

Appendix 10E

Fish Habitat Assessment and Electro-fishing Report



RWE Renewables UK Ltd

Eredine Wind Farm Environmental Impact Assessment Report

Appendix 10E: Fish Habitat Assessment and Electro-fishing Report



October 2024

Report for

Finlay Burns
Development Project Manager - Scotland
RWE Renewables UK Ltd

Main contributors

Will Johnston

Issued by

.....
Alastair Miller

Approved by

Richard Horsfield
.....

WSP

7th Floor
110 Queen Street
Glasgow G1 3BX
United Kingdom

Copyright and non-disclosure notice

The contents and layout of this report are subject to copyright owned by WSP save to the extent that copyright has been legally assigned by us to another party or is used by WSP under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report. The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of WSP. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.

Third party disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by WSP at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. WSP excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

Management systems

This document has been produced in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and ISO 45001 by Lloyd's Register.

Document revisions

No.	Details	Date
1	Issue	01/02/24
2	Draft issue	31/03/24
3	Final issue	25/10/24

Contents

1.	Introduction	4
1.1	Background	4
1.2	Site Context	4
1.3	Site Design	4
1.4	Legislation and Conservation Interest	6
	Habitats Directive	6
	Water Environment and Water Services (Scotland) Act 2003	6
	Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003	6
	Atlantic Salmon	6
	Trout	7
2.	Methodology	8
2.1	Field Surveys	8
	Fisheries Habitat Assessment	8
	Fish Survey	10
2.2	Assumptions and Limitations	10
3.	Results	11
3.1	Fish Habitat Survey	11
	High FUP	28
	Moderate FUP	28
	Low FUP	28
	Absent FUP	28
3.2	Fish Survey	28
4.	Discussion	30
5.	References	31

Table 2.1	Species / Habitat Type and Classification	8
Table 2.2	Fish Utilisation Potential (FUP) and Probability	10
Table 3.1	Fish Habitat Assessment Sites with FUP classification	11
Table 3.1	Electric-fishing survey results.	28

Annex A MSS – EIA Checklist
Annex B Figures

1. Introduction

1.1 Background

- 1.1.1.1 WSP was commissioned by RWE Renewables UK Ltd ('the applicant') to provide ecological consultancy services in relation to the proposed Eredine Wind Farm, hereafter referred to as 'the Proposed Development'. The site where the Proposed Development is located is referred to as the 'Development Site'.
- 1.1.1.2 This report provides information relating to fish habitat and electric-fishing surveys conducted in September 2020. Details of the Development Site and Proposed Development are provided, followed by a description of survey methods employed and a presentation of results.
- 1.1.1.1 **Annex A** presents the Marine Scotland Science (MSS) Environmental Impact Assessment (EIA) Checklist¹, generic scoping guidelines should ensure that all matters relevant to freshwater and diadromous fish and fisheries have been addressed and presented in the appropriate chapters of the EIA report.

1.2 Site Context

- 1.2.1.1 The Development Site is located approximately 4.5 km west of Inveraray and approximately 17 km to the north-east of Lochgilphead in Argyll and Bute, centred at coordinates (E)199418, (N) 704212.
- 1.2.1.2 The nearest residential property is Killean Farmhouse, which is located adjacent to the site boundary where it joins the A83 to the east. Killean Farmhouse is located 3.8 km southeast from the nearest turbine location
- 1.2.1.3 The Development Site is situated within an area of land positioned between two large bodies of open water – Loch Awe to the north-west, and Loch Fyne to the south-east. Numerous fresh water lochans and ponds are present within the Development Site which are drained by a network of watercourses. Those to the north are drained by the Abhainn a' Bhealaich and associated tributaries (which eventually flow into Loch Awe) while those to the north-east are drained by and Douglas Water and those to the south are drained by the Abhainn Dubhann and Leacann Water (all of which flow into Loch Fyne). The far south-west of the Development Site is drained by the River Add. Habitats within the Development Site are comprised primarily of coniferous plantation woodland, with open upland habitat within the north-west and also within the south of the Development Site, stretching from north-east to south-west.
- 1.2.1.4 The elevation of the Development Site ranges from approximately 100 metres (m) Above Ordnance Datum (AOD) at the Development Site entrance (OS Grid reference: NN 04451 04183), to 482m at Beinn Dearg (OS Grid reference: NN 02314 04934).

1.3 Site Design

- 1.3.1.1 The Proposed Development will include 22 turbines and associated hardstanding areas, access tracks, interconnecting cables between turbines, battery Storage, a permanent met

¹ Marine Scotland Science advice on freshwater and diadromous fish and fisheries in relation to onshore wind farm developments.

mast and a control building and substation. Temporary development areas will also be required in order to facilitate a construction compound, concrete batching plant, and potential borrow pits.

- 1.3.1.2 The installed capacity and turbine dimensions will be dependent upon environmental and technical considerations; however, it is understood that the maximum turbine tip height will be 200m, with an installed capacity in excess of 50 megawatts (MW).

1.4 Legislation and Conservation Interest

Habitats Directive

- 1.4.1.1 The Habitats Directive is the short name for Annex I of Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora, which is translated into UK law via the Conservation (Natural Habitats, &c.) Regulations 1994 ('the Habitats Regulations').
- 1.4.1.2 Habitats and species of European importance listed on the Annexes to the Habitats Directive must be maintained or restored at a favourable conservation status by European Union (EU) Member States.

Water Environment and Water Services (Scotland) Act 2003

- 1.4.1.3 The Water Environment and Water Services (Scotland) Act (WEWS) is the Scottish legislation transposed from the Water Framework Directive (WFD). The WFD is the short name for Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for community action in the field of water policy. It sets out objectives for the water environment, including the protection, enhancement and restoration of surface water, groundwater and water-dependent protected areas and prevention of deterioration (United Kingdom Technical Advisory Group [UKTAG], 2012).
- 1.4.1.4 Under the WFD, member states are required to achieve "*good ecological status*" in inland surface waters, transitional waters, and coastal waters. Ground waters must also be protected and restored to ensure the quality of dependent surface water and terrestrial ecosystems. Through these regulations the Scottish Environment Protection Agency (SEPA) is empowered to control activities likely to have an impact upon the water environment (i.e. pollution, abstraction, impoundment, and engineering). Consequently, SEPA can recommend and enforce regulations upon controlled activities, including the development of monitoring programmes.

Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003

- 1.4.1.5 The Salmon and Freshwater Fisheries (Consolidation) Act brings most Scottish salmon and freshwater fisheries laws together under a single piece of legislation. It makes it an offence to obstruct the passage of salmon to spawning grounds and to knowingly take, kill or injure, or attempt to take, kill or injure, any Atlantic salmon, trout, or freshwater fish, which is unclean or immature. The Act also makes it an offence to cause or knowingly permit to flow, or puts or knowingly permits to be put, into any waters containing fish or into any tributaries of waters containing fish, any liquid or solid matter to such an extent as to cause the waters to be poisonous or injurious to fish or the spawning grounds, spawn or food of fish. Defences exist where it can be proved that best practicable means, within a reasonable cost, has been undertaken to prevent such an event.

Atlantic Salmon

- 1.4.1.6 Atlantic salmon are protected under the Conservation (Natural Habitats, &c.) Regulations 1994, the Habitats and Species directive (Annex II and V). The species is also on the long list of globally threatened/declining species ('Biodiversity', UK Steering Group Report, the Scottish Biodiversity List (a species of principal importance for biodiversity conservation in Scotland) and the Species of Conservation Concern List (British species of conservation concern and under at least one international designation).

Trout

- 1.4.1.7 Neither forms of trout, freshwater resident or sea trout, have historically received extensive protection within conservation legislation. Some protection in terms of exploitation controls exist within fisheries legislation and sea trout are further protected within fisheries acts relating to the protection of 'Atlantic salmon'. But both brown trout and sea trout are on the Scottish Biodiversity List (SBL) and are of conservation importance in Scotland.

2. Methodology

2.1 Field Surveys

Fisheries Habitat Assessment

- 2.1.1.1 A fish habitat assessment was carried out in September 2020. Surveys comprised a walkover of all accessible watercourses within the Study Area (**Figure 10E-1, Annex B**) to characterize in-stream and bankside addition habitats according to depth, substrate type, flow, and overall suitability for different age classes of salmonid.

Study Area

- 2.1.1.2 **Figure 10E-2 (Annex B)** is a map of the watercourses within the vicinity of the Development Site. Red markers denote turbine placement.
- 2.1.1.3 Observations were made in the context of methods developed by Hendry and Cragg-Hine (1997), and those developed for river / fisheries habitat surveying (Scottish Fisheries Coordination Centre (SFCC) 2007).
- 2.1.1.4 Predominant habitat was recorded within specific stretches, and the habitat was defined as described in Table 2.1. The habitats described are regarded as definable parts of a spectrum of habitats commonly found in watercourses. In the bankside structures and other features such as overhanging vegetation were described where appropriate.
- 2.1.1.5 In total, 51 sites throughout the survey area were assessed out of an initially proposed 74. Those sites that were not assessed were discounted due to the lack of viable habitat at the location or were inaccessible due to difficult terrain features.

Table 2.1 Species / Habitat Type and Classification

Species / Habitat Type	Classification
Atlantic salmon (spawning gravel)	Stable gravel up to 30cm deep that is not compacted or contains excessive silt. Substrate size predominantly pebbles and smaller cobbles depending on fish size.
Trout (spawning gravel)	Stable gravel up to 30cm deep that is not compacted or contains excessive silt. Substrate size varies from gravels, pebbles and smaller cobbles depending on fish size.
Atlantic salmon (fry habitat)	Shallow (<0.2m) and fast flowing water indicative of riffles and runs with a substrate dominated by pebbles and smaller cobbles.
Atlantic salmon (parr habitat)	Riffle/run habitat that is generally faster and deeper than fry habitat (0.2 – 0.4m). Substrate size* from large pebbles/smaller cobbles to boulder.
Atlantic salmon (parr habitat)	Riffle/run habitat that is generally faster and deeper than fry habitat (0.2 – 0.4m). Substrate size* from large pebbles/smaller cobbles to boulder.

Species / Habitat Type	Classification
Trout (fry habitat)	Slow to medium flowing shallow water with a substrate dominated by pebbles and smaller cobbles, often concentrated at stream margins.
Trout (parr habitat)	Variety of substrate sizes; undercut banks, tree roots, big rocks; deeper, slower water.
Lamprey spp. (spawning habitat)	Stable gravel up to 30cm deep that is not compacted or contains excessive silt (but may contain some sand). Substrate size varies from gravels to pebbles.
Lamprey spp. (nursery habitat)	Optimal: Stable fine sediment or sand ≥ 15 cm deep with low water velocity and the presence of organic detritus/plant material. Sub-optimal: Shallow sediment (< 15 cm deep), often patchy and interspersed among coarser substrate.
European eel <i>Anguilla anguilla</i> (habitat)	Frequently burrow into mud and utilise cover from larger instream substrate and bankside crevices (e.g. gaps in bank modifications such as walls and log revetments).
Glides	Smooth laminar flow with little surface turbulence. Shallow glide ≤ 0.3 m, deep glide > 0.3 m.
Pools	No perceptible flow. Shallow pool ≤ 0.3 m, deep pool > 0.3 m.
Flow constriction	Where flows are accelerated between narrow banksides (usually combined with deep fast flows and bedrock substrates).

* Substrate size - Gravel (2 – 1.6mm), Pebble (16 – 64mm), Cobble (64 – 256mm), Boulder (> 256 mm)

** If significant amounts of different habitat types were found to co-exist in the same section, these habitat classifications were adequately described. For example, in the case of salmonids, fry and parr habitat is classified as juvenile habitat.

Where parr habitat is mentioned, this refers to habitat that has principally been identified as habitat more suited to parr than fry, however, habitually contains a lower quantity of fry habitat and habitat which is suited to both fry and parr. Salmonid definitions are adapted from SFCC Habitat Manual (2007) and Hendry & Cragg-Hine (1997). For lamprey spp. these have been adapted from Maitland (2003).

- 2.1.1.6 During the fisheries habitat survey, standard SFCC general habitat survey sheets were used, making notes on many different variables including substrate, flow types and cover for fish. From this, further analysis was undertaken and evaluations were made for fish utilisation potential (FUP), and fisheries habitat quality (FHQ) along the watercourse (notably related to providing suitable instream and bankside cover for fish).
- 2.1.1.7 Atlantic salmon, brown/sea trout and lamprey species utilise loose, unconsolidated gravel and pebbles on the river bed to construct nests (redds) within which ova are deposited and fertilised. The porous nature of these redds allows for metabolic wastes to be removed by river flows, which also replenish oxygen supplies for the ova (and very young fry which remain within the redd before emergence). Sediments, which can be released during construction, can block these interstitial spaces and thereby cause mortality. The presence of suitable substrate is a critical feature of salmonid spawning habitat.

Fish Utilisation Potential (FUP) and Fish Habitat Quality (FHQ)

- 2.1.1.8 Error! Reference source not found. **2.2** shows the assessment criteria for FUP. This was determined by assessing the probability of fish being present (%) and by presenting rating ranges based on likelihood.

Table 2.2 Fish Utilisation Potential (FUP) and Probability

Probability of Fish Present	%	Rating Ranges	
Certain/Near-Certain	95%	Very High	Very High
Probable	50-95%	Very High	High
Unlikely	5-50%	Moderate	Low
Extremely Unlikely	<5%	Very Low	Absent

- 2.1.1.9 Associated factors for FUP included target species/age class, wet width, flow (pool/riffle sequences), water depth (e.g. salmon fry <0.2m, salmon parr 0.2-0.4), substrate (stable gravels, not compacted, free from silt, suitably sized), instream cover, bankside vegetation, associated land-uses and water/sediment chemistry (where applicable/available).

Fish Survey

- 2.1.1.10 An electric-fishing survey was undertaken in September 2020 to characterise the fish populations within the Study Area. A total of 17 sites were selected based on their habitat quality (ranging from moderate to high) and were surveyed using standardised SFCC qualitative protocols i.e: sites were ~100m² in area and surveyed with a single electric-fishing pass. The exception to this was site 15 which, due to the width of the site, was surveyed using timed survey methodology rather than standardised by area in order to survey a greater length of river habitat.

2.2 Assumptions and Limitations

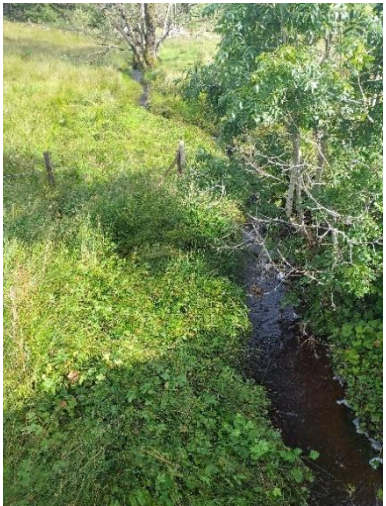
- 2.2.1.1 Due to access restrictions, primarily sites located in mountainous and boggy terrain, it was not possible to survey 11 of the initially proposed assessment sites during the 2020 survey. In addition, due to the site being in spate at the time of visit, it was not possible to fully assess the channel features of site 38 (**Table 3.1**).
- 2.2.1.2 The fish survey method followed was not designed to provide in depth fish habitat recording, as described by the SFCC habitat survey method (SFCC, 2007), but rather an assessment of suitability for each homogenous habitat along each watercourse.

3. Results

3.1 Fish Habitat Survey

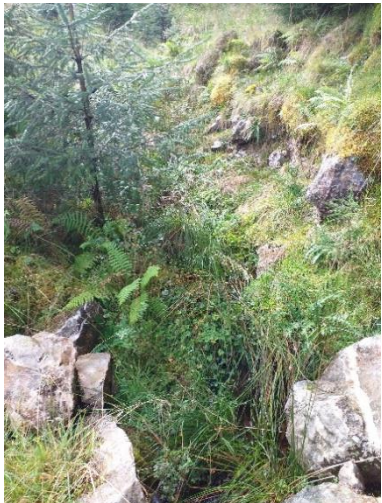
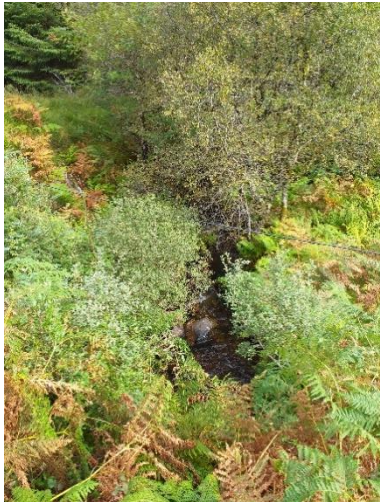
3.1.1.1 **Table 3.1** identifies each site sampled. It also provides FUP (from **Table 2.2**), site descriptions and limiting factors and site identifications/photos.

Table 3.1 Fish Habitat Assessment Sites with FUP classification

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
1	NN 04458 04182	Absent	None	Trackside ditch with a lack of water, substrate, and flow.	
2	NN 04427 04161	High	Trout fry Trout parr Trout adults Spawning potential.	Small burn with undercut banks, overhanging trees and suitable substrate.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
3	NN 04625 04517	Absent	None	Shallow trackside ditch with a steep gradient drop below track.	
4	NN 04778 04738	Absent	None	Forest drain with a sheer drop off from culvert downstream of track.	
5	NN 04888 05006	Absent	None	Forest drain with insufficient water level and unsuitable substrate.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
6	NN 04959 05530	Absent	None	Blocked forest drain.	
7	NN 04820 05678	Low	Salmonid adults Salmonid parr	Site has a very steep gradient with bedrock sections and charging flows.	
8	NN 04808 05713	Absent	None	Overgrown forest drain with insufficient water level and substrate.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
9	NN 04788 05860	Absent	None	Overgrown forest drain with insufficient water level and substrate.	
10	NN 04783 05898	Absent	None	Overgrown forest drain with insufficient water level and substrate.	
11	NN 04779 05933	Low	Trout adults Salmonid parr	Very steep gradient with bedrock features, charging flows and water falls around 15m downstream of track.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
12	NN 04723 06660	Absent	None	Steep gradient boulder/cobble substrate with a lack of water and flow.	
13	NN 044465 06871	Absent	None	Steep gradient bedrock/boulder substrate with a lack of water and flow.	
14	NN 04290 07200	High	Salmonid parr Salmonid fry Potential spawning.	Mid-size tributary of the Douglas water with boulder/cobble/bedrock substrate, undercut banks and upstream 3 culvert crossing.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
15	NN 03978 07586	High	Salmonid fry Salmonid parr Trout adults Spawning Potential	Douglas water with downstream hydro dam and upstream clear span. Wide channel with several features such as runs, an island, side channel, large pool, inflowing tributaries, and large boulders.	
16	NN 04164 07653	Moderate	Salmonid parr Trout adults	Steep gradient bedrock/boulder substrate with scour pool below culvert and fast flows.	
17	NN 04260 08025	Low	Salmonid parr Salmonid fry	Forest drain with insufficient water level. Culverted cascade fragments habitat in this section.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
18	NN 04195 08065	Low	Salmonid parr Salmonid fry	Forest drain with insufficient water level and substrate.	
19	NN 03108 08374	Moderate	Salmonid parr Salmonid fry	Small burn with a steep gradient, bedrock/boulder substrate and fast flows.	
21	NN 02886 08562	Low	Salmonid parr Salmonid fry	Small burn with a steep gradient, bedrock/boulder substrate and fast flows.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
22	NN 02598 08566	Moderate	Salmonid parr Trout adults	Small-med sized watercourse with bedrock, boulder and cobble substrate and cascading flows. Site was in spate at time of visit.	
27	NN 61872 07988	Low	Salmonid parr Trout adults	Steep gradient with bedrock/boulder substrate.	
28	NN 01546 07736	Low	Salmonid parr	Very steep gradient with bedrock/boulder cascade.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
29	NN 01395 07496	Low	Salmonid parr Trout adults	Very steep gradient with bedrock/boulder cascade.	
30	NM 97741 05287	Low	Salmonid parr Trout adults	Steep gradient with cascading flows and bedrock/boulder/cobble substrate. Culvert upstream of site.	
31	NM 97722 05485	Low	Salmonid parr Trout adults	Steep gradient with fast flows and bedrock/boulder substrate. Waterfalls upstream of site and waterfalls and a culvert at the downstream end.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
32	NM 97643 0553	Low	Salmonid parr	Steep gradient with cobble substrate. Culvert downstream with a significant drop.	
33	NM 97311 05895	Low	Salmonid fry	Gradient with cobble/pebble substrate., Shallow forest cutting with culvert downstream, perched sill and rock scour protection	
34	NM 97345 06267	Low	Salmonid parr Trout adults	Steep gradient with boulder/cobble substrate, downstream culvert and upstream dam/impoundment.	

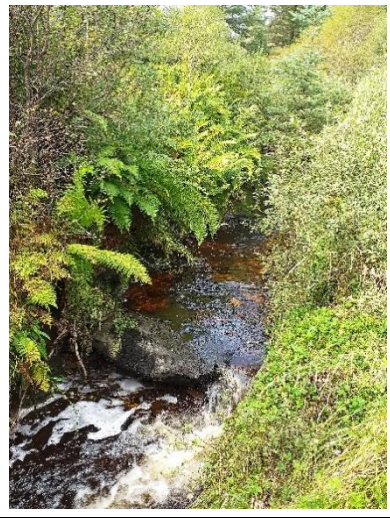
Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
35	NM 97423 06898	Moderate	Salmonid parr Trout adults	Steep gradient with boulder/bedrock substrate, controlled moderate flows and a clear span bridge. Site is impounded upstream.	
36	NM 97523 07653	Low	Salmonid parr Trout adults	Steep gradient laden with boulders and fast flows.	
37	NM 97690 04150	High	Salmonid fry Salmonid parr Potential spawning.	Low gradient with a braided channel, varied flows, and cobble/pebble/gravel substrate. High levels of fish cover including undercut banks and overhanging vegetation.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
38	NM 97550 04190	High	-	Site in spate at time of visit. No assessment was made.	
39	NM 97490 04240	Absent	None	Forest flush/ drain.	
40	NM 97339 03490	High	Salmonid fry Salmonid parr Trout adults Potential spawning.	Moderate gradient with boulder/cobble/gravel substrate and fast flows. High levels of fish cover with undercut banks and overhanging vegetation (grasses and conifers mid channel). Waterfall upstream of site and a culvert downstream.	-

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
41	NM 97300 03580	High	Salmonid fry Trout parr Trout adults Potential spawning	Low gradient site with a gravel bottom, undercut banks, overhanging grasses and conifers.	
42	NM 97000 03413	Moderate	Salmonid fry Salmonid parr Trout adults	Moderate gradient with boulder/cobble/gravel substrate and pool/riffle sections. Fish cover includes undercut banks, through clear fell site. Downstream culvert and scour pool.	
43	NM 97247 04458	Absent	None	Forest flush/ drain.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
44	NM 97152 05717	High	Salmonid parr Trout adults	Steep gradient with boulder laden run and fast flows. Site is upstream of dam with trout present downstream.	
45	NM 96880 02746	High	Salmonid fry Trout parr Potential spawning.	Low gradient with cobble/gravel substrate, undercut banks and culvert scour pools. Double culvert mid site and an additional culvert upstream.	
46	NM 96539 02523	High	Trout fry Trout parr Trout adults	Low gradient with gravel/ peat substrate and macrophytes. Connected to vegetated loch.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
47	NM 96260 02360	High	Trout parr Trout adults	Low gradient flood plain that drains loch. Deep water with peat and macrophytes.	
48	NM 96101 02588	High	Salmonid fry Salmonid parr	Moderate gradient with bedrock/boulder/cobble substrate, pool/riffle sections and upstream waterfalls.	
50	NM 95962 00743	Absent	None	Steep gradient with bedrock/boulder substrate.	
51	NM 95931 00641	Absent	None	Forest flush/ drain.	-

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
52	NM 9771800949	High	Salmonid fry Salmonid parr	Moderate gradient with bedrock/boulder/cobble substrate and pool/ riffle sections. High water clarity.	
53	NM 9771800948	Low	Salmonid fry Salmonid parr	Minor forest drain with moderate gradient and pebble/ gravel substrate.	
54	NM 9790000980	Moderate	Salmonid fry Salmonid parr Trout adults	Moderate gradient with exposed bedrock, boulder/cobble substrate and pool/riffle sections. Downstream culvert.	

Site	NGR	FUP	Habitat Suitability	Site description: Channel and bankside features.	Photo
55	NM 98664 04207	Absent	None	Steep gradient with boulder substrate. Connected to loch upstream.	
56	NM 98877 04831	High	Salmonid parr Trout adults	Pool/ Riffle sections with bedrock/boulder substrate and moderate flows.	
57	NM 98919 04817	High	Salmonid parr Trout adults	Pool/riffle sections with bedrock/boulder substrate and moderate-high flows.	

High FUP

- 3.1.1.2 Stretches of suitable habitat (15 in total), including salmonid spawning habitat, were recorded in the vicinity of the Development Site and classified to have high utilisation potential. These sites were given these ratings because of their assessed suitability to support the target species/age classes (notably salmonid fry and parr). For example, flow is moderate to fast, with suitable depth. The boulder and cobble substrates are providing suitable instream cover and often features undercut banks and emerging vegetation. Salmon potential in the area is limited by impassable barriers downstream.

Moderate FUP

- 3.1.1.3 Six sites were assessed to have moderate utilisation potential. These sites were given these ratings because of their assessed suitability to support the target species/age classes (notably salmonid fry and parr). For example, flow is moderate to fast and variation in substrate is providing suitable instream cover. A limiting factor for this site is the impassable barrier (natural)s downstream.

Low FUP

- 3.1.1.4 A total of 15 sites were classified as having low utilisation potential. These sites were given reduced ratings because of their lack of suitability to support the target species/age classes (notably salmonids). Overall, these were generally minor watercourses, with limited flow, depth, and heavy grade bedrock/substrates, and which are unlikely to have fish utilisations, or sustain fish populations. Many of these watercourses also had very limited accessibility for fish to migrate within the watercourse e.g. spawning and nursery.

Absent FUP

- 3.1.1.5 The remaining 15 sites were assessed to be of absent utilisation potential i.e: largely unsuitable for fish. These sites were characterised by insufficient depth, flows, substrate, or accessibility for salmonids.

3.2 Fish Survey

- 3.2.1.1 Results of electro-fishing surveys are presented in **Table 3.1**

Table 3.2 Electric-fishing survey results.

Site	NGR	FHQ	Trout	Trout size range (mm)	Minnow
2	NN 04427 04161	Moderate	8	65-130	0
14	NN 04290 07200	Moderate	11	70-165	0
15	NN 03978 07586	High	3	80-250	9
16	NN 04164 07653	Moderate	0	-	0
19	NN 03108 08374	Moderate	0	-	0

35	NM 97423 06898	Moderate	1	155	0
37	NM 97690 04150	High	4	70-170	7
40	NM 97339 03490	Moderate	9	65-150	0
41	NM 97300 03580	Moderate	1	200	0
42	NM 97000 03413	Moderate	0	-	0
45	NM 96880 02746	Moderate	30	45-75	0
46	NM 96539 02523	Moderate	6	80-265	0
48	NM 96101 02588	High	17	60-175	0
52	NM 9771800949	Moderate	20	65-125	0
54	NM 97900 00980	Moderate	0	-	0
56	NM 98877 04831	Moderate	6	80-125	0
57	NM 98919 04817	Moderate	4	80-100	0

4. Discussion

- 4.1.1.1 Suitable salmonid habitat including suitable spawning habitat was recorded in the vicinity of the Proposed Development.
- 4.1.1.2 Correspondence with the Argyll Fisheries Trust highlights that the lower reaches of Loch Awe and Loch Fyne (downstream of the Development Site) are accessible to and used by Atlantic salmon for spawning. No salmon were found in any of the surveys, which supports SEPA's record of impassible natural barriers downstream of the electric-fishing sites (**Figure 10E-2**).
- 4.1.1.3 Brown trout were recorded in 13 of 17 electric fishing surveys with a size range of 65-265mm. This would indicate the presence of suitable habitat for all age classes of trout. Trout populations are likely resident due to the presence of downstream barriers.

5. References

Hendry, K. and Cragg-Hine, D. 1997. *Restoration of riverine salmon habitats*. Fisheries Technical Manual 4. Environment Agency, Bristol, UK.

Maitland, P.S. (2003) Ecology of the River, Brook and Sea Lamprey. Conserving Natura 2000 Rivers Ecology Series No. 5. English Nature, Peterborough.

SFCC. 2007. Habitat Surveys Training Course Manual

Annex A

MSS – EIA Checklist

MSS Standard EIA Report Requirements	Provided in application YES/NO	If YES – please signpost to relevant chapter of EIA Report	If not provided or provided different to MSS advice, please set out reasons.	ECU/MSS use - comments
1. A map outlining the proposed development area and the proposed location of: - the turbines, - associated crane hard standing areas, - borrow pits, - permanent meteorological masts, - access tracks including watercourse crossings, - all buildings including substation, battery storage; - permanent and temporary construction compounds; - all watercourses; and - contour lines;	YES	Chapter 4: Description of Proposed Development and associated figures.		
2. A description and results of the site characterisation surveys for fish (including fully quantitative electrofishing surveys) and water quality including the location of the electrofishing and fish habitat survey sites and water quality sampling sites on the map outlining the proposed turbines and associated infrastructure;	YES	Fish habitat suitability survey and Electrofishing survey results for sample points within the Development Site presented in Technical Appendix 10E Fish Habitat Survey Report . Water quality assessed in Chapter 12: Geology, Hydrology and Hydrogeology .		
3. An outline of the potential impacts on fish populations and water quality within and downstream of the proposed development area;	YES	Technical Appendix 10F EcIA Scoping Rationale, Chapter 10 Ecology and Chapter 12: Geology, Hydrology and Hydrogeology		

MSS Standard EIA Report Requirements	Provided in application YES/NO	If YES – please signpost to relevant chapter of EIA Report	If not provided or provided different to MSS advice, please set out reasons.	ECU/MSS use - comments
4. Any potential cumulative impacts on the water quality and fish populations associated with adjacent (operational and consented) developments including wind farms, hydro schemes, aquaculture and mining;	YES	Potential cumulative impacts to water quality provided in Chapter 12: Geology, Hydrology and Hydrogeology	Note: Scoped out of ecology cumulative assessment due to lack of impacts.	
5. Any proposed site-specific mitigation measures as outlined in MSS generic scoping guidelines and the joint publication “Good Practice during Wind Farm Construction” (https://www.nature.scot/guidance-good-practice-during-wind-farm-construction);	YES	Implementation of a 50m buffer distance, where possible, from watercourses (excluding water crossings). Embedded measures to minimise the risk of pollution sediment release to watercourses are set out in detail in Chapter 12: Geology, Hydrology and Hydrogeology . Pollution prevention measures will be detailed within a CEMP and will be implemented as part of the CAR licensing requirements.		
6. Full details of proposed monitoring programmes using guidelines issued by MSS and accompanied by a map outlining the proposed sampling and control sites in addition to the location of all turbines and associated infrastructure (see wording suggested by MSS for planning conditions).	NO		There is a commitment for a monitoring programme following MSS guidance. The Water Quality & Fish Monitoring Programme would include all details requested by MSS and agreed prior to construction commencement. At this stage, the exact timings of surveys are unknown (these would be included in monitoring programme document), but they would follow recommended seasonality. Committed mitigation	

MSS Standard EIA Report Requirements	Provided in application YES/NO	If YES – please signpost to relevant chapter of EIA Report	If not provided or provided different to MSS advice, please set out reasons.	ECU/MSS use - comments
			is included in Chapter 10: Ecology and Chapter 12: Geology, Hydrology and Hydrogeology .	
7. A decommissioning and restoration plan outlining proposed mitigation/monitoring for water quality and fish populations.	NO		A decommissioning plan would likely follow a similar process as above for construction mitigation and monitoring, but details would be agreed nearer the point of decommissioning when current conditions are better known.	

Developers should specifically discuss and assess potential impacts and appropriate mitigation measures associated with the following:	Provided in application YES/NO	If YES – please signpost to relevant chapter of EIA Report	If not provided or provided different to MSS advice, please set out reasons.	ECU/MSS use - comments
8. Any designated area (i.e. SAC), for which fish is a qualifying feature, within and/or downstream of the proposed development area;	YES	Assessed for potential connectivity in Ecology chapter.		
9. The presence of a large density of watercourses;	YES	Fish habitat suitability survey of site included in Technical Appendix 10E. Chapter 10: Hydrology and Hydrogeology assess impacts to watercourses.		
10. The presence of large areas of deep peat deposits;	YES	Peat and peatland coverage is presented and assessed in Chapter 6: Renewable Energy, Carbon Balance and Peat, Chapter 10: Ecology and Chapter 12: Geology, Hydrology and Hydrogeology . Information on the Development Evolution, designed to avoid peat where possible, is presented in Chapter 3: Design Evolution and alternatives .		
11. Known acidification problems and/or other existing pressures on fish populations in the area; and	YES	Potential acidification of watercourses is assessed in Chapter 12: Geology,		

Developers should specifically discuss and assess potential impacts and appropriate mitigation measures associated with the following:	Provided in application YES/NO	If YES – please signpost to relevant chapter of EIA Report	If not provided or provided different to MSS advice, please set out reasons.	ECU/MSS use - comments
		Hydrology and Hydrogeology.		
12. Proposed felling operations.	YES	Chapter 6: Renewable Energy, Carbon Balance and Peat assesses potential effects on forestry. Potential effects on nature are assessed in Chapter 10: Ecology and Chapter 11: Ornithology . Potential effects of forestry felling on hydrological receptors are assessed in Chapter 12: Geology, Hydrology and Hydrogeology .		

Annex B

Figures
