



Advice to Boards/Trusts on engaging with the planning process for terrestrial wind farms

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Background

This briefing was drawn together following meetings with Marine Scotland Science and a number of council planners. The information below is largely based on generic advice produced by the Freshwater Laboratory (Marine Scotland Science). This document is an attempt to clarify the process for inputting to the consideration of applications for terrestrial wind farms and will be subject to ongoing review as new information becomes available and subject to feedback from Boards/Trusts. It should be considered alongside the ASFB wind farm policy document¹ and other advice as detailed below. It is appropriate for Boards to adopt a presumption against a development until they are reassured that appropriate risk assessments, robust monitoring programmes (with appropriate feedbacks to site management) and a suitable mitigation strategy are in place. Fishery trusts may wish to adopt a similar presumption or retain a position determined by individual local policies, information or circumstances.

ASFB and RAFTS Roles

Currently, the ASFB acts as a convenient central point for Scottish Government and developers to seek views on local developments. Similar to ASFB, but generally less frequently, RAFTS may receive copies of development proposals and scoping statements from developers although there is no statutory basis for this provision. All formal Section 36 applications are sent to ASFB for comment; in addition to this, ASFB may also receive copies of development proposals and scoping statements in advance, and separately from project developers. As neither ASFB nor RAFTS have any local knowledge, nor technical expertise to respond to specific projects, we are only able to provide a very generic response in terms of areas of potential risk to fish and fisheries. In replying to Scottish Government and developers, we provide contact details of the relevant DSFB and Trust to ensure that both organisations are involved in the consultative process, and at the same time copy the relevant DSFB/Trust into the correspondence. Clearly, under the current arrangements, ASFB and RAFTS ability to formulate any meaningful influence is limited, due to the local nature of sites. We are essentially acting as a 'postbox' and alerting the DSFB/Trust to any proposal.

Assessment of risk in wind farm applications

The following factors should be considered in evaluating the risk of a development to fish populations and fisheries:

- Presence and abundance of salmon and sea trout (Boards and Trusts) and sea lamprey, river lamprey, brook lamprey, trout (ancestral forms and sea trout), European eel and Arctic charr (Trusts). Any additional 'rare' fish species should also be taken into account (e.g. Shad, Smelt)
- Quality and quantity of fish habitat (in some cases this is not possible)
- Development within/ adjacent to a designated site
- Density of water bodies (standing and running waters)

¹ Available at: <http://79.170.44.155/asfb.org.uk/wp-content/uploads/2011/06/Wind-Farm-Policy.pdf>

- Presence of large areas of deep peat
- Forest removal
- Known acidification problems
- Large number of proposed watercourse crossings

In evaluating the Environmental Statement careful consideration should be given to the following activities (and associated effects) which can have an impact on fisheries:

- turbine foundations;
- excavation of borrow pits;
- road construction/upgrading;
- Watercourse crossing installation/upgrading;
- cable laying;
- water abstraction and discharge;
- obstruction to fish migration;
- removal or degradation of physical habitat;
- exacerbated erosion;
- hydrological regime changes; and
- reduction in food supply (e.g. invertebrates).

Water bodies and stream crossings

It is recommended that construction avoids water bodies wherever possible. If construction is to be carried out near watercourses, a buffer zone of at least 50m should be established. The potential for sediment transport and deposition should be carefully considered and the installation of appropriate siltation controls should be encouraged where required. Where river crossings are proposed the Scottish Executive guidance *River Crossings and Migratory Fish*² should be consulted in addition to SEPA's *Engineering in the Water Environment Good Practice Guide: Construction of River Crossings*³. The use of 'clear span bridge crossings' should be encouraged wherever possible. Highlighting the fact that the developer should consult with SEPA as to general pollution prevention and engineering regulatory controls, requirements and methods may also be appropriate.

Peat stability

Peat slides can have a direct impact on fisheries and peat disturbance can have indirect effects on water quality and quantity and abundance of invertebrates. A detailed survey of peat deposits present within the site should be undertaken to ascertain the risk of peat slide during construction. All construction should avoid areas of deep peat and where this is not possible appropriate mitigation measures should be put in place. Natural peat drainage channels should be preserved throughout the development; excavated material should not be stock piled in areas of unstable peat; concentrated water flows onto peat slopes should also be avoided.

Abstraction and discharge of water

SEPA, through The Water Framework Directive, regulates abstraction from and discharge of polluting matter to all wetlands, surface waters and ground waters. Where water abstraction is proposed, the developer should ensure that they comply with The Salmon (Fish Passes and Screens) (Scotland) Regulation

² Available at: <http://www.scotland.gov.uk/consultations/transport/rcmf-00.asp>

³ Available at: http://www.sepa.org.uk/water/water_regulation/guidance/idoc.ashx?docid=fa231e19-ed87-4417-91d1-fda918bc56c0&version=-1

1994⁴ which states that screens, at the point of water abstraction, should serve to prevent the entry and injury of salmon. Other fish species should also be considered in the same manner. Surface water run-off must be discharged in such a way to minimise the risk of pollution of the water environment.

Pollution

The Water Framework Directive requires any activity that is liable to cause water pollution to be authorised by SEPA. This includes point source pollution (e.g. sewage and trade effluent) and diffuse pollution (fuel, concrete spills, sediment discharge) all of which can be detrimental to the survival of fish. SEPA has produced guidelines for the prevention of pollution⁵ and these should be followed closely by the developer, particularly through the construction and decommissioning phases of a wind farm.

Acidification

Particular attention should be paid to acidification issues if they are known to be a problem in the area. Anthropogenic acidification of freshwaters is largely caused by the input of sulphur and nitrogen compounds, derived from the combustion of fossil fuels, exceeding the buffering capacity of the soils and underlying rocks through which the streams flow. Peat deposits and marine derived sulphates can also contribute to acidity. Salmonid fish are particularly sensitive to acid water, particularly due to the increased mobility of labile aluminium in acid conditions which is toxic to aquatic organisms.

Forestry

The developer should be aware of the potential impacts of tree felling on the aquatic environment including nutrient release, increased acidification risk, loss of habitat, impacts on hydrology, increased fine sediment transport and deposition, all of which can have a detrimental impact on fish populations and should therefore be addressed in the ES. In addition, the mulching of fallen trees *in situ* should be avoided. *The Forest and Water Guidelines* should be consulted for further information⁶.

Monitoring Programmes

Monitoring throughout the development phase should be carried out to identify impacts and allow remediation at the earliest opportunity for sites where there are thought to be risks to fish populations. The experimental design of the monitoring programme should focus on the risks presented by the development and be clearly justified. Methods of analysis, reporting mechanisms and links to site management should also be clearly identified. A Scottish Fisheries Research Report provides further information to help consider fish monitoring programmes⁷.

In order to assess the potential impact of developments the developer should provide information on all species and abundance of fish within, and in many cases, downstream of the development area. The onus is on the developer to provide adequate information on which to base an assessment of risk. Where there is a potential risk to salmonid populations baseline survey data should be collected for a minimum of 12 months (ideally monitoring should be provided for more than 1 year) prior to construction to establish pre-construction characteristics. It should be noted that a 12 month monitoring period would require a larger number of monitoring sites to deal with intra site and intra-annual variation. A Before and After Control Impact (BACI) design allows robust assessment of effects. It is important that there are adequate control sites to allow intra-site and intra-annual variation to be taken into account. Monitoring programmes might include:

⁴ Available at: <http://www.legislation.gov.uk/ukxi/1994/2524/regulation/6/made>

⁵ Available at: <http://www.netregs.gov.uk/netregs/links/107968.aspx>

⁶ Available at: [http://www.forestry.gov.uk/pdf/FCGL002.pdf/\\$FILE/FCGL002.pdf](http://www.forestry.gov.uk/pdf/FCGL002.pdf/$FILE/FCGL002.pdf)

⁷ Available at: http://www.scotland.gov.uk/Uploads/Documents/SFRR_67.pdf

- Water quality monitoring targeted to risks (e.g. turbidity, Acid Neutralising Capacity, pH, nutrients, Dissolved Organic Carbon)
- Aquatic macro-invertebrates
- Fish – all species and abundance of fish. Particular attention should be paid to species of high economic and/or conservation value - Atlantic salmon, sea lamprey, river lamprey and brook lamprey are listed under the European Habitat Directive. Atlantic salmon, trout (ancestral forms and sea trout), European eel, river lamprey, sea lamprey and Arctic charr are UK Biodiversity Action Plan (UKBAP) species-listed as priorities for conservation. European eel is also protected by EU regulation (EC No 1100/2007). Any 'rare' fish species should also be taken into consideration.
- A pre-construction walk-up habitat survey might also be considered here, specifically to identify key features of fish habitat (i.e. spawning beds, holding pools etc.).

The developer should clearly identify the methods of data collection, analysis and reporting to be employed. These methods must be statistically robust to detect change and any monitoring must feed back into site management to trigger remedial action/restoration. Following construction, there should be 3-5 years post development monitoring, with scope to extend this period if impacts are detected. Where a development straddles multiple Board/Trust boundaries a consistent, agreed monitoring protocol should be adopted.

The combined effect of all existing and proposed construction developments in the area should be addressed in the ES in addition to angling, as a recreation interest, and the impact that the proposed development may have on it.

If the developer considers that there will be no significant impact from the development and as such no monitoring will be required this should be clearly presented in the ES with supporting data and information thereby enabling the Board/Trust to assess the decision on monitoring requirements. If this information is not provided, the Board/Trust should recommend that the developer carry out a full monitoring survey of fish and water chemistry in addition to appropriate mitigation plans.

Maintenance and Decommissioning

It is vital to stress that the standards outlined above are equally important for any routine site maintenance and ultimately the decommissioning of the development. This should include the maintenance of drainage schemes and any siltation controls where appropriate.

Mitigation/ risk management

Adherence to best available techniques is expected throughout the development. **Site specific** mitigation measures and/or enhancement programmes to protect and/or compensate freshwater habitats should always be included in the Environmental Statement. Examples of mitigation measures include:

- Avoidance of water bodies and where possible, the lowest number of watercourse crossings possible
- Avoidance of peat
- Hydrological buffer zones
- Timing of works
- Drainage schemes (which allow no direct discharges to water courses)
- Pollution prevention
- Adherence to current legislation and guidelines (e.g. river crossing for migratory fish)

Other aspects of mitigation might include habitat restoration more generally, installation/repair of riparian fencing or riparian tree planting.

Conclusion

It is important to stress that large scale terrestrial wind farms have been built in important river catchments with little or no observable impact on either water quality, quantity or fish populations. However, there remains the possibility of statistically significant impacts on water quality, even on very well managed developments. A recent study at Paul's Hill wind farm, where a stringent and well-managed monitoring programme took place, showed that water pH was significantly lower following development, although the magnitude of that impact was small. Equally, there are have been examples of catastrophic failure of wind farm developments (e.g. the peat slide at Derry Brein – Republic of Ireland, 2003) and also significant water quality impacts during construction – particularly during periods of high run off. There is therefore potential for considerable long and short term damage to the freshwater environment and it is these risks and subject areas that the DSFB/Trust submissions should target and seek to mitigate.

If designed and located properly and if proper care and attention is taken during construction wind farm developments need not be incompatible with a high quality freshwater environment. However, it is appropriate for Boards to adopt a presumption against a development until they are reassured that appropriate risk assessments, robust monitoring programmes (with appropriate feedbacks to site management) and a suitable mitigation strategy are in place. It is advised that each DSFB/Trust responding to planning applications focuses their contributions to the environment, fish, fisheries and habitat in question. It is not appropriate to extend representations to other subject areas e.g. landscape and visual impact.

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