Appendix E. Ecology

Ecological Report for the Allt Achadh na Moine Burn for the Mull & Iona Community Trust

Image produced from Ordnance Survey's Get-a-map service. Image reproduced with permission of Ordnance Survey and Ordnance Survey of Northern Ireland.

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MARCH 2011

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Fish Habitat Survey of the Allt Achadh na Moine Burn

Background

This fish habitat survey was conducted at the request of the Mull and Iona Community Trust to fulfil the legislative requirements relating to a proposed hydro eclectic generation scheme.

Main Findings

The design of the proposed scheme represents minimal impact on fish habitat in the Allt Achadh na Moine Burn. The location of the proposed turbine house is above the productive habitat accessible from the sea and the abstracted reaches are unlikely to support ancestral Brown Trout populations. There is potential that four optimal adult holding locations, in the 148 metres accessible to fish above the proposed turbine house, are used by migratory Sea Trout and Atlantic Salmon.

Surveyors

Andrew Bowden Smith M.Sc. and Ross Preston M.Sc.

Recommended Mitigation

It is recommended that:

- The design of the scheme should allow for increased flows during spawning season to enable access of migratory fish to the four accessible adult holding locations above the proposed turbine house.
- The outfall from the turbine house should be designed to avoid attracting fish towards the screens.
- Consideration should be given to transporting trapped sediments beyond any intake weir to continue supply to the lower reaches.

INTRODUCTION

This Fish Habitats Survey has been conducted at the request of the Mull and Iona Community Trust on the Allt Achadh na Moine Burn, near Craignure, on the Isle of Mull. This survey is to fulfil the fundamental requirements for fish habitat evaluation as set out in SEPA guidance document *Guidance for applicants on supporting information requirements for hydropower applications* under *The Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR).* Additional requested output included searches for existing fishery and fish habitat data, and suggested potential mitigation measures, appropriate to the specifics of the proposed scheme.

1. SURVEY AREA

The channel surveyed on the Allt Achadh na Moine Burn is shown in *figure 1.* The survey was conducted over approximately 2.2 kilometres of channel length from NGR 167505 740054 to uppermost proposed abstraction intake at NGR 166717 738316. The survey

included all channel reaches between the proposed turbine house and the three potential locations for the scheme's intakes. An additional channel length was surveyed from the survey start point at NGR 167505 740054 to the lower of the proposed turbine house location to gauge overall channel characteristics and potential for upstream juvenile migration beyond accessible spawning locations.

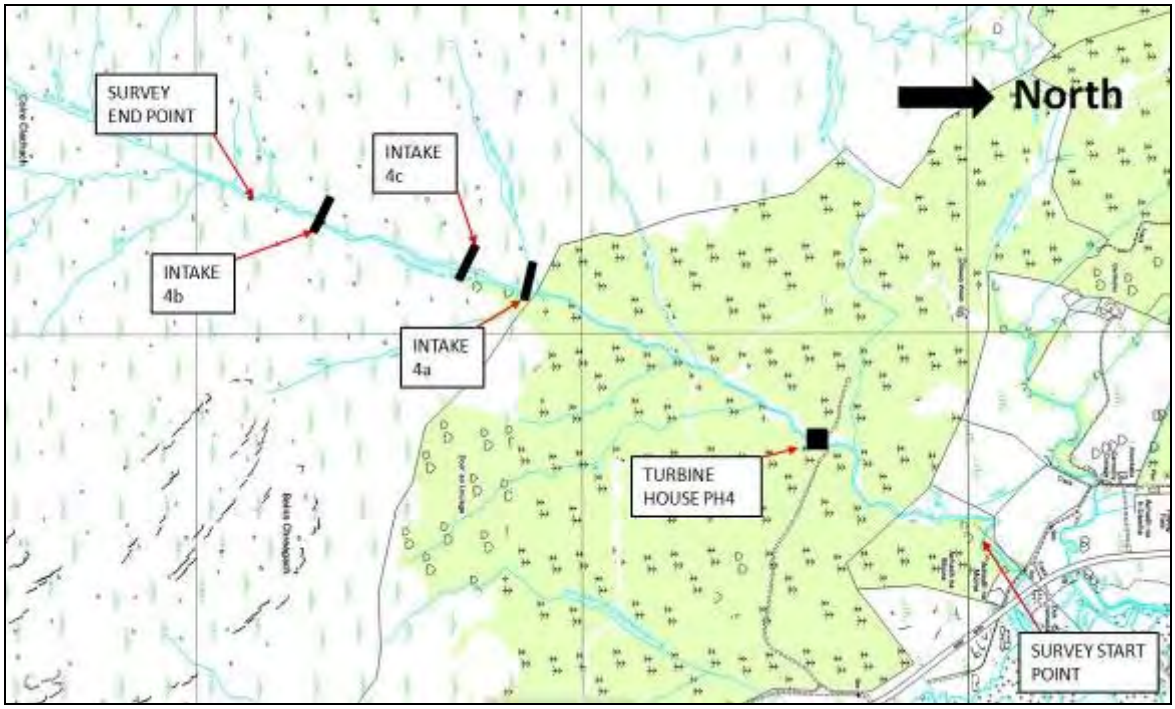

Figure 1 OS 1:10000 Scale Map showing the study area and the proposed scheme intake and potential turbine house locations.

For the purposes of assessing the fish habitat in relation to the proposed hydro scheme the study area was divided into five subsections. *Table 2.1* details these subdivisions.

Table 2.1 Details of surveys subdivision sections

Subsection	Details	Start NGR	End NGR	Channel Length (m)
A	Survey Start Point to Turbine House PH4	167505 740054	167288 739600	600
B	Turbine House PH4 to 1st impassable obstacle	167288 739600	167213 739500	148
C	1st impassable obstacle to Intake 4a	167213 739500	166890 738844	725
D	Intake 4a to Intake 4c	166890 738844	166837 738683	163
E	Intake 4c to Intake 4b	166837 738683	166717 738316	577

2. DATA SEARCHES

Searches for existing fishery and fish habitat data were conducted via enquiry to the Argyll Fisheries Trust who reported that they held no data on the Allt Achadh na Moine Burn. It was suggested that, as the river had no lochs within its catchment, the fish population was likely to be composed of the progeny of migratory Sea Trout (*Salmo Trutta*) and Atlantic Salmon (*Salmo Salar*) in areas downstream of impassable obstacles, dependent on suitable habitat for the various life stages of the two species. Data held by the Trust for similar rivers on the Isle of Mull supports this assumption. The potential for the existence of ancestral Brown Trout communities above any impassable obstacle is likewise dependent of the availability of suitable habitat and connectivity for their life stage requirements.

3. FISH HABITAT SURVEY METHODS

The survey was conducted using habitat definitions adapted from Hendry and Cragg-Hine (1996), as used by the Argyll Fisheries Trust, and deployed using basic elements of the SFCC habitat survey protocols (version 2.1) and undertaken by walking upstream during low and clear flow conditions. *Table 3.1* details the habitat types recorded and the applicable codes used. *Table 3.2* details the downgrades applied to fry and older juvenile habitats.

Table 3.1 Juvenile habitat type (adapted from Hendry and Cragg-Hine 1996)

Habitat Type	Habitat Code(s)	Classification
Fry habitat	**F**	Shallow (< 20cm) and fast flowing water with surface turbulence and a substrate dominated by pebbles and cobbles
Mixed juvenile habitat	**MJ**	Generally deeper water than fry habitat (20-40cm) with a pebble, cobble and boulder substrate. Water may be more turbulent than fry habitat. Stream edges often more suited to fry than parr.
Deep juvenile	**DJ**	Water over 40cm deep with pebble, cobble and boulder substrate
Pools (adult habitat)	**PA / PAS**	**Optimal;** No perceptible flow and usually greater than 1metre deep with cover from canopy or undercut banks. **Sub optimal;** smooth flow with little surface turbulence and generally greater than 30cm deep. Small substrates dominated by cobbles and fine materials.
Bedrock and gorge	**BR / GO**	Habitat dominated by sheets of bare rock. Depth usually <50cm. Little or no cover and unsuited to juvenile fish. May include different flow types including pools (although larger pools recorded separately).
Spawning	**SP /SPS**	**Optimal;** stable & not compacted. Mean substrate size up to 80mm. Not silted. **Sub optimal;** As above with fine sediments (sand & fine gravel <2mm) more than 20%.

Table 3.2 Downgrades for fry and older juvenile salmonid habitat

Feature	Bed features	Bank features	Consequence
Fish cover	Small substrates; silt and sand or compacted substrate matrix	Lack of vegetation overhang, bank undercut or tree roots	Increased exposure to predators and density dependant competition
Habitat complexity	Lack of variation in substrate and flow type	Overgrazed riparian vegetation. Non-native invasive plants.	Reduced productivity for aquatic & terrestrial food sources
Habitat modification	Unstable channel. Straightening, dredging, fords and culverts	Bank protection, erosion, trampling by livestock	Loss of habitat complexity and reduced carrying capacity

The National Grid References of transitions from one habitat type to another were recorded by hand held GPS, and a photographic record taken were appropriate. These photographs are all available on the accompanying CD-ROM, with each photograph named by feature number (ordered from downstream to upstream), habitat code, and six figure NGR. As fish populations are dependent on the range of habitats in *Table 3.1,* and the inter-connectivity between them, obstacles to upstream fish passage were recorded, as for habitat types, and provisionally classified as passable (OBP) or impassable (OBI) to migratory salmonids. The wetted widths of the channel were recorded periodically to attain an average width for each habitat type excluding adult holding pools. The area of spawning grade substrates was estimated and recorded separately.

The channel reach from the upper limit of tidal influence to the survey start point was walked up to ensure that no impassable obstacles were present. Additional attention was paid to the potential presence of habitat for Sea Lamprey (*Petromyzon)* and, River and Brook Lamprey (*Lampreta)*.

4. SURVEY DATA

The data was collated and the areas of each habitat type and number of optimal and sub-optimal adult holding pools calculated by survey subdivision sections. The locations of, spawning grade substrates, optimal and sub-optimal adult holding pools, and passable and impassable obstacles are shown in *Figures 2,3,4,5*, and *6* for Subsections A,B,C,D and E respectively. Numbered points refer to feature number and photographs were available. No lamprey habitat was observed in any of the subdivisions.

The mean channel widths for each survey subsection's habitat types were calculated and presented in *Table 4.1.* The approximate channel slopes for each subsection are presented in *Table 4.2.*

Table 4.1 Mean widths (m) of the measured habitat types by subdivision section

Subsection	F	MJ	DJ	BR
A	5.0	4.7	4.1	4.5
B	0	4	3.7	4
C	0	4	0	4

D	0	4	0	4
E	0	3.4	0	3.7

4.1 SUBSECTION A

Table 4.1.1 Subsection **A** *habitat area* (m^2)*, and adult holding pool and obstacle numbers.*

Subsection	F (M^2)	MJ (M^2)	DJ (M^2)	BR/GO (M^2)	SP (M^2)	SPS (M^2)	PA	PAS	OBP	OBI
A	201	1598	716	65	16	0	2	0	1	0

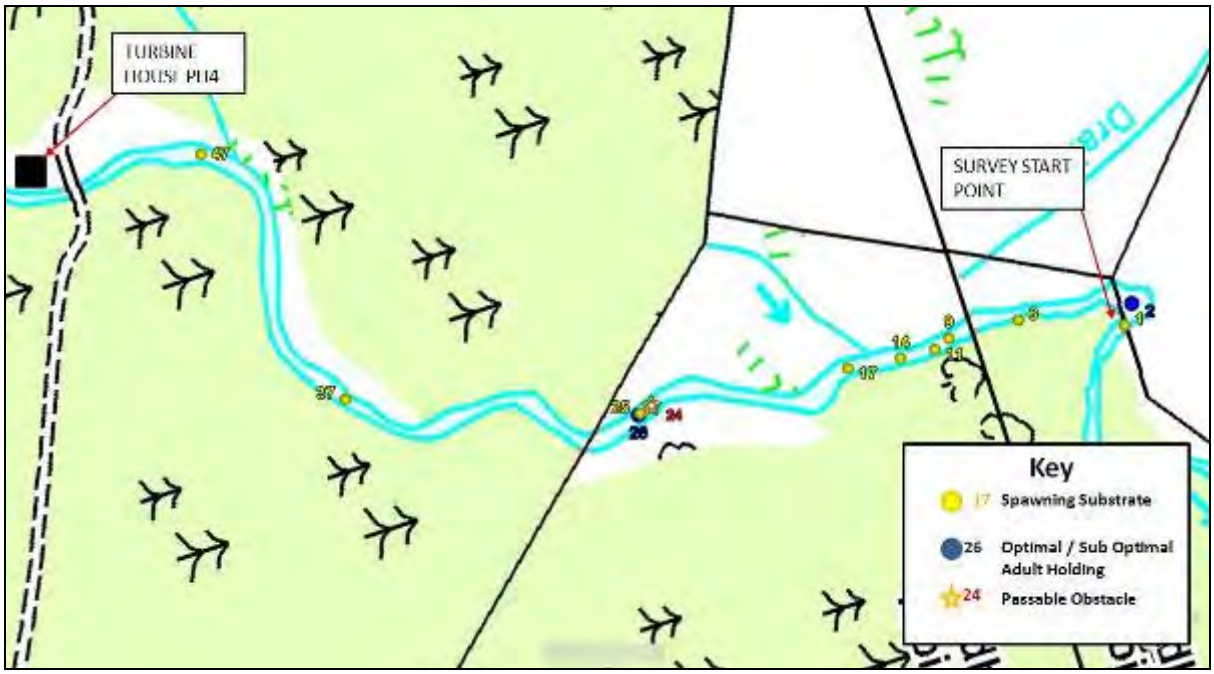

Figure 2 OS 1:10000 Scale Map showing the Subsection A obstacles, pools and spawning grade substrate locations.

4.2 SUBSECTION B

Table 4.2.1 Subsection **B** *habitat area, and adult holding pool and obstacle numbers.*

Subsection	F (M^2)	MJ (M^2)	DJ (M^2)	BR/GO (M^2)	SP (M^2)	SPS (M^2)	PA	PAS	OBP	OBI
B	0	0	128	164	0	0	4	0	2	1

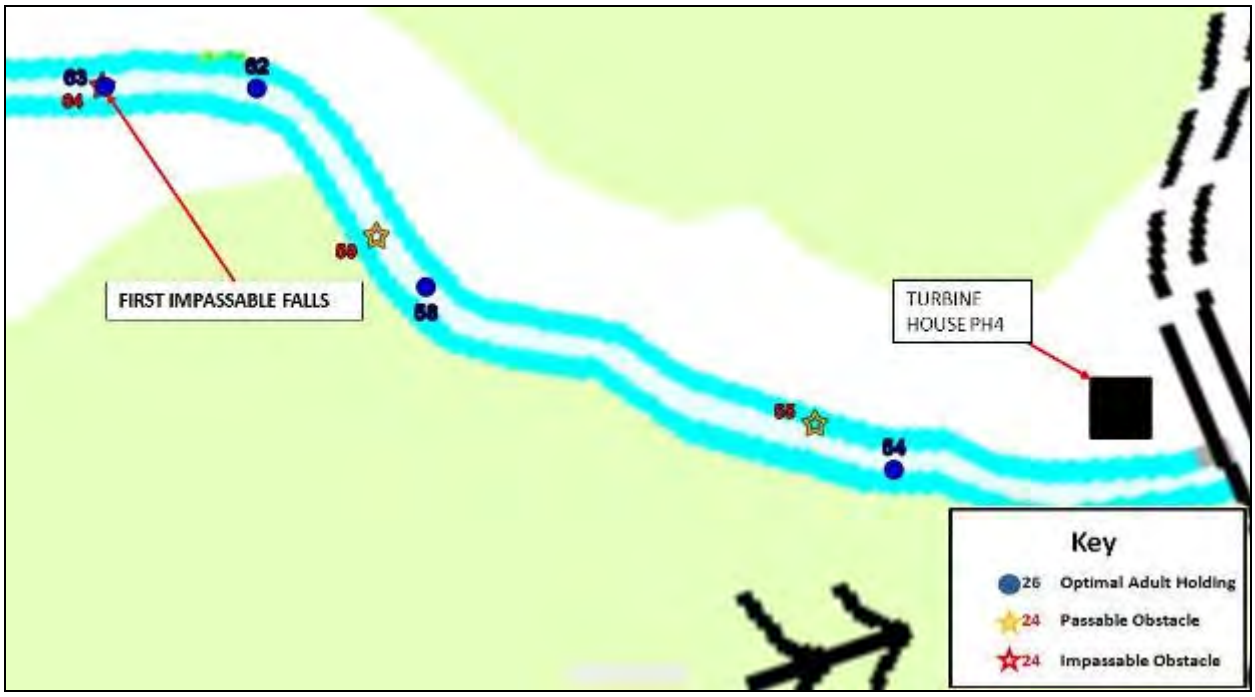

Figure 3 OS 1:10000 Scale Map showing the Subsection B obstacles, pools and spawning grade substrate locations.

The impassable falls, labelled feature 64, were unsafe to access for direct measurement. The height of the falls was estimated at 2.8 metres. Whilst this is below the theoretical passable height for both Sea Trout and Atlantic Salmon, the falls were an overhanging bedrock feature making it more difficult to ascend. Additionally the channel slope rises to 15.6% at this point and there is little reason for fish to progress further than this point.

4.3 SUBSECTION C

Table 4.3.1 Subsection **C** *habitat area, and adult holding pool and obstacle numbers.*

Subsection	F (M^2)	MJ (M^2)	DJ (M^2)	BR/GO (M^2)	SP (M^2)	SPS (M^2)	PA	PAS	OBP	OBI
C	0	560	0	1860	3	0	6	1	2	8

Figure 4 OS 1:10000 Scale Map showing the Subsection C obstacles, pools and spawning grade substrate locations.

4.4 SUBSECTION D

Table 4.3.1 Subsection **D** *habitat area, and adult holding pool and obstacle numbers*

.

Subsection	F (M^2)	MJ (M^2)	DJ (M^2)	BR/GO (M^2)	SP (M^2)	SPS (M^2)	PA	PAS	OBP	OBI
D	0	37	0	548	4	0	2	0	0	4

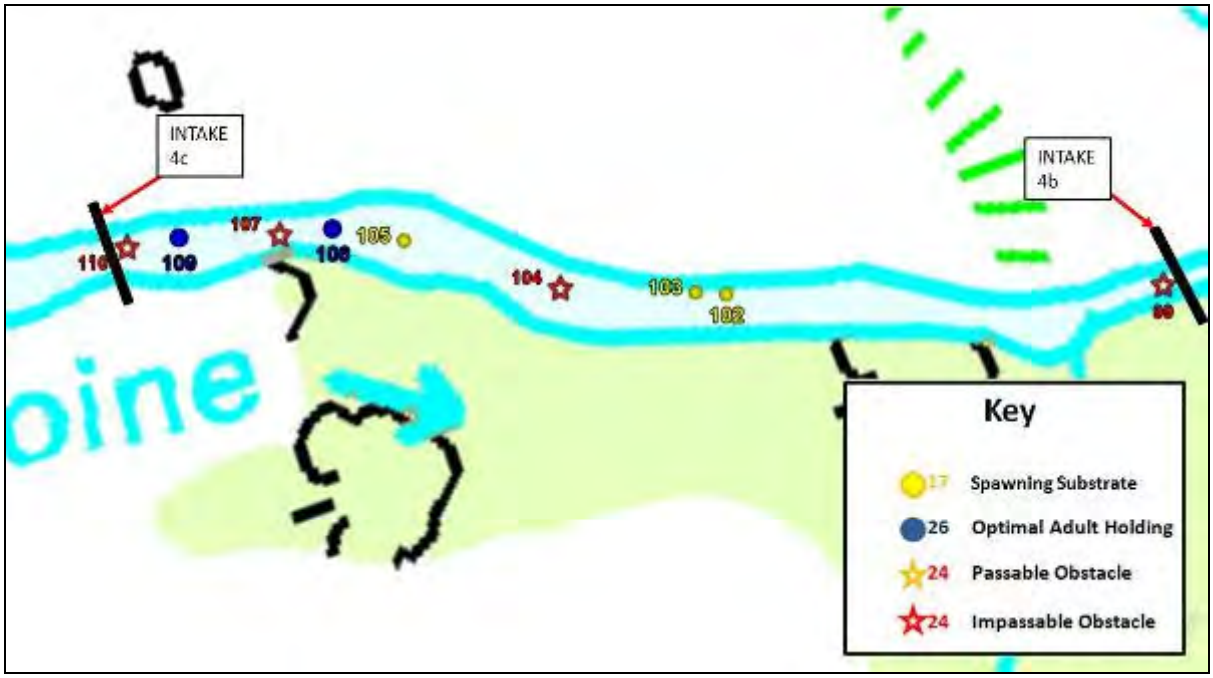

Figure 5 OS 1:10000 Scale Map showing the Subsection D obstacles, pools and spawning grade substrate locations

4.5 SUBSECTION E

Table 4.4.1. Subsection **E** *habitat area, and adult holding pool and obstacle numbers.*

Subsection	F (M^2)	MJ (M^2)	DJ (M^2)	BR/GO (M^2)	SP (M^2)	SPS (M^2)	PA	PAS	OBP	OBI
E	0	221	0	1462	0	0	7	0	1	5

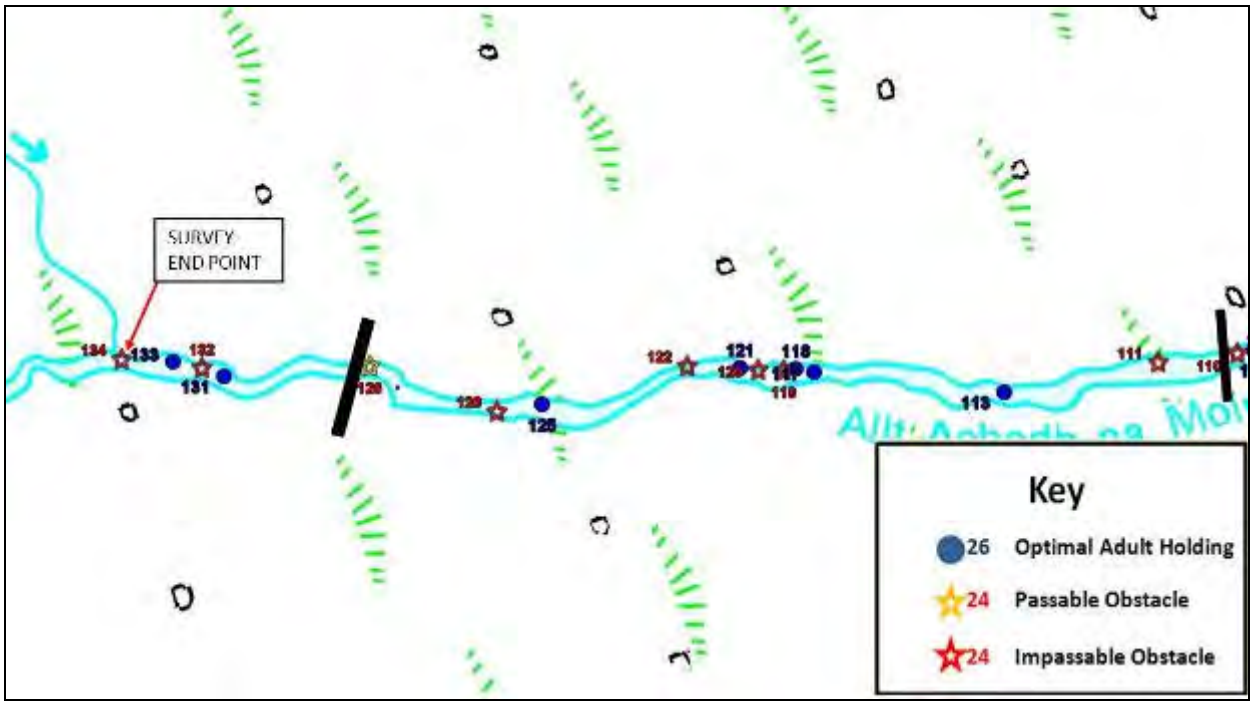

Figure 6 OS 1:10000 Scale Map showing the Subsection E obstacles, pools and spawning grade substrate locations

5. SURVEY DATA INTERPRETATION

To interpret the data in relation to the proposed hydro scheme comparison of the survey subsections is necessary. *Chart 5.1* presents the weighted area of optimal and sub-optimal spawning grade substrate for each subdivision section, represented as area of spawning grade substrate per linear metre of channel for each subdivision section. *Chart 5.2* presents a comparison of the habitat types, other than spawning and holding pools, represented as area of habitat type per linear metre of channel for each subdivision section. *Chart 5.3* presents the number of optimal and suboptimal adult holding pools for each subdivision section. *Table 5.1* shows the average channel slope for each subdivision subsection.

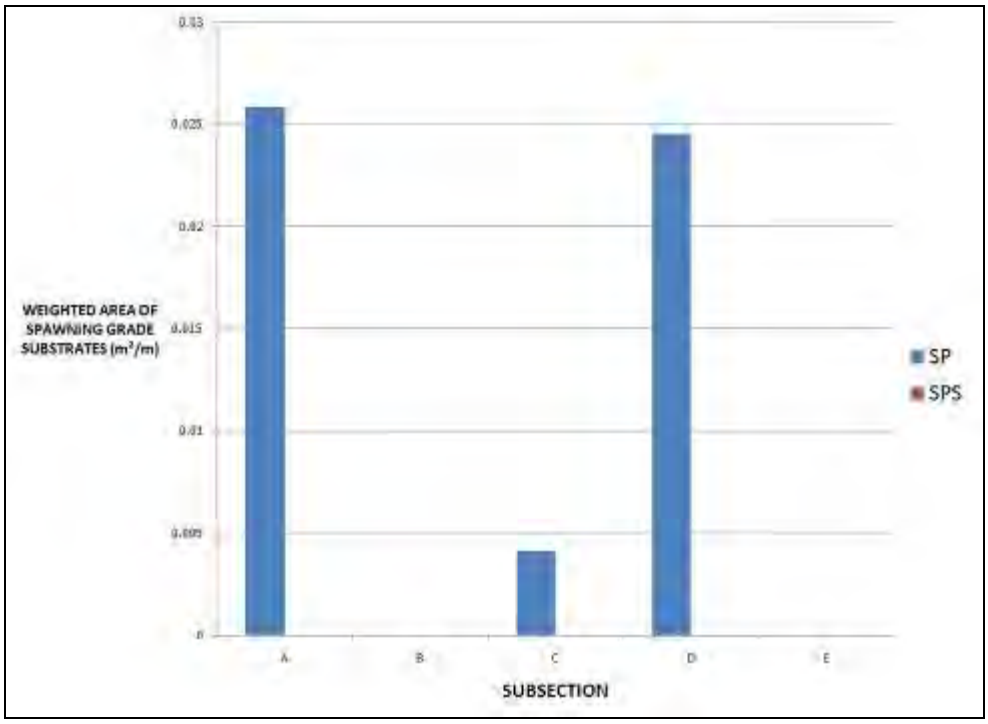

Chart 5.1. Comparison of the weighted area of optimal and sub-optimal spawning grade substrate for the subdivision sections

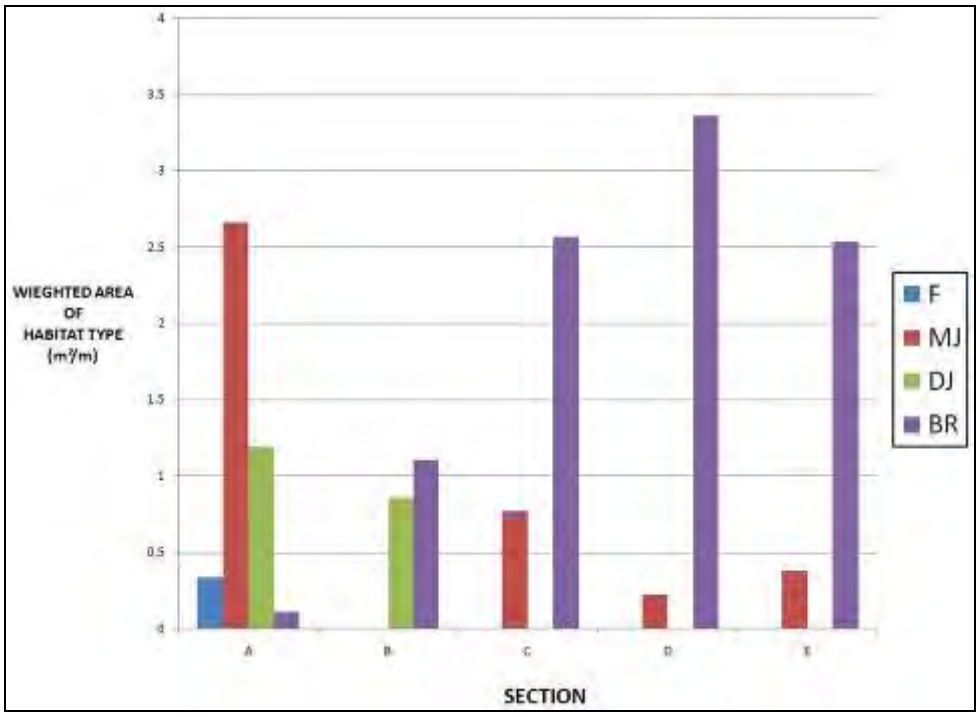

Chart 5.2. Comparison of the weighted area of fry, mixed juvenile, deep juvenile and bedrock habitat types by subdivison area.

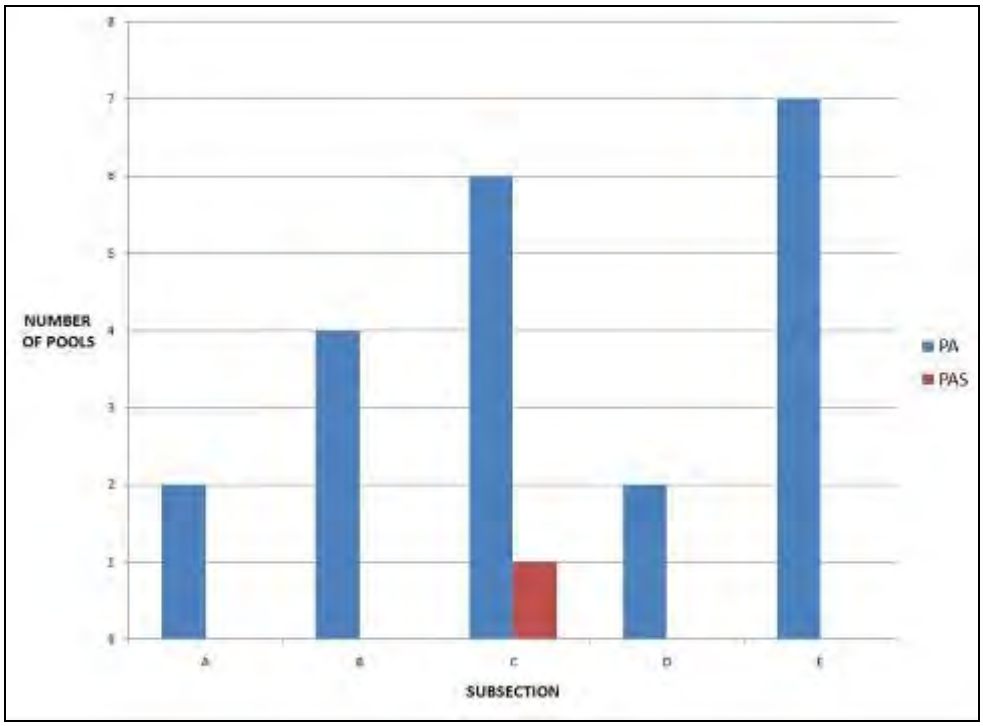

Chart 5.3. Comparison of the numbers of optimal and suboptimal holding pools by each subdivision section

Table 5.1 Approximate average slopes (%) of each channel subdivision section

Subsection	Channel Slope %
A	1.7%
B	4.7%
C	15.6%
D	27.6%
E	11.3%

The overall size of spawning substrates and the average widths of the channel make the Ardow Burn suited both Sea Trout and Atlantic Salmon derived populations. The upper limit of migration for both Sea Trout and Atlantic Salmon is at the impassable falls at feature 64 at the boundary of Subsections B and C. There are only 6 optimal adult holding pools along the accessible channel, two in subsection A, and four in subsection B. Similar sized streams with a similar lack of optimal adult holding have been electrofished by the Argyll Fisheries Trust and found to sustain both Sea Trout and Atlantic Salmon populations. It is assumed that both species are able to reach spawning maturity in the estuarine environment and make opportunistic use of the spawning opportunities afforded by high flows. In such scenarios some deep juvenile habitat provides sufficient holding capacity for returning adults. In the case of the Allt Achadh na Moine Burn it is possible that migratory fish utilise the optimal holding habitat in subsection B before dropping back to utilise the spawning substrates in subsection A.

The weighted habitat areas shown in *Chart 5.2* demonstrate highly heterogeneous juvenile fish habitat in subsection A. The survey found little reason to apply any downgrades

to the fish habitat below the proposed turbine house. The channel slopes and lack of juvenile habitat in subsection B make upstream juvenile migration, beyond the proposed turbine house location, highly unlikely. The dominance of bedrock, the fragmentation of the habitat by impassable obstacles, and the average channel slope in subsections C, D and E make it highly unlikely that there are any ancestral Brown Trout populations within these subsections, although this could only be substantiated by electro fishing survey.

The proposed plans for the hydro scheme show a number of potential intake locations, Intake 4c shows two tributaries, one on each bank, diverted to above the intake. These tributaries are extremely steep and less than a metre wide, and provide no potential fish habitat. Photograph 100 on the accompanying CD-ROM is of the tributary on the right bank.

6. IMPLICATIONS FOR THE PROPOSED SCHEME and SUGGESTED MITIGATION

The fish habitat data shows that the position of the proposed Turbine House PH4 is a practical location form a fishery point of view. The potential for migratory fish to utilise the adult holding capacity in subsection B, before dropping back to subsection A to spawn, make it desirable that the flow characteristics during spawning season enable access to these holding pools. This can be achieved by designing the scheme to provide increased flows during spawning season.

The outfall from the turbine house must be screened and designed so as not to attract fish towards the outfall. Sediments trapped above the intake weir are ultimately destined to supply the various habitats downstream and should be periodically transported beyond the intake weir.

Bryophyte Survey for the Proposed Hydro Scheme on the Allt Achadh na Moine Burn

Revised December 2011

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Bryophyte and Aquatic Macrophyte Survey on the Allt Achadh na Moine Burn

Background

This bryophyte survey was conducted at the request of the Mull and Iona Community Trust to fulfil the legislative requirements relating to a proposed hydro eclectic generation scheme.

Mull has been widely surveyed in detail for its bryophyte interest in the past e.g. B and A Averis, G Rothero, Quadrat, SNH and also by the Brylogical society. Oceanic bryophyte assemblages on the west coast of Scotland typical of western Atlantic woodlands are second to none elsewhere in the UK with many woodlands supporting rare or scarce plants. Hydro schemes are said to have the potential to impact on both bryophytes and lichen species by reduced flow and longer drought periods (Demars and Britton 2011).

Surveyors

Ross Preston M.Sc.

Main Findings

The Allt Achadh na Moine Burn has a relatively poor representation of oceanic bryophyte communities (See table 1). Generally terrestrial species were poor. Surface water and ground water run-off both contribute to the wetting of the banks of the burn. Dense stands of *Picea sitchensis* are found close to the edge on the east side of the burn (10m – 20m) and are of felling age. The proposed pipeline route and access route have relatively few bryophyte species present typical of dense plantation forest and *molinia / Pteridium* dominated habitat e.g. *Sphagnum capillifolium*, *Sphagnum palustre*, *Shagnum fallax and Isothecium myoseroides*. Aquatic macrophyte species are limited and only included bryophyte species listed in table 1 List of oceanic bryophyte species located between the intake and outflow points. The lack of suitable substrate and susceptibility to high flow periods is likely to restrict the ability of aquatic macrophytic plants to colonise.

Recommended Mitigation

The proposed pipeline route/access route is unlikely to impact important bryophyte species of interest.

Introduction

1. Survey area

The survey included all terrestrial land up to 10m from the edge of the Allt Achadh na Moine Burn (including trees and rocks) and within the burn including its bank edges between the locations for the intake and outfall of the proposed scheme (figure 11). The proposed route for the pipeline and access was surveyed. Those plantation trees which were on the west bank have now been felled. The majority of conifers

which line the east side of the Allt Achadh na Moine Burn are mature sitka spruce. The proposed pipeline and access route follows a general line along the edge this.

2. Bryophyte survey methods

A list of oceanic bryophyte species (sensu Hill & Preston, 1998) and/or oceanic woodland lichen species (Coppins & Coppins, 2002) located between the intake and outflow points (Table 1), along the proposed pipeline route (Table 2) and along the proposed access route (Table 3) was created with uncommon or vulnerable species highlighted. The bryophytes have been divided into four zones; aquatic, amphibian, riparian and terrestrial (Gilbert 2000) and classed as rare, scarce or common (Red Data Book).

3. Survey data

Figure 1 Powerhouse location *Sphagnum cappilifolium* and *Sphagnum fallax* vegetation in small pools, polytrichum commune, Dicranum scoparium, *Dicranum majus, Pleurozium schreberii, Isothecium myoseroides, Hylocomium splendens* and *Thuidium tamariscinum at* NM 67272 39613

Figure 2 *Polytrichum commune, Isothecium myoseroides* amongst molinia/calluna at NM 67186 39544

Figure 3 Looking north downstream from NM 67161 39500

Figure 4 Bracken at NM 67099 39421

Figure 5 *Sphagnum fallax, Sphagnum capillifolium* and *Isothecium myoseroides* under trees at NM 67096 39364

Figure 6 Looking uphill

Figure 7 Crossing point for pipe at NM 67020 39146

Figure 8 *Dicranum scoparium*, *Thuidium tamariscinum*, *Plagiochilla asplenoides* and *Plagiothecium undulatum* at NM 67075 39238

Figure 9 *Dicranum majus* at NM 67002 39100

Figure 10 *Eurhynchium praelongum* on downy birch near Intake point *NM 66964 39003*

Figure 11 Survey route

Scale: 1:10000

N
W E
S

Pipeline route

Powerhouse

Access route

Table 1 List of oceanic bryophyte species located between the intake and outflow points

Bryophytes	**Zone**						
	Aquatic	**Amphibious**	**Riparian**	**Terrestrial**	**Rare**	**Nationally Scarce**	**Common**
Rhytidiadelphus loreus				√			√
Dicranum scoparium				√			√
Isothecium myosuroides			√	√			√
Ulota phyllantha		√					√
Lophocolea bidentata		√					√
Leucobryum glaucum		√	√	√			√
Ptilium crista-castrensis		√	√	√			√
Pleurozium schreberi				√			√
Eurhynchium praelongum				√			√
Sphagnum capillifolium				√			√
Sphagnum cuspidatum				√			√
Sphagnum palustre				√			√
Polytrichum commune				√			√
Lichens							
Usnea cornuta			√				√
Degelia plumbea			√				√

Table 2 List of oceanic bryophyte species located on the proposed pipeline route

Bryophytes	**Zone**						
	Aquatic	**Amphibious**	**Riparian**	**Terrestrial**	**Rare**	**Nationally Scarce**	**Common**
Dicranum majus				√			√
Dicranum scoparium				√			√
Eurhynchium praelongum			√				√
Isothecium myoseroides				√			√
Plagiochilla asplenoides				√			√
Plagiothecium undulatum				√			√
Polytrichum commune				√			√
Sphagnum cappilifolium				√			√
Sphagnum fallax				√			√
Sphagnum palustre				√			√
Sphagnum papillosum				√			√
Thuidium tamariscinum			√	√			√

Table 3 List of oceanic bryophyte species located on the access route

Bryophytes	**Zone**						
	Aquatic	**Amphibious**	**Riparian**	**Terrestrial**	**Rare**	**Nationally Scarce**	**Common**
Dicranum scoparium				√			√
Eurhynchium praelongum			√				√
Isothecium myoseroides				√			√
Plagiochilla asplenoides				√			√
Plagiothecium undulatum				√			√
Polytrichum commune				√			√
Sphagnum cappilifolium				√			√
Sphagnum fallax				√			√
Sphagnum palustre				√			√
Sphagnum papillosum				√			√

4. Survey data interpretation

The Allt Achadh na Moine Burn, pipeline route and access route are species poor for their bryophytes.

5. Implications For The Proposed Scheme And Suggested Mitigation

There are no perceived implications for the proposed scheme on bryophyte interests.

Otter Survey for the Proposed Hydro Scheme on the Allt Achadh na Moine Burn

MARCH 2011

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Otter Survey for the Proposed Hydro Scheme on the Allt Achadh na Moine Burn

Habitat preference

Otters occupy home ranges within river systems, encompassing main rivers, other watercourses and wetlands. Male otters in particular have large overlapping home ranges extending up to 40km. Breeding occurs at any time of year and the young remain dependent on the female for up to one year. As a large proportion of an otter's diet comprises fish, favoured areas will support abundant fish populations, with appropriate bankside and in-channel features such as large overhanging trees, marginal tall-herb vegetation and in-channel riffles and pools.

1 Legislation

- listed on Appendix 1 of CITES, Appendix 11 of the Bern Convention and Annexes 11 and IV of the Habitats Directive.
- It is protected under Schedule 5 of the Wildlife and Countryside Act 1981 and Schedule 2 of the Conservation (Natural Habitats) Regulations 1994.
- The European sub-species is listed as globally threatened on the IUCN/WCMC Red Data List.

2 Survey methodology

A survey of the Ardow Burn was carried out including up to 250m beyond the intake and 250m below the outfall (See map 1, Otter survey). The search area included the riparian zone along the Ardow Burn up to 10m from the waters edge, the footprint of any areas that will be inundated as a result of the development and where any new infrastructure such as access roads and turbine houses are proposed. The survey included the search for signs of; spraint, footprints, holts and worn paths alongside water courses. A ten figure grid reference is given for any significant findings and is shown in table 1 Findings.

The survey took place on the 15th March 2011. Both sides of the river were checked by Ross Preston. The survey was carried out at the same time as carrying out a River Habitat Survey over an eight hour surveying period. Weather conditions were good with dry sunny periods. River flow conditions were normal.

3 Surveyor experience

Ross Preston (M.Sc. Environmental Management) is an ecologist with years of experience in this field of work having spent time as the Conservation Officer for the Forestry Commission and SNH at Lochgilphead from 2000 to 2007 and gained certification in otter ecology and surveying through Glasgow University in 2006. He has since carried out a number of otter surveys for renewable projects throughout Scotland.

4 Results

Otters are common in this area and most burns are likely to be used at some point. There are few good fish habitat areas along the burn above the forestry road suitable for feeding. All signs of otter recorded were found along the lower reaches of the burn. There were few spots suitable for otters to lie up or for holts. The development is unlikely to impact on otters as long as suitable mitigation is implemented at the outfall to allow otters to continue upstream.

No otter holts were found along the burn therefore a licence will not be required.

Table 1 Findings

Description of finding	**Grid reference**
Resting Place with footprints at the back	NM 167369 739698

Phase I/NVC for the Proposed Hydro Scheme on the Allt Achadh na Moine Burn

MARCH 2011

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Phase I for the Proposed Hydro Scheme on the Allt Achadh na Moine Burn

A Phase I/NVC survey was carried out for the proposed pipeline route on the Allt Achadh na Moine Burn between the intake and outflow points (see attached map 1 NVC and map 2 Phase I Habitat Survey). A thin edge of W11a *Quercus petraea – Betula pubescens – Oxalis acetosella* woodland aligns the banks of the burn on both sides. The main tree species include both *Betula pubescens* and *Quercus petrae*. The typical vegetation associated with this NVC community include; *Deschampsia flexuosa, Holcus mollis*, *Pteridium aquilinum*is, *Blechnum spicant*, *Lophocolea bidentata*, *Pleurozium schreberi and Rhytidiadelphus loreus*. U20c *Pteridium aquilinum-Galium saxatile* community, species-poor sub-communities are found between this thin line of woodland and the commercial forestry trees *Picea Sitchensis* which surround the burn on both sides.

Once exiting the commercial forestry uphill community types merge into W17b *Quercus petraea – Betula pubescens – Dicranum majus* woodland and M25a *Erica tetralix* sub-community *Molinia caerulea – Potentilla erecta* mire. Vegetation recorded includes; *Molinia caerulea, Juncus effuses, Potentilla erecta, Erica tetralix, Eriophorum angustifolium.* Above that point and up to the intake the NVC type merges into M16 *Erica tetralix – Sphagnum compactum* wet heath and includes the following plants recorded; *Erica tetralix, calluna vulgaris, Molinia caerulea, Eriophorum angustifolium, Narthecium ossifragum* and *Sphagnum compactum.*