



Appendix 9D

Electrofishing Survey 2018





**STORNOWAY WIND FARM
FULLY QUANTITATIVE ELECTROFISHING SURVEY**

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1 INTRODUCTION

1.1 Background

Mhor Ecology Ltd was commissioned by Wood Environment & Infrastructure Solutions UK Limited to undertake fully quantitative electrofishing surveys at 19 locations, with respect to the Stornoway Wind Farm development (hereafter referred to as the Site).

1.2 Site Description

The Stornoway Wind Farm is located 2km to the west of the town of Stornoway in an area close to three existing wind farm sites. The watercourses that flow across and within close proximity to the Site are part of the Creed, Glen, Tope and Laxdale Catchment areas.

1.3 Sampling Locations

A total of nineteen sites were selected in relation to the previous surveys carried out in 2010¹. Grid references have been provided from the downstream end of each survey site. See Appendix A for site map and Appendix D for photographs.

The nineteen sites included:

1. Site CRE01 (Creed Catchment) - NB 40250 32480;
2. Site CRE03 (Creed Catchment) - NB 38730 32260;
3. Site CRE05 (Creed Catchment) - NB 36800 32135;
4. Site CRE06 (Creed Catchment) – NB 35170 32170;
5. Site CRE08 (Creed Catchment) – NB 35594 31279;
6. Site CRE09 (Creed Catchment) – NB 37560 31470;
7. Site CRE10 (Creed Catchment) - NB 37655 31172;
8. Site CRE13 (Creed Catchment) – NB 36800 30900;
9. Site CRE14 (Creed Catchment) – NB 37565 30805;
10. Site CRE16 (Creed Catchment) – NB 35450 30605;
11. Site CRE17 (Creed Catchment) – NB 37510 30272;
12. Site GLE01 (Glen Catchment) – NB 39301 33935;
13. Site GLE02 (Glen Catchment) - NB 38093 33811;
14. Site GLE03 (Glen Catchment) - NB 40498 34293;
15. Site LAX01 (Laxdale Catchment) - NB 39716 35250;
16. Site LAX02 (Laxdale Catchment) – NB 38638 36008;
17. Site TOP01 (Tope Catchment) - NB 40360 29230;
18. Site TOP02 (Tope Catchment) - NB 39725 29200; and
19. Site TOP03 (Tope Catchment) - NB 38325 29150.

¹ Appendix 13 of the Stornoway Wind Farm Environmental Statement (2011).

1.4 Sampling Guidelines

Best practice Scottish Fisheries Co-ordination Centre (SFCC) procedures and guidelines² were adhered to and will be adhered to throughout future monitoring requirements.

1.5 Licencing

All electrofishing surveys were licenced by Marine Scotland under The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 (Sections 27 & 28) and The Freshwater Fish Conservation (Prohibition on Fishing for Eels) (Scotland) Regulations 2008. This allows a provision to take fish species for scientific purposes by certain methods which would normally constitute an offence. The surveys were completed under licence number CMS-18-102.

As part of the licence conditions the licence holder must notify the relevant District Salmon Fisheries Board (DSFB) one week prior to electrofishing in migratory salmonid watercourses. Notification to the Western Isles DSFB was given by email on the 12th September 2018.

2 OBJECTIVES

The overall objective of the study was to undertake fish fauna surveys at sites within and in close proximity to the Site. This baseline survey report will present an evaluation of the survey results and include recommendations for ongoing monitoring. A temporal comparison of the 2010 electrofishing survey results for this Site is included.

3 METHODS

3.1 Desktop Study

A detailed desktop study was undertaken to identify any statutory, non-statutory or designated / classified sites, relevant to the aquatic environment, within the study area (Appendix A). The following web-based sources were utilised for this:

- Scottish Natural Heritage (SNH) website (www.gateway.snh.gov.uk) - information provided here covered the location of any designated sites, statutorily protected species or habitats;
- Scottish Environment Protection Agency (SEPA) website (www.sepa.org.uk) - information provided here covered classified and designated waterbodies under the Water Framework Directive (WFD) and Freshwater Fish Directive (FFD);
- National Biodiversity Network (NBN) (www.searchnbn.net) – information provided here covered localised species records, and focused on legally protected and ecologically significant species; and
- Google earth (<http://earth.google.co.uk>) – satellite imagery provided detailed maps used during fieldwork.

3.2 Dates and Survey Conditions

Electrofishing Surveys were conducted between the 24th and 29th September 2018. Based on professional opinion survey conditions were moderate with normal to very high water

² SFCC (2007) - Fisheries Management SVQ Level 2 & Level 3 – Catch Fish Using Electrofishing Techniques & Manage Electrofishing Operations.

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levels and good (moderate in places) water clarity. Water levels at CRE09, TOP02 and TOP03 were classed as high, CRE08, CRE16 and LAX02 was classed as very high.

3.3 Limitations of Electrofishing Surveys

The SFCC method of electrofishing was primarily developed to survey juvenile salmonids in relatively shallow running water. Non-salmonid fish species may be present and caught during these surveys, but their populations may not be properly determined using this method of electrofishing.

Electrofishing may not capture all the fish in a survey site so densities presented in this report are an estimate (either a minimum estimate, or where possible the calculation of a Zippin³ estimate, has been presented, see Section 4.1) of the juvenile salmonid population residing within the site. The absence of fish cannot be ascertained with certainty using electrofishing techniques so a density of zero does not always guarantee these fish are altogether absent from this section of watercourse.

A low density of fish can be assessed with electrofishing techniques however it is harder to fully assess the actual population density of the watercourse or the representative site. If there is a low and patchy distribution of fish it may be harder to draw conclusions from the data.

3.4 Fish Fauna

3.4.1 Electrofishing

Electrofishing surveys were carried out by a fully qualified team from Mhor Ecology Ltd, led by Leigh Kelly BA MRes (licence holder - CMS-18-102) and in full accordance with SFCC protocols. Fully quantitative methods were adopted; fully quantitative surveys use a multiple run approach and estimates of fish abundance were based on fish depletion during successive runs. Fully quantitative surveys are area based and calculate the number of fish per 100m² as per SFCC guidelines, the data collected can then be compared to other data collected year on year. For example; before, during and after construction. All fish caught were anaesthetised for processing, identified (species) and measured (fork length). Other non-salmonid species were recorded but not measured.

3.4.2 Fisheries Habitat

At each electrofishing site a detailed habitat assessment using SFCC protocol is made of the instream habitat available for juvenile and adult fish. This assessment grades the cover available to salmonids instream as none, poor, moderate, good or excellent. This grading provides an index of instream cover where diverse substrate compositions will score more favourably than areas of uniform substrate which provides lower levels of cover.

In accordance with SFCC protocols, percentage estimates of depths, substrate type and flow type are made at each electrofishing site. Additionally, percentage estimates of the quantity of the bankside cover features such as undercut banks, draped vegetation, bare banks and marginal vegetation are made. For more detailed SFCC habitat survey methodology, see Appendix C.

Further analysis was undertaken and evaluations were made for modifications and utilisation potential (juvenile and adult fish), and fisheries habitat quality along the watercourse (notably related to providing suitable instream and bankside cover for fish).

³ Zippin, C. (1956) An evaluation of the removal method of estimating animal populations, Biometrics.

When reference to left or right bank is made, it is always left and right bank when facing downstream. Photographs of each site were taken to allow the exact area of river to be identified in future surveys.

3.4.3 Age Class

The electrofishing survey concentrated on assessing the status of juvenile salmonid species, namely Atlantic salmon (*Salmo salar* L.) and brown trout (*Salmo trutta* L.). In the majority of cases age determination can be made by assessment of the length of fish present. However, with older fish it is more difficult to clarify age classes. In these cases a small number of scale samples are taken from fish, in addition to length assessments, to verify the ages of fish whose age cannot be determined with certainty from the length (Appendix B). In this survey, juvenile salmonids are differentiated into fry (0+) and parr (1++) age groups.

3.4.4 Analysis

Densities of fish were calculated separately for fry (young of the year) and parr for salmon and trout. Estimates of minimum density were calculated by dividing the number of fish caught by the area of habitat surveyed. Zippin corrections were applied where appropriate using the Removal Sampling II software (Pisces conservation)⁴. To provide a guide to the relative abundance of salmonid fish sampled during the survey, fish densities were classified per the SFCC classifications scheme⁵ Outer Hebrides region (Appendix B). Godfrey's classification scheme is area based and calculated on a one-run approach, therefore classification for this survey is based only on the first pass of the multi-run approach. Grading from very poor through to excellent are given for abundance within each quintile range and absent for no fish caught.

4 RESULTS

4.1 Fish Fauna

Table 4.1 presents fish fauna data for September 2018, minimum density classification per the SFCC classifications scheme⁵, and population estimate using Zippin³ where possible.

Table 4.1: Fish Fauna Results, Classification and Population Estimates

Site Code	*Grid Reference	Fish Density & Species	Length (mm)	Classification ⁵ (Based on 1 st pass)	Population Estimate ³
CRE01	NB 40250 32480	Salmon Fry: 16 Salmon Parr: 8 Trout fry: 1 Trout parr: 1	Salmon Fry: 52-66 Salmon Parr: 92-133 Trout fry: 66 Trout parr: 98	Salmon Fry: Excellent Salmon Parr: Good Trout fry: Good Trout parr: Good	Salmon Fry: 18.16 Salmon Parr: 8.28 Trout fry: 1 (Actual Catch) Trout parr: 1 (Actual Catch)
CRE03	NB 38730 32260	Salmon Fry: 27 Salmon Parr: 10 Trout fry: 1	Salmon Fry: 50-75 Salmon Parr: 96-130 Trout fry: 66	Salmon Fry: Excellent Salmon Parr: Good	Salmon Fry: 28.24 Salmon Parr: 10.89 Trout fry: 1 (Actual Catch)

⁴ Seaby, R.M.H. & Henderson, P.A. (2008) Population Estimation by Removal Sampling. Version 2.2.2.22, Pisces Conservation, Hampshire.

⁵ Godfrey (2005) Site Condition Monitoring of Atlantic Salmon SACs. SFCC to Scottish Natural Heritage, Contract F02AC608.

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Site Code	*Grid Reference	Fish Density & Species	Length (mm)	Classification ⁵ (Based on 1 st pass)	Population Estimate ³
				Trout fry: Good	
CRE05	NB 36800 32135	Salmon Fry: 34 Salmon Parr: 24 Trout fry: 1 Trout parr: 1	Salmon Fry: 57-77 Salmon Parr: 94-129 Trout fry: 79 Trout parr: 101	Salmon Fry: Excellent Salmon Parr: Excellent Trout fry: Good Trout parr: Good	Salmon Fry: 38.48 Salmon Parr: 26.14 Trout fry: 1 (Actual Catch) Trout parr: 1 (Actual Catch)
CRE06	NB 35170 32170	Salmon Fry: 9 Salmon Parr: 6 Trout fry: 1 Trout parr: 1	Salmon Fry: 60-68 Salmon Parr: 89-110 Trout fry: 68 Trout parr: 116	Salmon Fry: Poor Salmon Parr: Poor Trout fry: Very Poor Trout parr: Very Poor	Salmon Fry: 10.16 Salmon Parr: 6.54 Trout fry: 1 (Actual Catch) Trout parr: 1 (Actual Catch)
CRE08	NB 35594 31279	Trout fry: 2 Trout parr: 1	Trout fry: 71-74 Trout parr: 115	Trout fry: Very Poor Trout parr: Very Poor	Trout fry: 2 (Actual Catch) Trout parr: 1 (Actual Catch)
CRE09	NB 37560 31470	Salmon Parr: 4 Trout fry: 27 Trout parr: 1	Salmon Parr: 92-105 Trout fry: 40-65 Trout parr: 183	Salmon Parr: Very Poor Trout fry: Excellent Trout parr: Very Poor	Salmon Parr: 4.04 Trout fry: 28.63 Trout parr: 1 (Actual Catch)
CRE10	NB 37655 31172	Trout fry: 23 Trout parr: 4	Trout fry: 40-62 Trout parr: 95-139	Trout fry: Excellent Trout parr: Moderate	Trout fry: 25.37 Trout parr: 4.04
CRE13	NB 36800 30900	Salmon Fry: 6 Trout fry: 29 Trout parr: 5	Salmon Fry: 47-59 Trout fry: 34-59 Trout parr: 69-155	Salmon Fry: Very Poor Trout fry: Excellent Trout parr: Moderate	Salmon Fry: 7.58 Trout fry: 30.40 Trout parr: 5.03
CRE14	NB 37565 30805	Trout fry: 22 Trout parr: 3	Trout fry: 50-75 Trout parr: 106-114	Trout fry: Excellent Trout parr: Poor	Trout fry: 23.93 Trout parr: 3.07
CRE16	NB 35450 30605	Salmon Parr: 2 Trout fry: 3 Trout parr: 2	Salmon Parr: 111-113 Trout fry: 63-68 Trout parr: 111-114	Salmon Parr: Very Poor Trout fry: Poor Trout parr: Very Poor	Salmon Parr: 2 (Actual Catch) Trout fry: 3.07 Trout parr: 2.18
CRE17	NB 37510 30272	Trout fry: 13 Trout parr: 1	Trout fry: 58-74 Trout parr: 103	Trout fry: Good Trout parr: Very Poor	Trout fry: 13.89 Trout parr: 1 (Actual Catch)

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Site Code	*Grid Reference	Fish Density & Species	Length (mm)	Classification ⁵ (Based on 1 st pass)	Population Estimate ³
GLE01	NB 39301 33935	Trout fry: 37 Trout parr: 9	Trout fry: 58-77 Trout parr: 99-163	Trout fry: Excellent Trout parr: Good	Trout fry: 43.14 Trout parr: 10.16
GLE02	NB 38093 33811	Trout fry: 18 Trout parr: 6	Trout fry: 59-69 Trout parr: 83-110	Trout fry: Good Trout parr: Moderate	Trout fry: 19.61 Trout parr: 6.54
GLE03	NB 40498 34293	Trout fry: 14 Trout parr: 5	Trout fry: 71-88 Trout parr: 110-170	Trout fry: Good Trout parr: Moderate	Trout fry: 14.75 Trout parr: 5.03
LAX01	NB 39716 35250	Salmon Fry: 15 Salmon Parr: 6 Trout fry: 1 Trout parr: 1	Salmon Fry: 55-75 Salmon Parr: 93-106 Trout fry: 68 Trout parr: 113	Salmon Fry: Excellent Salmon Parr: Good Trout fry: Good Trout parr: Good	Salmon Fry: 17.58 Salmon Parr: 6.15 Trout fry: 1 (Actual Catch) Trout parr: 1 (Actual Catch)
LAX02	NB 38638 36008	Trout parr: 3	Trout parr: 104-114	Trout parr: Moderate	Trout parr: 3 (Actual Catch)
TOP01	NB 40360 29230	Salmon Fry: 26 Salmon Parr: 15 Trout fry: 1 Trout parr: 1	Salmon Fry: 52-80 Salmon Parr: 83-111 Trout fry: 75 Trout parr: 168	Salmon Fry: Excellent Salmon Parr: Good Trout fry: Very Poor Trout parr: Very Poor	Salmon Fry: 26.22 Salmon Parr: 16.06 Trout fry: 1 (Actual Catch) Trout parr: 1 (Actual Catch)
TOP02	NB 39725 29200	Salmon Fry: 4 Salmon Parr: 11 Trout fry: 5 Trout parr: 6	Salmon Fry: 66-68 Salmon Parr: 96-117 Trout fry: 60-75 Trout parr: 108-245	Salmon Fry: Very Poor Salmon Parr: Poor Trout fry: Moderate Trout parr: Moderate	Salmon Fry: 4.04 Salmon Parr: 13.38 Trout fry: 5.03 Trout parr: 6.15
TOP03	NB 38325 29150	Salmon Fry: 1 Salmon Parr: 2 Trout fry: 23 Trout parr: 2	Salmon Fry: 63 Salmon Parr: 105-112 Trout fry: 47-72 Trout parr: 205-248	Salmon Fry: Very Poor Salmon Parr: Very Poor Trout fry: Excellent Trout parr: Poor	Salmon Fry: 1 (Actual Catch) Salmon Parr: 2.18 Trout fry: 24.3 Trout parr: 2 (Actual Catch)

Site 1: CRE01 (Creed Catchment)

Salmon fry were recorded in an excellent density and salmon parr were recorded in a good density. A good density of juvenile trout was also recorded. Nineteen eels and seventeen three-spined stickleback were recorded.

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Site 2: CRE03 (Creed Catchment)

Salmon fry were recorded in an excellent density and salmon parr were recorded in a good density. A good density of trout fry was recorded; however, trout parr were absent from this site. Six eels were recorded.

Site 3: CRE05 (Creed Catchment)

Juvenile salmon were recorded in an excellent density. A good density of juvenile trout was also recorded. One eel was recorded.

Site 4: CRE06 (Creed Catchment)

Juvenile salmon were recorded in a poor density. Juvenile trout were recorded in a very poor density. Three eels and two three-spined stickleback were recorded.

Site 5: CRE08 (Creed Catchment)

Juvenile salmon were absent from this site. Juvenile trout were recorded in a very poor density. No non-salmonid fish species were recorded.

Site 6: CRE09 (Creed Catchment)

Salmon fry were absent but salmon parr were recorded in a very poor density. Trout fry were recorded in excellent density together with a very poor density of trout parr. No non-salmonid fish species were recorded.

Site 7: CRE10 (Creed Catchment)

Juvenile salmon were absent from this site. Trout fry were recorded in an excellent density together with a moderate density of trout parr. No non-salmonid fish species were recorded.

Site 8: CRE13 (Creed Catchment)

Salmon fry were recorded in a poor density but salmon parr were absent from this site. Trout fry were recorded in an excellent density together with a moderate density of trout parr. No non-salmonid fish species were recorded.

Site 9: CRE14 (Creed Catchment)

Juvenile salmon were absent from this site. Trout fry were recorded in an excellent density together with a poor density of trout parr. Two eels were recorded.

Site 10: CRE16 (Creed Catchment)

Salmon fry were absent but salmon parr were recorded in a very poor density. Trout fry were recorded in a poor density together with a very poor density of trout parr. Seven three-spined stickleback were recorded.

Site 11: CRE17 (Creed Catchment)

Juvenile salmon were absent from this site. Trout fry were recorded in a good density together with a very poor density of trout parr. One eel and six three-spined stickleback were recorded.

Site 12: GLE01 (Glen Catchment)

Juvenile salmon were absent from this site. Trout fry were recorded in an excellent density together with a good density of trout parr. No non-salmonid fish species were recorded.

Site 13: GLE02 (Glen Catchment)

Juvenile salmon were absent from this site. Trout fry were recorded in an good density together with a moderate density of trout parr. Eleven three-spined stickleback were recorded.

Site 14: GLE03 (Glen Catchment)

Juvenile salmon were absent from this site. Trout fry were recorded in an good density together with a moderate density of trout parr. Eighteen eels were recorded.

Site 15: LAX01 (Laxdale Catchment)

Salmon fry were recorded in an excellent density and salmon parr were recorded in a good density. Juvenile trout were recorded in a good density. Three eels were recorded.

Site 16: LAX02 (Laxdale Catchment)

Juvenile salmon were absent from this site. Trout fry were also absent but trout parr were recorded in a moderate density. Two eels were recorded.

Site 17: TOP01 (Tope Catchment)

Salmon fry were recorded in an excellent density and salmon parr were recorded in a good density. Juvenile trout were recorded in a very poor density. Four eels were recorded.

Site 18: TOP02 (Tope Catchment)

Salmon fry were recorded in a very poor density and salmon parr were recorded in a poor density. Juvenile trout were recorded in a moderate density. One eel was recorded.

Site 19: TOP03 (Tope Catchment)

Juvenile salmon were recorded in a very poor density at this site. Trout fry were recorded in an excellent density together with a poor density of trout parr. Three eels were recorded.

4.2 Fisheries Habitat (SFCC Datasheet summary)

Table 4.2 presents a summary of the habitat characteristics recorded during the electrofishing survey (September 2018).

Table 4.2: Fisheries Habitat

Site Code	Fish Utilisation Potential	Fisheries Habitat Quality	Site Characteristics
CRE01	Moderate / High	Moderate	Juvenile & adult salmonid habitat. Flow type run/riffle/glide sequences with deep pool and weir 20m upstream. Wet width ~8 m. Depth ranging from 11- 90 cm. Cobble/pebble/gravel substrate with boulder and bedrock upstream. Moderate instream cover. Undercut bank in places providing moderate bankside cover. Land use is moorland heath and road/bridge downstream.
CRE03	High	Good	Juvenile & adult salmonid habitat. Flow type run/riffle sequences. Wet width ranging from 8-12 m. Depth ranging from 11- 75 cm. Cobble/pebble/gravel substrate with boulder. Moderate instream cover. Undercut bank both sides providing moderate/good bankside cover. Land use is moorland heath. Spawning habitat in survey area.
CRE05	Moderate / High	Moderate	Juvenile salmonid habitat. Flow type run/riffle sequences with large pool at bottom of run (not included in survey – good adult holding area). Wet width ~8 m. Depth ranging from 21- 70 cm. Cobble/pebble/gravel substrate with boulder and small area of bedrock on left bank. Moderate

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Site Code	Fish Utilisation Potential	Fisheries Habitat Quality	Site Characteristics
			instream cover. Undercut bank both sides providing good bankside cover. Land use is moorland heath. Spawning habitat in survey area.
CRE06	Moderate / High	Moderate	Juvenile salmonid habitat. Flow type predominantly run with glide/riffle sequences and torrent. Wet width ranging from 3-5 m. Depth ranging from 21- 55 cm. Cobble/pebble substrate with small amount of boulder. Moderate instream cover. Undercut bank both sides with vegetation rooted in riparian zone providing moderate/good bankside cover. Land use is moorland heath.
CRE08	Moderate	Moderate	Juvenile salmonid habitat. Flow type predominantly glide with run/pool sequences. Wet width 1-3 m. Depth ranging from 21-90 cm. Predominantly pebble/cobble substrate with areas of fine organic matter/silt and sand providing moderate/poor instream cover. Good bankside cover with undercut bank throughout. Land use is moorland heath. Water level classed as very high.
CRE09	Moderate	Moderate	Juvenile salmonid habitat. Flow type predominantly deep glide/run sequences with riffle in places. Wet width 2-4 m. Depth ranging from 11-65 cm. Predominantly boulder/cobble/pebble substrate with areas of fine organic matter/silt providing moderate/poor instream cover. Undercut bank providing moderate bankside cover. Land use is moorland heath.
CRE10	Moderate	Moderate	Fry (salmonid) habitat. Flow type riffle/run with a wet width ranging from 2-3 m. Depth <20 cm. Predominantly pebble/cobble/gravel with limited boulder. Moderate instream cover, moderate bankside cover. Collapsed dyke/weir upstream. Land use is rough moorland heath. Spawning habitat in survey area.
CRE13	Moderate	Moderate	Fry (salmonid) habitat with Parr (salmonid) habitat in places. Flow type predominantly run with riffle/glide sequences. Wet width 2-3 m. Depth ranging from 11-70 cm. Predominantly gravel/pebble/cobble substrate with areas of fine organic matter/silt and sand. Limited bedrock and boulder upstream section. Moderate/poor instream cover. Good bankside cover with undercut bank throughout. Land use is moorland heath.
CRE14	Moderate	Moderate	Juvenile salmonid habitat. Flow type predominantly run with riffle/glide sequences. Wet width ~1 m. Depth ranging from <10-50 cm. Predominantly gravel/pebble/cobble substrate with areas bedrock and boulder. Moderate/poor instream cover. Good bankside cover with undercut bank throughout. Discarded cattle grid recorded in mid-section. Small weir upstream – not considered to impact on fish migration. Land use is moorland heath.
CRE16	Moderate	Moderate	Parr habitat. Flow type deep glide/run. Wet width approx. 1-3 m. Depth ranging from 21-90 cm. Mix of pebble/cobble/boulder substrate with areas of bedrock and gravel throughout. Moderate instream cover. Good bankside cover. Water flow was classed as very high. Land use is moorland heath.
CRE17	Moderate	Good	Juvenile salmonid habitat. Flow type predominantly run with riffle/glide sequences. Wet width ranging from 1.5-3 m. Depth ranging from 11-50 cm. Predominantly pebble/cobble substrate at the upstream section providing good instream cover. Downstream section of sand/silt substrate considered poor instream cover. Good bankside cover with undercut bank throughout. Land use is moorland heath.

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Site Code	Fish Utilisation Potential	Fisheries Habitat Quality	Site Characteristics
GLE01	Moderate	Good	Juvenile salmonid habitat. Flow type predominantly run/riffle sequences with areas of glide. Wet width ranging from 2.5-3.5 m. Depth ranging from 11-55 cm. Predominantly pebble/cobble/gravel substrate providing moderate instream cover. Good bankside cover with undercut bank and draped vegetation. Land use is moorland heath. Potential spawning habitat within mid-section.
GLE02	Moderate	Moderate	Juvenile salmonid habitat. Flow type predominantly run/riffle sequences with areas of deep glide and pool. Wet width approx. 1-5 m. Depth ranging from 11-60 cm. Mix of fine organic matter/silt and sand at the downstream section caused by bank erosion. Upstream predominantly pebble/cobble/gravel substrate. Moderate/poor instream cover. Good bankside cover. Land use is moorland heath.
GLE03	Moderate	Moderate	Juvenile salmonid habitat. Flow type predominantly run/riffle sequences. Wet width ranging from 2.5-4.5 m. Depth ranging from 11-50 cm. Predominantly cobble/pebble/boulder substrate providing good instream cover. Moderate bankside cover. Land use is moorland heath and road. Bridge footing at upstream section.
LAX01	Moderate / High	Good	Juvenile & adult salmonid habitat. Flow type predominantly run/riffle/glide sequences. Wet width ranging from 8-12 m. Depth ranging from 11-60 cm. Predominantly cobble/pebble/gravel substrate with areas of boulder providing good/moderate instream cover. Good/moderate bankside cover with undercut bank in places. Land use is moorland heath. Good spawning habitat 20m from gabion baskets.
LAX02	Moderate	Moderate	Parr (salmonid) habitat. Flow type run/ glide. Wet width approx. 2.5-4 m. Depth ranging from 30-90 cm. Mix of cobble/boulder substrate with areas of bedrock and gravel/pebble throughout. Good instream cover. Good bankside cover. Water flow was classed as very high. Land use is moorland heath.
TOP01	Moderate	Moderate	Juvenile salmonid habitat. Flow type predominantly run with riffle/glide sequences. Wet width ranging from 1.5-3 m. Depth ranging from 11-65 cm. Predominantly boulder/bedrock with areas of cobble/pebble/gravel substrate providing moderate instream cover. Good bankside cover with undercut bank throughout. Land use is moorland heath.
TOP02	Moderate	Moderate/ Good	Juvenile salmonid habitat. Flow type predominantly run with riffle/glide sequences. Wet width ranging from 2.5-4.5 m. Depth ranging from 11-55 cm. Substrate predominantly boulder/bedrock with areas of pebble/cobble/fine organic matter in places. Moderate, poor in places, instream cover. Instream vegetation. Good bankside cover with undercut bank throughout. Land use is moorland heath.
TOP03	Moderate	Moderate	Juvenile salmonid habitat. Flow type run/riffle/glide sequences. Wet width ranging from 2.5-4 m. Depth ranging from 11-50 cm. Predominantly gravel/pebble substrate with areas of cobble and fine organic matter. Limited boulder/bedrock. Moderate, poor in places, instream cover. Instream vegetation. Good bankside cover with undercut bank throughout. Land use is moorland heath.

**Grid reference provided at downstream end of survey section.*

4.3 Comparison of Fish Fauna

The total area fished (m²) and exact survey location between the 2010 and 2018 surveys differs slightly. It is therefore suggested that any future fish fauna surveys replicate the

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2018 survey site locations and that comparisons and/or conclusions are based only on the results of the 2018 survey.

Evaluating the results of the 2010 and 2018 surveys in relation to fish density per 100m² will provide a view of fish populations.

Salmon were recorded at over half of the survey sites. Salmon fry (0+) were recorded at nine survey sites and salmon parr (1++) were recorded at ten survey sites. In 2010, juvenile salmon were recorded at twelve survey sites. Brown trout were recorded in all watercourses surveyed. Trout fry (0+) were recorded at all survey sites with the exception of CRE05 and LAX02. Trout parr (1++) were recorded at eighteen survey sites, TOP03 the only site where trout parr were absent. In 2010, trout fry were recorded in fifteen survey sites and trout parr were recorded in eighteen survey sites.

Salmon fry densities decreased at all sites where salmon fry had been recorded when compared to data obtained during 2010. Two survey sites recorded salmon fry that had been absent in 2010 (LAX01 & TOP03). Salmon parr densities decreased when compared to data obtained during 2010 at nine sites where salmon parr had been recorded. Seven sites remained consistent in relation to salmon parr density and two survey sites recorded salmon parr that had been absent in 2010 (LAX01 & TOP03).

Trout fry densities decreased at twelve sites when compared to data obtained during 2010. Trout fry densities increased at four sites when compared to data obtained during 2010. Three sites remained consistent. The Trout parr densities decreased at eleven sites when compared to data obtained during 2010. Trout parr densities increased at six sites when compared to data obtained during 2010. Two sites remained consistent. Overall, both salmon and trout have decreased significantly when compared to data obtained during 2010.

At the time of writing, it had not been confirmed if stocking had taken place prior to the 2010 or 2018 surveys.

Table 4.2.2a shows a comparison of the population estimate³ for each site surveyed in relation to trout. Where the Zippin (1958) estimation is not possible, a minimum estimate is shown.

Table 4.2.2a: Comparison of Salmonid densities per 100m²

Site Code	Salmon Fry		Salmon Parr		Trout Fry		Trout Parr	
	2010	2018	2010	2018	2010	2018	2010	2018
CRE01	44.68	18.16	24.68	8.28	0.20	0.93*	0.39	0.93*
CRE03	109.27	28.24	10.57*	10.89	ABSENT	ABSENT	ABSENT	1.00*
CRE05	144.14	38.48	25.17	26.14	ABSENT	0.89*	0.60	0.89*
CRE06	13.58	10.16	10.56	6.54	5.60	0.97*	4.10	0.97*
CRE08	ABSENT	ABSENT	ABSENT	ABSENT	0.69	1.88*	2.75	0.97*
CRE09	28.80	ABSENT	4.20	4.04	55.66	28.63	15.06	1.00*
CRE10	55.13	ABSENT	7.20	ABSENT	33.28	25.37	3.64	4.04
CRE13	21.08	7.58	5.75	ABSENT	265.61	30.40	4.69	5.03

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Site Code	Salmon Fry		Salmon Parr		Trout Fry		Trout Parr	
	2010	2018	2010	2018	2010	2018	2010	2018
CRE14	247.54	ABSENT	8.70	ABSENT	47.53	23.93	1.71	3.07
CRE16	7.72	ABSENT	8.41	1.98*	22.97	3.07	0.77	2.18
CRE17	0.76	ABSENT	0.76	ABSENT	31.32	13.89	4.58	0.88*
GLE01	ABSENT	ABSENT	ABSENT	ABSENT	55	43.14	9.14	10.16
GLE02	ABSENT	ABSENT	ABSENT	ABSENT	10.48	19.61	9.62	6.54
GLE03	ABSENT	ABSENT	ABSENT	ABSENT	22.14	14.75	6.20	5.03
LAX01	ABSENT	17.58	ABSENT	6.15	8.24	0.99*	3.37	0.99*
LAX02	ABSENT	ABSENT	ABSENT	ABSENT	ABSENT	ABSENT	5.73	2.92*
TOP01	114.72	26.22	16.06	16.06	32.07	0.94*	15.05	0.94*
TOP02	30.28	4.04	11.90	13.38	32.05	5.03	14.45	6.15
TOP03	ABSENT	1.00*	ABSENT	2.18	ABSENT	24.30	42.73	2.00*

*Minimum Estimate

5 CONCLUSION

The possible impacts that any land based wind farm development and its associated infrastructure could have on surrounding fish populations are well known. The potential for fish species and their habitats to be affected by the development mainly occurs during the construction and decommissioning phases of the development. During the construction phase potential impacts include siltation from ground disturbance, accelerated or exacerbated erosion, hydrological changes, pollution, and the blocking or hindering of the upstream/downstream migration of fish. During the operational phase, concerns include the effects of poor road drainage, accelerated levels of erosion, fish access, and the maintenance of silt traps and road crossings. Potential risks during the decommissioning phase are broadly similar to those in the construction phase. These potential effects could all impact on the surrounding fish populations by causing direct mortality of juveniles and adults, changes in food availability, avoidance behaviour resulting in unused habitat, blocking of migration routes to spawning beds or the damage of instream and riparian habitats.

Results from the fish surveys in September 2018 indicated that salmon were absent from eight sites. Salmon have declined significantly from data obtained in 2010. Salmon fry were absent in CRE09, CRE10 and CRE14 compared to the good to excellent densities recorded in the 2010 survey. Salmon parr were absent in CRE09, CRE10, CRE13 and CRE14 compared to the moderate to good densities recorded in the 2010 survey. At the time of writing this report it had not been confirmed if stocking had taken place prior to the 2010 survey which would account for the significant decrease.

Trout populations ranged from very poor to Excellent and were present at all of the nineteen sites surveyed with trout fry being more prevalent at the majority of sites. Trout fry were present at seventeen sites compared to only fifteen sites in 2010. Results showed

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a decrease in trout fry, from 2010 to 2018, at twelve sites where previously recorded. Five out of nineteen sites, where trout fry were recorded, showed an increase when compared to the 2010 survey. The most significant decrease in trout fry density was recorded at CRE13. Trout parr were present at eighteen sites which was consistent with previous survey in 2010, six sites recorded an increase in trout parr, eleven recording a decrease and two remained consistent. Adult trout were recorded at TOP02 and TOP03, it is considered that trout may be spawning within or in close proximity to both survey sites.

It was considered that the decrease in both salmon and trout densities could be partly attributed to the recent drought throughout the catchment (Summer 2018). It is also considered that the high/very high water levels recorded during the survey may have contributed to missed fish and had a negative impact on the results.

In addition, the significant decline of salmon across the survey area between 2010 and 2018 could be attributed to the various well documented factors⁶ including (but not limited to):

- biological characteristics (e.g. size) of salmon smolts;
- physical factors in fresh water (water flow and temperature);
- freshwater contaminants;
- predation; and
- salmon aquaculture.

6 RECOMMENDATIONS

Mhor Ecology Ltd. recommend that a construction and post-construction fish fauna monitoring programme is carried out utilising the same nineteen fish fauna sites as part of an ongoing assessment of potential impacts which may occur due to the Stornoway Wind Farm development.

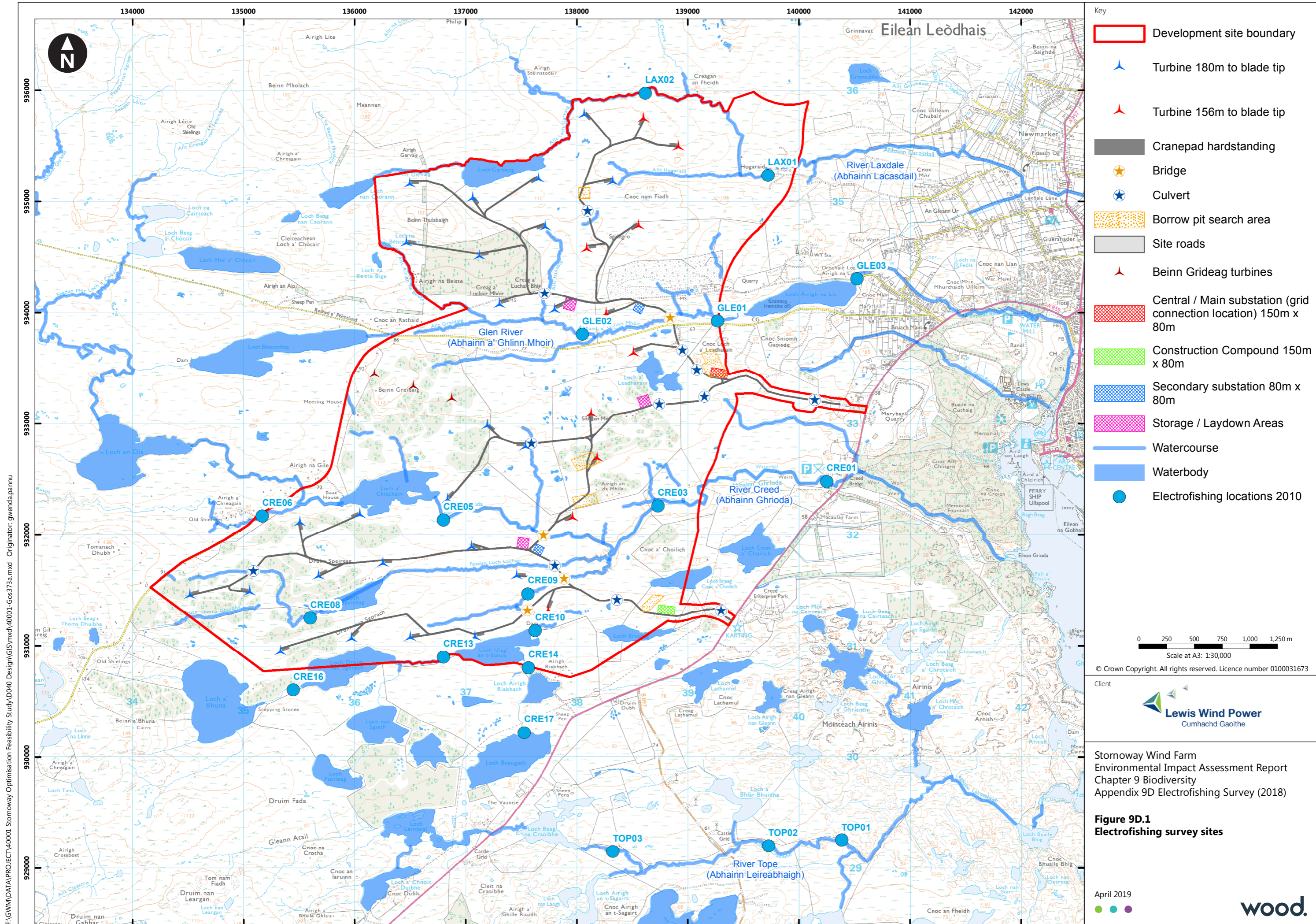
The suggested monitoring schedules are as follows:

- Fish fauna – annually during construction (summer/early autumn) and post-construction Year 1 (summer/early autumn) and Year 2 (summer/early autumn).

⁶ http://www.nasco.int/pdf/reports_other/Salmon_at_sea.pdf (Accessed October 2018)

APPENDIX A: FIGURES

Figure 1: Sampling Locations (see attachment)



APPENDIX B: RAW DATA

Habitat and Electrofishing Field Sheets

(See attachment)

Table B i: Electrofishing results, Zippin estimates⁴, site dimensions, fish density and minimum estimate

Site	Age Class / Species	2018 Actual Catch	Zippin	Lower 95% confidence interval	Upper 95% confidence interval	Site Length (m)	Avg. width (m)	Area Covered m ² (Min Est.)	Minimum Est.
CRE01	Salmon Fry	16	18.16	16	23.99	13	8.24	107.12	14.94
	Salmon Parr	8	8.28	8	9.74				7.47
	Trout fry	1	-	1	-				0.93
	Trout parr	1	-	1	-				0.93
CRE03	Salmon Fry	27	28.24	27	31.44	10	10.02	100.2	26.95
	Salmon Parr	10	10.89	10	14.13				9.98
	Trout fry	1	-	1	-				1.00
CRE05	Salmon Fry	34	38.48	34	46.81	14	8	112	30.36
	Salmon Parr	24	26.14	24	31.16				21.43
	Trout fry	1	-	1	-				0.89
	Trout parr	1	-	1	-				0.89
CRE06	Salmon Fry	9	10.16	9	14.37	26	3.98	103.48	8.70
	Salmon Parr	6	6.54	6	9.04				5.80
	Trout fry	1	-	1	-				0.97
	Trout parr	1	-	1	-				0.97
CRE08	Trout fry	2	-	2	-	61	1.74	106.14	1.88
	Trout parr	1	-	1	-				0.94
CRE09	Salmon Parr	4	4.04	4	4.52	33	3.04	100.32	2.99
	Trout fry	27	28.63	27	32.56				26.91
	Trout parr	1	-	1	-				1.00
CRE10	Trout fry	23	25.37	23	30.92	38	2.7	102.6	22.42
	Trout parr	4	4.04	4	4.52				3.90
CRE13	Salmon Fry	6	7.58	6	14.44	38	2.68	101.84	5.89
	Trout fry	29	30.40	29	33.84				28.48
	Trout parr	5	5.03	5	5.40				4.91
CRE14	Trout fry	22	23.93	22	26.64	100	1	100	22.00
	Trout parr	3	3.07	3	3.78				3.00
CRE16	Salmon Parr	2	-	2	-	49	2.06	100.94	1.98
	Trout fry	3	3.07	3	3.78				2.97
	Trout parr	2	2.18	2	3.63				1.98

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Site	Age Class / Species	2018 Actual Catch	Zippin	Lower 95% confidence interval	Upper 95% confidence interval	Site Length (m)	Avg. width (m)	Area Covered m ² (Min Est.)	Minimum Est.
CRE17	Trout fry	13	13.89	13	16.88	50	2.26	113	11.50
	Trout parr	1	-	1	-				0.88
GLE01	Trout fry	37	43.14	37	53.87	33	3.12	102.96	35.94
	Trout parr	9	10.16	9	14.37				8.74
GLE02	Trout fry	18	19.61	18	23.95	36	2.88	103.68	17.36
	Trout parr	6	6.54	6	9.04				5.79
GLE03	Trout fry	14	14.75	14	17.34	30	3.46	103.8	13.49
	Trout parr	5	5.03	5	5.40				4.82
LAX01	Salmon Fry	15	17.58	15	24.64	11	9.18	100.98	14.85
	Salmon Parr	6	6.15	6	7.14				5.94
	Trout fry	1	-	1	-				0.99
	Trout parr	1	-	1	-				0.99
LAX02	Trout parr	3	-	3	-	34	3.02	102.68	2.92
TOP01	Salmon Fry	26	26.22	26	27.29	46	2.32	106.72	24.36
	Salmon Parr	15	16.06	15	19.37				14.06
	Trout fry	1	-	1	-				0.94
	Trout parr	1	-	1	-				0.94
TOP02	Salmon Fry	4	4.04	4	4.52	31	3.24	100.44	2.99
	Salmon Parr	11	13.38	11	20.98				10.95
	Trout fry	5	5.03	5	5.40				4.98
	Trout parr	6	6.15	6	7.14				5.97
TOP03	Salmon Fry	1	-	1	-	35	2.86	100.1	1.00
	Salmon Parr	2	2.18	2	3.63				2.00
	Trout fry	23	24.30	23	27.73				22.98
	Trout parr	2	-	2	-				2.00

Table B ii: Quintile ranges for juvenile salmonids (per 100 m² of water) in different river width classes, based on multi-run electrofishing method, calculated on densities >0 over 50 sites in the Outer Hebrides Statistical Region (Godfrey, 2005)

	<4 m	4 – 6 m	>6m
Salmon 0+			
0th percentile	1.2	0.5	0.9
20th percentile	4.1	1.9	1.5
40th percentile	7.4	2.7	2.8
60th percentile	12.4	5.3	3.6
80th percentile	18.7	8.2	7.2
100th percentile	167.3	15.8	10.9
Salmon 1++			
0th percentile	1.0	0.7	1.0
20th percentile	3.1	3.9	1.7
40th percentile	6.8	5.0	2.0
60th percentile	10.1	7.2	3.7
80th percentile	17.2	10.2	7.5
100th percentile	40.4	13.5	13.2
Trout 0+			
0th percentile	0.6	1.1	0.2
20th percentile	2.1	1.9	0.3
40th percentile	3.5	2.2	0.5
60th percentile	6.8	4.8	0.9
80th percentile	13.1	9.0	2.5
100th percentile	56.3	11.8	8.5
Trout 1++			
0th percentile	0.7	0.4	0.2
20th percentile	1.6	0.6	0.2
40th percentile	2.8	0.7	0.3
60th percentile	4.9	1.9	0.5
80th percentile	8.4	3.7	1.3
100th percentile	38.1	5.7	2.1

Table B iii: Salmonid density classification - categories (Godfrey, 2005)

Density in regional classification	Descriptive category used in text
Min to 20th percentile	Very poor
20th to 40th percentile	Poor
40th to 60th percentile	Moderate
60th to 80th percentile	Good
80th to 100th percentile	Excellent

Table B iv: Age class and scale samples

Age Class	Site Code							
	CRE03	CRE05	CRE06	CRE08	CRE09	CRE13	GLE02	LAX01
	length mm							
Trout Fry (0+)				74	65	72	83	
Trout Fry (1++)					183			
Salmon Fry (0+)	75							75
Salmon Parr (1++)		129	89					

APPENDIX C: SFCC GENERAL HABITAT SURVEY

The Scottish Fisheries Co-ordination Centre (SFCC) developed a general habitat survey method that addresses the needs of fisheries managers and researchers. It was specially developed to assess habitat for juvenile salmon and trout and not used to evaluate habitat for other fish species.

Although a full SFCC habitat survey (which involves surveying the whole river and its tributaries) was not undertaken, smaller but detailed general habitat surveys were undertaken at each electrofishing site.

The survey methodology takes into account many recording requirements and information gathered about river stretches using SFCC fish habitat survey protocol can be used by trained interpreters and within reason to:

- Evaluate quality of habitat for juvenile salmonids
- Identify the potential location of salmonid spawning gravels
- Identify stream stretches that would benefit from habitat improvements
- Target areas for stocking
- Identify and classify point pollution sources
- Identify and grade obstacles to fish migration
- Identify location and type of past channel/bank modifications

Juvenile salmonids have specific habitat requirements. For example, water quality, shelter, feeding territory and availability of food. Table A below describes some basic habitat requirements for different life stages of salmon and trout. The precise habitat requirements for each species and life stage are extremely complex, and have therefore been simplified here.

Table A: Age class habitat requirements of salmonids

Life Stage	Salmon	Trout
Eggs/alevins	Golf ball to tennis ball sized substrate	Dependent on fish size: Golf ball to tennis ball sized substrate for large brown trout and sea trout, pea to golf ball sized material for smaller trout
Fry	Golf ball to tennis ball sized substrate, fast flowing, shallow broken water	Golf ball to tennis ball sized substrate, slow to medium flowing shallow water, often concentrated at stream margins
Parr	Tennis ball to football sized substrate, fast flowing broken water, often slightly deeper than fry	Variety of substrate, undercut banks, tree roots, big rocks, deeper slower water
Smolts	Unknown	Unknown

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Life Stage	Salmon	Trout
Adults	Deep pools	Deeper areas, sustained flow but not too fast, undercut banks, tree roots, good instream vegetation and large rocks

- Method

The habitat survey is undertaken after electrofishing the site has been completed.

- General definitions

o Instream cover

At each site a subjective assessment was made of the instream habitat available for older (parr-aged) fish. This assessment graded instream cover present as none, poor, moderate, good or excellent.

- None - No cover; stream bed composed entirely of fine uniform particles (e.g. silt, sand, gravel, pebbles) or continuous hard surfaces (bedrock, concrete).
- Poor - Little cover; stream bed composed predominantly of fine to medium particles (e.g. gravel, pebbles and cobbles), little or no cover from aquatic vegetation.
- Moderate - Moderate cover; stream bed composed of a mix of substrate sizes (e.g. gravel to boulders) and/or with some areas of Good cover (e.g. pebbles, cobbles, boulders), which may or may not have some aquatic vegetation cover.
- Good - Good cover; stream bed composed predominantly of medium to large size substrate (e.g. pebbles, cobbles or boulders) and/or with some aquatic vegetation cover.
- Excellent - Excellent cover; stream bed composed predominantly of large size substrate (e.g. cobbles and boulders) and/or with extensive aquatic vegetation cover.

o Site area

The site length is taken along with wetted width, bed width and bank width at a representative number of points within the site. This gives a value for the area fished in order to calculate the Zippin (1958) estimate (number of fish per 100 m²).

o Water depths

The survey stretch wetted area is recorded as percentage depths in six categories:

- <10 cm
- 11-20 cm
- 21-30 cm
- 31-40 cm

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- 41-50 cm
- >50 cm

o Substrates

In each survey stretch the percentages of each substrate type is recorded. Substrate is always recorded from the point of view of fish cover.

- High organic - Very fine organic matter
- Silt - Fine, sticky, mostly inorganic material
- Sand - Fine, inorganic particles, ≤ 2 mm diameter
- Gravel - Inorganic particles 2-16 mm diameter
- Pebble - Inorganic particles 16-64 mm diameter
- Cobble - Inorganic particles 64-256 mm diameter
- Boulder - Inorganic particles > 256 mm diameter
- Bedrock - Continuous rock surface
- Obscured - Something obscuring substrates that cannot physically be moved

o Flows

Flow percentages of the survey stretch wetted are recorded.

Table B: Flow percentages and descriptions

<i>Flow type</i>	<i>Description</i>
Still margin	<10 cm deep, still or eddying
Deep pool	≥ 30 cm deep, water slow flowing, smooth surface appearance
Shallow pool	<30 cm deep, water slow flowing, smooth surface appearance
Deep glide	≥ 30 cm deep, water flow moderate/fast smooth surface appearance
Shallow glide	<30 cm deep, water flow moderate/fast, smooth surface appearance
Run	Water flow fast, unbroken standing waves at surface, water flow silent
Riffle	Water flow fast, broken standing waves at surface, water flow audible
Torrent	White water, chaotic and turbulent flow, noisy and difficult to distinguish substrates

o Bankside cover

For each bank the percentage of bank length creating physical cover for fish in the site is recorded under the following categories:

- *Undercut* - Fish cover provided by undercut banks.

-
- *Draped* - Fish cover provided by vegetation rooted on the river bank and draping on to the water surface.
 - *Bare* - No cover for fish, or fish cannot get to the cover due to lack of water.
 - *Marginal* - Fish cover provided by plants rooted in the stream bed (includes tree roots). Fully aquatic vegetation is excluded from this category.
 - *Root* – Tree roots providing cover for fish
 - *Rock* – Rock providing bankside cover for fish, excluding that on the bed of the channel which provides cover
 - *Other* – Any other feature providing cover for fish

o Bank face vegetation

For each bank the predominant vegetation structure on each bank face. Vegetation must be rooted on the bank face and/or overhanging the bank face. Information is characterised in the following categories:

- *Bare* – Predominantly bare ground (or buildings/concrete), <50% vegetation cover.
- *Uniform* – Predominantly one vegetation type, but lacking scrub or trees.
- *Simple* – predominantly 2-3 vegetation types, with or without scrub or trees, but including tall and short herbs (e.g. nettles and grasses).
- *Complex* – Four or more vegetation types which must include scrub or trees.

Vegetation type does not refer to which species of plant are present. Reference is made primarily to structural complexity (e.g. short grasses versus long grasses/nettles versus taller trees).

o Overhanging boughs

For each bank the percentage of bank length is recorded where there are branches from trees and shrubs rooted in the riparian zone overhanging the site.

o Canopy cover

The percentage of the site (wetted area) which is covered by overhanging branches is estimated.

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APPENDIX D: PHOTOGRAPHS



Plate 1 – CRE01



Plate 2 – CRE03



Plate 3 – CRE05

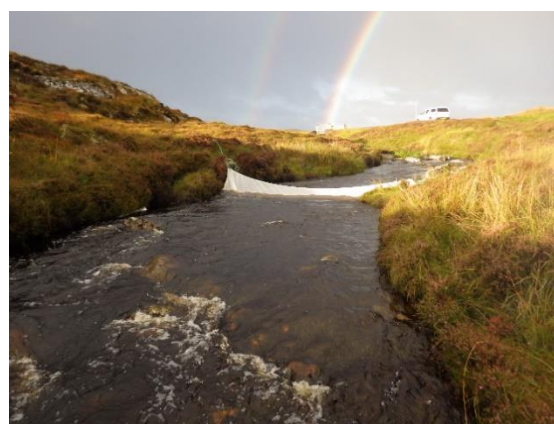


Plate 4 – CRE06



Plate 5 – CRE08



Plate 6 – CRE09



Plate 7 – CRE10



Plate 8 – CRE13



Plate 9 – CRE14



Plate 10 – CRE16



Plate 11 – CRE17



Plate 12 – GLE01

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Plate 13 – GLE02



Plate 14 – GLE03



Plate 15 – LAX01



Plate 16 – LAX02



Plate 17 – TOP01



Plate 18 – TOP02

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Stornoway Wind Farm



Plate 19– TOP03



Plate 20 – Juvenile salmon CRE05



Plate 21 – Trout fry CRE17

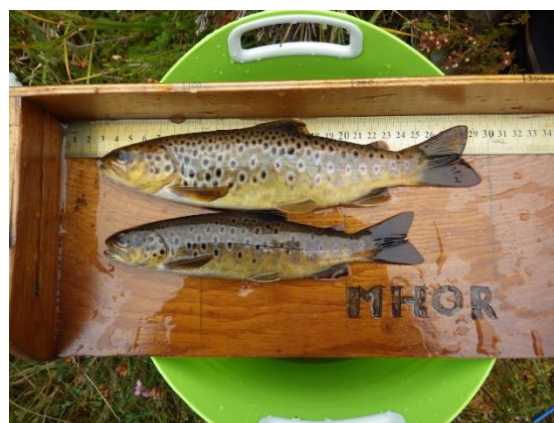


Plate 22 – Adult trout TOP03

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: CEED OS Grid sq: Easting: 40250 Northing: 932480 Altitude (m):
 River: CEED
 Site situation: 22m D/S from weir
 Access/permission: Date: 24.9.18

Instream cover: None / Poor / Moderate / Good / Excellent

Present	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
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Salmon

mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
33					93					153					213				
34					94					154					214				
35					95					155					215				
36					96					156					216				
37					97					157					217				
38					98					158					218				
39					99					159					219				
40					100					160					220				
41					101					161					221				
42					102					162					222				
43					103					163					223				
44					104					164					224				
45					105					165					225				
46					106					166					226				
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82					142					202					262				
83					143					203					263				
84					144					204					264				
85					145					205					265				
86					146					206					266				
87					147					207					267				
88					148					208					268				
89					149					209					269				

149 F D
 9 5
 2 5 3
 3 2 0
16 8

Scales:

Other species: Sal 19

Site notes: three-spined 17

fast flow - SEPA GAUGE 0.

TRT

81
66, 98

82
0

83
0

CREOI

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 140250 metres Northing: 932480 metres Site code: CREOI Date:

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	8.6		
B		7.9		
C		8.2		
D		8.1		
E		8.4		
F				
G				
H				
I				
J - Downst.				

Site length:

13 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	10	40	30	10	10

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	0	0	5	15	15	30	15	20	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 0% Silted?: Y/N Substrate: Stable/Unstable & Compacted/Partly/Uncompacted

Substrate notes: BED ROCK UPSTREAM SECTION

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	10	0	30	0	35	25	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: HIGH WATER - SEPA GAUGE 0.5

Bankside (%)	UC	DR	BA	MA
LB	50	0	50	0
RB	50	0	50	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover:% Total RB fish cover:%

LB bankface veg.: Bare/Uniform/Simple/Complex

RB bankface veg.: Bare/Uniform/Simple/Complex

LB banktop veg.: Bare/Uniform/Simple/Complex

RB banktop veg.: Bare/Uniform/Simple/Complex

LB overhang, boughs: 0%

RB overhang, boughs: 0%

Canopy cover: 0%

Bankside notes:

Gen. landuse: AR/BL/CP/FW/GA/IG/IN (MH)/NC/OR/OW/RD/RP/RS/SC/SU/TH/TL/WL

Equipment Type: GEN/BACK Volts: 275 Amps: 0.4 (SMOOTH) PULSED Effective fishing?: Y/N

Cond: 68 μ S/cm Temp: 10.9°C Time: 9.10 Stopnet: UP/DO (BO)/NO Water: LO (MH)/HI & CLR COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y/N

Stocking? Y/N Pollution? Y/N

SP Notes: FISH TO 20M D/S OF WEIR

* FISH TO NB 40248 32491
OPENS UP WITH BED ROCK SLOPE

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 387300 metres Northing: 93260 metres Site code: CRE03 Date: 26.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	8.9		
B		9.4		
C		10.1		
D		10.6		
E		12.9		
F				
G				
H				
I				
J - Downst.				

Site length:

10 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	5	15	25	45	10

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	QB
Percent	0	0	5	25	30	30	10	0	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 5% Silted? Y N Substrate: Stable / Unstable & Compacted Partly / Uncompacted

Substrate notes: Good in habitat

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	5	0	0	20	0	60	20	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes:

Bankside (%)	UC	DR	BA	MA
LB	95	0	5	0
RB	90	0	10	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 10% Total RB fish cover: 15%

LB bankface veg.: Bare / Uniform / Simple / Complex

RB bankface veg.: Bare / Uniform / Simple / Complex

LB banktop veg.: Bare / Uniform / Simple / Complex

RB banktop veg.: Bare / Uniform / Simple / Complex

LB overhang. boughs: 0%

RB overhang. boughs: 0%

Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN / MP / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN / BACK Volt: 270 Amps: 0.4 SMOOTH PULSED Effective fishing?: Y / N

Cond: 13 $\mu\text{S cm}^{-1}$ Temp: 11 $^{\circ}\text{C}$ Time: 17:00 Stopnet: UP / DO / BO / NO Water: LO / ME HN & CLB / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y / N

Stocking? Y / N Pollution? Y / N

SP Notes: Fish to NB 38728 32243

Fast flow

Run little / g / do

* Spawning habitat in reach!

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: CRE03 OS Grid sq: Easting: 138730 Northing: 932260 Altitude (m):
 River:
 Site situation:
 Access/permission: Date: 26.9.15

Instream cover: None / Poor / Moderate / Good / Excellent

Present	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
---------	------	------	------	------	-------	------	------	------	------	-------

SALMON																			
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
33					93					153					213				
34					94					154					214				
35					95					155					215				
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86					146					206					266				
87					147					207					267				
88					148					208					268				
89					149					209					269				

< 249
 186
 73
 21
 2710

Scales: 75

Other species: Eel III TSB II

Site notes: Good spawning habitat

21 22 23
68

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 136800 metres Northing: 932135 metres Site code: CREOS Date: 24.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	<u>~ 8m</u>		
B				
C				
D				
E				
F				
G				
H				
I				
J - Downst.				

Site length:

14 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	<u>0</u>	<u>0</u>	<u>45</u>	<u>35</u>	<u>10</u>	<u>10</u>

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	<u>0</u>	<u>0</u>	<u>0</u>	<u>15</u>	<u>35</u>	<u>30</u>	<u>10</u>	<u>5</u>	<u>0</u>

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 0% Silted? Y N Substrate: Stable / Unstable & Compacted Partly / Uncompacted

Substrate notes: Good spawning habitat

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	<u>0</u>	<u>20</u>	<u>0</u>	<u>40</u>		<u>40</u>	<u>0</u>	<u>0</u>

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RI fast; unbroken waves; silent TO fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: Fast - High water

Bankside (%)	UC	DR	BA	MA
LB	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>
RB	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 20% Total RB fish cover: 20%

LB bankface veg.: Bare Uniform / Simple / Complex

RB bankface veg.: Bare Uniform / Simple / Complex

LB banktop veg.: Bare Uniform / Simple / Complex

RB banktop veg.: Bare Uniform / Simple / Complex

LB overhang boughs: 0%

RB overhang boughs: 0%

Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN MH / OC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN BACK Volts: 275 Amps: 0.6 SMOOTH / PULSED Effective fishing? Y / N

Cond: 69 $\mu\text{S cm}^{-1}$ Temp: 9.6°C Time: Stopnet: UP / DO / BO / NO Water: LO / ME HL & CLR COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y / N

Stocking? Y N Pollution? Y N

SP Notes:

Spawning habitat

* Fish from bend up/s through riffle 136782 932139

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: CREOSOS Grid sq: ___ Easting: 136 800 Northing: 932135 Altitude (m):

River:

Site situation:

Access/permission:

Date: 24.9.18

Instream cover: None / Poor / Moderate

Good

Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++				
Present														
Salmon														
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					159				
31					91					157				
32					92					153				
33					93					153				
34					94					154				
35					95					155				
36					96					156				
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88					148					208				
89					149					209				

Scales: 129 (2+)

Other species: Let

Site notes: Few fish missed due to high - strong flow

* Spawning Habitat

Excellent!

Fish up/s 136782 932139 TROUT - 79

1361 TROUT 101, 102

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 35170 metres Northing: 932170 metres Site code: CRE06 Date: 24.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	4.4m		
B		4.6m		
C		3.6		
D		3.9		
E		3.4		
F				
G				
H				
I				
J - Downst.				

Site length:

26 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	0	25	35	15	15

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	0	0	0	5	20	40	10	10	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 20% Sifted?: Y (N) Substrate: Stable Unstable & Compacted (Partly) Uncompacted

Substrate notes:

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	0	0	20	0	10	10	10

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: Fast moving - heavy rain prior (am)

Bankside (%)	UC	DR	BA	MA
LB	40	40	0	10
RB	40	40	0	10

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 20% Total RB fish cover: 20%

LB bankface veg.: Bare (Uniform) / Simple / ComplexRB bankface veg.: Bare (Uniform) / Simple / ComplexLB banktop veg.: Bare (Uniform) / Simple / ComplexRB banktop veg.: Bare (Uniform) / Simple / ComplexLB overhang boughs: 0%RB overhang boughs: 0%Canopy cover: 0%Bankside notes: Marbled Hare - localGen. landuse: AR / BL / CP / FW / GA / IG / IN (MD) / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WLEquipment Type: GEN (BACK) Volts: 250 Amps: 0.4 SMOOTH / PULSED Effective fishing?: Y / NCond: 73 μScm^{-1} Temp: 8.1°C Time: 7am Stopnet: UP / DO / (NO) / NO Water: LO (MB) / HI & (CLR) / COLTeam leader: L. KELLY No of staff: Photo taken & IDS?: Y (YES) / NStocking? Y / N Pollution? Y (N)

SP Notes:

UP ~~35189~~ ~~32168~~ 35146 32158
 DW ~~35189~~ ~~32168~~ 35170 32170

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: CRE06 OS Grid sq: Eastings: 35170 Northings: 932170 Altitude (m):

River:

Site situation: FISH 70m N/S of bridge

Access/permission:

Date: 24.9.18

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++				
Present	SALMON													
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150				
31					91					151				
32					92					152				
33					93					153				
34					94					154				
35					95					155				
36					96					156				
37					97					157				
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87					147					207				
88					148					208				
89					149					209				

P

P

54

31

311

96

2 P P
 5 4
 3 1
 3 1
 9 6

Scales: 89

Other species: NO

Site notes:

TROUT - 68 (ONLY 1 TROUT FRY)

116

1 TROUT PAIR

See New
D/S

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 135600 metres Northing: 931250 metres Site code: CRE08 Date: 24.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	1.9		
B		1		
C		1.1		
D		2.1		
E		2.6		
F				
G				
H				
I				
J - Downst.				

Site length:

61 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	0	10	10	35	45

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	5	15	5	15	35	20	5	0	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg:% Silted?: Y / N Substrate: Stable / Unstable & Compacted / Partly / Uncompacted

Substrate notes:

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	20	0	40	0	40	0	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes:

Bankside (%)	UC	DR	BA	MA
LB	100	0	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 20 % Total RB fish cover: 20 %LB bankface veg.: Bare / Uniform / Simple / ComplexRB bankface veg.: Bare / Uniform / Simple / ComplexLB banktop veg.: Bare / Uniform / Simple / ComplexRB banktop veg.: Bare / Uniform / Simple / ComplexLB overhang, boughs: 0 %RB overhang, boughs: 0 %Canopy cover: 0 %Bankside notes: Burn at top of bankGen. landuse: AR / BL / CP / FW / GA / IG / IN MB / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WLEquipment Type: GEN / BACK Volts: 275 Amps: 0.9 SMOOTH / PULSED Effective fishing? Y / NCond: 83 $\mu\text{S cm}^{-1}$ Temp: 8.4 °C Time: 17:30 Stopnet: UP / DO BO / NO Water: LO / ME HL / CLR / COLTeam leader: L. KELLY No of staff: 3 Photo taken & IDST: Y / NStocking? Y / N Pollution? Y (N)

SP Notes:

If water/flow was any higher
survey could have been
called off..

up stream NB 3555# 31261
D/S NB 35594 31279

CRE08

SALMONID ELECTROFISHING RECORDING SHEET FULLY QUANTITATIVE

Site code: CRE08 OS Grid sq: 135594 Easting: 435600 Northing: 931219 Altitude (m): 931250

River: Site situation: Date: 24.9.18

Access/permission: Instream cover: None / Poor / Moderate / Good / Excellent

Instream Over										
	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

Tran																			
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
33					93					153					213				
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85					145					205					265				
86					146					206					266				
87					147					207					267				
88					148					208					268				
89					149					209					269				

F	P
2	0
0	1
0	0
2	1

Scales: 14

Other species:

Site notes: Very high water - fish to narrowing channel

Fish to 'S' bend/pool

OK - 2012 numbers

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: ~~137560~~ 137560 metres Northing: ~~931470~~ 931470 metres Site code: ~~CE09~~ 09 Date: 28-9-18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	4.0		
B		3.8		
C		2.7		
D		2.4		
E		2.3		
F				
G				
H				
I				
J - Downst.				

Site length:
33 metres

Depth (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	10	25	25	25	15

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	15	10	0	10	15	20	25	5	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 20% Silted? ☒ N Substrate: Stable Unstable & Compacted Partly / Uncompacted
Substrate notes: Silt in areas

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	10	0	0	85	10	30	15	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes:

Bankside (%)	UC	DR	BA	MA
LB	70	0	10	20
RB	70	0	10	20

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 25% Total RB fish cover: 25%

LB bankface veg.: Bare / Uniform Simple / Complex

RB bankface veg.: Bare / Uniform Simple / Complex

LB banktop veg.: Bare / Uniform Simple / Complex

RB banktop veg.: Bare / Uniform Simple / Complex

LB overhang boughs: 0%

RB overhang boughs: 0%

Canopy cover: 0%

Bankside notes: Good juv habitat

Gen. landuse: AR / BL / CP / FW / GA / IG / IN MH / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN / BACK Volts: 300 Amps: 0.6 SMOOTH PULSED Effective fishing?: Y / N

Cond: 89 $\mu\text{S cm}^{-1}$ Temp: 10.2°C Time: 12:30 Stopnet: UP / DO BO / NO Water: LO / ME HI & CLR COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y ☒ / N

Stocking? Y ☒ N Pollution? Y ☒ N

SP Notes:

Fish to NB 37532 31444

* High water

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: CE09 OS Grid sq: Easting: 137560 Northing: 931470 Altitude (m):

River:

Site situation:

Access/permission:

Date: 29-9-18

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

TROUT

mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150				
31					91					151				
32					92					152				
33					93					153				
34					94					154				
35					95					155				
36					96					156				
37					97					157				
38					98					158				
39					99					159				
40		1			100					160				
41					101					161				
42					102					162				
43		1			103					163				
44	1				104					164				
45	1		1		105					165				
46					106					166				
47	1				107					167				
48					108					168				
49	11	1			109					169				
50	11				110					170				
51					111					171				
52	1		1		112					172				
53	11	1			113					173				
54					114					174				
55	1				115					175				
56		1			116					176				
57	11				117					177				
58					118					178				
59	11		1		119					179				
60					120					180				
61					121					181				
62					122					182				
63					123					183				
64	(F) 1				124					184				
65					125					185				
66					126					186				
67					127					187				
68					128					188				
69					129					189				
70					130					190				
71					131					191				
72					132					192				
73					133					193				
74					134					194				
75					135					195				
76					136					196				
77					137					197				
78					138					198				
79					139					199				
80					140					200				
81					141					201				
82					142					202				
83					143					203				
84					144					204				
85					145					205				
86					146					206				
87					147					207				
88					148					208				
89					149					209				

2+

(1)

F P

1	18	1
2	6	0
3	3	0
27	1	

Scales: 183-b5

Other species: No Salmon fry

Site notes:

SALMON - 98.105

92

0

101

CKE 10

up/s → 137625 GENERAL ELECTROFISHING HABITAT SURVEY
 Easting: ~~37560~~ 931140 metres Northing: ~~931170~~ 10 metres Site code: ~~CKE~~ 10 Date: 27.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	2.4		
B		2.4		
C		2.7		
D		3.1		
E		2.9		
F				
G				
H				
I				
J - Downst.				

Site length:
 38m metres
 Start 10m up/s
 from deer fence.

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	0	10	30	40	20

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	0	0	0	25	30	35	10	0	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 5% Silted?: Y/N Substrate: Stable/Unstable & Compacted/Parity/Uncompacted

Substrate notes: Water high - flow good
 Spawning habitat throughout section

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	0	0	30	0	35	15	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes:

Bankside (%)	UC	DR	BA	MA
LB	100	0	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 30% Total RB fish cover: 30%

LB bankface veg.: Bare / Uniform Simple / Complex
 LB banktop veg.: Bare / Uniform Simple / Complex
 LB overhang. boughs: 0% RB overhang. boughs: 0% Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / EW / GA / IG / IN (MH) NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN / BACK Volts: 300 Amps: 0.4 SMOOTH / PULSED Effective fishing?: Y / N

Cond: 92 µS/cm Temp: 11.1°C Time: 12:00 Stopnet: UP / DO / BO / NO Water: LO / ME (HI) & (CLR) COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y ✓ / N

Stocking? Y / (N) Pollution? Y / (N)

SP Notes:

D/S NB 37655 31172

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: CE10 OS Grid sq: Easting: 137625 Northing: 931140 Altitude (m):

River:

Site situation:

Access/permission: Date: 28.9.18

Instream cover: None / Poor / Moderate Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

TROUT																			
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					130					210				
31					91					131					211				
32					92					132					212				
33					93					133					213				
34					94					134					214				
35					95	1				135					215				
36					96					136					216				
37					97					137					217				
38					98					138					218				
39					99					139					219				
40					100					140					220				
41	1				101					141					221				
42					102					142					222				
43					103					143					223				
44					104	X	1			144					224				
45					105					145					225				
46					106	1				146					226				
47					107					147					227				
48					108					148					228				
49	1				109					149					229				
50					110					150					230				
51	1				111					151					231				
52	1				112					152					232				
53	1				113					153					233				
54	1				114					154					234				
55	1				115					155					235				
56	1				116					156					236				
57	1				117					157					237				
58	1				118					158					238				
59	1				119					159					239				
60					120					160					240				
61					121					161					241				
62	1				122					162					242				
63					123					163					243				
64					124					164					244				
65					125					165					245				
66					126					166					246				
67					127					167					247				
68					128					168					248				
69					129					169					249				
70					130					170					250				
71					131					171					251				
72					132					172					252				
73					133					173					253				
74					134					174					254				
75					135					175					255				
76					136					176					256				
77					137					177					257				
78					138					178					258				
79					139					179					259				
80					140					180					260				
81					141					181					261				
82					142					182					262				
83					143					183					263				
84					144					184					264				
85					145					185					265				
86					146					186					266				
87					147					187					267				
88					148					188					268				
89					149					189					269				

F

P

133

281

320

234

F P
13 3
2 8 1
3 2 0
23 4

Scales: - 139 (2+)

Other species:

Site notes: Water high - Good habitat spawning area throughout.

No Salmon 2018

CRE 13

138600 930900
Easting: 137500 metres Northing: 931170 metres Site code: CRE 13 Date: 27.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	2.6		
B		2.4		
C		2.9		
D		2.7		
E		2.2		
F				
G				
H				
I				
J - Downst.				

Site length:
38 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	15	25	35	15	10

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	5	5	5	25	20	20	10	10	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 10% Silted?: Y (N) Substrate: Stable / Unstable & Compacted / Partly / Uncompacted
Substrate notes:

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	5	0	10	15	45	20	5

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy substrate invisible]

Flow notes: Good fly habitat

Bankside (%)	UC	DR	BA	MA
LB	100	0	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: % Total RB fish cover: %

LB bankface veg.: Bare / Uniform / Simple / Complex

RB bankface veg.: Bare / Uniform / Simple / Complex

LB banktop veg.: Bare / Uniform / Simple / Complex

RB banktop veg.: Bare / Uniform / Simple / Complex

LB overhang, boughs: %

RB overhang, boughs: %

Canopy cover: %

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN / MJ / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN / BACK Vols: 300 Amp: 0.5 SMOOTH / PULSED Effective fishing?: Y / N

Cond: 85 μ S/cm Temp: 9.9°C Time: 10min Stopnet: UP / DO / BO NO Water: LO / ME / HI / CLD / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y / N

Stocking? Y (N) Pollution? Y (N)

SP Notes:

up/s 36779 30886

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: CRE13 OS Grid sq: Easting: 138600 Northing: 930900 Altitude (m):
 River:
 Site situation: Fish to 1st large bend/hill
 Access/permission: Date: 27.9.18

Instream cover: None / Poor / Moderate Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

Thrust

mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
33					93					153					213				
34					94					154					214				
35					95					155					215				
36					96					156					216				
37					97					157					217				
38					98					158					218				
39					99					159					219				
40					100					160					220				
41					101					161					221				
42					102					162					222				
43					103					163					223				
44					104					164					224				
45					105					165					225				
46					106					166					226				
47					107					167					227				
48					108					168					228				
49					109					169					229				
50					110					170					230				
51					111					171					231				
52					112					172					232				
53					113					173					233				
54					114					174					234				
55					115					175					235				
56					116					176					236				
57					117					177					237				
58					118					178					238				
59					119					179					239				
60					120					180					240				
61					121					181					241				
62					122					182					242				
63					123					183					243				
64					124					184					244				
65					125					185					245				
66					126					186					246				
67					127					187					247				
68					128					188					248				
69					129					189					249				
70					130					190					> 249				
71					131					191									
72					132					192									
73					133					193									
74					134					194									
75					135					195									
76					136					196									
77					137					197									
78					138					198									
79					139					199									
80					140					200									
81					141					201									
82					142					202									
83					143					203									
84					144					204									
85					145					205									
86					146					206									
87					147					207									
88					148					208									
89					149					209									

F P

19 4

8 1

2 0

29 5

Scales: 72

Other species: NO SALMON FISH

Site notes:

SALMON - 53, 47, 57 | 59, 55 | 51

CRE14

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 137565 metres Northing: 930805 metres Site code: CRE14 Date: 24.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres			
B		1m		
C				
D				
E				
F				
G				
H				
I				
J - Downst.				

Site length:
100 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	5	30	30	20	5	0

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	0	0	0	25	35	30	5	5	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 5% Silted?: Y (N) Substrate: Stable (Unstable) & Compacted (Partly) / Uncompacted

Substrate notes:

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	5	0	5	0	25	45	25	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: Good instream/bankside cover

Bankside (%)	UC	DR	BA	MA
LB	100%	0	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get in cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 70% Total RB fish cover: 20%

LB bankface veg.: Bare (Uniform) / Simple / Complex

RB bankface veg.: Bare (Uniform) / Simple / Complex

LB banktop veg.: Bare (Uniform) / Simple / Complex

RB banktop veg.: Bare (Uniform) / Simple / Complex

LB overhang. boughs: 0%

RB overhang. boughs: 0% Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN / (MH) NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN (BACK) Volts: 250 Amps: 0.6 (SMOOTH) PULSED Effective fishing?: (Y) / N

Conduct: 119 µS/cm Temp: 9.9°C Time: 17.50 Stopnet: UP / DO / BO / NO Water: LO / ME / HI & CLR / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y / N

Stocking? Y / N Pollution? Y / (N)

SP Notes:

Fish to stone weir/wall. 137591 930737

Good fry habitat.

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: ~~13755~~ OS Grid sq: Easting: 137565 Northing: 930805 Altitude (m):
 River: CREIL
 Site situation:
 Access/permission: Date: 24.9.18

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

TROUT																			
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
33					93					153					213				
34					94					154					214				
35					95					155					215				
36					96					156					216				
37					97					157					217				
38					98					158					218				
39					99					159					219				
40					100					160					220				
41					101					161					221				
42					102					162					222				
43					103					163					223				
44					104					164					224				
45					105					165					225				
46					106					166					226				
47					107					167					227				
48					108					168					228				
49					109					169					229				
50					110					170					230				
51					111					171					231				
52					112					172					232				
53					113					173					233				
54					114					174					234				
55					115					175					235				
56					116					176					236				
57					117					177					237				
58					118					178					238				
59					119					179					239				
60					120					180					240				
61					121					181					241				
62					122					182					242				
63					123					183					243				
64					124					184					244				
65					125					185					245				
66					126					186					246				
67					127					187					247				
68					128					188					248				
69					129					189					249				
70					130					190					> 249				
71					131					191						F	P		
72					132					192									
73					133					193									
74					134					194						16	2		
75					135					195									
76					136					196									
77					137					197									
78					138					198									
79					139					199									
80					140					200						2	5	1	
81					141					201									
82					142					202									
83					143					203									
84					144					204						3	2	0	
85					145					205									
86					146					206									
87					147					207									
88					148					208									
89					149					209									

Scales: X

Other species: Eel

Site notes: Good fly hab. tent

Fish to old weir/dam EEL - 216

No Salmon 2018

Up/Seal - NB 37591 30737

CRE16

GENERAL ELECTROFISHING HABITAT SURVEY

D/S Easting: 135450 metres Northing: 930605 metres Site code: CRE16 Date: 24-9-18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	1.6		
B		1.6		
C		1.9		
D		2.1		
E		3.1		
F				
G				
H				
I				
J - Downst.				

Site length:

49 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	0	10	10	40	40

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	0	0	0	20	20	20	20	20	

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 10% Silted?: Y/N Substrate: Stable/Unstable & Compacted/Partly/Uncompacted

Substrate notes:

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	10	0	40	0	40	0	10

[Definitions: SM <10cm; still/eddy; smooth up.; silent DP >=30cm; slow/eddy; smooth up.; silent SP <30cm; slow/eddy; smooth up.; silent DG >=30cm; mod/fast; smooth up.; silent SG <30cm; mod/fast; smooth up.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes:

Bankside (%)	UC	DR	BA	MA
LB	100	0	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 30% Total RB fish cover: 30%

LB bankface veg.: Bare/Uniform/Simple/Complex

RB bankface veg.: Bare/Uniform/Simple/Complex

LB banktop veg.: Bare/Uniform/Simple/Complex

RB banktop veg.: Bare/Uniform/Simple/Complex

LB overhang, boughs: 0%

RB overhang, boughs: 0%

Canopy cover: 0%

Bankside notes: High water

Gen. landuse: AR/BL/CP/FW/GA/IG/IN/MH/NC/OR/OW/RD/RP/RS/SC/SU/TH/TL/WL

Equipment Type: GEN BACK Volts: 250 Amps: 0.4 SMOOTH/PULSED Effective fishing? Y/N

Cond: 86 $\mu\text{S cm}^{-1}$ Temp: 9.4°C Time: 10:05 Stopnet: UP/DO/BO/NO Water: LO/ME/HI/CLR COL

Team leader: L. KELLY No of staff: Photo taken & IDS?: Y/N

Stocking? Y/N Pollution? Y/N

2582-2586 - Salmon Err

SP Notes:

Up NB 35416 30615

Overnight / morning rain - high water! Top of bank

CRE16

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: CRE16 OS Grid sq: Easting: 35450 Northing: 930605 Altitude (m):

River:

Site situation:

Access/permission:

Date: 24.9.18

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

SALMON																			
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
33					93					153					213				
34					94					154					214				
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40					100					160					220				
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87					147					207					267				
88					148					208					268				
89					149					209					269				

Scales:

NO

Other species:

Stickleback H11

Site notes:

Very high water - decision to fish by LK.

TROUT R/W

1 65, 68, 114

2 63, 111

3 -

⊕ Expected more fish

up/s

See New GPS

KAROL
CREIFF

137519

GENERAL ELECTROFISHING HABITAT SURVEY

930272 0244

Easting: ~~137519~~ metres Northing: ~~930272~~ metres Site code: Date: 27-9-18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	2.1		
B		2.6		
C		2.7		
D		2.1		
E		1.8		
F				
G				
H				
I				
J - Downst.				

Site length:

50 m metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	10	25	45	20	10

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	0	10	30	10	10	30	10	0	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg:% Silted? Y/N Substrate: Stable / Unstable & Compacted / Partly / Uncompacted

Substrate notes: DS section sand - poor
US section pebbles/cobbles/boulder - good

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	0	0	20	10	45	25	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes:

Bankside (%)	UC	DR	BA	MA
LB	100	0	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 70 % Total RB fish cover: 70 %

LB bankface veg.: Bare / Uniform / Simple / Complex

RB bankface veg.: Bare / Uniform / Simple / Complex

LB banktop veg.: Bare / Uniform / Simple / Complex

RB banktop veg.: Bare / Uniform / Simple / Complex

LB overhang, boughs: 75 % RB overhang, boughs: 75 % Canopy cover: 0 %

Bankside notes: Overgrown - very diff to observe fish

Gen. landuse: AR / BL / CP / FW / GA / IG / IN / MH / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN / BACK Volts: 250 Amps: 0.6 SMOOTH PULSED Effective fishing?: Y / N

Cond: 151 μ S/cm Temp: 11.1 °C Time: 4:50 Stopnet: UP / DO / BO / NO Water: LO / ME / HI / CL / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y / N

Stocking? Y (N) Pollution? Y (N)

SP Notes:

* Fish to beginning of loch. Fish to loch
Start - 137510 930272 → 137519 30244

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: CE17 OS Grid sq: 19 Eastings: 137525 Northings: 930244 Altitude (m): 19

River:

Site situation:

Access/permission:

Date:

Instream cover: None / 0/5 Poor / Moderate Good / Up/5 Excellent

Instream cover											Trout				F P				
Present	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++									
Trout																			
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
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8

4

1

13

Φ

0

0

Φ

F P
8 0
4 0
1 0
13 0

Species:

Other species: No salmon Eel TSB HH

Site notes: Fish from below 1st single OHL to Loch.

GLEO1

GENERAL ELECTROFISHING HABITAT SURVEY

U/S Easting: 139265 metres Northing: 933925 metres Site code: GLEO1 Date: 28/9/15

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	3.1		
B		3.2		
C		3.0		
D		2.9		
E		3.4		
F				
G				
H				
I				
J - Downst.				

Site length:
33 metres

Depth (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	10	43	30	15	5

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	5	5	0	20	30	20	10	0	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg:% Silted?: Y / N Substrate: Stable / Unstable & Compacted / Partly / Uncompacted

Substrate notes:

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	5	0	0	15	15	35	30	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: Good for habitat

Bankside (%)	UC	DR	BA	MA
LB	50	50	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots, excl. fully aquatic veg.]

Total LB fish cover: 50% Total RB fish cover: 50%

LB bankface veg.: Bare / Uniform / Simple / Complex

RB bankface veg.: Bare / Uniform / Simple / Complex

LB banktop veg.: Bare / Uniform / Simple / Complex

RB banktop veg.: Bare / Uniform / Simple / Complex

LB overhang, boughs: 0%

RB overhang, boughs: 0%

Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN / MH / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN BACK Volts: 240 Amps: 0.6 SMOOTH PULSED Effective fishing: Y / N

Cond: 78 $\mu\text{S cm}^{-1}$ Temp: 8.9°C Time: Stopnet: UP / DO / BO / NO Water: LO / ME / HI & CLR / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y / N

Stocking? Y / N Pollution? Y / N

SP Notes:

DS/Section 139301 933935

GLE01

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: GLE01 OS Grid sq: Easting: 139265 Northing: 933925 Altitude (m):
 River:
 Site situation:
 Access/permission: Date:

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
33					93					153					213				
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89					149					209					269				

① 2+

F P
 1 18 5
 2 16 3
 3 3 1
 37 9

Scales:

Other species:

Site notes: Good riffle/run section - good fry habitat.

D/S end 139301-933935

No Salmon 2018

GLEO2

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 38061 metres Northing: 933826 metres Site code: GLEO2 Date: 25.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	4.2		
B		5.0		
C		2.6		
D		1.2		
E		1.4		
F				
G				
H				
I				
J - Downst.				

Site length:

36 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	20	15	25	15	25

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	10	20	10	10	20	10	0	0	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part, invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 35% Silted: 0/N Substrate: Stable / Unstable & Compacted / Partly / Uncompacted

Substrate notes:

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	5	0	25	0	40	30	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: High water

Bankside (%)	UC	DR	BA	MA
LB	60	20	20	0
RB	60	20	20	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 30% Total RB fish cover: 30%

LB bankface veg.: Bare / Uniform / Simple / ComplexRB bankface veg.: Bare / Uniform / Simple / ComplexLB banktop veg.: Bare / Uniform / Simple / ComplexRB banktop veg.: Bare / Uniform / Simple / Complex

LB overhang, boughs:%

RB overhang, boughs: 0% Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN / ML / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WLEquipment Type: GEN BACK Volts 240 Amps 0.5 SMOOTH / PULSED Effective fishing?: Y / NCond: 73 $\mu\text{S cm}^{-1}$ Temp: 12 °C Time: 13.45 Stoppet: UP / DO / NO / NO Water: LO / ME / CLR / COLTeam leader: L KELLY No of staff: 3 Photo taken & IDS?: Y / NStocking? Y / N Pollution? Y / N

SP Notes:

Run/riffle d/s - places of silt/peat debris
due to bank collapse. Right bank.

N/S 38093 33811

up/s 38061 33826

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: GLE 02 OS Grid sq: Easting: 138050 Northing: 933805 Altitude (m):
 River:
 Site situation:
 Access/permission: Date:

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

TROT														
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150				
31					91					151				
32					92					152				
33					93					153				
34					94					154				
35					95					155				
36					96					156				
37					97					157				
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88					148					208				
89					149					209				

249	F	P
	11	4
1		1
2	5	
3	2	1
	18	6

Scales: 83

Other species: Skate, Haddock, Herring

Site notes: Moderate to poor in places
S.H./Peat

GLEOS

GENERAL ELECTROFISHING HABITAT SURVEY

Up/s → Easting: 40520 metres Northing: 934305 metres Site code: GLEOS Date: 25.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	2.8		
B		2.9		
C		3.4		
D		3.8		
E		4.4		
F				
G				
H				
I				
J - Downst.				

Site length:

18 metres
30

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	15	25	30	15	15

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	5	5	0	5	25	40	25	0	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: %

Silted?: Y / N

Substrate: Stable / Unstable & Compacted / Partly / Uncompacted

Substrate notes:

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	5	0	0	5	5	80	35	5

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes:

Good hard tail

Bankside (%)	UC	DR	BA	MA
LB	30	0	30	40
RB	30	0	30	40

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 20 % Total RB fish cover: 20 %

LB bankface veg.: Bare / Uniform / Simple / Complex

RB bankface veg.: Bare / Uniform / Simple / Complex

LB banktop veg.: Bare / Uniform / Simple / Complex

RB banktop veg.: Bare / Uniform / Simple / Complex

LB overhang. boughs: 0 %

RB overhang. boughs: 0 %

Canopy cover: 0 %

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN / MH / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN / BACK Volts: 240 Amps: 0.6 SMOOTH / PULSED Effective fishing? Y / N

Cond: 111 μ S/cm Temp: 9.8 °C Time: Stopnet: UP / DO / BO / NO Water: LO / ME / HI / CLR / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y / N

Stocking? Y / N Pollution? Y / N

SP Notes:

start at small narrowing 25/30m down from bridge
NB 40498 34293 fence.

GLEDS

Site code: GLE03 OS Grid sq: , Easting: 140520, Northing: 934305 Altitude (m):

River: Fish to stop before bridges

Site situation:

Access/permission:

Date: 25.9.18

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present					:					

Part																			
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
33					93					153					213				
34					94					154					214				
35					95					155					215				
36					96					156					216				
37					97					157					217				
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70					130					190					> 149				
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88					148					208									
89					149					209									

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145

Scales:

Other species: 501 x 18

Site notes:

EEC III III III III

Jp/15

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 39720 metres Northing: 935235 metres Site code: LAX 01 Date: 25.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres			
B		8m		
C		8.4		
D		8.5		
E		9.4		
F		11.6		
G				
H				
I				
J - Downst.				

Site length:

11 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	0	25	30	20	20

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	0	0	0	20	25	40	15	0	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 5% Silted?: Y N Substrate: Stable Unstable & Compacted / Partly Uncompacted

Substrate notes: Good juv habitat

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	0	0	30	0	35	35	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate (invisible)]

Flow notes: Run / R. flt / Grade eq

Bankside (%)	UC	DR	BA	MA
LB	60	30	10	0
RB	60	30	10	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots, excl. fully aquatic veg.]

Total LB fish cover: 30% Total RB fish cover: 30%

LB bankface veg.: Bare Uniform Simple / Complex

RB bankface veg.: Bare Uniform Simple / Complex

LB banktop veg.: Bare Uniform Simple / Complex

RB banktop veg.: Bare Uniform Simple / Complex

LB overhang, boughs: 0%

RB overhang, boughs: 0%

Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN / MH / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN BACK Volts 295 Amps 0.4 MOOTH / PULSED Effective fishing?: Y / N

Cond. 67 μScm^{-1} Temp: 9.1 °C Time: 16:20 Stopnet: UP / DO / NO Water: LO / ME / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y / N

Stocking? Y N Pollution? Y N

SP Notes: Very fast flow - Run / R. flt

Fish from NB 39716 35250
Spawning habitat 20m 3/5 of gabion baskets

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

LAXOI ~~013~~ 08 Grid sq: Easting: 39T20 Northing: 935235 Altitude (m):
 River: LAXOI LAXDALE
 Site situation: Date: 25.9.18
 Access/permission:

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++				
Present														
SALMON														
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					210				
31					91					211				
32					92					212				
33					93					213				
34					94					214				
35					95					215				
36					96					216				
37					97					217				
38					98					218				
39					99					219				
40					100					220				
41					101					221				
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84					144					264				
85					145					265				
86					146					266				
87					147					267				
88					148					268				
89					149					269				

F

P

8

4

2

5

2

0

15

6

Scales: 75

Other species: Key III

Site notes: Fast flow - potential missed fish.

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Up/s Site code: LAX01 OS Grid sq: Easting: 139720 Northing: 935235 Altitude (m):
 River: LAXDALE
 Site situation: Date: 25.9.18
 Access/permission: ✓

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

TROUT														
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150				
31					91					151				
32					92					152				
33					93					153				
34					94					154				
35					95					155				
36					96					156				
37					97					157				
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87					147					207				
88					148					208				
89					149					209				

1

2

3

F = P

Scales: ✓

Other species: Sal III

Site notes:

$$\frac{F}{P}$$

 1 1 1

 2 0 0

 3 0 0

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 38615 metres Northing: 935975 metres Site code: LAX02 Date: 27.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	3.1		
B		2.9		
C		3.6		
D		2.7		
E		2.8		
F				
G				
H				
I				
J - Downst.				

Site length:
34 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	0	10	20	55	15

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	0	0	0	15	15	40	20	10	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 5% Silted? ☒ Substrate: Stable / Unstable & Compacted / Partly / Uncompacted

Substrate notes: Veg in margins - Good parr habitat

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	0	0	20	0	60	10	20

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: Very fast flow - limit of survey conditions

Bankside (%)	UC	DR	BA	MA
LB	100	0	0	0
RB	70	0	30	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 30% Total RB fish cover: 30%

LB bankface veg.: Bare / Uniform Simple / ComplexRB bankface veg.: Bare / Uniform Simple / ComplexLB banktop veg.: Bare / Uniform Simple / ComplexRB banktop veg.: Bare / Uniform Simple / Complex

LB overhang, boughs: 0%

RB overhang, boughs: 0%

Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN / MB / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WLEquipment Type: GEN / BAC Volts: 300 Amps: 0.4 SMOOTH / PULSED Effective fishing? ☒ / NConds: 53 $\mu\text{S cm}^{-1}$ Temp: 18°C Time: 9:15 Stopnets: UP / DO / BO / NO Water: LO / ME / IN / CL / COLTeam leader: L. KELLY No of staff: 3 Photo taken & IDS? ☒ / NStocking? ☒ / N Pollution? ☒ / NSP Notes: 15 net not considered useful due to flow conditions
- water levels raising on 2nd run

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

LAXOZ

D/S

Site code: LAXOZ OS Grid sq: Eastings 38615 Northing: 935975 Altitude (m):

River: LAXDALE

Site situation: FISH FROM SMALL ISLAND MID CHANNEL

Access/permission: Date: 27-9-18

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

TROUT

mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					99					189					310				
31					91					187					311				
32					92					182					312				
33					93					183					313				
34					94					181					314				
35					95					185					315				
36					96					186					316				
37					97					187					317				
38					98					188					318				
39					98					189					319				
40					100					190					320				
41					101					191					321				
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87					147					207					367				
88					148					208					368				
89					149					209					369				

F P

1 0 3

2 0 0

3 0 0

Scales:

Other species: — Eel II

Site notes: Good fair habitat

* Flow very fast and at survey limit, *

- More fish expected, impacted in flow/water level.

D/S 38638 36008

F	P
1	0 3
2	0 0
3	0 0

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 40322 metres Northing: 29234 metres Site code: TOPO1 Date: 26.9.18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	2.1		
B		1.9		
C		1.8		
D		2.2		
E		8.6		
F				
G				
H				
I				
J - Downst.				

Site length:
46 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	5	15	30	20	30

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	0	0	0	10	15	15	30	30	-

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE coat. rock surface OB wood barrels etc; cannot move]

Instream veg: 5% Silted?: (N) Substrate: (Stable) / Unstable & (Compacted) / Partly / Uncompacted

Substrate notes:

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	0	0	20	0	60	10	10

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: High water

Bankside (%)	UC	DR	BA	MA
LB	100	0	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get in cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 30% Total RB fish cover: 30%

LB bankface veg.: Bare / Uniform (Simple) / Complex

RB bankface veg.: Bare / Uniform (Simple) / Complex

LB banktop veg.: Bare / Uniform / (Simple) / Complex

RB banktop veg.: Bare / Uniform (Simple) / Complex

LB overhang. boughs: 0%

RB overhang. boughs: 0%

Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN (MH) / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN / BACK Volts: 250 Amps: 0.6 (SMOOTH) / PULSED Effective fishing?: (Y) / N

Cond: 99 $\mu\text{S cm}^{-1}$ Temp: 11.1 °C Time: 8.45 am Stopnet: UP / DO / BO / NO Water: LO / ME (H) & (CLR) / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y (H) / N

Stocking? Y / (N) Pollution? Y (N)

SP Notes:

Up/s end - NB 40322 29234

Down/s 40360 29230

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: T8901 OS Grid sq: Easting: 140322 Northing: 129234 Altitude (m):

River:

Site situation:

Access/permission: Date: 26.9.18

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++				
Present														
SALMON														
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150				
31					91					151				
32					92					152				
33					93					153				
34					94					154				
35					95					155				
36					96					156				
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85					145					205				
86					146					206				
87					147					207				
88					148					208				
89					149					209				

F

P

2210

243

262

349 F P
 1 22 10
 2 4 3
 3 1 2
26 15

Scales:

Other species: Eel x 111

Site notes: Bedrock, cobbles/boulder

Trout - 168
 75

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 39725 metres Northing: 929200 metres Site code: ~~TOP02~~ TOP02 Date: 26-9-18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	2.6		
B		3.0		
C		4.4		
D		3.0		
E		3.2		
F				
G				
H				
I				
J - Downst.				

Site length:
31 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	10	25	35	15	15

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	15	5	5	5	15	10	25	25	

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 10% Silted?: Y (N) Substrate: Stable (Unstable & Compacted) (Partly) Uncompacted

Substrate notes: Good parr habitat

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	5	0	25	0	40	20	10

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: High water - good parr/adult habitat

Bankside (%)	UC	DR	BA	MA
LB	100	0	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 70% Total RB fish cover: 20%

LB bankface veg.: Bare / Uniform (Simple) / Complex

RB bankface veg.: Bare / Uniform (Simple) / Complex

LB banktop veg.: Bare / Uniform (Simple) / Complex

RB banktop veg.: Bare / Uniform (Simple) / Complex

LB overhang. boughs: 0%

RB overhang. boughs: 0%

Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN (MP) / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN (BACK) Volts: 255 Amps: 0.6 (SMOOTH) / PULSED Effective fishing? (Y) N

Cond: 121 µS/cm Temp: 11.3°C Time: 11:30 Stopnet: UP / DO / BO / NO Water: LO / ME / HI & CLR / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y (✓) / N

Stocking? Y (N) Pollution? Y (N)

SP Notes:

Finish Point: - NB39701 - 29197

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: ~~102~~ ^{TOP 02} OS Grid sq: Easting: 139725 Northing: 929200 Altitude (m):

River:

Site situation: Full x/s of confluence (small burn)

Access/permission:

Date: 26.9.18

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++				
Present														
SALMON														
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150				
31					91					151				
32					92					152				
33					93					153				
34					94					154				
35					95					155				
36					96	1				156				
37					97					157				
38					98					158				
39					99			1		159				
40					100					160				
41					101					161				
42					102	1		1		162				
43					103		1			163				
44					104					164				
45					105	11				165				
46					106					166				
47					107					167				
48					108					168				
49					109	1				169				
50					110					170				
51					111					171				
52					112					172				
53					113					173				
54					114	1				174				
55					115					175				
56					116					176				
57					117		1			177				
58					118					178				
59					119					179				
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86					146					206				
87					147					207				
88					148					208				
89					149					209				

No Salmon
on Fry

1

2

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4

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84

85

86

87

88

89

F P

5

3

3

2

0

2

3

10

Scales:

Other species:

Site notes:

Trout - 1st 137, 108
 115, 75, 60
 69, 21, 51, 3

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: Top02-08 Grid sq: Easting: 139725 Northing: 92900 Altitude (m):

River:

Site situation:

Access/permission:

Date: 26-9-18

Instream cover: None / Poor / Moderate / Good / Excellent

	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
Present										

Trout															
min	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm
30					90					150					210
31					91					151					211
32					92					152					212
33					93					153					213
34					94					154					214
35					95					155					215
36					96					156					216
37					97					157					217
38					98					158					218
39					99					159					219
40					100					160					220
41					101					161					221
42					102					162					222
43					103					163					223
44					104					164					224
45					105					165					225
46					106					166					226
47					107					167					227
48					108					168					228
49					109					169					229
50					110					170					230
51					111					171					231
52					112					172					232
53					113					173					233
54					114					174					234
55					115					175					235
56					116					176					236
57					117					177					237
58					118					178					238
59					119					179					239
60					120					180					240
61					121					181					241
62					122					182					242
63					123					183					243
64					124					184					244
65					125					185					245
66					126					186					246
67					127					187					247
68					128					188					248
69					129					189					249
70					130					190					250
71					131					191					251
72					132					192					252
73					133					193					253
74					134					194					254
75					135					195					255
76					136					196					256
77					137					197					257
78					138					198					258
79					139					199					259
80					140					200					260
81					141					201					261
82					142					202					262
83					143					203					263
84					144					204					264
85					145					205					265
86					146					206					266
87					147					207					267
88					148					208					268
89					149					209					269

249	F	P
	4	3
2	1	2
3	0	0
	5	5

Scales:

Other species:

Site notes: Good fair/adult habitat

* 245 Trout

q/s

GENERAL ELECTROFISHING HABITAT SURVEY

Easting: 138325 metres Northing: 929150 metres Site code: T003 Date: 26-9-18

Widths (m)	At	Wet width	Bed width	Bank width
A - Upst.	0 metres	2.4		
B		3.1		
C		2.3		
D		2.4		
E		3.6		
F				
G				
H				
I				
J - Downst.				

Site length: 35 metres

Depths (cm)	<10	11-20	21-30	31-40	41-50	>50
Percent	0	10	30	40	10	10

Substrate	HO	SI	SA	GR	PE	CO	BO	BE	OB
Percent	15	5	0	30	30	10	5	5	0

[Definitions: HO v. fine org. matter SI inorg. indiv. part. invisible SA inorg. part. <2mm GR inorg. part 2-16mm PE inorg. part 16-64mm CO inorg. part 64-256mm BO inorg. part >256mm BE cont. rock surface OB wood barrels etc; cannot move]

Instream veg: 40% Silted? ☒ N Substrate: Stable ☒ Unstable ☒ Compacted ☒ Partly ☒ Uncompacted

Substrate notes: Gravel - pebble with rubble

Flow	SM	DP	SP	DG	SG	RU	RI	TO
Percent	0	0	0	20	10	40	30	0

[Definitions: SM <10cm; still/eddy; smooth ap.; silent DP >=30cm; slow/eddy; smooth ap.; silent SP <30cm; slow/eddy; smooth ap.; silent DG >=30cm; mod/fast; smooth ap.; silent SG <30cm; mod/fast; smooth ap.; silent RU fast; unbroken waves; silent RI fast; broken waves; audible TO white water; noisy; substrate invisible]

Flow notes: Good for fish

Bankside (%)	UC	DR	BA	MA
LB	100	0	0	0
RB	100	0	0	0

[Definitions: UC undercut banks DR vegetation rooted in riparian zone; branch/leaves touch or almost touch surface BA no cover or fish can't get to cover due to lack of water MA veg rooted in stream bed/bank incl. tree roots; excl. fully aquatic veg.]

Total LB fish cover: 20% Total RB fish cover: 20%

LB bankface veg.: Bare / Uniform ☒ Simple ☒ Complex

RB bankface veg.: Bare / Uniform ☒ Simple ☒ Complex

LB banktop veg.: Bare / Uniform ☒ Simple ☒ Complex

RB banktop veg.: Bare / Uniform ☒ Simple ☒ Complex

LB overhang. boughs: 0%

RB overhang. boughs: 0%

Canopy cover: 0%

Bankside notes:

Gen. landuse: AR / BL / CP / FW / GA / IG / IN ☒ ML / NC / OR / OW / RD / RP / RS / SC / SU / TH / TL / WL

Equipment Type: GEN ☒ BACK 250 Volts 295 Amps: 0.6 SMOOTH / PULSED Effective fishing?: Y ☒ N

Cond: 17 μ S/cm Temp: 11.2°C Time: 14:00 Stopnet: UP / DO ☒ NO Water: LO / ME ☒ HI & CLK / COL

Team leader: L. KELLY No of staff: 3 Photo taken & IDS?: Y ☒ N

Stocking? Y ☒ N Pollution? Y ☒ N

SP Notes: Fish to 5 bend + narrow channel

UP/S 38294 29149

SALMONID ELECTROFISHING RECORDING SHEET - FULLY QUANTITATIVE

Site code: T03 OS Grid sq: East: 138325 North: 929150 Altitude (m):

River:

Site situation:

Access/permission:

Date: 26.9.18

Instream cover: None / Poor / Moderate / Good / Excellent

Present	Sa0+	Sa1+	Sa2+	Sa3+	Sa4++	Tr0+	Tr1+	Tr2+	Tr3+	Tr4++
---------	------	------	------	------	-------	------	------	------	------	-------

TROUT																			
mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4	mm	1	2	3	4
30					90					150					210				
31					91					151					211				
32					92					152					212				
33					93					153					213				
34					94					154					214				
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45					105					165					225				
46					106					166					226				
47	11				107					167					227				
48					108					168					228				
49	11				109					169					229				
50					110					170					230				
51	11				111					171					231				
52					112					172					232				
53					113					173					233				
54	11				114					174					234				
55	11				115					175					235				
56					116					176					236				
57	11				117					177					237				
58					118					178					238				
59	11				119					179					239				
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64	11				124					184					244				
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68					128					188					248				
69	11				129					189					249				
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87					147					207					267				
88					148					208					268				
89					149					209					269				

TROUT
F P

1 15 2

2 6 0

3 2 0

23 2

TROUT
F P
1 15 2
2 6 0
3 2 0
23 2

Scales:

TROUT - 203 - 248 ADULT

Other species: EEL III (3)

Site notes: Veg instream - good pebble/cobble/gravel below!

SALMON

Run 1
63.112

Run 2
105

Run 3
0