



**Submission on the Renewal and Review of Aquaculture Licences
T12/063A, T12/063B and T12/096B, Inver Bay, County Donegal**

The legal requirement for consent for this licence is contained in the following judgements:

¹Kelly (Eamon) v An Bord Pleanála [2014] IEHC 400 1 and Connelly v An Bord Pleanála [2018] IESC 31. In Connelly, the Supreme Court explained that the ‘overall conclusion’ which must be reached before the competent authority will have jurisdiction to grant development consent following an appropriate assessment “is that all scientific doubt about the potential adverse effects on the sensitive area have been removed “

Executive Summary

This submission concerns the application by MOWI Ireland for the renewal and review of Aquaculture Licences T12/063A, T12/063B and T12/096B in Inver Bay, County Donegal.

The submission raises concerns regarding whether the environmental assessment and Appropriate Assessment have demonstrated, beyond reasonable scientific

¹ https://www.europeanrights.eu/public/sentenze/Irlanda-25luglio2014-High_Court.pdf

doubt, that the proposed operation will not adversely affect Atlantic salmon populations and Natura 2000 conservation interests.

The legal test applicable to this application is established by Article 6(3) of the Habitats Directive and has been clarified by the Irish courts, including *Kelly v An Bord Pleanála* and *Connelly v An Bord Pleanála*. The relevant question is not whether assessment has been undertaken, but whether all reasonable scientific doubt regarding the absence of adverse effects has been removed.

Several concerns arise in this regard.

First, the environmental baseline relied upon in the application appears increasingly outdated. The assessment relies substantially upon salmon conservation data from 2016–2018. ²More recent advice from the Technical Expert Group on Salmon (TEGOS) suggests that the Eany salmon stock may have deteriorated significantly since that period and remains substantially below its Conservation Limit. This raises questions regarding whether assumptions concerning stock resilience and impact significance remain valid.

Second, the application should be assessed within the context of the wider Donegal Bay migratory corridor. Atlantic salmon is a qualifying interest of both Lough Eske and Ardnamona Wood SAC and Lough Melvin SAC. Salmon originating from these designated catchments migrate through the wider Donegal Bay marine environment and may therefore be exposed to pressures arising from aquaculture activities within Inver Bay.

Third, recent scientific evidence has strengthened concerns regarding sea-lice impacts. ³Gargan et al. (2025), analysing approximately 546,000 Irish salmon smolts across forty-three paired-release trials, found significant reductions in adult returns associated with sea-lice infestation pressure and concluded that sea lice originating from salmon aquaculture can have important consequences for river stocks already failing to meet conservation objectives.

Fourth, disease transmission remains a relevant consideration. In addition to sea lice, Amoebic Gill Disease (AGD) has become a significant challenge within Atlantic salmon aquaculture internationally. Climate change, rising sea temperatures and altered pathogen dynamics may increase uncertainty regarding future disease pressures and cumulative ecological effects.

Fifth, concerns remain regarding the assessment of cumulative effects. Wild salmon and sea trout do not encounter individual aquaculture sites in isolation.

² [TEGOS Advice](#)

³ [Gargan et al. Salmon Lice reduce marine survival of Atlantic salmon.](#)

Migratory fish may be exposed to multiple interacting pressures including sea lice, disease transmission, reduced marine survival, climate-related stressors, escape events, and genetic introgression⁴. The key issue is whether cumulative biological exposure and population-level effects have been adequately assessed.

Sixth, the assessment relies heavily upon hydrodynamic and water-quality modelling. While the modelling predicts compliance with environmental standards, limited information is provided regarding model uncertainty, validation, and sensitivity testing. Compliance with environmental standards does not necessarily demonstrate the absence of adverse ecological effects on migratory fish populations or Natura 2000 conservation objectives.

Finally, the potential implications of escaped farmed salmon and genetic introgression warrant further consideration. Scientific literature has consistently identified farmed salmon escapees as a source of long-term ecological risk through interbreeding with wild populations, loss of local adaptation and reductions in population fitness.

Taken together, these issues give rise to continuing scientific uncertainty regarding the potential effects of the proposal on vulnerable salmon populations within the Donegal Bay region. The submission therefore concludes that it has not been demonstrated beyond reasonable scientific doubt that the proposed development, either alone or in combination with other plans or projects, will avoid adverse effects on Atlantic salmon conservation objectives, Natura 2000 interests, or the integrity of relevant European sites.

Accordingly, further consideration of the matters identified in this submission is required before a lawful conclusion can be reached under Article 6(3) of the Habitats Directive.

Introduction

Salmon Watch Ireland wishes to make a submission regarding the application by MOWI Ireland for the renewal and review of Aquaculture Licences T12/063A, T12/063B and T12/096B in Inver Bay, County Donegal.

While recognising the economic importance of aquaculture to coastal communities, we have significant concerns regarding the adequacy of the environmental assessment, particularly in relation to impacts on wild Atlantic salmon, sea lice, disease transmission including Amoebic Gill Disease (AGD), genetic introgression from escaped farmed salmon, cumulative ecological

⁴ [Norwegian Study Introgression.](#)

impacts, hydrodynamic and water-quality modelling assumptions, and compliance with Article 6(3) of the Habitats Directive.

It is acknowledged that the Applicant has undertaken environmental assessment, Natura Impact Assessment, hydrodynamic modelling, and cumulative assessment. However, the legal question under Article 6(3) of the Habitats Directive is not whether assessment has been undertaken, but whether all reasonable scientific doubt regarding the absence of adverse effects has been removed.

Status of Atlantic Salmon in the Donegal Bay Region

The application documentation relies heavily on conservation status information dating from 2016–2018. During that period, the Eany River stock achieved approximately 57% and 54% of its Conservation Limit, while the River Eske achieved approximately 61% and 60%, respectively. These figures demonstrated that both river systems were already performing below the level required to maintain naturally sustainable salmon populations.

More recent advice from the Technical Expert Group on Salmon (TEGOS) suggests that the Eany stock may now be achieving only approximately 29% of its Conservation Limit. If correct, this represents a substantial deterioration from the baseline relied upon in the original assessment and raises questions regarding the continuing validity of assumptions concerning stock resilience and capacity to absorb additional pressures.

The apparent decline from approximately 54–57% of Conservation Limit to approximately 29% is particularly significant. It indicates that the Eany population cannot be regarded as a resilient stock capable of absorbing additional pressures. Rather, it points to a population already experiencing severe conservation stress and increasingly vulnerable to additional mortality arising from sea lice infestation, disease transmission, reduced marine survival, climate-related pressures, and other cumulative impacts.

More broadly, recent TEGOS assessments indicate that only a minority of Irish salmon stocks currently exceed their Conservation Limits. This reflects a continuing national decline in Atlantic salmon abundance and underscores the importance of applying a precautionary approach to any activity capable of imposing additional mortality on already vulnerable populations.

The application should also be considered in the context of the recently adopted EU Nature Restoration Law (Regulation (EU) 2024/1991), which establishes legally

binding restoration objectives for degraded ecosystems and emphasises the recovery, resilience and connectivity of habitats supporting migratory species. These objectives are relevant when considering proposals that may affect Atlantic salmon, sea trout, and other species dependent upon healthy ecological connections between freshwater, estuarine, and marine environments.

Migratory Salmon and Natura 2000 Interests

The application places emphasis on the fact that no Special Area of Conservation designated specifically for Atlantic salmon occurs within Inver Bay itself. However, the absence of a salmon-designated SAC within the bay does not remove the obligation to assess impacts on salmon populations that migrate through the bay.

Inver Bay forms part of the migratory pathway used by Atlantic salmon originating from a number of river systems in the wider Donegal Bay region, including the Eany, Eske, Lough Eske and Lough Melvin catchments.

Atlantic salmon is a qualifying interest of both Lough Eske and Ardnamona Wood SAC and Lough Melvin SAC. Salmon originating from these designated catchments utilise marine migration routes within the wider Donegal Bay system and therefore form part of the ecological context against which the proposed aquaculture operation must be assessed.

The Appropriate Assessment should therefore evaluate impacts at the scale of the relevant salmon populations rather than solely within the geographic boundaries of Inver Bay.

The relevance of these migratory pathways is reinforced by the EU Nature Restoration Law, which recognises the importance of restoring and maintaining ecological connectivity for migratory species. Atlantic salmon and sea trout depend upon the successful functioning of interconnected freshwater, estuarine and marine habitats throughout their life cycle. The protection and recovery of these populations therefore require consideration of pressures operating across the entire migratory corridor rather than within individual sites viewed in isolation.

The implications for sea trout⁵ should also be considered. Sea trout utilise coastal and nearshore habitats extensively during their marine phase and may therefore experience prolonged exposure to parasite and disease pressures associated with salmon aquaculture operations. Unlike Atlantic salmon, which typically migrate rapidly through coastal waters, sea trout may remain within bays and estuarine environments for extended periods, increasing the potential for cumulative exposure to sea lice and other aquaculture-related stressors. Numerous studies

⁵ 2017 Report Sea Trout Symposium -https://drive.google.com/file/d/19PeLini6w6opCL9uZlYXW2Ne7aeKzT_c/view?usp=sharing

have identified sea trout as particularly vulnerable to elevated sea-lice infestation in areas supporting intensive salmon aquaculture. Recent European restoration obligations further emphasise the importance of protecting migratory fish species and maintaining ecological connectivity between freshwater and marine habitats. Given the recognised sensitivity of sea trout to sea-lice infestation and their prolonged use of nearshore habitats, these restoration objectives are directly relevant to the assessment of cumulative impacts within Donegal Bay.

Disease Transmission, Sea Lice and AGD

The Natura Impact Statement identifies disease and parasite transmission as one of the principal pathways through which salmon aquaculture may affect wild Atlantic salmon.

Recent peer-reviewed evidence has strengthened concerns regarding aquaculture-derived sea lice. Gargan et al. (2025), analysing 43 Irish paired-release trials involving approximately 546,000 salmon smolts, found a statistically significant treatment effect against sea lice and reported approximately 18–19% fewer adult returns among untreated fish exposed to lice pressure.

The study concluded that salmon lice associated with aquaculture significantly reduce marine survival of wild Atlantic salmon and that these losses may have important consequences for river stocks already failing to achieve conservation objectives.

This evidence is directly relevant to the present application because the Eany stock is already substantially below conservation targets.

In addition to sea lice, the potential for disease transmission between farmed and wild fish populations requires careful consideration. Of particular relevance is Amoebic Gill Disease (AGD), caused by *Neoparamoeba perurans*. AGD has become one of the most significant health challenges affecting Atlantic salmon aquaculture internationally and has been increasingly reported in Ireland and other North Atlantic salmon-producing regions.

Climate ⁶change introduces an additional layer of uncertainty. Rising sea temperatures have been associated with increased risk of AGD, altered pathogen dynamics, prolonged disease transmission periods and conditions favourable to sea lice proliferation. It remains unclear whether the cumulative implications of warming seas, increased pathogen prevalence and multi-site disease pressure

have been fully assessed in relation to wild salmon populations migrating through Inver Bay and the wider Donegal Bay system.

While modelling of sea lice dispersal and production scenarios has been undertaken, a cumulative assessment of farm outputs does not necessarily equate to a cumulative assessment of biologically realistic exposure experienced by wild fish. Wild salmonids migrating through Donegal Bay may encounter multiple aquaculture operations during marine migration and may therefore experience cumulative exposure to parasite and disease pressures that cannot be assessed solely through individual farm-level outputs.

Biomass Increase, Infestation Pressure and Water Quality Modelling

The proposed operation seeks to maintain a substantial production biomass within Inver Bay.

The findings of Gargan et al. demonstrate that mortality increases as infestation pressure increases. This raises a legitimate concern as to whether the proposed biomass levels have been assessed using the most up-to-date scientific understanding of sea-lice impacts.

The conclusions regarding nutrient enrichment, organic loading and assimilative capacity rely heavily upon hydrodynamic and water-quality modelling originally developed for the 2018 Environmental Impact Assessment.

While the modelling predicts compliance with Environmental Quality Standards, the assessment provides limited discussion of model uncertainty, validation metrics, sensitivity testing, or the implications of changing environmental conditions over the lifetime of the proposed licence.

Inver Bay is described as a relatively slack hydrodynamic system characterised by generally low current velocities and a strong influence of wind-driven circulation. Ecological responses in such systems may be particularly sensitive to periods of reduced flushing, seasonal stratification, prolonged calm weather conditions, or climate-driven changes in circulation.

Compliance with Environmental Quality Standards alone does not necessarily demonstrate the absence of adverse ecological effects on protected habitats, migratory salmon populations, or Natura 2000 conservation objectives.

Genetic Introgression and Escape Risk

The application acknowledges the possibility of escaped farmed salmon interacting with wild populations. However, the assessment of this issue remains limited despite a substantial body of scientific literature demonstrating that

escapes from salmon aquaculture can result in genetic introgression into wild Atlantic salmon populations.

Escaped farmed salmon are widely recognised as a significant threat to wild Atlantic salmon through interbreeding with wild fish, loss of local genetic adaptation, reduced fitness of offspring and long-term weakening of wild populations.

The long-term cumulative implications of escape events, particularly in the context of vulnerable salmon populations already experiencing conservation pressures, warrant careful examination.

Cumulative Effects

The proposed development cannot be assessed in isolation.

The key issue is not simply whether cumulative farm outputs have been modelled, but whether cumulative ecological exposure and cumulative population-level effects on wild salmonids have been adequately assessed.

Wild salmonids migrating through Donegal Bay may be exposed to multiple interacting pressures including sea lice infestation, disease transmission, declining marine survival, climate-related stressors, genetic introgression and changing environmental conditions.

Where salmon populations are already below conservation objectives, the combined effect of several individually moderate pressures may become ecologically significant.

The cumulative assessment should also be considered in the context of wider ecosystem restoration objectives. The Nature Restoration Law recognises that recovery of migratory fish populations depends upon addressing multiple interacting pressures across connected ecosystems. Assessment of individual impacts in isolation may therefore fail to capture the combined effect of sea lice, disease transmission, climate-related stressors, reduced marine survival and genetic introgression on long-term population recovery.

Wider Ecological Dependencies

Potential indirect effects on species dependent upon healthy salmonid populations should also be considered. Freshwater Pearl Mussels, where present within connected catchments, depend upon healthy juvenile salmon and trout hosts to complete their life cycle.

Any reduction in salmonid abundance, marine survival, disease resilience or genetic integrity arising from sea lice infestation, disease transmission or genetic introgression may therefore have indirect ecological consequences extending beyond salmon populations themselves.

The restoration objectives established under the Nature Restoration Law also support an ecosystem-based approach to assessment. Measures intended to restore ecological condition, habitat quality and species abundance may be undermined where multiple interacting pressures continue to affect key migratory fish populations. This reinforces the importance of considering indirect ecological effects extending beyond Atlantic salmon alone.

Precautionary Principle and Habitats Directive Requirements

The European Court of Justice has consistently held that consent may only be granted where there is no reasonable scientific doubt regarding the absence of adverse effects on site integrity.

The burden is not on objectors to prove that harm will occur. Rather, the competent authority must be satisfied that harm can be excluded beyond reasonable scientific doubt.

Recent scientific evidence demonstrates measurable reductions in marine survival associated with aquaculture-derived sea lice. Scientific uncertainty also remains regarding AGD, cumulative biological exposure, genetic introgression, climate-related effects, and hydrodynamic modelling assumptions.

This issue is of particular relevance because Atlantic salmon is a qualifying interest of both Lough Eske and Ardnamona Wood SAC and Lough Melvin SAC. Any assessment of sea lice infestation, disease transmission, cumulative mortality, or interactions with escaped farmed salmon should therefore consider not only local river systems but also designated salmon populations associated with Natura 2000 sites connected through the wider Donegal Bay marine environment.

The precautionary approach required under Article 6(3) is consistent with the broader objectives of the Nature Restoration Law. Both frameworks recognise the importance of restoring and maintaining ecological resilience and preventing further deterioration of species and habitats already experiencing unfavourable conservation trends. In circumstances where uncertainty remains regarding impacts on declining migratory fish populations, these objectives support a cautious approach to decision-making.

A further limitation of the assessment concerns the availability of historical fish-health and production-performance information. The publicly available documentation contains projected production assumptions, including an estimated full production-cycle mortality of 10.2%. However, it does not appear to provide historical site-specific mortality and survival records for previous production cycles against which these assumptions can be evaluated.

This distinction is important. Projected mortality assumptions cannot readily be tested against actual operational performance where historical mortality, survival and harvest data are not publicly available. Mortality levels in salmon aquaculture are known to vary considerably between sites and production cycles, particularly in circumstances involving disease outbreaks, Amoebic Gill Disease (AGD), sea-lice treatments, harmful algal events, jellyfish incursions, or other environmental stressors.

Recent decisions of the Office of the Information Commissioner have recognised the importance of mortality, survival, stocking, and harvest information in facilitating meaningful public participation in aquaculture licensing processes. In the absence of historical site-performance data, it is difficult for members of the public to assess whether the projected mortality assumptions used in support of the application are representative of actual experience at the Inver Bay site, or whether they adequately reflect the risks associated with fish health, disease and environmental variability over the lifetime of the proposed licence.

This uncertainty is particularly relevant given the reliance placed upon production assumptions within the environmental assessment and the wider concerns regarding disease transmission, AGD, cumulative impacts and long-term ecological risk.

Matters Requiring Further Consideration

Particular consideration should be given to:

- The implications of Gargan et al. (2025) for assessment of sea-lice impacts.
- The apparent deterioration in the conservation status of the Eany stock and the validity of the environmental baseline.
- The implications of recent TEGOS advice and wider evidence of declining salmon abundance.
- Potential impacts on Atlantic salmon populations associated with Lough Eske and Ardnamona Wood SAC and Lough Melvin SAC.

- The adequacy of assessment of cumulative biological exposure experienced by migratory salmonids.
- Disease transmission pathways, including AGD and climate-related disease pressures.
- Genetic introgression and long-term escape risk.
- Hydrodynamic and water-quality modelling assumptions, uncertainty, and validation.
- The adequacy of the cumulative effects assessment having regard to multiple interacting pressures.
- Whether all reasonable scientific doubt has been removed as required by Article 6(3) of the Habitats Directive.
- Release of all data referring to at least the last three production cycles containing harvest volume, mortality percentage and specific health issues encountered.

Conclusion

It is acknowledged that assessment has been undertaken. However, the legal test is whether all reasonable scientific doubt regarding the absence of adverse effects has been removed.

The available evidence indicates that the Eany stock may have deteriorated substantially since the baseline period relied upon in the original assessment. Atlantic salmon is a qualifying interest of both Lough Eske and Ardnamona Wood SAC and Lough Melvin SAC. Recent peer-reviewed evidence demonstrates measurable reductions in marine survival associated with aquaculture-derived sea lice. Scientific uncertainty also remains regarding disease transmission including AGD, cumulative biological exposure, genetic introgression, climate-related effects, and hydrodynamic modelling assumptions.

In these circumstances, it cannot presently be concluded that all reasonable scientific doubt has been removed. Accordingly, it is submitted that the competent authority cannot conclude beyond reasonable scientific doubt that the proposed development, either alone or in combination with other plans or projects, will not adversely affect protected salmon populations, Natura 2000 conservation objectives, or the integrity of relevant European sites.

The precautionary approach required under the Habitats Directive is further reinforced by the objectives of the EU Nature Restoration Law, which seeks to restore the condition, connectivity and resilience of ecosystems supporting

migratory fish populations. The apparent deterioration in salmon conservation status within the Donegal Bay region suggests that these restoration objectives remain highly relevant. In such circumstances, proposals with the potential to contribute additional mortality, disease pressure, genetic introgression, or cumulative ecological stress should be examined with particular care.

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