Submission by Inland Fisheries Ireland on the Environmental Impact Statement for a Deep Sea Fish Farm Development in Galway Bay

General Introductory Comment

Inland Fisheries Ireland (IFI) is the statutory authority tasked with the responsibility for the conservation, protection and development of the inland fisheries resource and recreational sea angling. Recent legislative changes (SI: 477) have also tasked IFI via the Minister for Communications Energy and Natural Resources (DCENR) with additional responsibilities as part of Ireland's implementation of the Habitats Directive, these include responsibility for the conservation of wild salmon, pollan, shad, smelt and lamprey.

IFI are the responsible agency in respect of the licensing and management commercial and recreational fishing for salmon, with protection responsibilities at sea out to 12 miles from baselines. Given the organisation's close involvement with costal and island communities, IFI recognise and understand the pressures that these communities are experiencing. IFI understand clearly the impact that the closure and increased control of inshore fisheries for conservation reasons has had on these local communities. IFI is closely involved in supporting some of the former licenced commercial fishermen in their efforts to diversify out of salmon fishing.

IFI have been concerned regarding the negative impact of salmon farming on wild sea trout and salmon stocks, particularly in Connemara, since the late 1980's. Sea lice infestation has been a particular concern. Many of the sites chosen to locate salmon farms were in shallow bays, close to river mouths where existing wild sea trout and salmon stocks existed these were not suitable locations for farming salmon from a wild fish perspective. Multiple farms in bays with two year classes of fish in close proximity lead to husbandry problems and lack of ability to control sea lice. While there has been an improvement in sea lice control recently, aided by lower stocking densities, fewer sites, and single generation sites, some existing locations remain a threat to wild salmonid stocks due to their proximity to rivers and problems with maintaining farm lice levels at a level whereby they do not impact on wild fisheries. IFI and its predecessors the Central and Regional Fisheries Boards have consistently sought the re-location of such farms away from river mouths. In this context, the proposal for a deep sea salmon farm in a more off-shore location is a move in the right direction. While such a location is not likely to encounter the same problems associated with farms in shallow bays close to river mouths, a more off-shore deep sea location is not without potential for negative impacts of wild salmon and sea trout stocks. The scale of the present proposal is of very significant concern as it provides for a greater production tonnage of salmon at this one location than is currently being produced nationally. In the past salmon farms were considered large when they were licensed for a harvest of 2000 tons – the current proposal is for a farm harvesting 15,000 tonnes based in two sites in Galway Bay. The comments of IFI on the EIS for this proposal are set out below.

Comment on the Content of the EIS

Chapter 4.0 Fish Husbandry

4.1 Introduction

The Operator will be required by BIM, to produce a detailed written "Husbandry Management Plan". This plan will be submitted to the Marine Institute for their observations and amendments prior to being accepted and enforced as a condition of operation by BIM. It would also be appropriate to submit this plan to Inland Fisheries Ireland for their observations and amendments prior to being accepted and enforced as a condition of operation by BIM.

4.3 Production Model

The proposal is for two single generation sites with 3.6 million annual smolt input at alternate sites. In addition full grow-out of each year class for 16 – 22 months will be required on each site. Harvesting will be undertaken over a 6 month period after which there will be a two month fallowing period before the next input of 3.6 millon smolts. The proposal is to build up to a production of 15,000 tonnes over a three year period.

4.3.4 Decision on Autumn or Spring Smolt Input.

The EIS sets out the option to stock smolts in March or November to allow reasonable flexibility, largely for sales and marketing purposes. The Departmental protocol for fallowing at offshore fin fish farms (May 2000) states that current best practice is that smolt sites are high energy sites which are fallowed annually over the winter months. The input of March smolts would achieve this best practice by facilitating fallowing in January and February.

Input of Smolts in March

In this smolt stocking regime, fish are fed until July of the following year after which grading and harvesting takes place. Harvesting continues until December and the site is fallow from the end of December until March. Peak biomass occurs at site 1 in month 17 (July), 12,041 tonnes. Site 2, in July has 1,164 tonnes of young fish at this time. This smolt input strategy has peak biomass and harvesting occurring after the wild salmonid smolt migration. There will only be grower fish in one site each March and this is important to reduce any potential impact on wild fish.

Input of smolts in November

Fish are fed until March of the following year after which grading and harvesting takes place. Harvesting continues until August and the site is fallow from the end of August until November. Peak biomass occurs at site 1 in month 17 (March), 12,041 tonnes. Site 2, in March has 1,164 tonnes of young fish at this time. This smolt input strategy has peak biomass occurring just prior to wild salmonid smolt migration and harvesting occurring during the smolt run.

4.3.5 Harvesting

Harvesting will take place remote from the on-growing sites. The graded fish will either be transported directly to the packing station landing point or will be held on an intermediate

holding site for a short period prior to final transportation to the packing plant. No details are provided of the location of this intermediate holding site or the number of fish to be held. A licence for this site must be required along with the appropriate studies and assessments. The location of this site is significant as, in all probability, it may be closer to the shore and consequently wild sea trout feeding in the inner bays and estuaries as well as being closer to wild salmon smolts. In addition for fish pre harvest the experience has been that they support significant lice infestations as there is a period when treatments are avoided prior to harvest and sale for consumption – this entire aspect of the proposal has not been addressed in the EIS.

4.6 Emergency Planning

4.6.3 Large Scale Live Fish Escapes

The operator will make an emergency application to the Department of Agriculture for a special licence under Section 14 of the Fisheries Act 1959 to deploy nets to recapture the escaped fish. Under the Fisheries Amendment Act 1997, Section 77(1), Inland Fisheries Ireland, both within the meaning of the Act of 1980, may take such action as it considers necessary to recapture stock which has escaped from a facility operated under a licence. Under 77(2), the Minister (DCENR), may authorise a licensee or other person or body to take such action as is specified in the authorisation to recapture stock which has escaped from a facility operated under a licence. (3) An authorisation referred to in *subsection (2)* may be granted subject to such conditions, if any, as the Minister or the designated officer, as the case may be, considers necessary or expedient. There is a possibility that wild salmonids may be captured during attempts to recapture escaped farmed fish and the authorization issued should specify what action is required in such an event. The EIS does not address the potential for escapees to enter, in significant numbers into freshwater catchments, including SACs like the Corrib SAC. IFI recommends that the EIS addresses this issue.

6.0 Hydrography

6.4.4 Salmon Lice Dispersal

The model results predict the risk of sea lice reaching areas of Galway Bay. There is a considerable area between Blackhead and Spiddal and out to Rossaveal Bay out from the north shore where the area is at 20-80% of the maximum risk from sea lice dispersal from the northeast site. There is a greater risk from this site to the north shore of Galway Bay than the southwest site. The EIS states there is a very low risk to the north shore of Galway Bay from particles released at the southwest site. The greater potential risk of sea lice reaching areas out from the north shore would confirm the view expressed above that March stocking would be more precautionary from a wild fish perspective. Most of the area of the bay, except for a small area along the north shore, has a relatively high risk of sea lice dispersal from the northeast site. With a March smolt input regime, the northeast site would be essentially fallow or only have recently introduced smolts every second year prior to wild salmonid smolt runs.

In this section, the EIS concludes that there is a very low to zero risk of viable sea lice larvae reaching the areas of the bay that are known to harbour salmonids or their migration routes

because of the influence of low salinities and the remoteness of the proposed site locations. No data is provided on the known migration routes of salmonids to support this statement.

Chapter 8.0 Flora and Fauna

8.8 Invasive Species

While the EIS states that the applicant is closely involved with the 'Invasive Species Programme' it should be noted that this is not a statutory body and does not have a remit to provide notifications on invasive species or any appropriate rapid response mechanism. Instead the programme relies on independent scientists to report on newly recorded species. This link between the applicant and the Invasive Species Programme is at best a tenuous mechanism to assist in invasive species control.

Given the high number of smolts required for this development, 3.6million annually, it is likely that importation of smolts will be required (as noted in 4.2.2) from the UK. This would greatly increase the chance of introduction of invasive species from water used in transportation, e.g. well boats. It should be noted that invasive species can include the following: microbial life, most importantly fish pathogens; juvenile stages of invertebrate life, particularly of molluscs and crustaceans, juvenile fish and also ascidians (sea snot), which are capable of causing extensive biofouling of cages and other structures. Spread of invasive species (both marine and freshwater) from the UK and the continent has occurred in the past.

Introduction of invasive species is considered globally as one of the major threats to native biodiversity. This issue is not sufficiently addressed in the EIS, nor are the biosecurity measures properly outlined. While it is recognised that fish health and certification would be a de facto part of the importation process, careful monitoring of water and wet gear/equipment involved in transportation should also be carried out.

8.5.1. Atlantic Salmon

With an estimated average salmon spawning of 15,000 fish annually in the Corrib catchment alone, and at 5% marine survival, the estimate of smolt output from Galway bay rivers is more likely to be in excess of 300,000 smolts.

This section suggests that salmon post smolts are likely to migrate along the northern shore on their migration out of Galway bay. This is discussed below in section 8.5.3 below.

8.5.2 Sea Trout

The closest sea trout fishery to the proposed site locations is the Cashla fishery entering Rossaveal Bay. Historically the Cashla fishery was the prime sea trout fishery in Connemara with rod catches of over 2,500 sea trout annually. No specific assessment is undertaken of the potential impact of the proposed farm on the Cashla fishery or on other sea trout fisheries in

Galway Bay, (Crumlin and Owenboliska). Reference is made to concerns expressed about the negative impact of sea lice from marine salmon farms on sea trout stocks. However, the extensive literature published on interactions of sea trout and salmon lice in Ireland are not referred to or discussed.

8.5.3 Impact Assessment

8.5.3.1 Sea Lice

Salmon

With regard to the potential for lice infestation of outward migrating salmon smolts through Galway Bay, the EIS states that many studies have shown that infestation levels on emigrating salmon smolts are highly site dependent, and also that the risk of infestation varies from year to year being highly dependent on hydrographic and meterological conditions. This implies that infestation of out migrating salmon smolts could occur in certain circumstances.

The EIS goes on to state that "Given the detailed information available on the migration behaviour of Atlantic salmon smolts from the environs of Galway Bay and the detailed sea lice dispersion modeling conducted, we can confidently assess the potential spatial overlap of migrating Atlantic salmon smolts and sea lice juveniles which might originate from the proposed farm sites. This modeling output finds that there is little or no spatial overlap between the modeled distributions of sea lice larvae from the proposed farm sites and the migration routes of Atlantic salmon smolts".

The EIS provides no details on tracking studies other that those conducted at the mouth of the Corrib River, to support this statement and there is no information provided to indicate that Corrib salmon smolts will only migrate along an area close to the northern shore of Galway Bay. As stated above, there is a considerable risk of sea lice from the northeast site reaching areas out from the north shore and the view that there will be little or no spatial overlap between modeled distributions of sea lice from the proposed farm sites and the migration routes of Atlantic salmon cannot be made with any degree of confidence. Acoustic tracking studies like those conducted in inner Galway Bay in relation to the new port development and in Clew Bay or marine trawling to show the migration route of outward migrating salmon smolts would be required to support this statement. Marine trawling was conducted in Galway Bay as part of the Celtic Voyager trawling cruises referred to on page 229. Trawling was conducted in an area between the Aran Islands and the north shore of Galway bay in an area in the vicinity of the proposed farm. Salmon post-smolts were captured and genetic analysis indicated that the fish originated from the Corrib system and from north Mayo rivers, these latter post-smolts having migrated south on their seaward migration. This information is not presented in the EIS.

A recent study was conducted to determine the potential impact of sea lice from salmon farms on out migrating salmon smolts in three bays in Connemara (Gargan *et al.* 2012). The study found that analysis of tag recaptures from returning adult salmon showed that emamectin-treated smolts experienced increased survivorship and were 1.8 times more likely to return compared to control fish. These results suggest that sea lice-induced mortality on adult Atlantic salmon returns in Ireland can be significant, and that sea lice larvae emanating from farmed salmon may influence

individual survivorship and population conservation status of wild salmon in these river systems". This research is not referred to in the EIS. Similar studies would be required to make any definitive statement regarding the potential spatial overlap between the modeled distributions of lice larvae from the proposed farm sites and the migration routes of Atlantic salmon smolts, for which little information currently exists.

In support of the contention that sea lice do not negatively impact on out migrating salmon smolts, Jackson *et al*. 2011 is quoted as concluding that the infestation of outwardly migrating salmon smolts with sea lice was only a minor component of the overall marine mortality in the stocks studied. Before reaching this conclusion, Jackson *et al*. 2011 comment in their discussion that "When the results of this study are examined in the context of the results of the Burrishoole time series it can be seen that out of a total of fifteen releases at five locations, twelve are positive, showing a higher rate of return in the treated groups. This result is significant (sign test, pb 0.05) and supports the view that infestation of outwardly migrating salmon smolts with salmon lice has a negative impact on fitness and can contribute to increased marine mortality".

The issues discussed above regarding the potential for negative effects of sea lice from salmon farms on out-migrating salmon smolts and the paucity of information on salmon smolt migration routes in Galway Bay leave this issue as a legitimate concern in this proposal.

Sea Trout

The EIS comments that the offshore nature of the proposed farm and the water depths at the proposed sites means that there is little likelihood of any overlap between the foraging range of sea trout and the vicinity of the farm sites. When taken together with the modeled dispersion of lice larvae from the farm, there is a low to very low risk of any potential for cross infection.

No information is presented on the foraging range of sea trout, particularly from the closest sea trout fishery, the Cashla fishery. The above statement in the EIS is not supported by the modeled dispersal of particles from the northeast site which present high risk to sea trout from the Cashla fishery in a large area outside Rossaveal Bay and to the south and east of the bay. IFI are currently engaged in an international project, the Celtic Sea Trout Project, which is due for completion in Q1 2013, and which will offer detailed insight into the migratory nature and foraging behaviour of sea trout. This is important when placed in the context of Ireland's National Biodiversity Plan, Actions for Biodiversity 2011-2016, which actions the development, adoption and implementation of programmes to restore sea trout stocks.

8.5.3.2 Escapes

The EIS comments there has been little or no genetic interaction between farmed and wild salmon stocks. However, there is a large body of published literate on the negative interaction of farmed and wild stocks. McGinnity *et al*. (2003) reported on a two generation experiment examining the estimated lifetime successes, relative to wild natives, of farm, F1 and F2 hybrids and BC1 backcrosses to wild and farm salmon. Offspring of farm and 'hybrids' (i.e. all F1, F2

and BC1 groups) showed reduced survival compared with wild salmon but grew faster as juveniles and displaced wild parr, which as a group were significantly smaller. Where suitable habitat for these emigrant parr is absent, this competition would result in reduced wild smolt production. In the experimental conditions, where emigrants survived downstream, the relative estimated lifetime success ranged from 2% (farm) to 89% (BC1 wild) of that of wild salmon, indicating additive genetic variation for survival. They concluded that interaction of farm with wild salmon results in lowered fitness, with repeated escapes causing cumulative fitness depression and potentially an extinction vortex in vulnerable populations.

Glover *et al.* (2012) conducted a spatiotemporal analysis of 3049 fish from 21 populations throughout Norway, sampled in the period 1970–2010. They concluded that while the majority of the historical population genetic structure throughout Norway still appears to be retained, suggesting a low to modest overall success of farmed escapees in the wild, genetic introgression of farmed escapees in native salmon populations has been strongly population-dependent, and it appears to be linked with the density of the native population.

Hindar *et al*. 2006 modeled the future of wild salmon populations experiencing invasions of escaped farmed salmon. Simulations with a fixed intrusion rate of 20% escaped farmed salmon at spawning suggest that substantial changes take place in wild salmon populations within ten salmon generations (w40 years). Low-invasion scenarios suggest that farmed offspring are unlikely to become established in the population, whereas high-invasion scenarios suggest that populations are eventually mixtures of hybrid and farmed descendants. Recovery of the wild population is not likely under all circumstances, even after many decades without further intrusion. Managers of wild salmon will have difficulty in obtaining broodstock of the original wild population after a few generations of high intrusion. They conclude that further measures to reduce escapes of farmed salmon and their spawning in wild populations are urgently needed.

Thorstad *et al*. (2008) conducted a large scale review of the incidence and impacts of escaped farmed Atlantic salmon in nature. Large-scale experiments undertaken in Ireland (Burrishoole) and Norway (Imsa) gave similar results, both showing highly reduced survival and lifetime success of farm and hybrid salmon compared to wild salmon. The relative estimated lifetime success observed in the field experiments ranged from lowest for the farm progeny to highest for the local wild progeny with intermediate performance for the hybrids, indicating additive genetic variation for survival. A reduction in juvenile recruitment of 15-30% in the first generation may be within the range of natural variability for strong wild populations, but such reductions would have a significant impact on severely depressed wild populations. Since farm escapes are repetitive, often with ongoing repeated intrusions in some rivers, such reductions in fitness and productivity are cumulative and could potentially lead to an extinction vortex.

The EIS quotes two papers (McGinnity *et al*. 2009 & McGinnity *et al*. 2003) as supporting the view that there is little or no genetic interaction between farmed and wild stocks. In fact both papers come to the opposite conclusion. The EIS comments that the record with regard to escapes from Irish salmon farms is good and no negative interactions from escapes have actually taken place. Official statistics indicate that approximately 415,000 salmon were reported to have escaped from salmon farms in coastal waters of the Republic of Ireland in the period 1996-2004, with an annual range of 0-160,000 fish, (Anon. 2004).

Since the 1990's there has been a small number of large scale escapes from salmon farms, e.g. (Inver bay, 50,000 fish in 1998, Kilkieran bay, 140,000 fish in 2000). An escape of approximately 29,000 fish in Lough Swilly in 1992 was investigated and it was found that up to 18% of the juvenile salmon in the Crana river entering lough Swilly were of farmed salmon origin, (Clifford *et al*. 1997). This indicates that a large scale escape of farmed salmon can have serious consequences for wild Irish salmon stocks.

In Norway, where salmon farming is on a similar scale to that in the present proposal, over the 1989-2006 period, the mean annual proportion of escaped farmed salmon varied between 21-54% in coastal fisheries, 10-43% in fjord areas closer to the river mouths, 4-16% in angling catches in rivers in summer, and 11-35% in samples from the spawning populations in rivers close to the spawning season (Fiske *et al*. 2001, Hansen *et al*. 2007). After a large escape of adult salmon from Glenarm Bay fish farm in Northern Ireland following storm damage in August 2001, escaped farmed salmon were found in rivers of Northwest England and North Wales (Milner & Evans 2003). The distances between Glenarm and the receiving rivers ranged from 181 to 276 km.

While the incidence of large scale escapes of farmed salmon have been small to date, the present proposal is on a different scale to that previously experienced in Ireland. There could be 2.5 million mature salmon present on site annually in autumn and an escape would pose a significant threat for interbreeding with the wild salmon stock in December. Using data from IFI's Standing Scientific Committee on Salmon, the Corrib catchment has the largest estimated salmon spawning stock, at about 15,000 salmon annually while the spawning stock estimate for other rivers in the bay is much less (555 for Kilcolgan 182 for Spiddal, and 1,000 for Cashla). Even an escape of 1% of the farm stock, numbering approximately 25,000 adult salmon would outnumber all wild salmon in Galway Bay rivers and pose a serious threat, particularly from the smaller rivers entering Galway Bay.

In its response to the scoping letter, IFI set out a number of issues relating to escapes which it felt important to address in the EIS. These issues related to identifying escapees, plan to deal with mass escapes (both adult salmon and smolts), identifying farmed fish, finding of escapees/ capture, notification of relevant authorities. These issues have not been adequately addressed in the EIS. Please see the original letter in response to the scoping document for reference (Appendix I).

With regard to impact assessment in general, IFI in its response to the scoping letter set out the following,

> "Inland Fisheries Ireland believe it would be appropriate to conduct an assessment of all wild salmonid fisheries in the potentially affected zone around the area. Galway Bay should be assessed for wild salmon and sea trout smolt input (and premature returning post smolts) in advance of any farm being put in place. A full monitoring system should be put in place and a baseline study undertaken in advance of any farm being established".

While there has been assessment of the potential impact of the proposed development on wild salmonids, the assessment set out above has not been undertaken.

8.5.4 Mitigation Measures

8.5.4.1 Sea Lice

This section refers to the DAFM Integrated Pest Strategy for controlling sea lice on salmon farms. Management strategies are employed to reduce the development of infestations. Two issues which have been problematical with regard to effective lice control have been poor inclusion rates for in-feed treatments and development of resistance to the major oral lice control in-feed treatment, 'Slice'. Pancreas disease related issues relating to poor appetite and/or poor uptake of active ingredient in lice treatment from the diet is also a potential problem for effective sea lice control. The development of one or all of these issues at the proposed sites on the scale outlined could result in inability to effectively control sea lice.

The DAFF National Implementation Group Report on a Strategy for Improved Pest Control on Irish salmon farms (November 2010) comments that two husbandry related issues which militated against effective control at a number of locations were the practice of carrying out protracted or partial harvests on production sites and the absence of effective separation of generations and fallowing. The current proposal to harvest over a six month period cannot therefore be seen as best practice in effective sea lice control.

8.5.4.2 Escapees

Stocking of salmon smolts in March each year would result in one year class of fish being immature in their first winter while the older year class of salmon at the second site would be undergoing harvest from July and be cleared off site by December. Such a stocking regime would pose less of a threat from escapes to wild salmon and could be seen as an important mitigation measure if a licence was granted for the proposal. Stocking of smolts in November would have one year class of mature salmon (>3million fish) present each autumn and winter and pose a greater potential risk to wild stocks in the event of an escape during winter storm events.

Conclusion

This proposal for a deep sea salmon farm in an 'off-shore' location is not entirely a new development in the context of the salmon farming industry in Ireland. While such a location is not likely to encounter the same problems associated with farms in shallow bays close to river mouths, a more off-shore deep sea location is not without potential for negative impacts on wild salmon and sea trout stocks. The scale of the present proposal is of particular concern as it

provides for a greater production tonnage of salmon at this one location than is currently being produced nationally. In any such project IFI believe that a significantly lower smolt input should take place initially, and a gradual built up of smolt numbers should only take place following further rigorous review and consent processes. IFI believe that intensification should be treated as a totally separate application with all of the associated statutory consultations and reviews. This would allow an assessment of any impact of the salmon farm on the environment, flora and fauna and allow mitigation measures to be developed in a more sustainable manner. In this specific situation IFI believe that the maximum tonnage should be significantly reduced.

With regard to the production model proposed, smolt input should be restricted to March only rather than the option to stock in November for a number of reasons which have less potential to negatively impact on wild salmonids. March stocking results in fish being fed until July of the following year after which grading and harvesting takes place. Harvesting continues until December and the site is fallow from the end of December until March. This smolt input strategy has peak biomass and harvesting occurring after the wild salmonid smolt migration. There will only be grower fish in one site each March and the second site will be effectively fallow, thus reducing the potential impact on wild salmonids. Stocking of salmon smolts in March each year would result in one year class of fish being immature in their first winter while the older year class of salmon at the second site would be undergoing harvest from July and be cleared off site by December. Such a stocking regime would pose less of a threat from escapes to wild salmon and could be seen as an important mitigation measure if a licence is granted for the proposal. The greater potential risk of sea lice reaching areas out from the north shore would confirm the view expressed above that March stocking would be more precautionary from a wild fish perspective.

Protracted harvesting has been identified as a factor militating against effective sea lice control in the DAFF National Implementation Group Report on a Strategy for Improved Pest Control on Irish salmon farms (November 2010). The current proposal to harvest salmon over a six month period cannot therefore be seen as best practice in effective sea lice control. A shorted harvest period is essential to ensure effective sea lice control.

One of the issues not adequately addressed in the EIS is the migration routes of wild salmonids and particularly the route of salmon smolts from the Corrib SAC through Galway Bay. Presumptions are made and conclusions drawn regarding the potential impact of sea lice from the proposed locations on wild smolts which are not supported by any scientific investigation. A survey to identify the migration route of salmon smolts through Galway Bay is required to adequately fulfill the requirements of this Environmental Impact Statement.

The potential impact of the proposed salmon farm on sea trout, particularly from the Cashla fishery, located closest to the proposed farm, is also not adequately addressed nor is the potential impact of a large scale escape of farmed salmon on local wild salmon populations.

Given the proximity of the proposed farm location to a series of European sites (SAC and SPA), IFI concur with the requirement for a screening for Appropriate Assessment and note the inclusion of the Natura Impact Statement in Appendix 1. Issues of concern to IFI relate to the Corrib SAC (ref 000297) where the Atlantic salmon and sea lamprey are qualifying interests. Both species are migratory and both young and adult life stages would be traversing waters adjacent to the proposed development. IFI as a State Agency with responsibility for the conservation of the Altantic salmon and sea lamprey under Ireland's implementation of the

Habitats Directive, are available to discuss with BIM the Appropriate Assessment as it pertains to salmon and sea lamprey.

IFI has been approached by stakeholders, including angling representative bodies, who have not been included as part of this EIS consultation process. IFI would recommend that for the purposes of transparency, and to encourage wider support for this application, that the EIS documentation be made available to all stakeholders and feedback solicited. For example one stakeholder group that maybe considered here in the recreational sea anglers (shore, canoe and boat).

In conclusion, the present proposal does have the potential to pose a risk to wild salmonid stocks in the vicinity of Galway Bay. IFI request that consideration is given to the issues outlined in this document and that the recommendations set out be adopted to minimize any potential negative impacts.

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Appendix I

Mr Donal Maguire,
Aquaculture Development Manager,
BIM,
Crofton Road,
Dun Laoghaire,
Co. Dublin.

16th December 2011

Re: Aquaculture License for a deep sea marine fish farming unit off Inis Oirr in Galway Bay

Dear Mr Maguire,

I refer to your letter of November 16th detailing the proposal to develop a deep sea marine fish farming unit off Inis Oirr in Galway Bay and, specifically your request for any specific requirements, queries or objections which should be addressed in the EIA and EIS.

In this regard I have attached a short document which sets out some additional areas which Inland Fisheries Ireland would like to see addressed in the process. Should you wish to discuss any point further please do not hesitate to contact me.

Yours sincerely,

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Dr Ciaran Byrne
Chief Executive Officer

Additional checklist Items to consider / discuss in the EIA & EIS

Location and Dimensions of Proposed Farm

1. Alternative locations considered
2. Design measures incorporated into cages to prevent escapees
3. Potential impacts of location on migrating fish runs
4. Stopping predation by seals and other predators
5. Potential impacts of shore based facilities

Site Characteristics

1. Location of wild salmon fisheries
2. Location of sea trout fisheries
3. SPA/SAC – SAC for salmon (specifically)
4. Previous salmon farming experiences in the same area
5. Baseline conditions within the zone of potential impact

Production Process

1. Identifying escapees
2. Plan to deal with mass escapes (both adult salmon and smolts)
    a. identifying farmed fish
    b. finding of escapees/ capture
    c. notification of relevant authorities
3. Potential for impact of parasites on wild salmon/sea trout fisheries
4. Consideration of production in the context of other (recreational) users and stakeholders (C.L.A.M.S process refers only industry)
5. General biosecurity issues
6. Potential Impact of feed barge 'failing' /sinking
7. Details for dealing with mortalities of salmon

Potential Impacts

1. Potential impact of parasites on wild salmon & sea trout
2. Potential impact of parasites on other wild fin fish species
3. Potential impact of chemicals used in production that effect life cycle of crustaceans
4. Potential impact on prawn/shrimp fishery in Galway Bay
5. Potential impact on Red Book data species
6. Potential for cumulative impacts
7. Potential for impact arising from smolt production in freshwater on the scale required to underpin the project.
8. Scale and magnitude of the fish farm and commensurate increased predation and disease
9. Potential impact of odour at sea as well as at shore based facilities

Monitoring

1. Monitoring of farm/ surrounding water for escapees
2. Monitoring of genetic type of stock
3. Baseline monitoring prior to the development of the facility (offshore & onshore)
4. Compliance with Environmental Liability Directive

5. Consideration of who is the competent/responsible party for any infringements – BIM /Contractor

Difficulties – Completion of Environmental Impact Study

1. Monitoring of flotsam/jetsam from farm on coastline
2. Clarification of models used to predict impacts (dispersion models for sea lice, chemical, nutrient loading)

Organic Farming

1. Clarity of which standards to be used
2. Impacts of 'organic' management regime i.e. all other impacts
3. SWOT analysis of decision to develop organic fish farm
4. Evaluation of the use of organic fish

In addition to the listing above Inland Fisheries Ireland believe it would be appropriate conduct an assessment of all wild salmonid fisheries in the potentially affected zone around the area. Galway Bay should be assessed for wild salmon and sea trout smolt input (and premature returning post smolts) in advance of any farm being put in place. A full monitoring system should be put in place and a baseline study undertaken in advance of any farm being established.