TECHNICAL APPENDIX 8.2:

FISH HABITAT ASSESSMENT REPORT

Balmeanach Wind Farm

Prepared for: **Balmeanach Wind Farm Limited**

SLR Ref: 428.V11223.00001
Version No: Final
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BASIS OF REPORT

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DOCUMENT REFERENCES

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APPENDICES

1.0 Introduction

1.1 Background

Balmeanach Wind Farm Limited (the Applicant) is applying to The Highland Council (THC) for planning permission to develop a wind farm on land approximately 3km to the south of the settlement of Edinbane, approximately 8km to the east of Dunvegan and approximately 7km to the north of Struan on the Isle of Skye. The Applicant has appointed SLR Consulting Limited (SLR) to undertake a range of environmental studies on the site to inform an Environmental Impact Assessment (EIA) for the Proposed Development.

This report provides an update of previous fish habitat surveys. In May 2019 fish habitat surveys were undertaken for the consented Ben Sca[1] Wind Farm (**Annex 8.2A**). The original fish habitat surveys were undertaken for the Proposed Development in May 2021 (**Annex 8.2B**). The 2021 survey results were updated during the August 2022 protected mammal surveys, during which target notes were taken on fish habitats of the relevant burns. These target notes are presented in the main body of this report.

1.2 Site Location

The site, which measures approximately 476ha, centred on NGR 133900, 846750 is located on moorland approximately 3km to the south of the settlement of Edinbane, approximately 8km to the east of Dunvegan and approximately 7km to the north of Struan on the north west of the Isle of Skye (**Figure 1**). The proposed turbines would be located across two landownerships – primarily on the Bracadale Estate, on ground which forms part of the Balmeanach and Caroy Common Grazings, and partly on the Coishletter Estate. Access to the site would be via the existing Ben Aketil Wind Farm access track from the A850, and then south east via the consented Ben Sca Wind Farm site access track onto the hillside.

For the main development area of the site, topography slopes to the south east from 283m AOD at the summit of Ben Sca down to the lower slopes at approximately 160m AOD adjacent to the Allt Ruairidh burn, which is part of the River Ose Catchment which flows south west discharging into Loch Bracadale. The other main watercourses which drain the site are: the Abhann Coishleader to the north east of the site generally flowing northwards towards Coishletter before discharging into Loch Greshornish; the Abhainn Bhaile Mheadhonaich which drains to the south and the Aketil Burn to the south west which drains into the Caroy River catchment.

This report focuses on the main development area as the 'site' and does not refer to the wider application site boundary which includes the access route to the site.

1.3 Scope of Study

The site was assessed for the presence of protected and otherwise notable mammals, focussing on species that are likely to occur in the area, ascertained from known species distribution and habitat suitability. The survey focussed on Eurasian otter (*Lutra lutra*). During this survey, high-level target notes on obstructions within the burns that may impact fish, impede fish movement and/or any significant differences to the morphology of the burns were recorded.

This report presents the target note observations made during the August 2022 protected mammal survey on burn habitat and summarised findings from previous surveys conducted in 2019 and 2021. It should be noted a fish habitat survey using Scottish Fisheries Coordination Centre (SFCC)[2] methodology outlined in the

[1] SLR. Technical Appendix 8.2: Fish Habitat Assessment Report Ben Sca Wind Farm. 405.07767.00002
[2] Scottish Fisheries Co-ordination Centre. (2007). Habitat Surveys Training Course Manual. pp. 1-64

Environment Agency document 'Restoration of Riverine Salmon Habitats: A guidance Manual'[3] which was followed in the 2019 survey was not repeated in 2022 (see **Sections 2.2 and 2.4**).

1.4 Relevant Legislation

1.4.1 Conservation (Natural Habitats, &c.) Regulations 1994

The Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations) (as amended in Scotland) transpose the operation of Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) in Scotland. Under the Habitats Regulations it is an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

A number of fish species are included on Annex II of the Habitats Directive and therefore require Special Areas of Conservation (SACs) to be designated for them. A number of fish species are included on Schedule 3 of the Regulations and may not be taken or killed in certain ways.

1.4.2 Wildlife and Countryside Act 1981

The Wildlife and Countryside Act of 1981 (as amended in Scotland) transposes the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) into Scottish law. Under the Act it is an offence to:

- intentionally or recklessly kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection.

A number of fish species are included on Schedule 5 of the Act.

1.4.3 Nature Conservation (Scotland) Act 2004

The Nature Conservation (Scotland) Act 2004 places duties on public bodies in relation to the conservation of biodiversity, increases protection for Sites of Special Scientific Interest (SSSI), amends legislation on Nature Conservation Orders, provides for Land Management Orders for SSSIs and associated land, strengthens wildlife enforcement legislation, and requires the preparation of a Scottish Fossil Code and a Scottish Marine Wildlife Watching Code. It also amends the legislation for protected species, introducing new conditions to the 'incidental results of a lawful operation' defence for all wild birds and certain species of animal and plant.

The Act places a duty on every public body to further the conservation of biodiversity consistent with the proper exercise of their functions.

It also requires Scottish Ministers to designate one or more strategies for the conservation of biodiversity as the Scottish Biodiversity Strategy, and to publish lists of species of flora and fauna and habitats of principal importance. The Scottish Biodiversity List[4] includes a number of fish species.

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

Under Section 23 of the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 it is an offence to damage or disturb any spawning bed or any bank or shallow areas in which the spawn of salmon may be present or redd beds reside.

[3] Hendry, K. and Cragg-Hine, D. (1997). Restoration of Riverine Salmon Habitats: A Guidance Manual. pp. 1-250.
[4] http://www.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL

2.0 Methods

2.1 Survey Area

At Scoping, the site boundary extended south to the settlement of Balmeanach, therefore the survey area in August 2022 covered a greater extent than the application site boundary, as shown on **Figure 8.2.1**. Subsequently during design evolution (see **Chapter 2**), the site boundary was refined. The application site boundary no longer includes this southern area and no infrastructure is proposed in this area.

During the August 2022 survey, all watercourses within the Scoping site boundary were walked, this encompassed watercourse surveyed in May 2021 and the upper reaches of watercourses surveyed in 2019. The results of the walkover undertaken within the Scoping site boundary are presented here for completeness (See **Figure 8.2.1**).

2.2 2019 Ben Sca Fish Habitat Assessment

A fish habitat assessment was carried out to assess the potential for fish being present on all watercourses within the survey area based on an adapted version of the Scottish Fisheries Co-ordination Centre (SFCC) Habitat Survey methodology[2]. A walkover of each watercourse was undertaken and data on physical characteristics were collected at different survey locations along each watercourse. Survey locations were generally chosen where a substantial change of characteristics was observed. Physical characteristics recorded included channel width; channel depth; flow type; substrate composition; instream and bankside cover; riparian canopy cover; fish spawning potential; riparian land uses; and associated limiting factors as described in the SFCC Habitat Surveys Training Manual[2]. Photographs of the sections and target notes on potential barriers to fish movement were recorded.

The data collected was used to determine the potential of each watercourse, to offer suitable habitat for fish species of conservation importance (e.g. salmonids and lamprey).

2.3 2021 Balmeanach Fish Habitat Surveys

A fish habitat assessment was carried out using a modified Hendry & Cragg-Hine (1997)[5] method. The surveyor mapped approximate channel dimensions; substrate composition; riparian canopy cover; and associated limiting factors, to inform the quality and utilisation potential of different fish species and age classes.

Due to time limitations, notes and measurements were taken every 50m which lowered the resolution of data, allowing for all water courses to be covered in the allocated time.

2.4 2022 Update Survey

A dedicated fish habitat survey using Scottish Fisheries Coordination Centre (SFCC)[2] methodology outlined in the Environment Agency document 'Restoration of Riverine Salmon Habitats: A guidance Manual'[3] was not conducted in 2022, however, high-level target notes were taken during the update protected mammal surveys. The surveyor recorded any significant habitat changes and any obstructions within the burns that may impact fish, impede fish movement and/or any significant differences to the morphology of the burns.

[5] Hendry, K. & Cragg-Hine, D. (1997). Restoration of Riverine Salmon Habitats. Fisheries Technical Manual 4, Environment Agency, Bristol.

2.5 Survey Dates

The Ben Sca fish habitat survey was undertaken from 21 to 23 May 2019, during a period of predominantly dry, generally stable weather. No periods of exceptionally heavy rain occurred within the two weeks preceding the survey, and water levels did not appear unusually high.

The Balmeanach fish habitat survey was undertaken from 11 to 13 May 2021, during a period of stable weather with rain on 11 May 2021. Though, water levels were not deemed to be substantially affected at the time of surveying.

The protected mammal survey where watercourse target notes were recorded, was undertaken from 23 to 25 August 2022, due to a change of site layout and widening of the site boundary. The surveys were conducted during a period of stable weather with heavy rain showers on 22 August 2022. The total rainfall (ml) was not enough to substantially raise water levels to be deemed too high for the repeated surveys to be conducted.

2.6 Survey Personnel

Helen Allinson conducted the protected mammal update survey in August 2022. Helen (BSc, QCIEEM) is a senior field ecologist with over seven years' experience in ecology and conservation within consultancy and NGOs. During her time in consultancy, she has worked on a range of projects and her expertise covers ecological and ornithological field skills and technical report writing.

2.7 Limitations

During the 2021 surveys, very heavy and persistent rainfall was recorded resulting in rivers being deems full during the survey. Increased turbidity within the river system can make it difficult to survey substrate types and habitat suitability potential due to lack of visual accuracy.

3.0 Results

3.1 Ben Sca Burns

The upper reaches of the Abhainn Choishleadar and Allt Storachan burns were surveyed during the 2022 surveys. These two burns were previously surveyed during the Ben Sca May 2019 surveys that are within the Scoping site boundary. No significant changes or obstructions were recorded in the August 2022 surveys, though, within the upper reaches of the burns, target notes recorded did qualify the sites to be deemed unsuitable fish habitat due to the channel dimensions and substrate present.

The results of the 2022 survey of Abhainn Choishleadar and Allt Storachan burns are summarised in **Table 3-1**. The relevant 2019 survey results can be viewed in **Annex 8.2A**.

Table 3-1. Obstructions and significant changes recorded during Balmeanach Survey 2022: Abhainn Choishleadar and Allt Storachan burns

Target note	Grid Reference (NGR)	Notes	Photo
1	133635, 847669	Upper reaches of Allt Storachan just within site boundary. Very narrow stream leading to forestry, peat substrate. Not suitable for fish.	

Target note	Grid Reference (NGR)	Notes	Photo
2	134044, 847649	Small run off of water from Ben Sca. Above this point the burn disappears underground and/or into flushes. Below this point, the burn goes partially underground and channel width narrows. Peat substrate was present. Not suitable fish habitat.	
3	134517, 847550	Tributary of Abhainn Choishleadar, survey stopped here at red line boundary. Small bedrock falls present along the burn but none more than c.1m high. Mostly peat substrate with bedrock substrate present throughout. Peat hag were recorded to have slipped into pool, but does not appear to be a major obstruction.	

Target note	Grid Reference (NGR)	Notes	Photo
4	134346, 847482	Upper reaches of tributary of Abhainn Choishleadar. Above this point, burn disappears underground and/ or into flushes.	

3.2 Aketil Burn

The Aketil Burn was surveyed during May 2021 and target notes were recorded in August 2022. One obstruction in the upper reaches of the main Aketil Burn was recorded. In addition, two tributaries that were not surveyed in 2021 were checked as they fell within the newly proposed site boundary. These tributaries were scoped out due to the burn disappearing underground and/or into flushes. No significant changes to the burn were recorded.

The results of the 2022 survey of Aketil Burn are summarised in **Table 3-2** and the full 2021 survey results are presented in **Annex 8.2B**.

Table 3-2. Obstructions and significant changes recorded during Balmeanach Update Survey 2022: Aketil Burn

Target note	Grid Reference (NGR)	Notes	Photo
5	133093, 845524	Upper reaches of Aketil Burn. Burn mostly underground with some bank slip into channel. No water flow was recorded. Not suitable fish habitat.	
6	132208, 845246	Tributary of Aketil burn within the proposed site boundary, not previously surveyed. More of a flush than a burn. Scoped out for fish. Not suitable fish habitat.	

Target note	Grid Reference (NGR)	Notes	Photo
7	132052, 845131	Tributary of Aketil Burn within proposed site boundary, not previously surveyed. Burn mostly underground and continues into a flush within the proposed site boundary. Scoped out for fish. Not suitable fish habitat.	

3.3 Allt Ruairidh Burn

The Allt Ruairidh Burn was surveyed during May 2021 and August 2022. No significant changes to the burn were recorded, however, seven obstructions were noted. All of the obstructions were from either bank slips or collapses with five obstructions noted to be a major obstacle to larger adult fish.

The results of the 2022 survey are summarised in **Table 3-3** and the full 2021 survey results are presented in **Annex 8.2B**.

Table 3-3. Obstructions and significant changes recorded during Balmeanach Update Survey 2022: Allt Ruairidh Burn

Target note	Grid Reference (NGR)	Notes	Photo
8	134483, 846297	North Tributary of Allt Ruairidh. Peat slipped into channel; water still able to pass but would be an obstacle to adult fish. Shallow & 0.5m wide.	
9	134471, 846307	North Tributary of Allt Ruairidh Peat slipped into channel, slowing flow of water, water still able to pass. Above this point burn disappears underground and into flush.	

Target note	Grid Reference (NGR)	Notes	Photo
10	134449, 846323	North Tributary of Allt Ruairidh. Big peat hag slip into burn; Major obstacle for fish, water still flowing through channel width and depth is limited.	
11	134186, 845701	Central Tributary of Allt Ruairidh. Bank slip into burn; water still flowing and does not appear to be fully obstructing waterway. Potential fish barrier for larger fish.	

Target note	Grid Reference (NGR)	Notes	Photo
12	134257, 845546	Central Tributary of Allt Ruairidh. Bank slip into burn; only causing a slight obstruction to water flow.	
	134536, 845531	Allt Ruairidh. Peat slip into narrow channel; causing slight obstruction, water still flowing. Potential obstruction to fish.	

Target note	Grid Reference (NGR)	Notes	Photo
14	133737, 845284	South Tributary of Allt Ruairidh Bank slip into channel, water still flowing. Major obstruction to fish.	

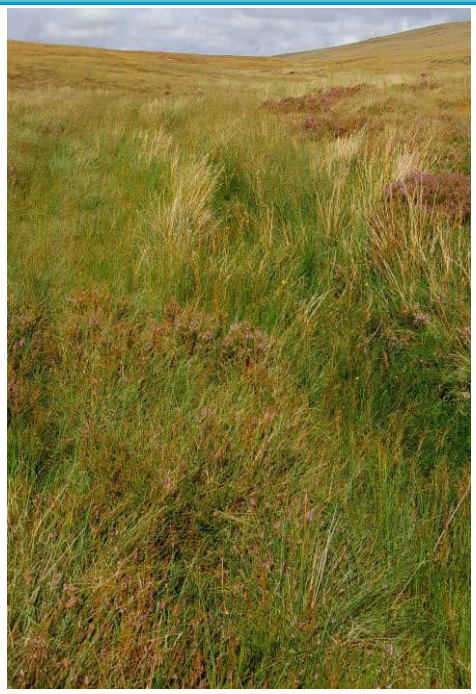
3.4 Allt Bhaile Mheadhonaich Burn

During the 2022 update survey the full length of the Allt Bhaile Mheadhonaich was walked up to the newly proposed site boundary, however a dedicated fish habitat survey was not undertaken. The Allt Bhaile Mheadhonaich catchment was screened out of the 2021 survey as at the 2021 survey boundary the habitat was boggy with no defined burn and therefore, unsuitable for fish at the high altitude.

The upper reaches of the burn disappear underground and go into flushes and/or bogs. There were several stretches where the burn cut through peat hags and was underground, one stretch where the burn was covered by overhanging vegetation and two bedrock chutes.

The results of the 2022 survey are summarised in **Table 3-4Error! Reference source not found.** and the full 2021 survey results are presented in **Annex 8.2B**.

Table 3-4. Obstructions and Observations recorded during Balmeanach Update Survey 2022: Alt Bhaile Mheadhonaich

Target note	Grid Reference (NGR)	Notes	Photo
15	132613, 844933	Above this point the burn disappears underground and goes into flushes and/or bogs. Scoped out for fish above this point. Not suitable fish habitat.	
16	132584, 844915	Burn cuts through peat hags with narrow, shallow channel.	

Target note	Grid Reference (NGR)	Notes	Photo
17	132478, 844422	Tributaries lead up into flushes and/or bogs. Scoped out for fish. Not suitable fish habitat.	
18	132489, 844222	Overhanging shrubs over the length of this stretch of burn.	

Target note	Grid Reference (NGR)	Notes	Photo
			
19	132535, 843775	Bedrock and boulder chute with gentle gradient. Possible fish barrier.	

Target note	Grid Reference (NGR)	Notes	Photo
20	132535, 843775	Long bedrock chute (c.20m length) with relatively steep gradient. Potential fish barrier.	 

4.0 Discussion and Conclusions

During the August 2022 target note survey, no significant differences to the earlier surveys (2019 or 2021) were recorded to any of the burns within the Scoping site boundary. At higher altitudes, all burns surveyed are deemed unsuitable for fish habitat due to channel dimensions, burns disappearing underground and/or disappearing into flushes and bogs. Burns located closer to the proposed site boundary were deemed moderate for fish species of conservation importance, due to changes in channel dimensions (deeper and wider).

The upper reaches of the Abhainn Choishleadar and Allt Storachan burns were surveyed with no obstructions noted. The 2019 report for Ben Sca[1] reports that the watercourses surveyed in 2022 are tributaries of the main Abhainn Choishleadar and Allt Storachan burns and are all graded as low habitat suitability for fish. This is due to the tributaries small and/or shallow channel dimensions, with predominantly peaty substrate. It is also noted that waterfalls downstream have the potential to act as an obstacle to fish migration and riverine movement. The Abhainn Choishleadar river is classed as Good in the Water Framework Directive (WFD)[6] indicating the river is in a good condition in terms of its ecology, general condition and level of pollutants and is likely more suited for fish beyond the site boundary.

One obstruction was noted within the Aketil Burn main watercourse with a bank slip into the main channel. This is within the higher reaches of the burn, where the burn disappears underground and is deemed as unsuitable habitat for fish. The 2021 surveys describe this burn as having moderate to good salmonid habitat, however, there is an unpassable waterfall c.6m high at NGR 132735, 845440, allowing for the assumption that migrating salmonids are not present within the watercourse above the observed waterfall. Below this point the burn is classed as good salmonid habitat within the site boundary. The Aketil Burn connects to the Caroy River below the site boundary which is classed as Good in the WFD and likely provides suitable fish habitat.

Within the Allt Ruairidh Burn, seven obstructions were recorded as the result of either a bank slip or a collapse. These obstructions were not previously recorded during the 2021 surveys and are believed to be obstructions to fish migration and riverine movement. During the 2021 surveys, it was noted that the tributaries and upper reaches of the Allt Ruairidh Burn were mostly moderate or poor salmonid habitat while the main watercourse was recorded to be good in the wider sections along the proposed site boundary. From the OS map several waterfalls are noted downstream of site before the Allt Ruairidh Burn joins the River Ose, these may form obstacles to migratory fish and reduce connectivity. The River Ose is classed as Good in the WFD and likely provides suitable fish habitat.

The Allt Bhaile Mheadhonaich is potentially suitable for fish at the proposed site boundary however there were two observed fish barriers in the form of two bedrock chutes. At present there is no site infrastructure proposed in this area. If infrastructure was to be proposed here, it is recommended that a dedicated fish habitat survey is undertaken to further inform the EIA and to inform suitable mitigation.

The River Ose, Caroy River and Abhainn Bhaile Mheadhonaich all connect to the sea loch; Loch Caroy, which connects to the larger Loch Bracadale to the South-west part of the Scoping site boundary. The Abhainn Choishleadar connects to sea loch; Loch Greshornish, located to the north of the site. While there are no protected areas for fish species with connectivity to site, Loch Bracadale has a High WFD classification and Loch Greshornish has a Good WFD classification indicating that the ecosystem in the lochs is in a good condition, pollution is low and their general condition is overall good. Therefore, suitable pollution control and mitigation during construction, to protect the watercourses onsite is paramount.

[6] Water Framework Directive (WFD) Waterbody Classification 2007-2020, SEPA. Available at: Water Classification Hub (sepa.org.uk)

130000 131000 132000 133000 134000 135000 136000

848000 847000 846000 845000

N

LEGEND

- Application Site Boundary
- Proposed Turbine Location
- Proposed Permanent Met Mast
- Proposed Crane Hardstanding
- Proposed Construction Compound
- Proposed Substation
- Proposed Turning Head
- Potential Borrow Pit
- Existing Access Track
- Consented Access Track

Proposed Track Alignment

- Proposed
- Proposed Option A
- Proposed Option A1
- Proposed Option A2
- Proposed Option B
- August 2022 Survey Area
- May 2021 Survey Area
- 2019 Ben Sca Fish Habitat Survey Area
- No Access Permission for Survey
- Watercourse
- Target Note

0 200 400 Metres

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TA 8.2 - FISH SURVEYS

SURVEY AREA AND TARGET NOTE LOCATIONS

FIGURE 8.2.1

Scale: 1:20,000 @ A3

Date: JULY 2023

11223.00001.0350.0 Figure 8.2.1 Survey Area and Target Note Locations

ANNEX 8.2A

ANNEX 8.2A

Relevant Ben Sca 2019 Fish Habitat Survey Results

Table A1
Results of Ben Sca Fish Habitat Survey 2019 for Burns Within the Balmeanach Site Boundary

Grid Reference (NGR)	Notes	Photo
134654, 847669	Small tributary of Abhainn Choishleadar, narrow <1m, up to 30cm deep at eastern end but disappears under peat and dries up at western end. Slow to moderate flow, with lack of riffles etc. The gradient is reasonably shallow. The banksides are vegetated by predominantly grasses. Mostly peaty substrate, with a general lack of stones and pebbles. No obvious obstacles to fish movement recorded within this section of tributary. Evidence of light grazing in area.	
133820, 848200	The upper reaches of a small tributary, Allt Storachan, which joins the more substantial Abhainn Choishleadar downstream (off-site to the north). The section within the site was completely dry at the time of survey. The substrate is predominantly peaty, and the bankside vegetation is dominated by grasses. Evidence of light grazing in area.	
133939, 848171	The upper reaches of a small tributary which joins the more substantial Abhainn Choishleadar downstream (off-site to the north). The watercourse was completely dry at the southern end and contained a very small amount of water (<10cm) where it continues off-site to the north. The bankside vegetation is dominated by grasses. The substrate is predominantly peaty, and the channel width is generally narrow (<1m). Evidence of light grazing in area.	

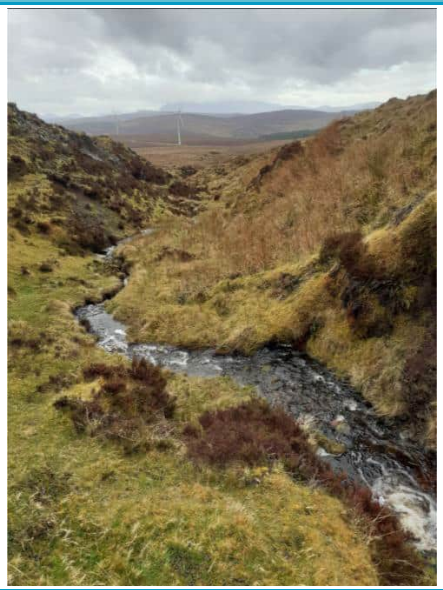
ANNEX 8.2B

ANNEX 8.2B

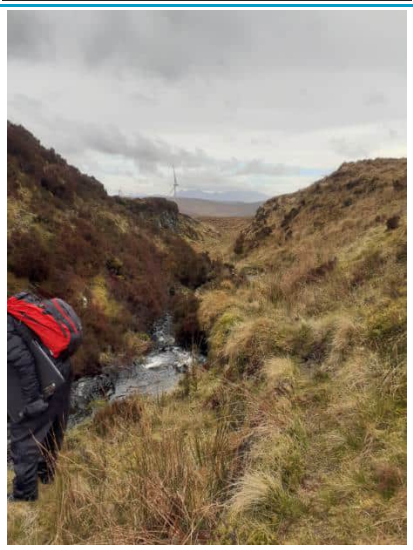
Balmeanach Fish Habitat Survey Results 2021

Table B1
Day 1 - Balmeanach Fish Habitat Survey: Habitat photos every 50m & Habitat Description

Location (NGR)	Photo	Habitat Description
1: 133852, 846312		Upstream of this location is mostly peat, sphagnum and bog so screened out for fish habitat suitability. Watercourse starts to take the form of a burn here with mostly boulder substrate and 30cm depth and 50cm width.
2: 133894, 846276		Substrate: Boulders & bedrock Width: 60cm Depth: 30cm Suboptimal salmonid habitat.

Location (NGR)	Photo	Habitat Description
3: 133921, 846244		Substrate: Boulders & bedrock Width: 80cm Depth: 30cm Suboptimal salmonid habitat.
4: 133942, 846205		Substrate: Boulders & bedrock Width: 80cm Depth: 30cm Suboptimal salmonid habitat.

Location (NGR)	Photo	Habitat Description
5: 133958, 846166		Unpassable barrier (no migratory fish upstream of here). Substrate: Boulders & bedrock Width: 1.5m Depth: 30cm Poor salmonid habitat.
6: 133986, 846114		Substrate: Boulders & bedrock Width: 1m Depth: 10cm Fast flowing, high gradient barrier to fish migration. Poor salmonid habitat.

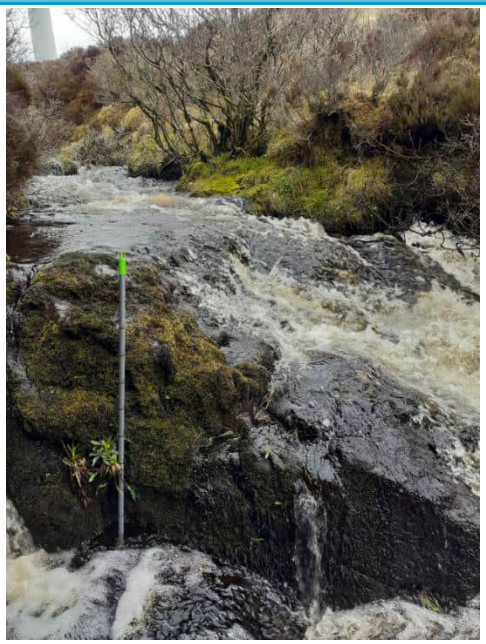
Location (NGR)	Photo	Habitat Description
7: 134003, 846074		Substrate: Boulders & bedrock Width: 1.5m Depth: 20cm Small tributary joining from the right bank. Suboptimal salmonid habitat.
8: 134031, 846017		Substrate: Boulders & bedrock Width: 1.5m Depth: 20cm Suboptimal salmonid habitat.
9: 134062, 845973		Substrate: Boulders & bedrock Width: 2m Depth: 40cm Bedrock chute (small barrier to migration) with small pool formation downstream. Poor salmonid habitat.

Location (NGR)	Photo	Habitat Description
10: 134099, 845905		Substrate: Bedrock & boulders Width: 30cm Depth: 30cm Boulders with peat and gravel in between, deep undercut on both sides (20cm). Beyond bank full (submerged grass). Suboptimal salmonid habitat.
11: 134127 845858		Substrate: Bedrock & boulders Width: 30cm Depth: 30cm Boulders with patches of gravel, deep undercut on both sides (20cm). Beyond bank full (submerged grass). Suboptimal salmonid habitat.
12: 134161, 845786		Substrate: Bedrock & boulders Width: 70cm Depth: 20cm Suboptimal salmonid habitat.

Location (NGR)	Photo	Habitat Description
13: 134177, 845751		Substrate: Boulders & cobbles Width: 70cm Depth: 20cm Good salmonid habitat (parr).
14: 134193, 845687		Substrate: Boulders & cobbles Width: 1m Depth: 20cm Good salmonid habitat (parr).

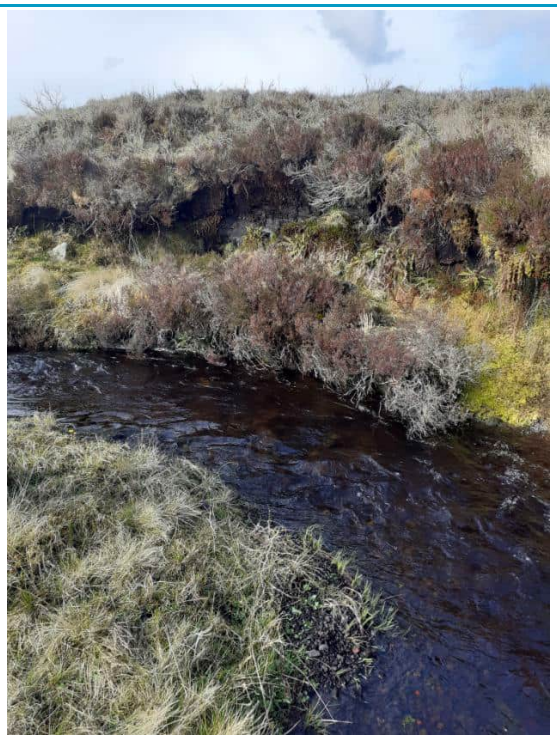
Location (NGR)	Photo	Habitat Description
15: 134231 845584		Substrate: Cobbles & gravel Width: 50cm Depth: 30cm Good salmonid habitat.
16: 134260 845449		Substrate: Cobbles & gravel Width: 1m Depth: 30cm Good salmonid habitat.

Location (NGR)	Photo	Habitat Description
17: 134299, 845373		Substrate: Boulders & cobbles Width: 70cm Depth: 30cm Good salmonid habitat (parr).
18: 134336, 845333		Substrate: Boulders & cobbles Width: 70cm Depth: 20cm Confluence that becomes Allt Ruairidh and joins site boundary. Good salmonid habitat (parr).

Location (NGR)	Photo	Habitat Description
19: 134387, 845360		Substrate: Bedrock Width: 2m Depth: 10cm Steep gradient, barrier to migration. Suboptimal salmonid habitat.
20: 134430, 845373		Substrate: Boulders & cobbles Width: 2m Depth: 30cm Good salmonid habitat (parr).

Location (NGR)	Photo	Habitat Description
21: 134538, 845444		Substrate: Boulders & cobbles Width: 2m Depth: 30cm Good salmonid habitat (parr).
22: 134527, 845496		Substrate: Boulders & cobbles Width: 2m Depth: 30cm Good salmonid habitat (parr).

Location (NGR)	Photo	Habitat Description
23: 134529, 845549		Substrate: Cobbles & pebbles Width: 2m Depth: 30cm Good salmonid habitat (parr).
24: 134525, 845608		Substrate: Cobbles & gravel Width: 2.5m Depth: 30cm Good salmonid habitat.

Location (NGR)	Photo	Habitat Description
25: 134494, 845658		Substrate: Cobbles & patches of gravel Width: 3m Depth: 40cm Trees present on both sides of river, good for fish cover. Good salmonid habitat.
26: 134477, 845737		Substrate: Cobbles, pebbles & patches of gravel Width: 2.5m Depth: 40cm Good salmonid habitat.

Location (NGR)	Photo	Habitat Description
27: 134455, 845797		Substrate: Cobbles, pebbles soft muddy/peat Width: 2.5m Depth: 20cm Good salmonid habitat.
28: 134419, 845844		Substrate: Soft, muddy/peat Width: 40cm Depth: 20cm Aquatic vegetation upstream/beginning to flatten out and more rushes seen as well as sphagnum sp. Suboptimal salmonid habitat.

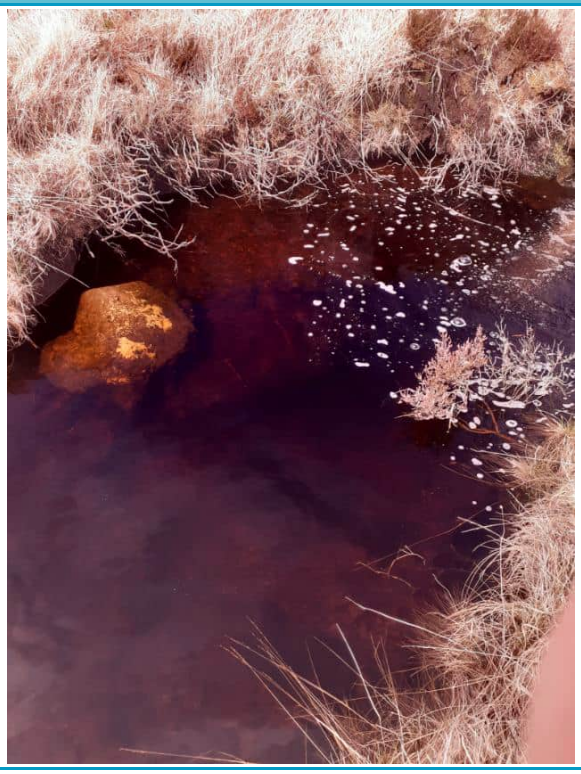
Location (NGR)	Photo	Habitat Description
29: 134431, 845930		Substrate: Soft, muddy/peat Width: 30cm Depth: 20cm More rushes seen as well as sphagnum sp. Suboptimal salmonid habitat.
30: 134429, 845958		No more flowing water, screened off tributaries upstream on OS map

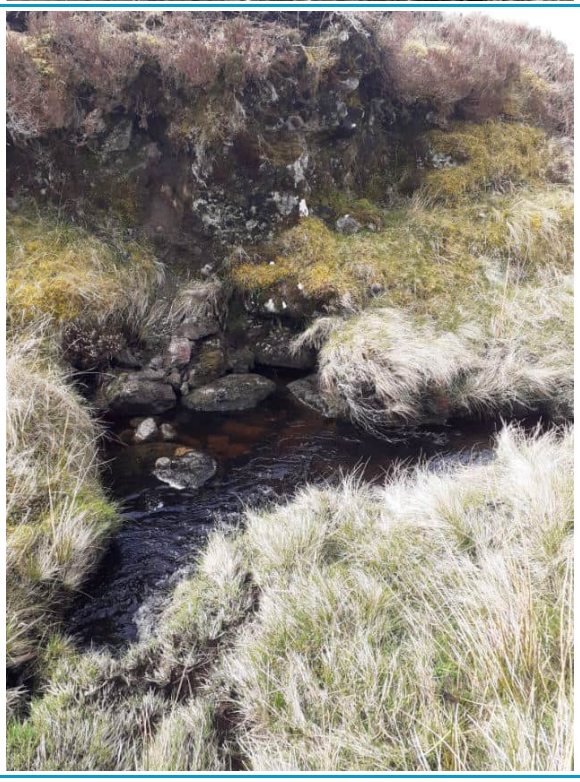
Location (NGR)	Photo	Habitat Description
		Day 1 (kml file available) Allt Ruairidh catchment

Day 2 - Balmeanach Fish Habitat Survey: Habitat photos every 50m & Habitat Description

Location (NGR)	Photo	Habitat Description
31: 133089 846152		Substrate: Boulders Width: 60cm Depth: 20cm Springs/water course present upstream over and below ground (screened off). Suboptimal salmonid habitat.
32: 133115 846102		Substrate: Boulders Width: 20cm Depth: 20cm Deep undercut, with running water, ephemeral. Suboptimal salmonid habitat.

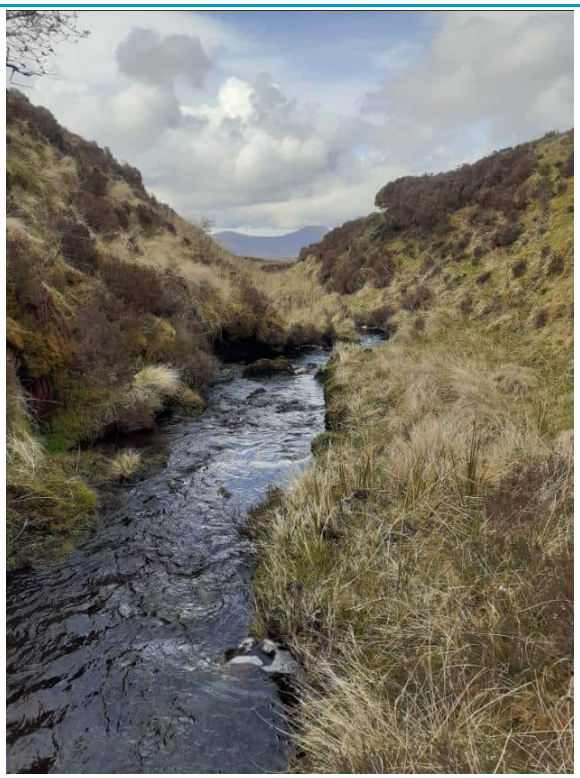
Location (NGR)	Photo	Habitat Description
33: 133149, 846036		Substrate: Boulders, patches of peat/gravel Width: 1m Depth: 20cm Suboptimal salmonid habitat.
34: 133166, 845976		Substrate: Boulders, patches of peat/gravel Width: 1m Depth: 20cm Suboptimal salmonid habitat, slow flowing water and little cover.

Location (NGR)	Photo	Habitat Description
35: 133193, 845929		Substrate: Soft, muddy/peat Depth: 60cm Suboptimal salmonid habitat, slow flowing water and little cover.
		No GPS signal/misplaced photos: photos placed by notes, and timestamp in this area.
36: 133196, 845874		Substrate: Bedrock Width: 80cm Depth: 10cm Small bedrock waterfall, barrier to migration. Suboptimal salmonid habitat.

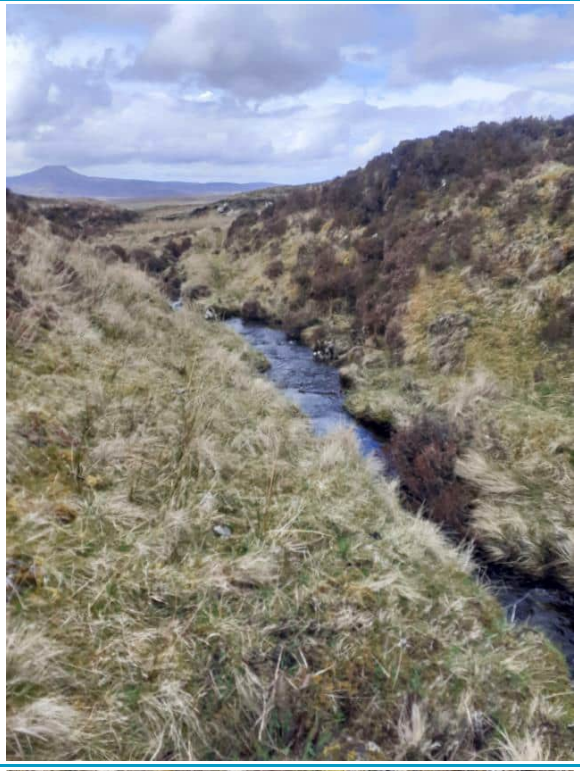
Location (NGR)	Photo	Habitat Description
37: 133190, 845829		Substrate: Bedrock/boulder Width: 80cm Depth: 10cm Suboptimal salmonid habitat.
38: 133192, 845784		Substrate: Boulders & cobble Width: 1m Depth: 30cm Good salmonid habitat (parr).

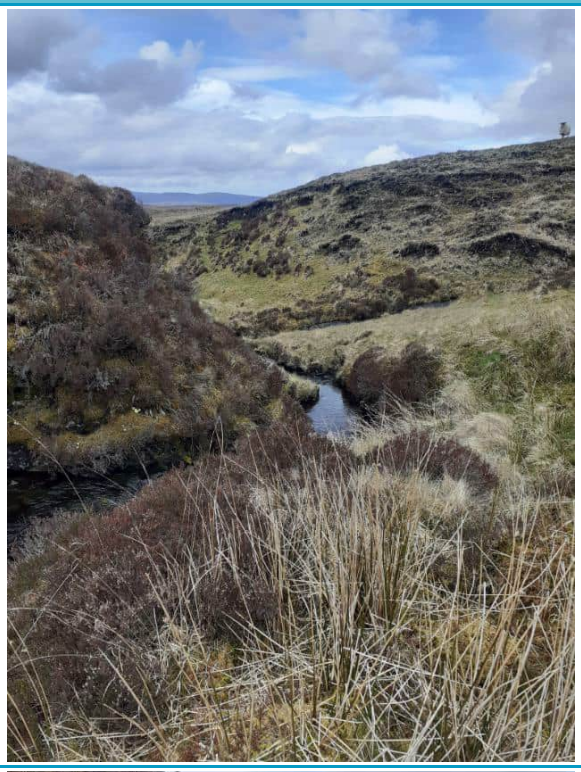
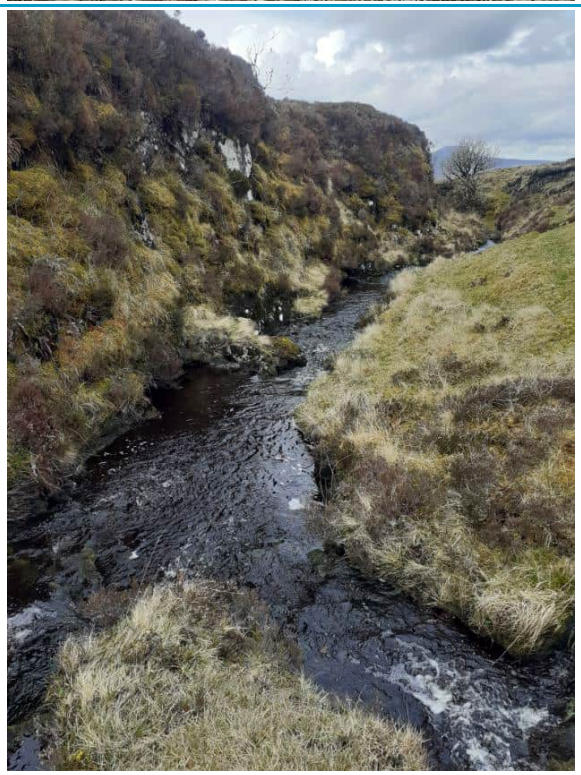
Location (NGR)	Photo	Habitat Description
39: 133207, 845734		Substrate: Boulders & patches of gravel Width: 80cm Depth: 20cm Good salmonid habitat (parr).
40: 133218, 845682		Substrate: Cobbles & patches of gravel Width: 50cm Depth: 20cm Good salmonid habitat (parr).

Location (NGR)	Photo	Habitat Description
41: 133237, 845632		Substrate: Bedrock & boulders Width: 60cm Depth: 10cm Small bedrock waterfall, barrier to migration. Suboptimal salmonid habitat.
42: 133236, 845584		Substrate: Boulders & Cobbles Width: 1m Depth: 20cm Good salmonid habitat (parr).

Location (NGR)	Photo	Habitat Description
43: 133183, 845565		Substrate: Boulders & cobbles Width: 1.5m Depth: 30cm Good salmonid habitat (parr).
44: 133130, 845542		Substrate: Boulders & cobbles Width: 1.5m Depth: 20cm Good salmonid habitat (parr).

Location (NGR)	Photo	Habitat Description
45: 133076, 845529		Substrate: Boulders Width: 1m Depth: 10cm Suboptimal salmonid habitat.
46: 133027, 845507		Substrate: Boulders Width: 1m Depth: 10cm Suboptimal salmonid habitat.

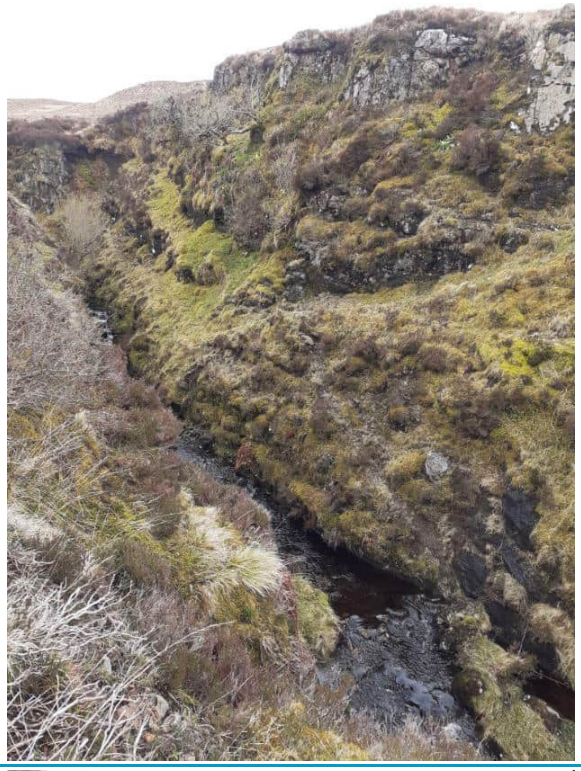
Location (NGR)	Photo	Habitat Description
47: 132980, 845481		Substrate: Boulders & cobbles Width: 1.5m Depth: 20cm Good salmonid habitat (parr).
48: 132922, 845474		Substrate: Boulders & cobbles Width: 1m Depth: 30cm Good salmonid habitat (parr).

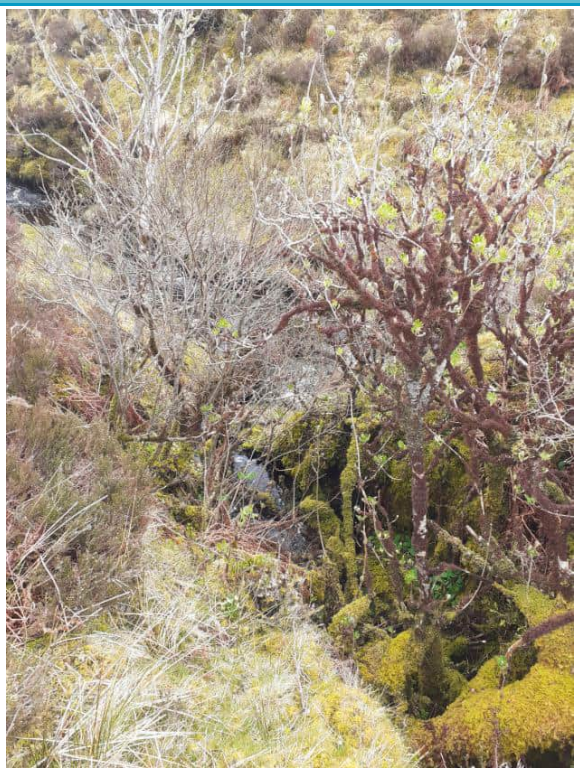
Location (NGR)	Photo	Habitat Description
49: 132873, 845463		Substrate: Boulders & cobbles Width: 90cm Depth: 20cm Good salmonid habitat (parr).
50: 132838, 845471		Substrate: Boulders & cobbles Width: 1.5m Depth: 20cm Good salmonid habitat (parr). Confluence with small tributary on right bank.

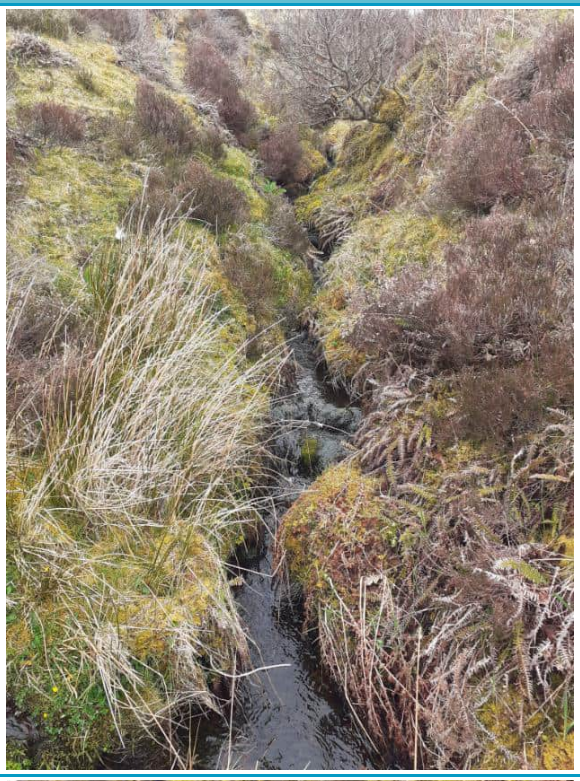
Location (NGR)	Photo	Habitat Description
51: 132837, 845521		**Substrate: Boulders & bedrock** **Width: 50cm** **Depth: 20cm** **Suboptimal salmonid habitat.**
52: 132857, 845561		**Substrate: Boulders & bedrock** **Width: 50cm** **Depth: 20cm** **Suboptimal salmonid habitat.**

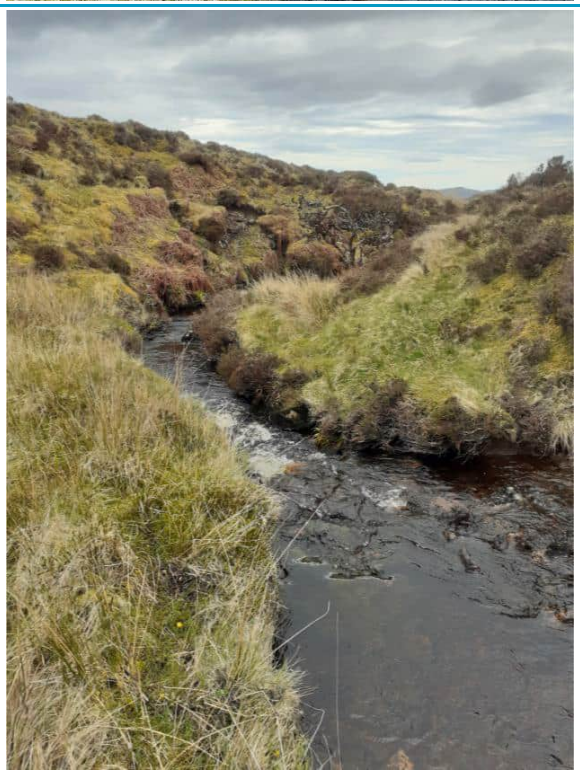
Location (NGR)	Photo	Habitat Description
53: 132841, 845609		Substrate: Boulders & bedrock Width: 1m Depth: 30cm Suboptimal salmonid habitat.
54: 132842, 845654		Substrate: Boulders & bedrock Width: 50cm Depth: 5cm Suboptimal salmonid habitat. Iron ochre present, top of tributary.

Location (NGR)	Photo	Habitat Description
55: 132788, 845456		Substrate: Boulders, cobble & patches of gravel Width: 1m Depth: 20cm Good salmonid habitat (parr). Continuing on main watercourse before going up to look at the tributary.
56: 132735, 845440		Substrate: bedrock Width: 2m Depth: 10cm Unpassable barrier, could not access at this point for the next 100+ metres. Suboptimal salmonid habitat.

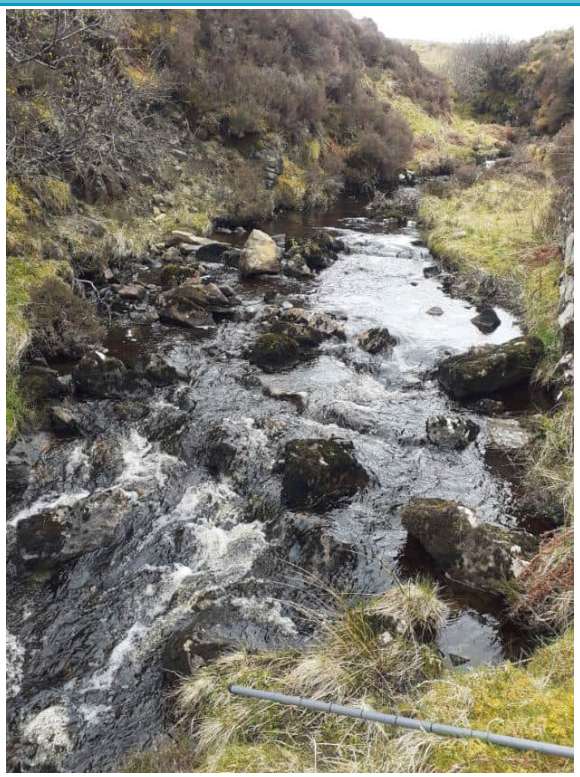
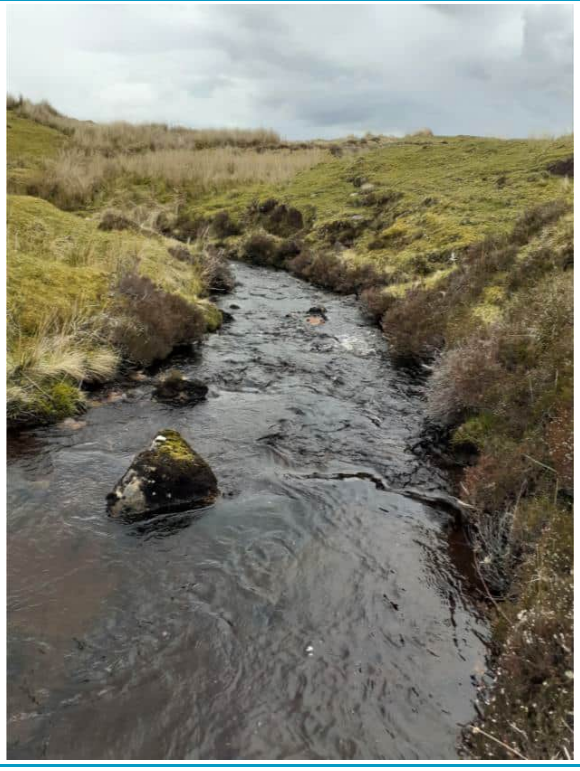
Location (NGR)	Photo	Habitat Description
57: 132685, 845435		Substrate: bedrock/boulders/cobbles Width: 2m Depth: 20cm Could not access at this point for the next 50+ metres due to steep gorges. Potentially good salmonid habitat.
58: 132634, 845430		Substrate: bedrock/boulders/cobbles Width: 2m Depth: 20cm Could not access at this point for the next 50+ metres due to steep gorges. Potentially good salmonid habitat.

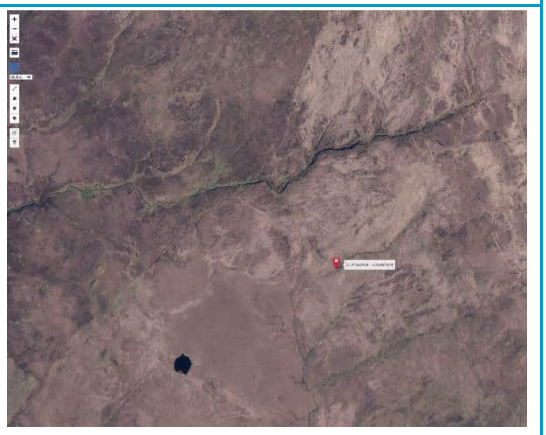
Location (NGR)	Photo	Habitat Description
59: 132589, 845429		Substrate: bedrock/boulders/cobbles Width: 2m Depth: 20cm Could not access at this point for the due to steep gorges/thick vegetation. Potentially good salmonid habitat.
60: 132551, 845416		Substrate: Soft, muddy Width: 50cm Depth: 20cm Small tributary on right bank, though not accessible to migratory fish (2m waterfall and not much flow in high water). Suboptimal salmonid habitat.

Location (NGR)	Photo	Habitat Description
61: 132567, 845462		Substrate: Soft, muddy Width: 50m Depth: 20cm Tributary disappearing below ground so everything upstream screened out. Suboptimal salmonid habitat.
62: 132519, 845370		Substrate: Boulders, cobble (mostly) & patches of gravel Width: 3m Depth: 20cm Good salmonid habitat (parr). Continuing on main watercourse before going up to look at the tributary.

Location (NGR)	Photo	Habitat Description
63: 132479, 845333		Substrate: Boulders & cobble Width: 1m Depth: 20cm Good salmonid habitat (parr).
64: 132433, 845311		Substrate: Cobbles Width: 2m Depth: 20cm Good salmonid habitat (parr).

Location (NGR)	Photo	Habitat Description
65: 132392, 845263		Substrate: Cobbles Width: 1m Depth: 20cm Good salmonid habitat (parr).
66: 132309, 845314		Substrate: Boulder & cobbles Width: 1.5m Depth: 20cm Good salmonid habitat (parr). Good coverage from willow trees and well oxygenated.

Location (NGR)	Photo	Habitat Description
67: 132220, 845313		Substrate: Boulder & cobbles Width: 2m Depth: 20cm Good salmonid habitat (parr).
68: 132093, 845293		Substrate: Boulder & cobbles Width: 2m Depth: 20cm Good salmonid habitat (parr).

Location (NGR)	Photo	Habitat Description
		Aketil Burn catchment and photo locations.
69: 132603, 844936		 Allt Bhaile Mheadhonaich catchment screened out (even at site boundary -the most downstream section to be surveyed- was ephemeral/boggy).

Location (NGR)	Photo	Habitat Description
70: 133645, 845357		 **Western Allt Ruairidh section screened out, low gradient bog, no flowing water despite previous heavy rainfall.**

Photos clustered together due to poor GPS signal, so photos were assigned to areas using timestamp, see below yellow surveyed areas that have their photos assigned in clusters of signal.

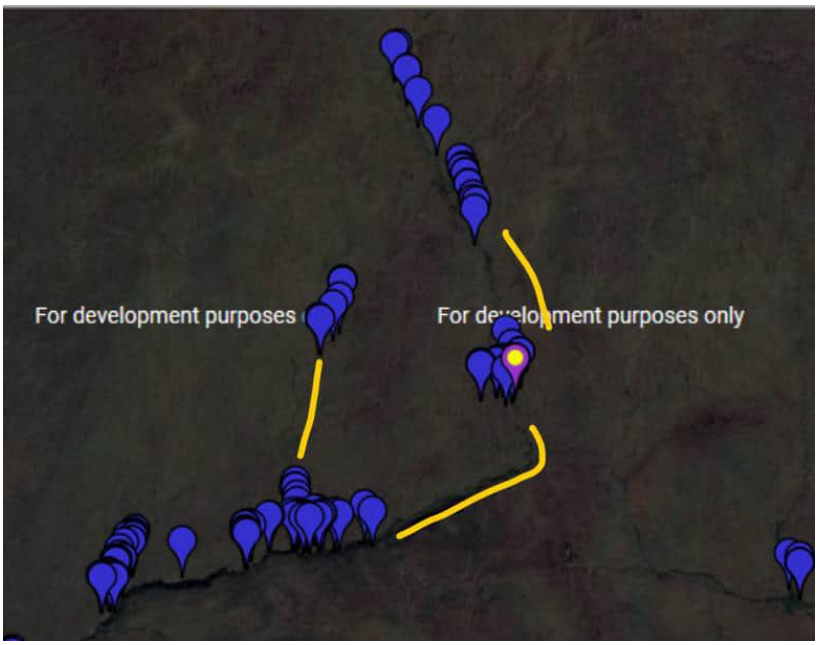



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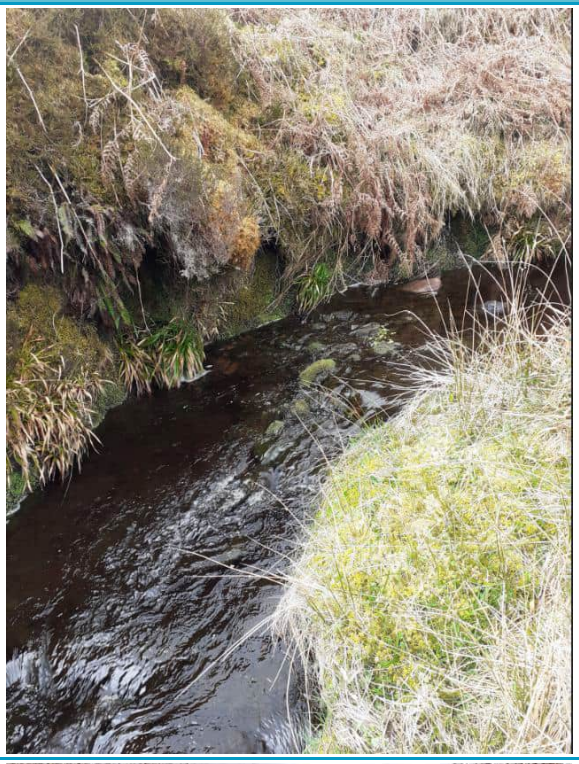
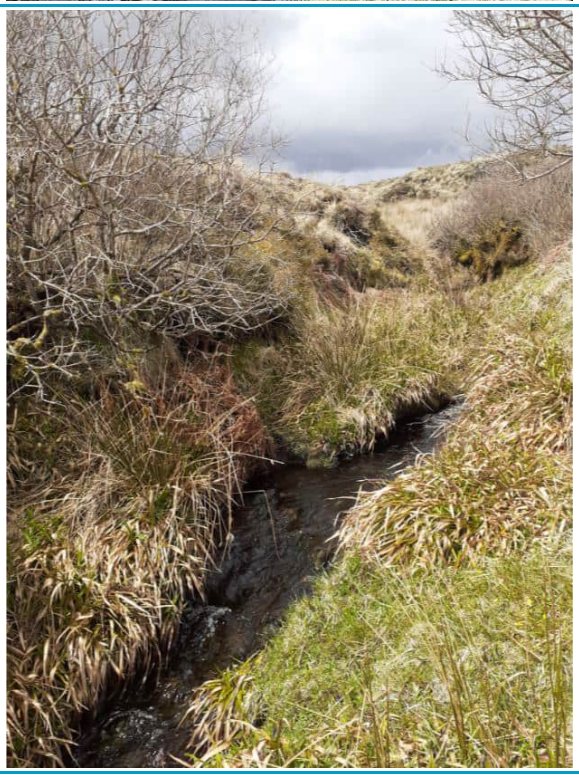
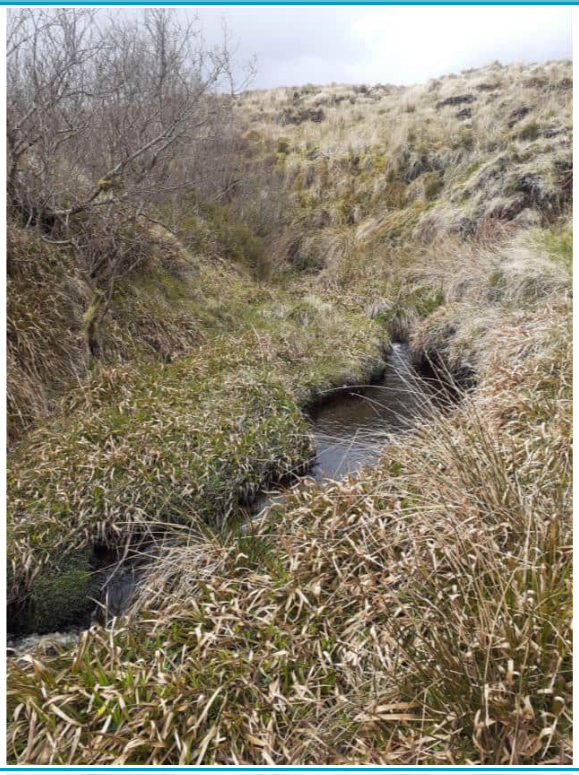
Table B3
Day 3 - Balmeanach Fish Habitat Survey: Habitat photos every 50m & Habitat Description

Location	Photo	Habitat Description
71: 134669, 846437		Eastern site boundary section of Allt Ruairidh catchment screened out, rushes and bog, no flow.
72: 134442, 846338		Screened out marsh/bog.

Location	Photo	Habitat Description
73: 134489, 845984		Substrate: Boulder & cobbles Width: 1.5m Depth: 20cm Good salmonid habitat (parr).
74: 134439, 845962		Substrate: Boulder & cobbles Width: 1.5m Depth: 20cm Good salmonid habitat (parr).

Location	Photo	Habitat Description
75: 133980, 845113		Substrate: Boulder & cobbles Width: 1.5m Depth: 30cm Good salmonid habitat (parr). Different watercourse.
76: 133945, 845151		Substrate: Cobbles Width: 70cm Depth: 10cm Good salmonid habitat (parr). Good coverage from trees.

Location	Photo	Habitat Description
77: 133917, 845193		Substrate: Cobbles & boulders Width: 90cm Depth: 10cm Good salmonid habitat (parr).
78: 133873, 845226		Substrate: Cobbles & boulders Width: 90cm Depth: 10cm Good salmonid habitat (parr).

Location	Photo	Habitat Description
79: 133824, 845234		Substrate: Cobbles & boulders Width: 90cm Depth: 10cm Good salmonid habitat (parr). Good shading from trees.
80: 133772, 845225		Substrate: Fine gravels/muddy Width: 40cm Depth: 20cm Suboptimal salmonid habitat.

Location	Photo	Habitat Description
81: 133745, 845269		Substrate: Fine gravels/muddy Width: 20cm Depth: 20cm Suboptimal salmonid habitat. Cutting down into the earth, deep undercut on both sides and beyond bank full (submerged grass).
82: 133719, 845313		Substrate: Fine gravels/muddy Width: 20cm Depth: 20cm Suboptimal salmonid habitat.

Location	Photo	Habitat Description
83: 133654, 845344		From satellite imagery, looks like a confluence but it has no flow and is boggy so screened out.
		Photo locations along surveyed area

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