Environmental Impact Assessment

Development of a Salmon Farm

Shot Head

Bantry

Co. Cork

T5/555

Prepared by

The Department of Agriculture Food and the Marine Aquaculture and Foreshore Management Division

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Applicant:

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1 Contents

1 Executive Summary ................................................................. 4
2 Introduction and Project Description ........................................ 5
3 Legislative Framework and Statutory Permissions Required ........ 7
4 Project in a Policy Context ...................................................... 8
5 Statutory Bodies Consultation .................................................. 9
6 Public Consultation ............................................................... 10
7 Documents Considered .......................................................... 12
8 Principal Issues of Environmental Relevance ......................... 13
9 Adequacy of EIS ................................................................. 15
10 Socio-economic impacts ....................................................... 16
  10.1 Employment Creation ..................................................... 16
  10.2 General Tourism and Marine Tourism impacts .................... 16
  10.3 Conclusion ........................................................................ 17
  10.4 Archaeology ...................................................................... 18
  10.5 Conclusion ...................................................................... 19
11 Infrastructure ......................................................................... 20
  11.1 Infrastructure, possible impacts on road traffic volumes ....... 20
  11.2 Conclusion ...................................................................... 21
12 Navigational safety ............................................................... 22
  12.1 Effects on the environment during Construction and Decommissioning of the Farm Structures .............................................. 22
  12.2 Conclusion ...................................................................... 23
13 Landscape and Visual Impact ................................................ 24
  13.1 Conclusion ...................................................................... 25
14 Interactions with Fishing and Other Aquaculture Activities .......... 26
  14.1 Pot Fisheries ................................................................. 26
  14.2 Trawl Fisheries .............................................................. 26
  14.3 Dredge Fisheries ............................................................ 27
  14.4 Aquaculture .................................................................... 27
  14.5 Conclusion ...................................................................... 27
15 Interactions with Natura 2000 Sites and Protected Species ........ 28
  15.1 Marine Mammals ............................................................ 31
  15.2 Conclusion ...................................................................... 33
1 Executive Summary

In June of 2011 an application was received by the Department of Agriculture Food and the Marine, from Bradán Fanad Teo T/A Marine Harvest Ireland for the development of a Marine Aquaculture Salmon Farm at Shot Head, Bantry Co. Cork. Under Section 4A of SI 236/1998 – Aquaculture (Licence Application) Regulations, 1998, prior to any determination on the application, the Minister is required to produce an Environmental Impact Assessment report. (Appendix 1)

The Department of Agriculture, Food and the Marine established a group of subject matter experts to produce an Environmental Impact Assessment report on the proposed development.

The methodology and documents considered are as set out below.

The assessment was carried out in accordance with S.I. No. 410 of 2012, European Union (Environmental Impact Assessment)(Aquaculture) Regulations 2012.

The Environmental Impact Assessment (EIA) examined, analysed and evaluated the direct and indirect impacts of the proposed development on the following:

- (a) human beings, flora and fauna,
- (b) soil, water, air, climate and the landscape
- (c) material assets and the cultural heritage, and
- (d) the interaction between the factors mentioned in (a), (b) and (c) above.¹

The conclusion of the Environmental Impact Assessment is that the installation and operation of the salmon farm as proposed is not likely to have a significant negative impact on the environment.

¹ S.I. No 410 of 2012
2 Introduction and Project Description

In June 2011, Bradán Fanad Teo T/A Marine Harvest Ireland submitted an application, accompanied by an Environmental Impact Statement (EIS), to the Minister for Agriculture, Food and the Marine for an Aquaculture Licence and a Foreshore licence for a 3,500 tonne salmon farm in Bantry Bay.

The proposed farm would have one production site located near Shot Head on the north shore of Bantry Bay as shown in Appendix 4. The area of the proposed site is 42.5 hectares (850m x 500m).

The site would contain 12 No. 41m diameter cages with 15m deep nets. The cages would be held in position, in a 6 cage x 2 cage array, by a submerged mooring grid. A feed barge would also be deployed on the shoreward side of the site. The feed barge would be used to feed the stock automatically via a pipe distribution system using compressed air.

At the start of the production cycle the site would be stocked in October/November with a maximum of 836,000 smolts sourced from the applicant’s hatcheries in Donegal. At the end of the production cycle, some 17-22 months later, harvesting of the fish would take place on site by pumping the fish into a well boat. It is anticipated that the fish would then be transported to the applicant’s facilities at the Fisheries Harbour Centre in Castletownbere for slaughtering and subsequent transfer to chilled road-tanker transport to Donegal to the applicant’s facility for processing and packing. The site would be left fallow between 2 to 4 months post harvesting prior to restocking for the next production cycle. During the pre-harvest stage, in months 14-22, the number of cages at the site may be increased from 12 to 14 to accommodate groups of fish ready to be harvested.

It is anticipated that the Shot Head site would undergo a 2-year production cycle, resulting in the harvest of circa 3,500 tonnes of fish by month 20-22. After this the site would be fallowed for 2-4 months, before restocking for the next cycle at the beginning of Year 3 and so on. The applicant’s existing Roancarrig site would be stocked one year after the Shot Head site with harvesting taking place 1 year after the harvesting at Shot Head.

It is intended that site service will be provided by a purpose-built 15.5m long multi-cat type vessel used for transportation of feed and other freight and general site duties including maintenance and net changing. The site will also be serviced by an 8m Polar Circle type workboat. Net cleaning will be carried out using the MV Conamara, which is shared by the applicant’s operations in the Southwest. An existing well boat, the 60.4m MV Grip Transporter (or equivalent), which is on permanent lease to the applicant, will be used for a variety of activities that require fish pumping, fish delivery, fish grading and fish bath treatments. The main service vessels will operate from existing moorings either in the Castletownbere Harbour area or at the Pontoon Pier at Beal Lough, east of Castletownbere. Feed supplies will be delivered by road to Castletownbere for transfer to the applicant’s vessels for delivery to the site.
The operation of the Shot Head site will also involve the use of the applicant’s existing shore-based facilities, including an office in Castletownbere and an operations yard on Dinish Island, within the Castletownbere Fishery Harbour Centre.
3 Legislative Framework and Statutory Permissions Required

The development of a salmon farm is subject to the following legislation:

- Fisheries (Amendment) Act, 1997 (as amended)
- Foreshore Acts, 1933-2010.
- A Fish Health Authorisation, from the Marine Institute, under the
  - European Communities (Health of Aquaculture Animals and Products) Regulations 2008 (S.I. No. 261 of 2008),
  - European Communities (Health of Aquaculture Animals and Products (Amendment) Regulations 2010 (S.I. No. 398 of 2010) and

- Directive 2014/52/EU the assessment of the effects of certain public and private projects on the environment.
4 Project in a Policy Context

This project concerns increasing output from the aquaculture sector and from marine salmon farming in particular. All other things being equal in terms of compliance and sustainability issues, this project aligns closely with national and regional policy for Seafood development.

This proposal is also consistent with local and regional development plans as set out in the Cork County Development Plan 2014 and the Bantry Electoral Area Plan of January 2015.

The proposal is in line with the relevant national policies concerned with the seafood sector in the current time frame. Increases in output are envisaged in the ‘Food Harvest 2020’ strategy and in the earlier ‘Steering a New Course’ 2007-2013 strategy. The recently published ‘Harnessing our Ocean Wealth’ maritime strategy also calls for increases in aquaculture output and in particular for increases in the volume of salmon being farmed.

EU policy is also strongly in favour of increasing aquaculture output from within the member states of the Union so as to begin to address the huge current seafood trade deficit and for reasons of food security as more and more seafood supply is being attracted to the increased purchasing power of the middle income earners of the Asia-Pacific region.
5 Statutory Bodies Consultation

The Department undertook a consultation process with statutory bodies as set out in AQUACULTURE (LICENCE APPLICATION) REGULATIONS, 1998 (S.I. No 236/1998) and the Foreshore Act 1933

Written responses on the application were received from the following:

- Department of Transport, Tourism and Sport (Marine Surveyors Office),
- Commissioners of Irish Lights;
- Inland Fisheries Ireland;
- Department of Arts, Heritage and the Gaeltacht (Underwater Archaeology);
- Bantry Bay Harbour Commissioners
- An Taisce.

The submissions and comments were evaluated in the context of this assessment.
6 Public Consultation

1st round of Public Consultation

The applicant was advised on the 29th December 2011 to initiate the 1st round of Public Consultation. The information made available to the public consisted of:

- Copy of the application form and drawings
- Copy of the accompanying Environmental Impact Statement

A public notice was placed in each of the following newspapers on the dates shown below and the public were afforded the four week period, as provided for in legislation, during which submissions could be made to the Minister on the documentation published:

- 11th January 2012 The Kerryman
- 12th January 2012 The Irish Examiner
- 14th January 2012 The Southern Star

A total of 77 submissions were received within the specified timeframe. Submissions were made to both the Department’s office in Clonakilty and the office of the Minister in Agriculture House, Dublin. There was also a later submission by a local TD, supporting the company’s application. This led to the company giving three replies to the submissions.

The issues raised have been categorised into the following broad areas. It should be noted that some submissions raised a number of issues, which have been allocated to the different sections.

- Public Consultation
- Impact on local fishing
- Safety and quality of farmed fish
- Navigation
- Tourism
- Economic Benefit
- Environmental Issues
  - Pollution
  - Habitats/Benthic impacts
  - Interaction with wild salmon species
  - Disease
A second public consultation phase was conducted in September 2014. The applicant was required to publish the submissions of the statutory consultees. Notices were placed in three papers as detailed below. The public were given eight weeks to respond to the notice. This elicited a total of 42 responses. These were also sent to the company for comment.

17/09/2014   The Kerryman
17/09/2014   The Irish Examiner
20/09/2014   The Southern Star

The comments and submissions were broadly in line with the submissions made previously.

A third round of public consultation took place in December 2014. This was to inform the public that additional information had been requested by the Minister subsequent to a review of the EIS by the Marine Institute. There were no submissions made as a result of this process.

A final round of public information took place in March/April of 2015. This took the form of putting all the comments and submissions on the applicant’s website. This was an information exercise only and no submissions were invited from the public.
7 Documents Considered

The following documents were considered as part of the Environmental Impact Assessment (EIA) process:

The following material was reviewed:

- Environmental Impact Statement (EIS) for a proposed salmon farm at Shot Head, Bantry Bay, County Cork Ireland Volume 1 of 3, Main EIS Document, May 2011.
- Environmental Impact Statement (EIS) for a proposed salmon farm at Shot Head, Bantry Bay, County Cork Ireland Volume 2 of 3, Appendices, May 2011.
- Environmental Impact Statement (EIS) for a proposed salmon farm at Shot Head, Bantry Bay, County Cork Ireland Volume 3 of 3, Non-Technical Summary May 2011.
- Submissions received on foot of the public and statutory consultation and the applicant’s responses to these submissions.
- Relevant scientific publications and available data.
- Additional information provided by applicant.
8 Principal Issues of Environmental Relevance

Having examined the material from Section 7, the following are considered to be the principal issues of environmental relevance:

1. Socio-economic impacts
   a. Job Creation
   b. Tourism
   c. Local population
   d. Infrastructure
      i. Construction phase
      ii. Operation phase

2. Heritage
   a. Archaeology

3. Navigation

4. Visual impact
   a. Local Environment
   b. Impact on tourism

5. Interactions with commercial fishing and other aquaculture
   a. Pot Fisheries
   b. Trawl Fisheries
   c. Dredge Fisheries
   d. Aquaculture

6. Interactions with Natura 2000 sites and protected species
   a. Immediate environment
   b. Adjacent sites

7. Waste and pollutants
   a. Litter/Debris
   b. Nutrients/Harmful Algal Blooms (HABS)
   c. Seabed Impacts
   d. Use of chemicals – including dangerous substances

8. Fish health
   a. Fish health management

9. Quality and safety of farmed fish

10. Interactions with wild salmonids
    a. Escapees
    b. Genetic interactions
    c. Sea Lice
Other issues examined that are considered to be of lesser environmental relevance include effects on Air, Noise and Climate.

1. **Air**

Effects on Air will principally be exhaust emissions from vessels and engine operated plant and equipment. The plant and equipment proposed for operational purposes are well described in the EIS document. Effects from these are considered to be minor. No noxious smells or gasses are generated as a result of the development. It is concluded that effects on air quality are not significant.

2. **Noise**

Noise Effects will principally be due to vessel traffic and engine operated plant and equipment and potentially also by Acoustic Deterrent Devices (ADDs), which could potentially impact on marine mammals. Predation controls are described in Section 3.4.11 of the EIS. ADDs, if proposed for deployment, would require separate statutory consent from Department of Arts Heritage and the Gaeltacht, at which time a full evaluation of the effects would be carried out and any mitigation measures would be specified, as required.

3. **Climate**

Effects on Climate are considered to be negligible and again any effects will be in the form of CO₂ emissions to the atmosphere from vessels and equipment engines, which are considered to be of minor significance in the context of vessel movement within the Bantry Bay area. Climate Change can potentially result in increased storm activity and more severe wave conditions into the future. Design integrity of farm structures will need to be considered in this context, and measures are in place to carry out this exercise under the terms of the draft Protocol for Structural Design of Finfish Farms, and/or at Licence Renewal Stages.
9 Adequacy of EIS

A three volume Environmental Impact Statement (EIS) was submitted with the application. The EIS was supplemented with information submitted by the applicant on foot of specific requests by the Minister for further information and also in response to submissions made during the public and statutory consultation phase. The EIS, and additional information, provides an adequate description of the proposed development. It outlines the rationale for selecting the proposed location, it provides the data required to identify the main effects which the proposed development is likely to have on the environment and a description of the measures envisaged to mitigate adverse effects. It contains a non-technical summary.

The content of the EIS complies with the provisions of S.I. No. 236 of 1998 (as amended). It is considered therefore, that the EIS complies with the applicable legislative requirements.
10 Socio-economic impacts

10.1 Employment Creation

The proposal envisages that eight new full time direct jobs will be created by the project at the proposed location. Whilst correct in immediate local terms, this is an underestimate of the actual amount of total employment which will be generated if the project proceeds. The applicant has extensive existing operations in the region, which means that a range of key services are already in place. These services (divers, net maintainers, well-boat operators, mooring and boat maintainers, harvesting crew, grading crew and boat providers etc) will already be available to deploy on this proposed site meaning that only a site specific fish husbandry crew is needed in addition to the existing resources. The employment of these ‘ancillary’ staff will be made more secure and their employment will be more likely to be full-time as a result of the additional operational needs of this proposed farm. The company will also be able to operate more efficiently and more competitively as a result.

In addition to the on-farm operational employment the projected 3,500 tonnes of output volume will also generate substantial employment at the location where the fish are processed to the first point of sale. Experience from elsewhere shows that it will require 30 to 35 FTE’s to process this volume of harvested salmon to the point of first sale. Whether local to the Bantry/Castletownbere region or not, these posts will be created in a coastal community and will contribute valuable employment in areas where little or no other opportunity exists.

- Based on the analysis of interactions with; inshore fisheries, migratory salmonids, other aquaculture tourism and heritage, discussed elsewhere in this EIA, it is considered that there is no substantive risk of displacement of any other legitimate economic activity arising from this proposal.

- On that basis it may be seen that the socio-economic impact of the proposal will be positive both to the immediate locality and to the economy generally.

10.2 General Tourism and Marine Tourism impacts

Overarching issues that might affect general tourism such as visual impact, socio-economics, impacts on road traffic and marine navigation are dealt with elsewhere in this assessment.

With regard to marine tourism in particular, in their 2008 ‘Marine Leisure Infrastructure Strategy’ for West Cork, Cork County Council listed sea angling from boats or shore, leisure boating, swimming, whale & dolphin watching, bird watching, walking, scuba diving and other water sports as the main components of marine tourism in the region. Given the location of the proposed operation and the nature of the proposed activity it is not likely that it would have any significant negative impact on any of the marine leisure activities listed above.
10.3 Conclusion

In the case of the application under consideration, there is no substantive evidence, arising from the EIS, the submissions received during consultation, the responses supplied by the applicant or the expert analyses of key issues from the agencies, that the proposed development will have any significant negative impact, either directly or indirectly, on the existing tourism businesses in the region or would impede further tourism development. This conclusion is built upon the separate analyses covered elsewhere in this report of possible impacts on water quality, inshore fisheries, local infrastructure, navigation and visual impact.

There will be a positive impact on local employment and the economy generally.
10.4 Archaeology

The seabed at the location of the proposed development will be impacted by the twenty six anchors, ranging from 700 Kg to 1,500 Kg (subject to detailed design) proposed to be installed at the fishfarm site. Mooring and anchoring arrangements are well described in the EIS document under Section 3.3 and Figure 63. Sizeable anchors such as these would have the potential to impact on any archaeological features within the immediate area of anchor deployment.

On foot of a request for the submission of additional information on the archaeological potential of the area of the proposed salmon farm the results of a geophysical survey, carried out under the guidelines and acquisition parameters as recommended by the Underwater Archaeology Unit of the Department of Arts, Heritage and the Gaeltacht, was submitted by the applicant. The survey, which included bathymetry, sidescan sonar and magnetometer, was conducted at an average line spacing of 100m. A shoreline inspection was also carried out. In addition a desktop survey, which included examination of information in the Records of Monuments and Places, the Topographical Records of the National Museum of Ireland and the Shipwreck Inventory, was also carried out.

The walkover and photographic inspection of the shoreline adjacent to the seabed survey site revealed the upstanding remains of a deserted village and the eroded remains of a shore access path leading from the village towards the shoreline. It is considered that the installation and operation of the salmon farm as proposed will not impact on these features given that the proposed fish farm site does not overlap with this area.

Rock and coarse substrate was identified in the northern half of the site and it is considered that the archaeological potential within these areas is low. Finer substrates, with higher archaeological potential, were identified in the central and southern portion of the site. The results of both the sidescan sonar and magnetometer investigations across the entire site, however, revealed no features that would indicate the presence of archaeological remains.

The desktop survey did not identify any records indicating known archaeological features in the subtidal area of the proposed fishfarm site. The site does not overlap with any documented shipwreck locations. This is consistent with the data collected in Bantry Bay as part of the INFOMAR project which identified one shipwreck in the inner part of the bay. This is the wreck of the "La Surveillante" which was lost in Bantry Bay in 1797. This wreck site is circa 10Km east of the site of the proposed salmon farm and it is considered that it will not be impacted.
10.5 Conclusion

Arising from the survey no archaeological features were identified within the proposed fish farm site. Ground disturbance during the installation of moorings and anchors at the site has the potential, albeit low, to reveal previously unknown / undetected features. Compliance with the archaeological condition in the licence will ensure that impacts on any such features are addressed. Special licence conditions are proposed for the Aquaculture and companion Foreshore licences. (Appendix 2)
11 Infrastructure

11.1 Infrastructure, possible impacts on road traffic volumes

The proposal will involve a certain level of increase in HGV traffic using the road network at a local and regional level. These HGV movements will principally arise from three activities associated with the proposal: the movement of juvenile stock or ‘smolts’ onto the proposed site, the transportation of salmon feeding stuffs and the transportation of harvested stock.

In the case of the movement of smolts, this will not impact on the road infrastructure in County Cork as the fish will be transported by sea in a live fish transport vessel to the proposed site. The vessel will have been loaded in Killybegs Co. Donegal and will steam south to deliver the stock by sea. Killybegs has adequate road connectivity in this regard as it already experiences high traffic volumes in connection with the landings of very large volumes of pelagic fish and the lorry movements associated with this activity would be negligible in comparison.

With regard to the transportation of salmon feeding stuffs and harvested stock, both of these activities will be centred around the Fisheries Harbour Centre located at Dinish Island outside of the town of Castletownbere, Co. Cork. The applicant has a substantial operating base there to service all of their salmon farming operations in the vicinity.

Salmon feeding stuff will be delivered by 24 tonne HGV trucks to the store at that location and then broken down into smaller loads of up to 14 tonnes on a rigid body truck owned by the applicant and taken 4.1 kilometres to a landing pontoon owned and operated by the applicant. The feed will then be loaded onto the applicant’s farm service vessels and taken out to the proposed site and stored in an automatic feeding barge. At no point will any of the truck movements pass through Castletownbere.

Harvesting of the stock will be done by loading graded fish into a well boat at the proposed site and taking them to the harvest station located at Dinish Island where they will be humanely killed and bled. The carcasses will then be loaded onto a special tanker lorry in an ice-water slurry bath and transported by road to the company’s facility in Donegal for processing in 16tonne lots.
**Regional Roads – R572**

Combined, the total maximum HGV movements associated with the proposal would be 395 one way journeys over a two year period which equates to 395 journeys per year (Both Ways). Given that the fish and shellfish landings into Castletownbere in 2012 was some 37782 tonnes (Source; Beara tourism) this would generate some 3435 HGV movements every year assuming 22t per journey x2 to accommodate both the journey in and out). The fish catching and processing sectors in Castletownbere account for over half (54%) of the town’s economic activity so it can be assumed that other economic activity would require at least 2926 HGV movements including imports for the processing sector. Therefore the proposal would lead to a maximum 6% increase in HGV movements on the R572. However the proposal would not lead to any increase in traffic in Castletownbere town and harbour which is the congested zone on this route. Thus such an increase is not regarded as significant, especially as the peak of lorry movements for harvest or feed transport will happen outside of the peak tourist summer season.

**National Roads – N71**

The NRA have a traffic monitoring point at Bantry, where the mean daily traffic volume of 133 HGV movements per day or 48545 HGV movements per year. The proposal would lead to a maximum 0.8% increase in HGV movements on the N71. This increase is not regarded as significant.

**11.2 Conclusion**

It is considered that the operation of the proposed salmon farm would not result in a significant increase in traffic on local, regional or national road networks.
12 Navigational safety

The proposed Shot Head aquaculture site is located close to the north shore of Bantry Bay, between Ardigole and Glengarriff. The site measures 850 m X 500 m, an area of 42.5 Ha. The main navigation traffic route in the area is to Bantry Pier, which facilitates commercial vessels, fishing and leisure traffic, as well as occasional cruise liner traffic. Other smaller vessel routes are local to the existing minor piers and harbours. The principal features within the area are a quarry at Leahill and the Whiddy Oil terminal. The quarry includes a pier from which stone may be transported by sea. The Whiddy Oil terminal is also relevant from a navigation perspective. Another licensed fish farm and shellfish aquaculture are located close to the south shore of Bantry Bay to the south and east of the proposed site. Navigation Safety was identified as a concern at EIS Scoping stage, and generally navigation safety appears to be a particular issue of concern as highlighted in public submissions. Bantry Bay Pilotage expressed concern in this regard, stating that vessels of c.96,000 t and 250 m length navigate to Leahill Pier.

The EIS addressed the issues of navigation safety and considered all of the principle elements referred to above. The discussion (p279 of the EIS) includes commentary by Maritime Management, Consultants; and a further submission by the applicant, dated 16 March 2012, included a document titled “Report into the effect on navigation of a proposed fin fish farm near Shot Head in Bantry Bay”, also prepared by Maritime Management. The conclusion of this consultancy firm was that the site of the aquaculture farm as proposed will not cause a significant danger or hazard to navigation in Bantry Bay.

The Marine Survey Office (MSO) of the Department of Transport, Tourism and Sport, the statutory body with responsibility for regulation of navigation safety in Irish Ports, submitted a report to the Department, dated 14 March 2012. In the report they state: “This office is still of the opinion that the development (T5/555) would not present any navigational danger”. It is noted that the MSO make recommendations, in response to submissions made by Bantry Harbour Commissioners and Conoco Phillips, that:

(i) a Bantry Bay development plan be produced with regard to overall aquaculture development in the bay and
(ii) the designation of a number of areas as anchor berths with swinging areas for deep draft vessels be produced; and further that the MSO concur with comments regarding specification of navigation buoys made by the Commissioners of Irish Lights.

12.1 Effects on the environment during Construction and Decommissioning of the Farm Structures

With regard to navigation safety during the construction stage, it is proposed that cages will be assembled on land and towed to the site. Section 3.4.4 and Appendix 2.2 of the EIS describe standard operating procedures for cage and grid moorings, including deployment and recovery of anchors. These operations will be carried out under favourable weather and tidal conditions and will include, as appropriate, issue of Marine Notices and deployment of
navigation markings in co-ordination with the Marine Survey Office and Commissioners of Irish Lights during the construction phase. It is considered that, in the context of navigation safety during construction and decommissioning, these operations will have negligible and transitory impacts on the environment provided they are carried out in accordance with licensing conditions.

12.2 Conclusion

In consideration of the foregoing, and in particular the views of the Marine Survey Office, it is concluded that, with the inclusion of appropriate licensing conditions of a relatively standard nature and appropriate navigation marking to the approval of the Commissioners of Irish Lights, navigation safety concerns are adequately addressed and do not pose a significant environmental risk to the development. (Appendix 2)
13 Landscape and Visual Impact

The assessment of the visual impact is based on the EIS submitted by the applicant and engineering reports.

Visual Impact Assessment is included in Volume 1, Section 6.3 of the EIS. The content is comprehensive and well presented, including detailed description of the landscape, discussion on why the site was chosen over other sites with regard to visual impact, maps showing viewing vantage points, relevant photographs and photomontages, information on scenic routes. There is extensive reference to relevant sections of the Cork County Development Plan (2009).

The proposed configuration of the salmon farm’s array of circular cages is a rectangular grid pattern. The farm structures are low in profile, with the vertical components such as handrails and predator netting being the most intrusive aspects visually. Maintenance of these components in a vertically upright and neat condition will be most important in maintaining a visually acceptable appearance. The array is aligned with the long edge parallel to the shoreline, which is in keeping with best practice from a visual perspective.

Marine Engineering Division of the Department of Agriculture Food and the Marine inspected the site and surrounding area in 2011. An examination of the site was conducted and the following documents were referenced in the evaluation of the visual impact of the proposed development:

- Department of Marine and Natural Resources document titled “Guidelines for Landscape and Visual Impact Assessment of Marine Aquaculture, 2001”,
- Cork County Development Plans 2009 and 2014,
- Public and Statutory submissions made during the Public Consultation Phase of the Aquaculture Licence Application process

Conclusions are that the site, landscape and relevant features are well described in the EIS. Generally, the panoramic view from the land site immediately to the north, which is elevated for the most part, is towards the expansive waters to the west or south of west, in the direction of Bere Island, the outer headlands of Bantry Bay and towards the open sea; and as such the proposed farm site is at the lower level of visual intrusion, being in the lower sector of the visual envelope. On the other hand, land-cover in the area is generally open, but this is mitigated by hills which generally obscure long distance views and views of the site.

In terms of the effects on the visual amenity enjoyed by people and views from residences located in the area, it is noted that many of the responses to the public consultation process complained about the visual impact of the proposed farm, and cited the impact on visitors to the location, particularly during summer months. It is noted that the area is sparsely populated, in a regional context, even though there are a number of houses (c. 12 houses) comprising the hamlet of Roosk nearby. The salmon farm site will impact on this community to some extent, particularly from houses located directly adjacent to the shoreline, which
are few, and from particular outdoor locations in the vicinity. It will also impact the views of tourists and hikers walking along the shoreline, which is rugged and generally suitable only to dedicated hikers. Views from vehicles travelling along the Glengarriffe to Castletownbere route (R572) are generally obscured, and where potentially visible are at a distance in excess of 5 Km from the site.

Views from Sheep’s Head peninsula on the south side of Bantry Bay are at the closest point in the order of 5 Km distant, and given this considerable distance and the relatively low elevation of the cage structures against a backdrop of a cliff face and the mountainous peninsula to the north, visual intrusion is very low.

It is considered that the assessment presented in the EIS represents a good analysis of landscape and visual impact. It is considered that, overall, landscape and visual impact will be slight - being of low visual impact (principally mitigated by the low population levels, absence of moderate or large urban settlement, only a small settlement of Roosk and individual houses close by, remotesness from public access routes and vantage points, the low vertical height of structures); and moderate landscape impact due to introduction of new manmade cage structures where little infrastructure existed heretofore (other than a quarry pier nearby which is set directly at the shoreline and not in open waters); there is no proposed physical change to the landscape, but the scenic quality of the landscape will be affected somewhat. It is noted also that any physical changes are entirely reversible (i.e by removal of the cage structures) without any great difficulty, cost or environmental disturbance.

13.1 Conclusion

The significance of impacts, being low in respect of magnitude of change and moderate in respect of sensitivity of landscape or visual receptor, is considered to be slight overall.
14 Interactions with Fishing and Other Aquaculture Activities

The potential interactions of the proposed development on commercial inshore fishing and existing shellfish aquaculture activity in Bantry Bay include:

- Loss of traditional fishing (potting and trawling) area due to presence of fish farm structures; e.g. cages, mooring ropes/chains and anchors.
- Loss of fishing gear (e.g. pots) due to entanglement with mooring ropes/chains and anchors.
- Direct impact on existing shellfish aquaculture operations.
- Contamination of wild fish due to use of chemicals/therapeutants as part of fish farm operations.
- Impact of veterinary substances on commercial species, particularly crustaceans and molluscs.

14.1 Pot Fisheries

- A pot fishery for shrimp (Aug-Feb) occurs around Bere Island and east to inner Bantry Bay. Some of the fishery may overlap with the proposed farm site but it is considered that the affected footprint is likely to be insignificant generally.
- Brown crab and lobster potting occurs on harder ground along the south shore of Bantry Bay and westwards and significant impacts on this activity are not considered likely.
- Potting for prawns occurs along the south and north shores of Bantry Bay, mainly in the inner Bay, east of Bere Island. This activity is seasonal and up to four vessels may be involved. This fishery occurs in the area of the proposed farm.

14.2 Trawl Fisheries

- There is a significant prawn fishery in outer and mid Bantry Bay, on mud substrates and an important pot fishery for prawns in or near to the proposed salmon farm site and in inner Bantry Bay generally. Bottom trawlers >15m regularly fish for *Nephrops* in the middle of the Bay, south of the proposed farm site, but not in the vicinity of the proposed site. Trawlers <15m in length are also known to fish this same area.
- Mid-water trawling activity occurs in the middle of the Bay. This represents a targeted sprat fishery in autumn/winter. This fishery may be sporadic; depending on fish abundance. The fishery does not overlap with the proposed site.
14.3 Dredge Fisheries

- Small scale fisheries for bivalves (scallop, clams) may occur in the area south and west of Bere Island. Clams (surf clam and razor clam) are not currently harvested in the area. These fisheries do not overlap with the proposed site.

14.4 Aquaculture

- There are 4 licensed salmon farm sites in Bantry Bay. Two sites, situated near Roancarrig Rocks, some 6 km west of the proposed site at Shot Head, are owned by the applicant and comprise a smolt site and a grower site. The other two sites are situated near Gearahies along the south shore of Bantry Bay, circa 5 km south-southeast from the proposed Shot Head farm.
- The nearest licensed shellfish production sites to the proposed development are approximately 4 km to the west, in Adrigole Harbour, and 5-6 km to the south, on the north coast of the Sheep’s Head Peninsula.
- There is 1 licenced seaweed production site near Gearahies along the south shore of Bantry Bay, circa 5 km south-southeast from the proposed Shot Head farm.

14.5 Conclusion

- There is some overlap between existing fishing activity and the footprint of the proposed salmon farm. A small number of individuals may lose access to a proportion of the grounds they fish. However, there is unlikely to be large-scale disruption of fishing.
- There is no spatial overlap between existing aquaculture sites and the footprint of the proposed salmon farm. Access to existing aquaculture sites will not be impeded and the operation of these sites will not be adversely effected by the proposed salmon farm.
15 Interactions with Natura 2000 Sites and Protected Species

The proposed salmon farm site at Shot Head is not located within a designated Natura 2000 site. The site is, however, located adjacent to a number of Natura 2000 sites; details of which are presented in Table 1.

**Table 1.** Natura 2000 sites adjacent to the proposed salmon farm site at Shot Head and their Conservation Objectives

<table>
<thead>
<tr>
<th>Designated Site</th>
<th>Distance from Shot Head site</th>
<th>Conservation Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Caha Mountains SAC</td>
<td>5.5 km to the north</td>
<td>To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected(^2):</td>
</tr>
<tr>
<td>(Site Code 000093)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Kerry slug</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Killarney fern</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Oligotrophic to mesotrophic standing waters with vegetation of the <em>Littorelletea uniflorae</em> and/or of the <em>Isoeto-Nanojuncetea</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Natural dystrophic lakes and ponds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Northern Atlantic wet heaths with <em>Erica tetralix</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Alpine and Boreal heaths</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Blanket bog (<em>active only)</em></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 2) Sheep’s Head SAC  
   (Site Code 000102) | 5.7 km to the south | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected³:
   - Kerry slug
   - Northern Atlantic wet heaths with *Erica tetralix*
   - European dry heaths |
| 3) Sheep’s Head to Toe Head SPA  
   (Site Code 004156) | 5.3 km to the south | To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA⁴:
   - Peregrine
   - Chough |
| 4) Glanmore Bog SAC  
   (Site Code 001879) | 11.5 km to the northwest | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected⁴: |

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has been selected:

- Freshwater pearl mussel
- Killarney fern
- Oligotrophic waters containing very few minerals of sandy plains
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation
- Northern Atlantic wet heaths with *Erica tetralix*
- Blanket bog (*if active bog*)

| 5) Beara Peninsula SPA  
(Site Code 004155) | 12.16 km to the west | To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:
- Fulmar
- Chough |

| 6) Glengarriff Harbour and Woodland SAC  
(Site Code 000090) | 9.8 km to the east | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex |

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II species for which the SAC has been selected:

- Kerry slug
- Lesser horseshoe bat
- Otter
- Common seal
- Old sessile oak woods with Ilex and Blechnum in the British Isles
- * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)

* Priority Habitat

In view of the largely terrestrial nature of sites 1-5 above it is considered that these sites are outside the zone of potential impact of the proposed fish farm development at Shot Head. There is no potential “source-pathway-target” vector connecting the proposed site to the Natura 2000 sites and it can be concluded that there will be no significant impacts on their Conservation Objectives.

The location of the proposed salmon farm at Shot Head is circa 9.8 km from the southern boundary of the Glengarriff Harbour and Woodland SAC. The number of otter couching sites and holts within the SAC will not be directly affected given that the proposed salmon farming activities are confined exclusively to marine habitats. Similarly, seal breeding or haul-out site will not be directly affected. There will, therefore, be no direct effects on common seal or otter populations within the site.

### 15.1 Marine Mammals

In Ireland, the 1992 EC Habitats Directive as transposed by the EC (Natural Habitats) Regulations requires that both seal species (Common Seal and Grey Seal) and all cetaceans occurring in Ireland are maintained at favourable conservation status. Under Article 12 of the Directive, all cetaceans should receive strict protection within the Exclusive Economic Zone

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Results of seal surveys carried out in Glengarriff over the period 1989-2003\(^8\) showed that numbers of Common Seals using the site increased during this period, with a maximum of 403 adult common seals recorded in 2003. More recently, the maximum count recorded in the inner Bay in 2011 was considerably higher than that recorded in 2010 using a standardised methodology\(^9\). Summary data gathered within Bantry Bay since 2000 suggest that the numbers of Common Seals ashore during the moult may fluctuate considerably between years. The counts for the years 2009-2011 were 332, 308 and 365, respectively.

Results from the same study for Adrigole Harbour showed counts of 35, 36 and 20 Common Seals for that area in 2009, 2010 and 2011, respectively. The maximum number of Common Seals recorded across three surveys in 2011 was below figures recorded in 2009 and 2010. Human disturbance of seals hauled out in the harbour was recorded during two of the surveys in 2011. In both cases, all seals ashore entered the water as a result of local kayak activity. Common Seals have been reported internationally to be vulnerable to disturbance via close approaches by kayaks, canoes and small boats.

Although disturbance to seals from human activities has been observed in the Bantry Bay area, on the basis of the available data the numbers of seals in Bantry Bay does not appear to have significantly declined in recent years. Aquaculture activities, either alone or in combination with other human activities (e.g. tourism), does not appear to have affected seal numbers significantly. Significant impacts on seal populations arising from the installation and operation of the proposed salmon farm at Shot Head are not considered likely.

The Irish Whale and Dolphin Group’s sightings database\(^{10}\) provides 47 records of sightings of seven cetacean species in Bantry Bay covering the period from October 1991 to September 2013, including:

- **Common dolphin** - recorded in July 2007 (15 animals), February 2009, (125 animals), July 2012 (75 animals) and September 2013 (20 animals)

- **Harbour Porpoise** - recorded in August 1995 (7 animals), July 1999 (8 animals), May 2002 (8 animals), August 2002 (18 animals), July 2004 (3 animals), April 2007 (1 animal) and February 2009 (2 animals)

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\(^8\) Irish Wildlife Manual No. 13, 2004  
\(^{10}\) All sightings records are validated and are available at www.iwdg.ie.
- Bottle nose dolphin - recorded in August 1992 (5 animals), October 2003 (12 animals), December 2007 (1 animal), June 2009 (15 animals) and January 2010 (55 animals)

- Risso’s dolphin - recorded in May 1992 (4 animals), July 2001 (12 animals)

- Pilot whale - recorded in July 1997 (20 animals), April 2003 (1 animal),

- Minke whale – July 2007 (1 animal), May 2008 (4 animals), September 2010 (1 animal) July 2011 (1 animal) and September 2013 (2 animals)

- Sperm whale – recorded in June 1995 (1 animal)

These data indicate that a number of cetacean species commonly but infrequently occur in Bantry Bay. The Bay is not considered to be an important foraging or breeding area for cetaceans and there are no resident populations in the Bay. Significant impacts on cetaceans arising from the installation and operation of the proposed salmon farm at Shot Head are not considered likely.

15.2 Conclusion

There is no spatial overlap of the proposed aquaculture site with any designated Natura 2000 site. In addition, there would be no interference with key relationships that define the function of the sites. The proposed aquaculture activities will not result in habitat loss within any of the Natura 2000 sites; there will not be significant disturbance to key species; and there will be no habitat or species fragmentation. Consequently, it is concluded that the culture of finfish, as it is currently constituted and proposed, in Bantry Bay does not pose significant risk to the conservation features of the adjacent sites.

Based on the available data, it is considered that the proposed salmon farm will not result in significant disturbance to cetaceans or other marine mammals and that the culture of finfish, as it is currently constituted and proposed, in Bantry Bay does not pose significant risk to cetaceans or other marine mammals.
16 Waste and Pollutants

The operation of the proposed salmon farm can give rise to a number of different waste streams which could have environmental effects. These include:

- General waste e.g. feed bags, rope, packaging which if not adequately managed could result in the accumulation of litter / debris along the shoreline in Bantry Bay

- Particulate organic waste e.g. uneaten fish food and fish faeces which can settle on the seabed and impact on the benthos below and adjacent to the farm

- Inorganic waste e.g. N & P emitted from the farm as waste products of fish metabolism which could result in increased nutrient levels in the water column leading to eutrophication and stimulation of Harmful Algal Blooms (HABs)

- Discharge of veterinary medicines with potential impacts on non-target species

- Disposal of mortalities which if not adequately managed could result in disease transfer to other fish farm sites and to wild fish.

16.1 General Waste

The applicant has in place a Standard Operating Procedure (SOP) for Waste and Waste Management covering the management and disposal of all routine wastes from its existing facilities. In the Bantry Bay area solid waste segregation and temporary storage activities are carried out at applicant’s operations yard on Dinish Island. All wastes are disposed of in licenced facilities by licenced contractors as appropriate. Where possible, waste material is sent for recycling / reuse.

It is intended that the existing facility at Dinish Island will be used to manage general waste arising from the proposed Shot Head site.

It is considered that the risk of general waste / waste material entering the marine environment is low.

16.2 Particulate organic waste

The data available from sediment analysis indicates a stable and diverse habitat type and faunal communities within the area surveyed. Video transects taken revealed a number of different habitats including extensive muddy habitat as well as coarser sand (waves) found towards the western portion of the site.

A depositional model was run on the site under a scenario of full production (worst case scenario) resulting in a high level of retention within the broad footprint of the cage.
structures. The parameters used in the modelling are considered to be appropriate and appeared conservative in nature. The output of the dispersion modelling demonstrates a highly depositional area, particularly if the cages were to be located in the centre of the licensed area. Given the dominance of silt/mud at this site, re-suspension and subsequent transport of material away from the site is unlikely to be a dominant feature.

Benthic monitoring is carried out on an annual basis at the four licensed sites in Bantry Bay, as set out by the licence conditions and in accordance with Benthic Monitoring Protocol.

At the North shore sites, in the vicinity of Roancarrig, surveys have been carried out for one or both of the sites in each of the last five years. The two sites (Roancarrrig and Ahabeg) are dominated by fine sediments, with some rock outcrops prominent at the Ahabeg site. At each location, although there have been impacts on the seabed observed (e.g. waste food and some bacterial mats), the impacts are confined to the area beneath the cages and within the allowable zone of effect. Reviews carried out by the Marine Institute have concluded that the benthic conditions have been within the parameters allowed under the Benthic Monitoring Protocol.

Based on the available data it is considered that impacts on the benthos will be confined to footprint of the cage structure and will be within the “allowable zone of impact” as set out in Benthic Monitoring Protocol.

16.3 Inorganic waste

Release of nutrients in the water column from salmon farms occurs either directly from the input of dissolved nutrients or indirectly from remineralisation of nutrients in sediments. The input of nitrogen and phosphorous (N&P) in their dissolved form is thought to be of greater importance than the release of nutrients through remineralisation. Phosphorous is not considered to be a limiting nutrient for phytoplankton in the marine environment and therefore is of less importance than nitrogen.

Blooms of phytoplankton are regular occurrences and part of the natural cycle of the marine flora. A bloom is said to occur when the population of planktonic organisms becomes sufficiently abundant resulting in visible discolouration of the sea.

An “exceptional” bloom is defined as being an irregular event, and hence unpredictable. Exceptional blooms include those that are outside of the usual dinoflagellate summer succession and blooms that are unusual in their consequences. Blooms of certain naturally-occurring species are considered harmful (i.e. Harmful Algal Blooms-HABs) as they can have adverse impacts on marine organisms, including farmed fish. Such impacts include mortality of marine organism, including farmed fish. Mortalities can occur through the physical presence of large numbers of plankton leading to clogging of fish gills or through the production by the plankton of toxins. Mass mortalities of marine organisms have been recorded following blooms of Karenia mikimotoi, which have been documented in Ireland, including Bantry Bay, since the late 1970s. Other naturally-occurring plankton species
produce toxins that can accumulate in shellfish and present a human health risk for shellfish consumers. These events have been detected in Bantry Bay, through a national phytoplankton and biotoxin monitoring programme, for many years.

There is no clear evidence available in the scientific literature that demonstrates a link between salmon farming and the stimulation of HABs and/or toxin events in shellfish. Reviews of available data in Scottish waters concluded that there was no evidence of aquaculture wastes (including both inorganic and organic nutrients) stimulating HABs. A similar conclusion was reached for fish farms in Tolo Harbour, Hong Kong.

Latest research suggests that HABs in southwest Ireland are associated with import of the surrounding oceanic waters along with toxic species during rapid wind-driven exchange of water in the bay rather than being a response to in situ growth conditions. Bantry Bay exhibits limited estuarine behaviour becoming thermally stratified in the summer months with weak tidal currents, typically below 5 cm s\(^{-1}\). Circulation is thus primarily wind driven; this is also due to the fact that the bay is axially aligned to the predominant wind direction from the southwest. When the bay is thermally stratified, variations in wind direction cause two layer oscillatory flows which generally result in the import of water from the near coastal continental shelf containing phytoplankton, and in general water flushing is in an anticlockwise direction. During such events approximately 70% of the bay volume can be exchanged with a period of 2 – 3 days. The bulk of the inflow occurs just below the pycnocline and on the southern side of the bay, with the exception of waters immediately adjacent to southern shore at the mouth where outflow of water associated with a gyre is predicted. Bulk of the outflow takes place at mid-water depths and on the northern side of the bay. At the mouth, most of the upper layer away from the shores shows negligible net transport over the summer months, whereas in the inner bay an outflow is present in this section of the water column. Crude estimates of residence times are 10.4 days for the entire bay and 7.7 days for the inner bay.

It is considered that significant increases in ambient nitrate concentrations are not likely to occur and consequently the production of salmon at the scale proposed is not likely to stimulate algal blooms or lead to eutrophication of the water in the Bay. The occurrence of a bloom does not simply depend on nutrient concentrations but is a complex interaction of life cycle of the HAB species; current and wind forcing; chemical, ecological and toxin interactions; genetic diversity; water column stability; transport and mixing; as well as nutrient concentrations.

### 16.4 Use of Veterinary Medicine

Information has been provided on all veterinary medicines currently in use by the applicant at its sites in Ireland – and likely to be used at the proposed site. All medicines are prescribed by a company vet. An SOP for Medication of Fish is in place to ensure best practice in the choice, handling and use of medicines; and that harvested fish contain no drug residues or have residues below the relevant Maximum Residue Level (MRL). Material Safety Data Sheets are included for all substances to be used.
Aside from the chemicals used for sea lice treatment (see below) the applicant may use antibiotics (oxytetracycline) and potentially small amounts of anaesthetic.

Anaesthetics may be used in small quantities and in low doses for routine fish handling (e.g. broodstock stripping and sea lice counts). The use of anaesthetics is generally considered to be of little risk to the environment.

The use of antibiotics is tightly controlled in aquaculture. As the proposed site will produce organic fish the use of medication is even more strictly controlled than with conventional production. All antibiotic use will be prescribed by a veterinary practitioner. Antibiotic residues in farmed fish are detailed in the section relating to fish health below.

Hydrogen peroxide, one of the three treatments to be used for sea lice, has a rapid decomposition, breaking down to hydrogen and water in the water column, and is considered a low environmental risk.

The applicant focuses its sea lice treatment strategy on the use, in rotation, of Slice® (as an in-feed treatment) and Hydrogen peroxide and Alphamax® (as bath treatments). The active ingredients in Slice® and Alphamax® are Emamectin Benzoate and Deltamethrin, respectively; both of which are considered as a Dangerous Substance under Directive 2006/11/EC and for which Environmental Quality Standards (EQS) have been set down in accordance with Statutory Instrument 466 of 2008.

It is proposed that the Standard Operating Procedures currently in place for the applicant’s existing sites in Ireland will be implemented in respect of each of the sea lice treatments intended for use at the Shot Head site. The SOPs include information on treatment dose rates and treatment duration. Enclosed well boat tanks will be used in the case of bath treatments; with subsequent discharge from the well boat post-treatment. An SOP is also in place in respect of sub-optimal sea lice treatment events whose purpose is to analyse potential factors which may have caused or contributed to sub-optimal sea lice treatment events and to ensure that such factors are avoided or minimised in the future.

The European Communities (Control of Dangerous Substances in Aquaculture) Regulations 2008 (SI 466 of 2008) was introduced for the purpose of giving effect to the Dangerous Substances Directive (2006/11/EC), Habitats Directive (92/43/EEC) and Water Framework Directive (2000/60/EC), in so far as these Directives relate to the discharge of dangerous substances to the marine environment from aquaculture activities. Environmental Quality Standards (EQS) which apply to substances used in treatment of marine finfish during the operation of aquaculture facilities on the have been established and are set out below.
The following standards (concentration in the water column) shall apply 24 hours post treatment at 100m from site

<table>
<thead>
<tr>
<th>Substance</th>
<th>Concentration (ng/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cypermethrin (Excis)</td>
<td>0.5</td>
</tr>
<tr>
<td>Teflubenzuron</td>
<td>30</td>
</tr>
<tr>
<td>Emamectin benzoate (Slice)</td>
<td>0.22</td>
</tr>
<tr>
<td>Alphamax (Deltamethrin)</td>
<td>2</td>
</tr>
<tr>
<td>Azamethiphos</td>
<td>150</td>
</tr>
</tbody>
</table>

Of these, the applicant has stated that its sea lice treatment regime at the site will rely upon Slice® and Alphamax®. Use of these substances is prescribed by a veterinary practitioner.

The track record of salmon farms in Bantry Bay (including the applicant’s licensed site at Roancarrig) in maintaining low levels of lice on the farmed fish has, in general, been good; and lice control in the south-west as a whole is good. Since 2008, lice levels during the spring period have consistently been within the sea lice monitoring and control protocol treatment trigger levels. Accordingly, the applicant has only required chemical treatments of lice with a dangerous substance (Slice®) three times since 2008.

It is not possible, however, to predict future sea lice levels and, hence, the applicant’s requirement for chemical treatments. Nevertheless, the applicant provides information on the maximum quantities of chemicals that may be required to administer a treatment to the entire maximum biomass.

On the basis of the additional data presented by the applicant it is reasonable to conclude that the EQS for each of the Dangerous Substances in question (Emamectin Benzoate and Deltamethrin) is not likely to be breached at the proposed farm site – even at the worst-case scenario presented.

Given the consistently low levels of sea lice on salmon farms in Bantry Bay and the historically low usage of sea lice treatment at these sites significant adverse impacts on benthic fauna, commercial fish and shellfish are not considered likely.

Deltamethrin is not mobile in the environment because of its strong adsorption on particles, its insolubility in water, and very low rates of application. Extensive field studies, in experimental ponds, and field use have shown that the high potential toxicity is not realised.

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The available data indicate that the use of Emamectin Benzoate to treat lice infestations in salmon should create no risk of adverse impacts on sensitive pelagic life—vertebrate or invertebrate. Although Predicted Environmental Concentration : Predicted No-Effects Concentration values for sediments in the vicinity of treated farms, derived from conservative models, indicate a risk to sensitive invertebrates, measured concentrations in sediments close to the farm indicate a much smaller localised risk.

16.5 Conclusion

Based on the forgoing analysis, it is considered that the waste streams arising as a result of the operation of the proposed salmon farm are not likely to have significant impacts on the marine environment.
17 Fish Health

Health management on all of the applicant’s sites is conducted according to its Fish Health Management Plan. The plan underpins the company’s obligations under EU and national legislation, namely Council Directive 2006/88/EC and SI 261 of 2008 (Health of Aquaculture Animals and Products Regulations).

The main goals of the Fish Health Management Plan are:

- To prevent and control fish diseases and ensure the maintenance of a high level of fish health and welfare;
- To minimise environmental impact; and
- To rear salmon in accordance with industry guidelines and the current best practice of industry.

The primary actions of the Fish Health Management Plan are:

- Vigilance and regularity in stock monitoring against key performance indicators;
- Disciplined and detailed record keeping;
- Official notification in the event of disease outbreaks; and
- Application of therapy under veterinary supervision/prescription, in strict adherence to the organic standards that will apply at the site.

Biosecurity measures—such as cleaning and disinfection in relation to visitors, divers, equipment and well-boats—as well as the safe and efficient disposal of mortalities are also outlined in detail in the Fish Health Management Plan and the corresponding Standard Operating Procedures. Emergency plans for dealing with large-scale mortality are also in place.

In addition to the health management regime outlined above, the company takes a proactive approach to disease avoidance by having a policy of:

- Vaccination against the following diseases—Furunculosis, Vibriosis and Pancreas Disease; and
- Minimising stress levels on fish by employing low stocking densities, ensuring that environmental conditions are optimal in as far as possible, and providing good nutrition.
The general approach to disease management by the applicant can be considered to be of a very high standard. The Fish Health Management Plan, which relates to the site at Shot Head, is very comprehensive and covers all of the elements required in such a plan.

The issue of treating fish for infection with AGD was not addressed by the applicant but this can be explained by the fact that the disease only emerged as an issue for the Irish industry after the EIS was compiled and the licence application was submitted. The applicant has successfully managed AGD on their sites in 2013; using a system of weekly gill screening followed by early treatment where *N. perurans*, the causative agent of AGD, is detected. The treatment involves the bathing of fish in freshwater for a period of up to 6 hours. It is anticipated that the same proactive management strategy would be used at the Shot Head site and the sourcing of freshwater required for the treatments would be subject to licensing as appropriate.

In addition to the commitment to operate in the context of the Fish Health Management Plan and associated SOPs outlined in the EIS, the applicant has, since completion of the EIS, signed up to the national *Code of Practice on Fish Health*[^12] and the *Farmed Salmonid Health Handbook*[^13]. These documents were compiled jointly by the Marine Institute and industry and are aimed at detailing all aspects of good practice on salmonid farms in Ireland. Compliance with these documents further supports the adoption of all aspects of industry best practice by the applicant.

In an Irish context, when dealing with outbreaks of listed diseases (i.e. those which require eradication under Council Directive 2006/88/EC), only sites that fall within a zone with a radius of 5km around the infected site are considered to be high risk. Given that the proposed site at Shot Head lies 8 km east of the site at Roancarrig, the risk of disease transfer between the 2 sites is not considered to be a significant issue.

Compliance with the applicant’s Fish Health Management Plan and associated SOPs; the national Code of Practice on Fish Health; and the Farmed Salmonid Health Handbook will ensure that the site is operated in accordance with the highest fish health standards, thereby minimising the risk of infection and mitigating against disease transfer from the site to local populations of wild fish—or indeed vice versa.

Collected mortalities are to be taken for incineration at College Proteins of Nobber, County Meath, an approved animal by-products rendering plant, as required by Department of Agriculture, Marine and Food guidelines.

### 17.1 Conclusion

It is considered that compliance with the Standard Operating Practices as outlined will ensure the health of the fish stocks is maintained and will not have a significant impact on the environment.

18 Quality and Safety of Farmed Fish

As with other intensively farmed animals, farmed finfish can be subject to disease and infestation which can have animal welfare, environmental and commercial implications. Therefore, similar procedures are in place for farmed finfish (as for other farmed animals); including treatment with approved veterinary medicines (e.g. vaccines, antibiotics, antifungal agents and ectoparasitic treatments to prevent or treat disease or infestation), under the direction of a veterinarian. Following treatment with such medicines operators are obliged to adhere to specified withdrawal periods before harvesting, in order to ensure compliance with Maximum Residue Limits (MRL) defined in legislation.

All EU Member States are required to monitor certain “substances and residues thereof in live animals and animal products” in accordance with EU Directive 96/23/EC. In Ireland the Department of Agriculture, Food and Marine (DAFM) co-ordinates the overall food residue monitoring programme, including aquaculture. The main objectives of the National Residue Control Programme (NRCP) is to ensure farmed fish are fit for human consumption; to provide a body of data showing that Irish farmed fish is of high quality; to promote good practices in aquaculture; and to comply with EU Directive 96/23/EC.

The Sea Fisheries Protection Authority (SFPA) is responsible for ensuring compliance with the Directive in the finfish aquaculture sector and the Marine Institute implements the monitoring programme on behalf of the SFPA. The scope of residues testing is set out in an annual national surveillance monitoring plan (approved by European Commission). It covers four broad categories: banned substances, unauthorised substances, authorised substances and environmental contaminants.

The overall results of the analysis of aquaculture products during the period 2004–2013 demonstrate consistently low occurrence of residues in farmed finfish, with 0.23% non-compliant results from routine targeted monitoring in 2004, 0.09% in 2005 and 0% for the period 2006-2013

There have been a number of additional studies on the levels of a range of contaminants in Irish Seafood, including farmed salmon. The results of these studies have shown that concentrations of environmental contaminants, specifically trace metals and certain persistent organic pollutants (e.g. PCBs, dioxins) are measurable but are generally low and well within EC maximum limits where such have been set.

The Food Safety Authority of Ireland (FSAI) has advised that Irish farmed salmon is an excellent source of omega-3 polyunsaturated fatty acids and especially eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) which are important for cardiovascular and brain health. Farmed salmon also contains 17-18% of high quality protein and is a source of minerals and some vitamins. Additionally the FSAI has advised that consumers should eat and enjoy one to two portions of Irish farmed salmon per week as part of a balanced diet.

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14 Results of the annual monitoring programme are available on the Marine Institute Open Access Repository - http://oar.marine.ie/
interspersed with other oily fish such as mackerel and with white fish as these are also highly nutritious

Based on the results of the annual residues monitoring programme, it is considered that farmed salmon produced in Ireland are compliant with the Maximum Residues Limits (MRL) prescribed by the European Commission and are fit for human consumption. Ongoing compliance will be ensured through the National Residues Control Plan which incorporates samples representative of the annual salmon production

18.1 Conclusion

Based on the forgoing analysis, it considered that the fish produced and placed the market from the proposed salmon farm will be of high quality and safe for human consumption.
# Interactions with Wild Salmonids

Interactions with wild salmonids may result from:

- The potential for escapees and possible interaction with wild salmon populations and habitats

- Transfer of sea lice emanating from farmed fish to wild salmonids

There are 10 rivers in the Cork district (including the 5 rivers which flow into Bantry Bay) and 26 rivers in the neighbouring Kerry district. Of these, 14 are failing to meet Conservation Limits (CL) and 21 have forecast CLs of less than 250 salmon.

The five rivers in Bantry Bay support some of the smallest self sustaining stocks and fisheries on these stocks in Ireland. CLs for the Bantry Bay rivers in 2014 (as advised by the SSCS) are: Mealagh-96, Owvane-371, Coomhola-310, Glengarriff-66 and Adrigole-66. These numbers need to be considered in the context of the production targets/no. of fish for the proposed and adjacent sites. Each of the rivers in Bantry Bay is meeting and exceeding CLs by varying amounts. Four of the five rivers (Mealagh, Owvane, Coomhola and Glengarriff) are fully open in 2014. The Adrigole River is open on a Catch and Release basis only.

For some of the rivers—notably the Mealagh, Owvane and Coomhola—the estimated returns have been consistently above the Conservation Limits for the last five years.

Genetic baseline studies on all five of the rivers suggest that they support small but naturally self-sustaining wild stocks of salmon. These stocks are important as spawning populations in their own right.

## 19.1 Escapees and Interactions

Prevention of escapees is of paramount importance to the applicant. There have been no recorded escapee events for the last five years under the applicant’s currently licensed aquaculture production in Bantry Bay. However, escapes from fish farms in Ireland have occurred. Three official reports of escaping farmed fish have been reported to DAFM/MI/IFI since 2007. In November 2009, approximately 25,000 salmon escaped from a cage in Ireland. A single report of an escape of 1,000 fish followed by a report of an escape of 83,000 was reported in 2010. No reports of salmon escapees were received in 2011. In comparison with other salmon aquaculture producing countries, the incidence of escapees is generally lower in Ireland. A three-year study over the period 2007-2009 showed that Ireland had the lowest rate of fish farm escapees in Europe, with only one escape event during the study period\textsuperscript{15}. There was a fish loss at a salmon farm in Bantry Bay in early 2014 due to extreme and prolonged storm conditions but it was not possible to establish whether

any fish actually escaped as a result of this event. It noted that the moorings and pen types deployed at the location were of an older generation of technology less able to withstand extreme weather events than the technology proposed for this application.

The technology proposed for this application is to modern specification. The use of improved standards for cage design, together with better training, has been shown in Norway to reduce escapees significantly. The Norwegian government has enacted legislation called NYTEK. This technical standard relates to cages, mooring systems and other components. Since the implementation of this legislation there has been a reduction in both the number of escape incidents and the numbers of fish escaping.

The current Standard Operating Procedure – Emergency Plan for Fish Escapes outlines actions to be taken to repair the net, the reporting procedure in the event of an escape, including the specific causes and the relevant authorities to be informed. The SOP should reduce the likelihood of losses incurred during day-to-day operations on the farm. The inclusion in the SOP of a mitigation measure against large escapee events—through net deployment at sea—is noted; but the effectiveness of such measures is uncertain and may have an undesirable by-catch of wild salmon. Other than recapture at sea, there are no direct actions in the SOP aimed at either reducing or eliminating any potential impact on wild salmon stocks.

The likelihood that escapee salmon will enter freshwater immediately following an escape event depends on the numbers escaping, the stage at which they escape (post smolts or adults), the stage of sexual maturity and the proximity to rivers. Although many escapee salmon will disperse and die at sea, entry to freshwater immediately following escape has been reported. Research in Northern Ireland has shown the level of escapees detected entering fresh water to be less than 1%. Occurrence of escapees entering an adult trap in fresh water averaged 0.88% (with a range of 0.13–2.62%, depending on year). There are very few systematic in-river monitoring programmes for farm escapees in Irish rivers and the scale of the potential risk is uncertain.

An important consideration in relation to impact of escapees is the size of the wild salmon stocks in adjacent rivers. Escaped farmed salmon have been shown to alter the genetic make-up of wild populations. Recent Norwegian research showed that four of 21 Norwegian rivers screened were significantly changed as a consequence of genetic interaction with escaped farm salmon, based on the genetic markers deployed, but, for the most part, for the majority of the rivers tested there was no change in genetic profile. Population density of the recipient population was an important contributory factor in determining its susceptibility to genetic change. Those rivers with the most depressed wild populations were the most severely affected. Furthermore, the gene flow from farmed escapees into native populations has been less than the number of escapees observed on the spawning grounds. This is considered to be due to the fact that farmed escapees display reduced spawning, compared to wild fish, and that their offspring display lower survival when compared with native conspecifics.

There have been no documented cases in Ireland of negative population impacts leading specifically to loss of wild stock integrity and productivity. However, there is documented evidence from a number of Irish rivers of escapees entering freshwater, spawning with wild
salmon and producing viable offspring and the persistence of genetic changes over time in one of the stocks studied. These genetic changes to wild stocks are likely to have a negative effect on a wild stock. Indications from literature suggest that small stocks and stocks at low densities are more vulnerable to these negative genetic impacts.

The applicant’s good record with respect to escapees is good evidence that the containment of stocks within the cages can be consistently achieved. Nevertheless, even with the best technical standards, training and operating procedures in place, it is not possible to entirely discount the possibility of accidental losses of salmon from cages.

Given the small size of the salmon stocks in Bantry Bay rivers, and other areas along the possible migration or dispersal route of escaped farmed fish, mitigation of potential interactions with escaped farmed fish is essential. Efficient monitoring in freshwater for escapees, following large-scale escape events, and effective mitigation measures (e.g. removal of escapees from freshwater, where possible and practical) will assist in the ongoing maintenance of the status of the local wild salmon stocks.

This application will fall under the aegis of a new protocol governing the design, installation and maintenance of pens and moorings. Based on international experience, the introduction of this important mitigating factor will significantly reduce the risks associated with stock escapes.

19.2 Conclusion

The improved cage design and application of up to date technology will ensure the standard of structural design of the proposed development will meet the highest standards available to the industry, thus reducing the risk of escapes and minimising the interaction with wild salmonid species.
20 Sea Lice

Following the introduction of the Strategy for Improved Pest Control on Irish Salmon Farms in 2008 by the Department of Agriculture Fisheries and Food there have been significant improvements in sea lice management in Ireland. The national monitoring and control system for sea lice is aimed at implementing a strategic approach to lice control at a Bay level and targeting efforts on the spring period where there is a potential for impacts on wild smolts embarking on their outward migration.

The track record of salmon farms in Bantry Bay (including the applicant’s licensed site at Roancarrig) in maintaining low levels of lice on the farmed fish has, in general, been good; and lice control in the south-west as a whole is good. Since 2008, lice levels during the spring period have consistently been within the protocol treatment trigger levels.

Since 1997, Single Bay Management (SBM) arrangements involving separation of generations and appropriate fallowing of sites have been in place in all salmon farming areas in Ireland, including Bantry Bay. Since then these plans have been regularly updated.

Single Bay Management arrangements for fin-fish farms are designed to co-ordinate husbandry practices in such a way that best practice is followed and that stocking, fallowing and treatment regimes on individual farms are compatible with the arrangements on neighbouring farms. The goal is to ensure that practices on individual farms act synergistically to enhance the beneficial effects to the bay as a whole. The SBM process has proved very effective in enhancing the efficacy of lice control. Single Bay Management plans are subject to revision for each production cycle.

Long-term studies in Ireland show that sea lice are a minor and irregular component in marine mortality of wild salmon and that the observed level of marine mortality attributable to sea lice infestation is very small, both in absolute terms (approximately 1%) and as a proportion of the overall marine mortality. At these levels it is unlikely to influence the conservation status of stocks and is not a significant driver of marine mortality.\(^{16}\)

Norwegian studies have shown broadly similar results.

Marine mortality of smolts was historically over 75% and more recently is 95%, both in areas with and without salmon farms. Information from the National Coded Wire Tagging and Tag Recovery Programme from eight rivers in Ireland show a significant and consistent rate of decline in marine survival of both hatchery and wild salmon over the period from 1980 to 2011. The time series does not show any significant discontinuity in marine survival between the periods 1980-1990, when fish farm production was low, and 1990-2002 when farm production was increasing. This suggests that no significant new mortality factor has been introduced during the period 1980-2010 and therefore that lice infestation due to cross infestation from farmed fish is not a significant factor in trends in marine mortality of salmon.

\(^{16}\) Jackson D, O’Donohoe P, Mc Dermott T, Kane F, Kelly S & A Drumm (2013). Report on Sea Lice Epidemiology and Management in Ireland with Particular Reference to Potential Interactions with Wild Salmon (Salmo salar) and Freshwater Pearl Mussel (Margaritifera margaritifera) Populations Marine Institute Irish Fisheries Bulletin No 43
Returning wild salmon—which can spend significant periods in coastal and estuarine waters of Ireland’s west coast—can be both the source of, and subject to, infestation with lice.

There are distinct differences in the susceptibility to salmon lice infestation between salmon and sea trout. For salmon, the risk of additional mortality due to infestation by lice in inshore waters is considered to be low given their direct migration out of coastal waters and consequent low temporal exposure to lice larvae. In contrast, sea trout, which feed within coastal waters throughout the summer, may be susceptible to higher levels of exposure to lice.

The control protocols for the management of sea lice are operated by the Marine Institute on behalf of the State and are more advanced than those operated in other jurisdictions for the following reasons:
- the inspection regime is totally independent of the industry
- data obtained as a result of inspections is published
- treatment trigger levels are set at a low level

20.1 Conclusion

The applicant’s track record in maintaining low levels of lice on the farmed fish at their existing licensed site in Bantry Bay has been good. Continued mitigation efforts—including full implementation of the national Pest Control Strategy (including Single Bay Management), rotation of treatment methods to avoid resistance and the applicant’s commitment to co-operation with the other salmon farm operator in the Bay—should allow this record to be maintained, and minimise the lice burden on the farm and any potential impact on wild salmon and sea trout populations.
21 Structural Design

21.1 Structural Design Adequacy of Farm Structures, Deployment and Decommissioning

The environmental assessment of effects due to potential storm events is treated under a number of headings in the EIS, including the environmental effects of salmon escapes in the event of cage failure and consequences for navigation safety and property damage from debris. This section relates to the latter (potential physical damage) and design aspects of the assessment.

The EIS includes comprehensive detail on the preliminary design of the cage structures proposed for deployment, together with full details of positioning of cage arrays within the proposed site, and mooring and anchoring arrangements. Details of farm service vessels and their mooring arrangements are also included.

The EIS includes a Hydrodynamic Model of wave activity in the bay and at the proposed site. The model was prepared by RPS Consulting Engineers, and provides detailed modelling of the wind, wave and currents at the site, taking into account the characteristics of the appropriate boundary conditions, including bathymetry and topography. The model examines effects at the site of 50 year return period waves from relevant directions to describe the worst case scenario conditions at the site.

The wave height prediction given for 1:50 year storm from 240° direction at the SW Corner of the site is given as 5.549 m, with a wave period of 15.92 seconds (EIS document Table 4, p81). By comparison, however, a licensed site at Clare Island, Co. Mayo, has 1:50 year return period waves of in excess of 6 m (up to 6.3 m) - ref. RPS Report Detailed Assessment of Wave Climate at the fish farming sites off Clare Island, Clew Bay, West Coast, Ireland, Dec 2010 (IBE0491/AKB/Clew Bay).

In its assessment of storm damage risk, the Department’s Marine Engineering Division discussed the wave regime further with the hydrodynamic modelling expert involved in preparation of the model for Shot Head, particularly in relation to other areas concerning potential diffraction, reflection of waves and shoaling effects.

The application is accompanied by relevant sea charts detailing depth contours and discussion is given on proposed anchoring arrangements.

The parameters detailed in the hydrodynamic study provide sufficient information to produce a preliminary design of structures proposed for deployment, detailing the principal components of the farm, and is considered sufficient in this respect as a safeguard to the environment arising from storm effects. Following issue of any licence, a detailed design stage process will be required covering all elements of the proposed structure, prior to deployment of structures on site.

It is also notable that the Department is in the final stages of introduction of a Protocol for the Structural Design of Marine Finfish Farms, which has the twofold purpose of prevention of fish escape and ensuring the design integrity of structures throughout the lifespan of a marine finfish farm. Measures contained in the protocol (once it has been approved) will be
followed in the case of the Shot Head farm. In accordance with the protocol, on issue of a licence, a design certification process by a competent person will be required to be completed prior to deployment of structures.

The conclusion in respect of this section of the EIA is that appropriate and sufficient detail is provided to satisfy the preliminary design stage for the development to ensure that the environment is safeguarded in respect of structural damage due to storm events.

21.2 Construction and Decommissioning of Farm Structures

The construction and decommissioning phases of installing farm equipment will impact on the seabed only in respect of installation of anchoring and mooring equipment, all other elements of the structures being off the seabed. Volume 2 of the EIS describes the cage mooring process and deployment and recovery of anchors. It is considered that, in the context of disturbance to the seabed, installation and decommissioning will have negligible and transitory physical impacts.

21.3 Conclusion

In respect of Structural Design Adequacy of Farm Structures it is considered that appropriate and sufficient detail is provided to satisfy the preliminary design stage for the development to ensure that the environment is safeguarded in respect of structural damage due to storm events.

It is considered that installation and decommissioning of farm structures will have negligible and transitory impacts.
22 Conclusion and Recommendation

The proposed development was assessed in accordance with S.I. 401 of 2012. Based on the documentation associated with this application and having regard to the scientific, engineering and other advice, it is considered that, subject to compliance with both standard and the specific licence conditions set out in Appendix 2 below, the proposed development will not have a significant negative impact on the local environment.

The level of interaction between the factors, as outlined in Section 3 of the regulations, will be minimal and the cumulative effect of such interaction will not have a significant negative impact on the local environment. It is therefore concluded that there are no substantial environmental grounds for refusing to approve this application.
Report Authors

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4A. (1) The Minister shall, as part of his or her consideration of an application, in accordance with paragraph (2), ensure that before a decision is made aquaculture likely to have significant effects on the environment by virtue, inter alia, of its nature, size or location is subject to an environmental impact assessment.

(2) An environmental impact assessment shall be carried out by the Minister in respect of an application for –

(a) aquaculture of a class specified in Regulation 5(1)(i) and (ii), unless the application is one which is solely for movement of navigation buoys, internal reconfiguration of the site, upgrading equipment used on the site, technology changes or improvements, or to comply with public safety requirements or a combination of these and which the Minister determines would not be likely to have significant effects on the environment, or

(b) aquaculture of a class specified in Regulation 5(1)(ii) which does not exceed a quantity, area or other limit specified in that Regulation which the Minister determines would be likely to have significant effects on the environment.

(3) An environmental impact statement shall be submitted with all applications for aquaculture referred to in paragraph 2(a) and shall also be submitted where the Minister determines that an application for aquaculture referred to in paragraph 2(b) would be likely to have significant effects on the environment.

(4) The Minister shall, in deciding whether aquaculture referred to in paragraph 2(a) or (b) would be likely to have a significant effect on the environment, have regard to the criteria specified in Annex III to Council Directive No. 2011/92/EU.

(5) The Minister shall require the production by the applicant of any additional or Supplemental information that the Minister considers necessary to enable him or her to make an assessment.

(6) The Minister shall consider the content of the environmental impact statement (and any other material including maps or plans) submitted as part of the application and determine whether same adequately identifies, describes and assesses the direct and indirect effects of the proposed development. If the environmental impact statement (and other material) is inadequate, then the Minister shall serve a notice (hereinafter 'a request for further information') which sets out the manner in which the information is inadequate and requires the applicant to submit further information to remedy these inadequacies.

(7) In carrying out his or her consideration and environmental impact assessment, the Minister, in addition to the matters prescribed in Regulations 12 to 16, is obliged to have regard, inter alia, to the following matters:

(a) the particulars submitted with the application including the environmental impact statement and any other material including plans, charts, maps or drawings,

(b) any additional material submitted in response to a request for further information, if any, pursuant to paragraph 6,

(c) any submissions or observations validly made in relation to the effects on the environment of the proposed development including those made by bodies
specified in Regulation 10(1) or members of the public,
(d) the views, if any, furnished by other Member States of the European Communities pursuant to Regulation 13.
25 Appendix 2 Special Licence Conditions

Marine Navigation and Lights

The licensee shall:

- contact the Marine Survey Office as the competent authority for navigational matters in relation to the designation of a number of areas as anchor berths with swinging areas for deep draft vessels.

- deploy two navigation buoys at the SW and SE corners, these are to be special mark buoys. South Cardinal buoys shall be installed. The buoys are to be a minimum of 1.5m diameter, with the appropriate day-marks and top-marks. The buoys should each include a white light displaying the appropriate south cardinal character with a 4 Nautical Mile range. These buoys shall ideally be installed circa 100m south of the extreme SW and SE cage mooring points.

- apply to the Commissioners of Irish Lights for sanction to establish the following lights and marks: A yellow special mark buoy with light, characteristic flash yellow every five seconds, nominal range three nautical miles to be located at each of the extreme corners of the site. The top mark should be constructed in the pattern approved by the Commissioners for Irish Lights. The marks should not be placed on the structures but working lights are permitted on the cage structures but every attempt should be made to shield the lights so as not to interfere with the navigational marks. The marks described above should be placed in position before any structures are erected on the site.

- seek the approval of the Commissioners of Irish Lights for all navigation lights and buoys. The applicant shall comply with all the requirements of the Commissioners of Irish Lights in respect to Navigation Lights and Buoys.
• Stocking and/or equipment deployment conditions.

• Production
The application is for a biennial production of 3,500 tonnes of farmed salmon. The production cycle is 24 months, with harvesting over 6 months between months 17 and 22 inclusive. The final 2 months are a fallowing period, prior to re-stocking.

The definition of biennial production for the purpose of this licence is as follows:

Biennial production = [weight of salmon harvested at the site + weight of salmon exported from the site] – weight of salmon input to the site.

Notes:

all weights of salmon in this definition refer to live weight and are cumulative weight over a single production cycle of (approximately) 24 month duration.

the production cycle period shall be considered as commencing at time of smolt introduction to the site and ending at the end of a 2 month long fallow period following harvest out of that stock.

“weight of salmon harvested at the site” refers to fish taken from the site for subsequent slaughtering, processing and placing on the market. The harvested weight is to be expressed as a live weight and whole fish weight.

“weight of salmon exported from the site” means the weight of live salmon leaving the marine site – be it for harvesting off site or for on-growing or for another purpose.

“weight of salmon input to the site” is the weight of salmon introduced to site from any source outside the site. It includes smolt inputs. It includes other salmon stock transfer into the site that occurs during the production cycle period.
Floating Facilities

It is proposed to deploy 12 No. circular cages each of circumference 128 m (nominal diameter 41 m) in the licensed site area.

These will be in a pattern of 2 rows of 6 cages each. Each of the 12 cages will be moored within a 70 m x 70 m grid square. The cage mooring grid area shall be 140m x 420m. All associated moorings and anchors are to be located within the boundaries of the licensed site area.

It is proposed to deploy a single feed barge of approximate dimensions 21.5m x 7.5m at a central location on the northern side of the cage mooring grid within the licensed site area. All associated moorings and anchors are to be located within the boundaries of the licensed site area.

No other floating structures may be moored for extended periods at the site.
• **Additional conditions applicable to the licence.**

The licensee shall:

- Comply with regulation 6(1) of SI 466 of 2008 as revised from time to time.
- Ensure that the site is operated in full compliance with the Code of Practice on Fish Health and the Farmed Salmonid Health Handbook.
- Ensure that the site is only serviced by fish transporters registered with the Competent Authority.
- Update the Emergency Plan for Fish Escapes (SOP 25561) to incorporate specific actions to:
  - monitor the incidence of farmed fish escapees in the rivers in the immediate vicinity of the farm following escape events; and
  - where possible and practical, remove farmed fish in fresh water where these have been identified.
- Adhere to the sea lice monitoring and control protocols as set out in the Strategy for Improved Pest Control on Irish Salmon Farms (2008).
- Comply with such protocols, including in relation to monitoring, auditing and any aspect of managing an aquaculture site, as may be published by the Minister.
- Consult with the appropriate local authority regarding the use of Trafrask and Adrigole piers.
- Prior to the installation of any structures at the site arrange the publication of a local marine notice. This notice shall give a general description of the operations and the approximate dates of commencement and completion.
- Notify Castletownbere Harbour Master and Bantry Harbour Master at least 14 days in advance of the commencement of the installation of cages, moorings and associated structures and shall comply with any direction given by the Harbour Masters during the course of the installation works.
- Prior to the installation of any structures at the site, arrange for the publication of a Marine Notice through the Maritime Safety Directorate giving general description of operations and approximate dates of commencement and completion.
- Carry out a benthic survey at the site in order to generate a more up-to-date and scientifically robust baseline dataset prior to commencement of any operations on the site. Details of the sampling and analysis plan for the survey shall be submitted for the approval of the Minister.
• Engage the services of a suitably qualified Archaeologist, with underwater /maritime experience to monitor all seabed disturbance works, including anchor installation, associated with the development.

i. The Archaeological monitoring shall be licensed under the National Monuments Acts 1930-2004 and a detailed method statement shall accompany the licence application. The methodology shall include a definite finds retrieval strategy that looks to assess the activity for artefactual bearing potential.

ii. Should archaeological remains be found during the course of the monitoring the monitoring archaeologist shall have the power to have the works stopped in that area pending a decision on how best to deal with the archaeology. In this event the National Monuments Service, of the Department of Arts, Heritage and the Gaeltacht, shall be contacted immediately.

iii. The Licensee shall ensure that secure temporary storage facilities are in place so as to immediately house any finds made during the monitoring.

iv. The Licensee shall be advised by the Underwater Archaeology Unit of the Department of Arts, Heritage and the Gaeltacht with regard to any necessary mitigation actions e.g. preservation in situ, dive survey or excavation. The Licensee shall facilitate the Archaeologist, in recording any material found.

v. The National Monuments Service, of the Department of Arts, Heritage and the Gaeltacht shall be furnished with a report describing the results of the monitoring once completed.
• Comply with the European Communities (Animal Remedies)(No 2) Regulations SI No 786 of 2007 (as amended).

• Comply with the relevant Environmental Quality Standard as set out under the European Communities (Control of Dangerous Substances in Aquaculture) Regulations 2008 (S.I. No 466 of 2008).

• Ensure that Dangerous substances shall be used only under veterinary supervision and in accordance with the licensee’s relevant Standard Operating Procedures.

• Ensure that the use of Dangerous Substances—substances used and quantities—shall be in accordance with the information supplied with the application submitted to the planning authority (including the Environmental Impact Statement and any supplementary material), unless otherwise approved by the Minister.

• Ensure that the discharge of a Dangerous Substance occurs within the licensed area only, as shown on the attached map. Discharges outside the licensed area are not permitted unless otherwise approved by the Minister and in accordance with such conditions as may be attached to such.

• The amount of feed inputs over a production cycle shall be consistent with the plans and particulars as set out in the application, unless otherwise approved by the Minister. The Licensee shall keep full records, at the place of business, of all feeds used.
Maintain the following monthly stock weight records:

(i) weight of salmon input to the site during the month
(ii) weight of salmon exported from the site during the month
(iii) weight of salmon harvested at the site during the month
The above weight quantities are as defined in schedule 4 and shall be expressed as live weight and in tonnes to two places of decimals.
A copy of the above listed monthly records shall be kept in hard copy format at the nearest operational landbase to the site and shall be kept such that they are readily accessible for examination by an authorised officer (refer also to condition 3.12). The above monthly records shall be kept from month of first smolt input to the site and shall be retained on site for at least three years.

The Licensee shall provide to the Department of Agriculture, Food and the Marine, Clogheen, Clonakilty, Co. Cork at three monthly intervals a hard copy of the above listed monthly stock weight records covering the preceding three month period.

- Maintain the following weekly stock records including relevant dates:
  (i) Number and average weight of salmon harvested at the site
  (ii) Number and average weight of salmon transfers into site
  (iii) Number and average weight of live salmon transfer off site
  (iv) Number and average weight of fish removed from cages due to mortality or culling

These records to be kept at the nearest operational landbase to the site and be accessible for examination by an authorised officer (refer also to condition 3.12)

- Maintain the following records for each individual cage:
  - Position – by coordinates or grid position
  - Date of cage deployment
  - Date of stocking
  - Date when fully destocked
  - Cage maintenance records for collar, net and moorings
  - Farm structure inspection record for the cage collar, net and moorings. The records to include above water and underwater inspections. The records shall identify component inspected, date of inspection, name of person inspecting and outcome of inspection.
  - Details of any repairs carried out to date on cage collar, net and moorings.

These records to be kept at the nearest operational landbase to the site and be accessible for examination by an authorised officer (refer also to condition 3.12)
## Appendix 3 Statutory Consultees

| Inland Fisheries Ireland  
3044 Lake Drive  
Dublin 24 | Inland Fisheries Ireland  
Sunnyside House  
Macroom  
Co. Cork |
|---|---|
| Licensing Section  
Environmental Protection Agency  
Headquarters  
P.O. Box 3000  
Johnstown Castle Estate  
Co. Wexford | Chief Executive  
Bord Iascaigh Mhara  
P.O Box 12  
Crofton Road  
Dunlaoghaire  
Co. Dublin |
| The Secretary  
Commissioner of Irish lights  
Harbour Road  
Dunlaoghaire  
Co. Dublin | The Harbormaster  
Bantry Bay  
Bantry  
Co. Cork |
| The Chief Executive  
Fáilte Ireland  
Environment Unit  
88-95 Amiens Street  
Dublin 1 | The Manager  
Department of Arts, Heritage and the Gaeltacht  
Development Applications Unit  
Newtown Road  
Wexford |
| National Parks and Wildlife Service  
7 Ely Place  
Dublin 2 | The Secretary  
An Taisce-National Trust of Ireland  
The Tailor’s Hall  
Back Lane  
Dublin 8 |
| The Secretary  
Cork County Council  
County Hall  
Cork | The Secretary  
Department of Transport, Tourism and Sport  
Irish Coastguard Administration  
Leeson Lane  
Dublin 2 |
| Department of Transport, Tourism and Sport  
Marine Survey Office  
Centre Park House  
Centre Park Road  
Cork | Department of Environment, Community and Local Government  
Foreshore Section  
Newtown Road  
Wexford |
| Chief Executive  
Marine Institute  
Rinville,  
Oranmore,  
Co. Galway. | |
27 Appendix 4 Map showing location of proposed site