

APPENDIX V2-4.5: WATERCOURSE CROSSING FISH HABITAT SURVEY

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1.	WATERCOURSE CROSSING FISH HABITAT SURVEY	3
	Summary	3
1.1	Introduction	5
1.2	Objectives	7
1.3	Methods	7
1.4	Results	9
1.5	Interpretation	28
1.6	Recommendations	29
1.7	References	30

Annex

Annex A: Section 2 Skye: Cable route, crossing locations subject to detailed surveys and linear survey reaches (downstream and upstream limits)

Annex B: Section 6 Inverigar Burn: Cable route, crossing locations subject to detailed surveys and linear survey reaches (downstream and upstream limits)

Annex C: Section 2 Skye: Spawning habitats recorded during stream crossing surveys

Annex D: Section 2 Skye: Extended linear stream survey sections and habitat descriptions

Annex E: Section 6 Inverigar Burn: Extended linear stream survey sections and habitat descriptions

Annex F: Section 2 Skye: spawning habitats in extended linear habitat surveys

Annex G: Section 6 Inverigar Burn: spawning habitats in extended linear habitat surveys

1. WATERCOURSE CROSSING FISH HABITAT SURVEY

Summary

Background

This survey was commissioned by ASH Design + Assessment Ltd. on behalf of SSEN Transmission to provide data on fish habitats along two sections of the Skye Reinforcement Project (hereafter referred to as “the Proposed Development”). Specifically, the survey was commissioned in relation to watercourses in Skye between Sligachan and Loch Ainort (referred to as Section 2 of the project), and a section of the western side of the Great Glen south of Fort Augustus (referred to as Section 6 of the project). The survey has been undertaken by Waterside Ecology.

While most of the reinforcement project would comprise an overhead 132 kV transmission line supported by wood poles (in Section 0 of the project) and steel lattice towers, part (Section 2) or all (Section 6) of the above Sections would be buried underground, and would cross watercourses along the route either by trenching within the channel or by directional drilling beneath channels. Concerns were raised at scoping stage that the proposed works at watercourse crossings could have the potential to impact negatively on fish and fish habitats.

This study identified watercourses along the route of the Proposed Development within Section 2 and 6 where underground cabling is proposed, with the potential to hold useful suitable habitat for salmonid fish species, and carried out surveys at proposed crossing points on the selected watercourses to classify habitats and identify any potential sensitivities. The results are set out in this Technical Appendix.

Main Findings

- There are significant areas of spawning habitat suitable for salmon and trout at the proposed crossing locations on the River Sligachan and on the Abhainn Ceann Loch Ainort (Section 2);
- Small amounts of spawning habitat suitable for trout were found close to three other crossing locations along the Skye section of the cable route (Section 2);
- No spawning habitat was found at or close to any of the three crossing points surveyed on the Invervigar Burn catchment (Great Glen, River Ness catchment) (Section 6);
- Bank stability issues were noted at several proposed crossing locations; and
- No substantial areas of spawning habitat or other sensitive features were found in linear habitat surveys on Abhainn Torra-mhichaig, Allt Mhic Mhoirein or Invervigar Burn.

Key Recommendations

- Particular care should be taken at the crossings of the River Sligachan and Abhainn Ceann Loch Ainort due to the presence of significant areas of potential spawning habitats. Where practicable, subject to review by the Principal Contractor against detailed construction programming, it would be preferable for directional drilling at the crossings of the River Sligachan and Abhainn Ceann Loch Ainort to be carried out between March and late September to avoid impacts on spawning fish and eggs in the vulnerable early stages of development when they are susceptible to mechanical shock. Further consultation with SEPA and the relevant District Salmon Fisheries Board will be undertaken as part of this process and prior to works commencing. Instream work at these crossings (if required) should be done between early May and late October, and damage to or destabilisation of banks, should be avoided.
- Directional drilling is scheduled to be carried out at several smaller watercourse crossings in addition to the two rivers mentioned above. Potential effects are the same at these smaller sites, but while some spawning habitat was found close to several crossing points, no large or important areas of spawning habitat were recorded and any impacts are expected to be highly localised. Thus impacts on fish and fisheries in these streams are expected to be small, and timing of drilling at these sites is considered to be non-critical.

- Where practicable, trenching for river crossings should be carried out between early May and late October to avoid impacts on spawning fish or developing eggs and fry, as set out in SEPA guidance. However, proposed trenched streams are small, and no significant areas of spawning habitat were found at proposed crossing locations; therefore if it is necessary to carry out trenching work during sensitive months (November to April) this is not expected to have significant impacts on local fish populations provided measures are taken to avoid any substantial downstream impacts; If the above measures are taken, alterations to proposed crossing points should not be required.

1.1 Introduction

1.1.1 This survey was commissioned to provide data on fish habitats along two Sections of the Skye Reinforcement Project (hereafter referred to as 'the Proposed Development'). While most of the project would comprise overhead line (OHL), two Sections of the Proposed Development would be buried underground, as follows:

- Section 2 of the Project: Skye - Sligachan to Loch Ainort; and
- Section 6 of the Project: Fort Augustus – Achadh nan Darach to Auchtertau.

1.1.2 This would involve trenching and back-filling along the cable route. There are a number of streams along the route of the Proposed Development. Crossing would either be by trenching across the stream channel (minor watercourses) or by directional drilling beneath the channel (mainly in larger watercourses).

Cable Routes

1.1.3 The buried cable route in Section 2 on Skye is approximately 15 km in length running between approximately NG 481 321 and NG 564 275. It crosses numerous small streams as well as several larger watercourses. Most of the proposed crossing locations are in the lower stream reaches, quite close to the sea, and potentially are accessible to sea trout. Atlantic salmon may be present in larger watercourses. In addition to the crossings, the cable route runs close to the left bank of the Abhainn Torra-mhichaig for approximately 1.5 km, and the left bank of the Allt Mhic Mhoirein for roughly 600 m, potentially exposing the streams to silt runoff during trenching and filling.

1.1.4 The route near Fort Augustus (Section 6) is approximately 9 km in length. Unlike Section 2 of the project on Skye, it mainly runs across hill ground and most stream crossings are likely to be at locations that are either fishless or populated by small numbers of resident brown trout. The exception is at Achadh nan Darach (NH 31 05), where the cable route crosses or runs adjacent to the headwaters of Invervigar Burn at several locations. The Ness District Salmon Fisheries Board raised concerns in relation to potential impacts on Atlantic salmon populations in this stream¹.

Potential Impacts on Fish and Fish Habitat

1.1.5 Possible impacts vary depending on crossing type. Trenched crossings are dug through the river bed and then back-filled. This would be expected to have a direct localised impact on fish habitats where the cable is laid, with potential for silt impacts in the immediate vicinity downstream. In a typical stream with widespread juvenile salmonid habitat, damage to a small area through trenching would not be expected to have significant impacts on fish populations, however trenching in important, sensitive and potentially very limited habitat such as a good spawning area could have significant negative local impacts on fish populations.

1.1.6 No data is available on the impacts on fish as a result of directional drilling below a riverbed, so it is not known what, if any, effects would be expected. Directional drilling beneath the channel would not directly impact fish habitats, but potential impacts include changes to fish behaviour and mechanical shock to eggs caused by vibrations. Changes in fish behaviour would be of particular concern during spawning if fish are deterred from using a particular spawning area. Depending on the amount of vibration caused by drilling, mechanical shock to eggs may also be a concern during the early stages of development, should crossing locations coincide with redds; a review of the literature (Clarke (ed.) 1997) found that salmonid eggs are vulnerable to mechanical shock between fertilisation and what is known as the 'eyed stage' of development, becoming more robust once the eyed stage is reached. The length of time from fertilisation to eyed stage varies depending on water temperature but in Scotland ova would be expected to reach the eyed stage by the end of February. Mechanical shock or behavioural impacts are of greatest concern where the proposed drilling site coincides with significant spawning areas where failure to spawn successfully could have impacts at a population level. Where effects would be limited to smaller patches of habitat impacts may be negligible in the context of the

¹ Scoping response dated 22 January 2022

wider watercourse. A further possible impact of drilling or trenching could be destabilisation of riverbanks in areas where heavy machinery might be used on banks composed of unstable or loose material. Wider impacts on fish or fish habitats from the proposed cable route could accrue from runoff from construction work close to and up-slope of watercourses. Once again, spawning areas would probably be most at risk.

Existing Fisheries Data

Skye (Section 2)

- 1.1.7 The only watercourse for which data exist in the Skye survey area is the River Sligachan, which supports both salmon and sea trout. Salmon fry and parr were both recorded at low to moderate densities in 2019 (Skye and Wester Ross Fisheries Trust 2020).

Invervigar Burn (Section 6)

- 1.1.8 The Invervigar Burn is a tributary of the River Oich in the Ness catchment, and concern around potential impacts on salmon associated with the cable route were raised by the Ness District Salmon Fisheries Board at scoping stage for the project. Recent surveys on the Invervigar Burn (Ness DSFB 2020) suggests that while it is accessible to salmon in its lower reaches and surveys have found both fry and parr to be present, the upper reaches may be inaccessible. Surveys carried out in 2019 and 2020 were upstream of falls, and no salmon were found. Trout are present in the headwaters, and it is possible that sea trout can ascend the falls as they are known to be able to 'scramble' up certain obstacles that salmon are unable to pass.

Conservation Status

- 1.1.9 The Atlantic salmon is listed on Annexes IIa and Va of the EU Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (known as the Habitats Directive). Atlantic salmon receive protection, particularly from over-exploitation, under the Bern Convention (see **Annex C** of this Technical Appendix). Salmon in Scotland receive further protection from Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003. This covers a number of regulatory areas, including legal methods of fishing and offences, close times and protection of juvenile and spawning salmon. The Atlantic salmon is listed as vulnerable on the IUCN red list.
- 1.1.10 Due to recent declines, eels are of increasing conservation interest and are protected by European (EC No 1100/2007) and Scottish (Freshwater Fish Conservation (Prohibition on Fishing for Eels) (Scotland) Regulations 2008) legislation. The latter makes it illegal to take eels without a license from the Scottish Government. European eels are listed as critically endangered on the IUCN Red List. Atlantic salmon, brown trout (including sea trout) and European eel are listed as priority species on the UK and Scottish Biodiversity Action Plan lists.

Habitat Requirements

Salmon and Trout

- 1.1.11 The physical habitat requirements of juvenile salmonids have been subject to a considerable amount of detailed study (for reviews see e.g. Crisp 1993; Hendry & Cragg-Hine 2003; Klemetsen et al. 2003; Summers et al. 1996; Youngson & Hay 1996). Trout and salmon spawn in late autumn and early winter, depositing their eggs in redds which they excavate in gravel and pebble substrates. Eggs are often deposited in areas of accelerating flow, such as the tails of pools and glides, upstream from riffles. However, in upland streams eggs may be deposited in any areas of gravel that can be physically moved. A good supply of oxygen is essential for eggs to develop and this is facilitated by a flow of water through the gravel. Clogging with fine sediment such as silt and fine sand reduces water flow resulting in egg mortality due to lack of oxygen. Egg survival is also affected by redd 'washouts' during winter spates – the direct, physical, scouring out of eggs from the gravel.

Substrate stability, the dynamics of water flow and the weather all determine the extent of siltation and washouts.

- 1.1.12 After hatching the young fry remain in the gravel, absorbing nutrient from the remaining yolk sac. On emergence, usually between March and early May, the young fry disperse and set up territories which they defend aggressively. Salmon fry prefer fast flows (>30 cm/s) and favour areas with surface turbulence (riffle habitat). They require a rough bed of pebble, cobble and gravel. Trout fry prefer areas of relatively low velocity water near the streambed. Cover from stones, plants or debris is required and good cover is essential for maintaining high fry densities.
- 1.1.13 Salmon that have survived their first winter (parr) prefer deeper water than fry (typically 15-40 cm) and a coarser substrate of pebbles, cobbles and boulders. Trout parr generally favour areas of relatively low current speed where cover is available. Juvenile trout are often to be found in cover alongside the banks, in undercuts, among tree roots or in marginal vegetation. Cover remains important for adult trout and salmon particularly in smaller streams. In larger rivers and lochs this may be less important, as deep water provides refuge.

European Eels

- 1.1.14 Eel habitat requirements have received less attention than those of salmonid fish. Tesch (2003) suggests that so long as temperature and oxygen requirements are met, there are few stretches of water that are not suitable for eels. The main requirement for eels is cover, as they are averse to light and require suitable refuges during daylight hours. Eels of different size show different substrate preferences. Larger eels require large hollows, crevices or weed beds whereas small eels are sometimes abundant in cobble substrates, where they can burrow between the stones. Tree stumps, roots and other large structures provide ideal cover for eels. Eel diet is diverse, but the majority of the diet consists of benthic species (Moriarty 1978; Kottelat & Freyhof 2007).

1.2 Objectives

- 1.2.1 The objectives of the proposed surveys were to:

- Identify streams along the cable route with the potential to hold useful salmon or trout habitat, with the emphasis on those which are accessible to migratory salmon and sea trout;
- Assess the distribution and extent of fish habitats at crossing locations on the identified watercourses, and along reaches where adjacent cable burying might impact on fish habitats;
- Advise on micro-siting as required to minimise risk to fish populations; and
- Identify any locations where pre-construction surveys of fish populations (by electric fishing) may be necessary or desirable.

1.3 Methods

- 1.3.1 Ten watercourse crossing were surveyed on Skye (Section 2), and three on the Invervigar Burn (Section 6) (see **Table 1**). In addition, two sections of watercourse were surveyed on Skye where they are close to and down-slope of the proposed cable route, and approximately 3 km of the Invervigar burn and its headwater tributaries were surveyed where it is close to the proposed cable route. Crossing locations and linear survey reaches are shown on maps as **Annexes A** and **B**.
- 1.3.2 The habitat survey method was based on Hendry & Cragg-Hine (1997) with elements of SFCC (2007). These are standard methods widely used in Scotland and form the basis of SEPA's habitat survey requirements for instream developments (see e.g. SEPA 2010). Detailed surveys extended approximately 50 m upstream and 100 m downstream of proposed crossing points. Qualitative inspections were occasionally extended further up or downstream if surveyors considered this necessary due to e.g. presence of high quality/value fish habitats or impassable obstacles that might help determine mitigations or further survey needs.

Table 1: Locations of Watercourse Crossing Surveys

Site Code	Watercourse	Crossing NGR	Crossing Type
SKYE A	River Sligachan	NG 48927 30462	Directional drilling
SKYE B	Unnamed stream	NG 49098 30355	Trench
SKYE C	Unnamed stream	NG 50761 31202	Trench
SKYE D	Allt na Beiste	NG 50899 31246	Trench
SKYE E	Allt Mòr Doire Mhic-ùin	NG 53385 29725	Directional drilling
SKYE F	Allt Teanga na Mairt	NG 53307 29564	Directional drilling
SKYE G	Unnamed stream	NG 53298 28433	Directional drilling
SKYE H	Allt Mhic Mhoirein	NG 53929 27824	Directional drilling
SKYE I	Abhainn Ceann Loch Ainort	NG 53929 27824	Directional drilling
SKYE J	Unnamed stream	NG 54318 26814	Directional drilling
INVER A	Allt Dail a'Chuirn	NH 31338 05477	Directional drilling
INVER B	Unnamed stream	NH 31811 05659	Trench
INVER C	Allt Achadh nan Darach Beag	NH 31929 05750	Directional drilling

1.3.3 Areas of functional habitat types were identified and mapped around each crossing. The habitat classification is provided in **Table 2**. Where suitable spawning areas for salmonid fish were identified the location was recorded using GPS. The area and quality of available spawning habitat was recorded based on the SFCC protocol (SFCC 2007). Representative photographs were taken at each crossing location. For linear habitat surveys (Abhainn Torra-mhichaig, Allt Mich Mhoirein, Invervigar Burn) recording was based on contiguous sections of river of between 150 and 400 m in length. Representative photographs were taken of each survey section.

Table 2: Salmonid Habitat Classification for Walkover Survey

Habitat Category	Description
Mixed juvenile habitat	Habitats with mixed depth including areas ≥ 20 cm. Cobble and/or boulder substrate.
Deep juvenile	Cobble and boulder substrate or other streambed cover, depth 40 to 80 cm.
Pool	Over 80 cm deep. Slow or eddying current. Suitable for adult salmonids if cover is present. If > 1 m deep cover may be less important, as depth can provide refuge.
Glide	Moderate to slow flow. Small substrates provide little cover. May be productive if bankside cover or macrophytes present.
Spawning	Ideally well oxygenated, stable & not compacted. Typically comprising gravel and pebble. Fines (sand & fine gravel < 2 mm) less than 20%. Not silted.

Habitat Category	Description
Bedrock	Sheet bedrock covering majority of streambed. No cover. Unproductive habitat.

1.4 Results

Section 2 (Skye): Sligachan to Loch Ainort

Watercourse Crossings

- 1.4.1 Based on a desk study, a total of twenty watercourse crossings were identified for survey between Sligachan and the head of Loch Ainort. On inspection, ten of these were found to be inaccessible from the sea or unsuitable for fish, and were therefore not surveyed in detail. The remaining ten (**Table 1**) were surveyed fully. The results are presented below. A list of potential spawning habitats referred to in the results section is provided as **Annex C**.

Watercourse	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
River Sligachan	29/03/22	Directional drilling	SKYE A	NG 48927 30462	NG 48985 30332	NG 48929 30336

Stream habitats and fish access

Crossing location, looking across river from left bank



View downstream from crossing location



The River Sligachan at the proposed crossing location is wide and braided, with a bed width estimated at 60 m at the crossing location itself and over 200 m towards the downstream end of the survey reach. It is highly dynamic with multiple channels, cobble islands, backwaters and actively eroding banks. Flow evidently shifts substantially over time. At the time of survey the main flow entered the crossing location via a channel along the right bank, then crossed the riverbed in shallow braided runs at roughly 90° to the banks to join the flow from tributary Allt Dubh, exiting the crossing location in a deep glide along the left bank.

Where the flow is concentrated along the banks, the habitat is mainly deep or shallow glide over cobble substrate, with occasional short runs. The middle of the river is a complex mix of runs over cobble and pebble, shallow pools, backwaters, cobble/pebble banks and small eroded peat islands.

Spawning substrate suitable for both salmon and trout is available where the shallow runs crossing the middle of the river enter deep glide along the left bank (see photos), and at the outflow of Allt Dubh.

According to the Ordnance Survey the crossing location coincides with the normal tidal limit, however inspection of the reach suggests that high tide would reach this part of the river only under exceptional conditions, and with the river in its present configuration would probably not reach the areas of spawning substrate.

Potential value to fish and fisheries

This reach offers good habitat for juvenile salmon and trout. There are three areas of spawning substrate amounting to 45 m² in the immediate vicinity of the proposed crossing location (NG 48927 30432, NG 48933 30456, NG 48900 30449). A full habitat survey of the river (Watt 2010) found that spawning habitat was widespread in the lower river. Due to possible tidal influence, the value of spawning substrates near the crossing point is uncertain. However, there is potential for spawning by both salmon and trout.

Sensitivities

Drilling should be timed to avoid disturbance to spawning adults or risk to eggs in the vulnerable period before they 'eye up'. In effect this means avoiding drilling in the period from October to February.

Any in-river work (if necessary) should be avoided between October and early May.

Care should be taken to avoid damage to spawning areas through siltation due to bankside damage.

Watercourse	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Unnamed	29/03/22	Trench	SKYE B	NG 49098 30355	NG 49152 30387	NG 49049 30307

Stream habitats and fish access

Crossing location



View downstream from crossing location



Accessible for salmonids and eels.

This is a very small first-order stream flowing into the lower River Sligachan. It is very shallow, 2-20 cm, with a mix of run and shallow glide flow with small shallow pools over a partially compacted substrate of small pebble, gravel and coarse sand. There is a layer of peat fragments over the substrate.



Despite the relatively poor habitat, recently-hatched trout fry were seen at the time of survey.



Potential value to fish and fisheries



No typical spawning areas were identified and where gravel and pebble was present it was very heavily silted (see photograph at left). The presence of trout fry indicated that spawning is possible in the close vicinity of the crossing location.



Sensitivities



No significant impacts expected to spawning habitat or ova, provided downstream impacts are avoided. Damage to banks should be avoided in order to minimise further impact on the already-silted substrates.



Watercourse	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Unnamed	29/03/22	Trench	SKYE C	NG 50761 31202	NG 50775 31301	NG 50769 31120
Stream habitats and fish access						
<p>Crossing location</p> 			<p>Accessible for salmonids and eels.</p> <p>This unnamed stream holds good mixed juvenile habitat with plentiful cover, however this is a steep and spate-prone stream and the substrate is unstable. The stream varies in width between 1 and 2 m. Flow types are mainly run and shallow pool and the substrate is a mix of small boulder, cobble and pebble interspersed by short reaches of bedrock. There are some small patches of spawning habitat suitable for small trout scattered through the surveyed reach, but all are likely to be unstable. Some bank erosion is evident.</p> <p>Habitat at the crossing point is a short reach of mixed juvenile habitat immediately downstream of the road bridge, followed by a low-gradient bedrock chute. The banks are eroding.</p> <p>Upstream of the crossing point the gradient increases and the habitat changes to step-pool sequences with a high proportion of bedrock.</p>			
<p>Watercourse downstream of crossing location</p> 			<p>Potential value to fish and fisheries</p> <p>Good habitat for juvenile salmonids downstream of crossing location. No significant spawning potential within surveyed reach.</p>		<p>Sensitivities</p> <p>No significant impacts expected to spawning habitat or ova, provided downstream impacts are avoided.</p>	

Watercourse	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Allt na Beiste	29/03/22	Trench	SKYE D	NG 50899 31246	NG 50910 31348	NG 50897 31185
Stream habitats and fish access						
<p>Crossing location</p> 		<p>Reaches downstream of the proposed crossing are accessible for salmonid and eels. The crossing point itself is immediately downstream of the road, where the stream spills out of a pipe culvert (which may present an impassable obstacle under most flow conditions).</p> <p>Allt na Beiste is similar in size and character to the previous stream, with run and shallow pool flow over a mixed angular substrate of boulder, cobble and pebble, providing good habitat for juvenile salmonids. Small pockets of spawning substrate are scattered widely in the section downstream of the crossing point. The banks show signs of erosion, and the steep nature of the catchment indicates that the stream will be prone to spates.</p> <p>The habitat at the crossing location is unstable mixed juvenile habitat with a substrate of angular cobble and pebble. The banks appear quite stable in the immediate vicinity of the crossing.</p> <p>Upstream from the crossing point the stream splits into two tributaries. The gradient becomes steeper and bedrock makes up an increasingly large proportion of the substrate. Obstacles on both tributary streams render them impassable a short distance upstream of the crossing point.</p>				
<p>Watercourse downstream of crossing location</p> 		<p>Potential value to fish and fisheries</p> <p>Good habitat for juvenile salmonids. Some pockets of spawning habitat suitable for smaller trout are available downstream of the crossing point (Annex C).</p>		<p>Sensitivities and monitoring needs</p> <p>No significant impacts expected to spawning habitat or ova, provided downstream impacts are avoided.</p>		

Watercourse	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Allt Mòr Doire Mhic-ùin	30/03/22	Directional drilling	SKYE E	NG 53385 29725	NG 53504 29750	NG 53323 29738
Stream habitats and fish access						
Crossing location 			<p>This tributary of Abhainn Torra-mhichaig holds good mixed juvenile salmonid habitat. The flow is mainly run, riffle and small pool, and the substrate is mixed unstable boulder, cobble and pebble. There are no large areas of spawning habitat, but small pockets of spawning substrate are widespread. Banks show some signs of erosion. Streambed width is 3-5 m.</p> <p>Habitat at the crossing location is as described above, with good juvenile habitat and some spawning potential. There is a high eroding bank close to the crossing point. The crossing location appears to be accessible to salmonids and eels.</p> <p>Upstream of the crossing point the gradient begins to increase and the stream narrows somewhat.</p>			
Watercourse downstream of crossing location 			Potential value to fish and fisheries Good habitat for juvenile salmonids. Some good pockets of spawning habitat suitable for trout are available throughout the surveyed reach (Annex C).		Sensitivities and monitoring needs Pockets of spawning habitat are widely distributed, and no significant accumulations are present at the crossing location. No significant impacts to fish or fisheries are expected, provided downstream impacts are avoided.	

Watercourse	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Allt Teanga na Mairt	30/03/22	Directional drilling	SKYE F	NG 53307 29564	NG 53402 29569	NG 53252 29534
Stream habitats and fish access						
<p>Crossing location</p> 		<p>The surveyed reach of Allt Teanga na Mairt from the confluence with Abhainn Torra-mhichaig to 50 m upstream of the proposed crossing point holds a mix of juvenile salmonid habitat and unproductive bedrock. Ten metres downstream of the crossing location is a bedrock waterfall which lacks a plunge pool and is likely to be impassable to salmonids. Fish were seen downstream of this obstacle but not upstream. A tiny amount of spawning substrate is available downstream of the waterfall in pockets behind boulders. Habitat at the crossing location itself is good mixed juvenile habitat, with a bed width of 2.2 m. The substrate changes to bedrock just upstream and the steepening gradient above the survey reach means obstacles will become frequent. The section of the stream above the waterfall, including the habitat at the crossing point itself, may well be fishless.</p>				
<p>Habitat downstream of crossing location</p> 		<p>Potential value to fish and fisheries</p> <p>It is likely that the crossing point itself is fishless. There are no particularly sensitive habitats within the surveyed reach.</p>		<p>Sensitivities and monitoring needs</p> <p>No particular sensitivities. Standard mitigation to avoid any downstream impacts.</p>		

Stream	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Unnamed	29/03/22	Directional drilling	SKYE G	NG 53298 28433	NG 53395 28341	NG 53230 28435
Stream habitats and fish access						
<p>Crossing location</p> 				<p>This is a small first-order stream. Habitat is mainly unproductive peat channel with some pebble and cobble. Flow is shallow run and small shallow pools. There is a heavy layer of iron deposit on the substrate.</p> <p>The stream is not accessible from the sea, and holds very poor habitat. It is likely to be fishless.</p>		
<p>Watercourse downstream of crossing location</p> 				<p>Potential value to fish and fisheries</p> <p>None</p>		<p>Sensitivities and monitoring needs</p> <p>None</p>

Stream	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Allt Mhic Mhoirein	30/03/22	Directional drilling	SKYE H	NG 53929 27824	NG 53991 27708	NG 53894 27869
Stream habitats and fish access						
<p>Crossing location</p> 		<p>The crossing point is close to the Normal Tidal Limit (NTL) and is accessible to salmonid fish and eels. Allt Mhic Mhoirein drains a small steep catchment and is clearly very spate-prone and unstable, with mobile substrate and eroding banks particularly in the lower part of the section. The habitat in the surveyed reach is boulder-dominated, providing good cover and excellent habitat for salmon and trout parr. Smaller cobble and pebble accumulate between boulders.</p> <p>Upstream of the crossing point there is an increasing proportion of bedrock in the substrate. A single area of spawning substrate was recorded, an accumulation of small pebble at the tail of a shallow bedrock pool upstream of the crossing point. It would be vulnerable to wash-out in spates and may be ephemeral. The riverbanks are unstable and vulnerable to erosion, particularly the right bank at the crossing location.</p>				
<p>View to crossing location from upstream</p> 		<p>Potential value to fish and fisheries</p> <p>Good parr habitat</p>		<p>Sensitivities and monitoring needs</p> <p>No sensitive habitats were recorded at or downstream of the proposed crossing point. Care should be taken to ensure that drilling works do not further destabilise banks.</p>		

Stream	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Abhainn Ceann Loch Ainort	30/03/22	Directional drilling	SKYE I	NG 53929 27824	NG 53991 27708	NG 53894 27869

Stream habitats and fish access

Habitat at crossing location



View to crossing location from upstream



The lower Abhainn Ceann Loch Ainort is a moderately-sized river, with a bed width of 10-15 m and a wet width at the time of survey of 4-8 m. The crossing location is accessible to sea trout, salmon and eels.

It provides good habitat for juvenile salmonids, and is especially suitable for fry. Flows are mainly shallow run and glide (mostly less than 25 cm depth) with a single long pool into a glide at the lower end of the survey reach, downstream of the road. The substrate is mixed small boulder and cobble with some pebble.

Pockets of spawning substrate are plentiful, but the only significant accumulation of spawning substrate is immediately upstream of the road bridge, which coincides with the proposed crossing location.



The crossing location itself is a shallow run into a pool. The substrate is slightly too large to make ideal spawning substrate, and is somewhat compacted in places; nevertheless spawning is possible in parts, especially for larger fish, with suitable spawning habitat at the crossing point amounting to approximately 25 square metres. Good spawning substrate exists further downstream but is likely to be inundated by seawater at the highest spring tides; the survey was extended for over 400 m upstream and no further areas of spawning habitat were found upstream of the crossing point, making this the only significant spawning area on the lower river and therefore potentially of some significance to the migratory salmonid populations of this catchment.

Potential value to fish and fisheries

Potentially important spawning area suitable for salmon and larger trout at the proposed crossing point (**Annex C**).
Excellent fry habitat throughout the surveyed reach.

Sensitivities and monitoring needs

Highly sensitive location.
Drilling seems unlikely to cause damage to spawning habitats. However, drilling must be timed to avoid disturbance to spawning adults or risk to eggs in the vulnerable period before they 'eye up'. In effect this means avoiding drilling in the period from October to February.
No instream work should take place between October and May.
If it is necessary to take machinery across the stream, this should not be done between October and May.

Stream	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit				
Unnamed	30/03/22	Directional drilling	SKYE J	NG 54318 26814	NG 54321 26865	NG 54276 26741				
Stream habitats and fish access										
Crossing location 		<p>This small stream (2 – 3.5 m wide) appears to be accessible from the sea. It provides reasonable quality mixed juvenile salmonid habitat, with a mix of run and glide flow with small shallow pools, and a substrate of angular boulder, cobble and pebble. There are pockets of spawning substrate suitable for smaller trout within the reach. Fish were seen during the survey.</p> <p>The habitat at the crossing location is much the same as that in the wider reach. Approximately 1 m² of rather poor-quality spawning substrate is available at the tail of a pool above a manmade rock step just downstream of the main road bridge, very close to the proposed crossing location.</p>								
Habitat upstream of crossing location 		<table border="1"> <thead> <tr> <th>Potential value to fish and fisheries</th> <th>Sensitivities and monitoring needs</th> </tr> </thead> <tbody> <tr> <td>Moderate quality habitat for juvenile salmonids. Some pockets of spawning habitat suitable for smaller trout are available, with 1 m² of spawning substrate immediately upstream of the proposed crossing location (Annex C). Although accessible, no spawning suitable for larger fish is available, and the stream is unlikely to support substantial migratory salmonid populations.</td> <td>Pockets of spawning habitat are widely distributed. No significant impacts to fish or fisheries are expected, provided downstream impacts are avoided.</td> </tr> </tbody> </table>		Potential value to fish and fisheries	Sensitivities and monitoring needs	Moderate quality habitat for juvenile salmonids. Some pockets of spawning habitat suitable for smaller trout are available, with 1 m ² of spawning substrate immediately upstream of the proposed crossing location (Annex C). Although accessible, no spawning suitable for larger fish is available, and the stream is unlikely to support substantial migratory salmonid populations.	Pockets of spawning habitat are widely distributed. No significant impacts to fish or fisheries are expected, provided downstream impacts are avoided.			
Potential value to fish and fisheries	Sensitivities and monitoring needs									
Moderate quality habitat for juvenile salmonids. Some pockets of spawning habitat suitable for smaller trout are available, with 1 m ² of spawning substrate immediately upstream of the proposed crossing location (Annex C). Although accessible, no spawning suitable for larger fish is available, and the stream is unlikely to support substantial migratory salmonid populations.	Pockets of spawning habitat are widely distributed. No significant impacts to fish or fisheries are expected, provided downstream impacts are avoided.									

Linear Habitat Surveys - Abhainn Torra-mhichaig

- 1.4.2 Approximately 2 km of the upper Abhainn Torra-mhichaig was surveyed where the cable route runs close to the stream between NG 537 307 and NG 526 278 (see **Annex A**). The proposed cable route crosses two headwater tributaries (Allt Teanga na Mairt and Allt Mòr Doire Mhic-ùin) and runs near the west side (left bank) of the watercourse through this reach. The crossing points are described in detail in Part 4.1.1 above. The linear habitat survey of Abhainn Torra-mhichaig is presented below.

Sections ATM1 and ATM2 (NG 53736 30680 to NG 53502 29748)

- 1.4.3 This reach is low gradient and holds excellent juvenile salmonid habitat. The habitat is mainly gentle run and riffle with small pools and one larger holding pool. The substrate is a mix of cobble and boulder with some pebble, and is evidently quite unstable with a lot of movement in spates; there is a bedrock reach in the middle of the section. Pockets of spawning substrate are scattered through the reach, but the substrate is mostly too large and there are no large accumulations of spawning-calibre substrate. The banks are mainly low and fairly stable with heather and turf over peat and boulder, but there are some short sections with high eroding banks where the river cuts into drumlin-type features, releasing substantial quantities of loose material into the watercourse. **Plate 1** shows a typical stretch of these sections of the watercourse.



Plate 1: Typical Stretch of Sections ATM1 and ATM2

Section ATM3 (NG 53502 29748 to NG 53374 29512)

- 1.4.4 This short section of the Abhainn Torra-mhichaig upstream of the confluence with Allt Mòr Doire Mhic-ùin holds a short reach of good mixed juvenile habitat but then turns quickly to bedrock. Accumulations of pebble and gravel in bedrock pools and hollows provide some better spawning substrate than is found lower down the river, although it is rather unstable; fry were seen in these areas during the survey. The top of the section (NG 53374 29512) is marked by a high, clearly impassable waterfall. **Plate 2** shows a typical stretch of this section of the watercourse.



Plate 2: Typical Stretch of Section ATM3

Linear Habitat Surveys - Allt Mhic Mhoirein

- 1.4.5 Approximately 500 m of Allt Mhic Mhoirein was surveyed between NG 540 277 and NG 537 278. The proposed cable route runs close to the northern (left) bank of the stream for approximately 750 m and crosses or runs close to several small tributaries. The reach upstream of NG 53652 27830 was not surveyed as a substantial waterfall makes it inaccessible to migratory fish, but resident trout and eels may be present.

Section AMM1 (NG 54012 27702 to NG 53825 27888)

- 1.4.6 Much of this lower section of the the Allt Mhic Mhoirein is good mixed juvenile habitat, with run, riffle and glide flow over a substrate of boulder, cobble and pebble. Habitat becomes steeper and increasingly boulder-dominated upstream of the road bridge, better suited to parr than fry. Approximately 70 m upstream of the road bridge the substrate changes to bedrock. A single small area of unstable spawning habitat was recorded. Banks are bedrock and boulder, mostly stable, but with some erosion on the outside of bends. **Plate 3** shows a typical stretch of this section of the watercourse.



Plate 3: Typical Stretch of Section AMM1

Section AMM2 (NG 53825 27888 to NG 53652 27830)

- 1.4.7 The gradient steepens in this section, and the river becomes entrenched between steep banks, with a bedrock substrate and frequent obstacles, some of which are very probably impassable. A 2.2 m high by 4 m long

waterfall over stepped bedrock and without a plunge pool appears to be an impassable obstacle to salmonids, and marks the upstream end of the section.



Plate 4: Typical Stretch of Section AMM2

Section 2 (Skye) Streams: Summary of Main Sensitivities

- Crossing points SKYE A (River Sligachan) and SKYE I (Abhainn Ceann Loch Ainort) hold large areas of spawning habitat which are potentially important for the salmonid populations of these two watercourses.
- A further three crossing points (SKYE D, E and J) had small areas of spawning substrate at or close to the proposed crossing location.
- Abhainn Torra-mhichaig which flows alongside the proposed cable route holds good quality juvenile salmonid habitat, including small amounts of spawning habitat, and has fragile eroding banks in some places.



Section 6 – Invervigar Burn



1.4.8 The proposed cable route runs close to several sections of watercourse in the headwaters of the Invervigar Burn, and crosses streams in multiple locations (see **Annex B** for map). Many of the crossings are over very small first-order streams which are unlikely to support fish; a desk study determined that four crossings were of watercourses of sufficient size and potentially accessible to migratory salmonids, meriting survey. On the ground, one of the four (at NH 3119 0538) was found to be a small, first order incised peat channel and unsuitable for fish. The survey results for three crossing points of larger watercourses are presented below. In addition, approximately 3 km of linear watercourse survey was carried out, taking in the upper mainstem of the Invervigar Burn and sections of tributaries.



1.4.9 The surveyed sections of the Invervigar Burn are not thought to be accessible to salmon. It is not known if they are accessible to sea trout, however there is a resident trout population in the headwaters, and good habitat for trout is available. Eels may also be present.

Watercourse Crossings

1.4.10 Three watercourse crossings were surveyed in the headwaters of the Invervigar Burn. Of the three crossings surveyed, two will be crossed by directional drilling, and one by trenching. The survey results are presented below.

Watercourse	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Allt Dail a'Chuirn	31/03/22	Directional drilling	INVER A	NH 31338 05477	NH 31559 05349	NH 31358 05522
Stream habitats and fish access						
<p>Crossing location</p> 				<p>Access for migratory salmonids is uncertain due to a natural obstacle downstream.</p> <p>Allt Dail a'Chuirn is unstable and spate-prone with eroding turf and boulder banks. Instream habitat is unstable mixed juvenile habitat with run, riffle and glide flow over a substrate of small boulder, cobble and pebble. No discrete areas of spawning substrate were found in the surveyed reach. Cover is good and salmonid fish were seen during the survey.</p> <p>At the proposed crossing location there is significant erosion occurring on the outsides of the bends, and deposition of boulders and cobbles on the insides.</p>		
<p>Habitat downstream of crossing location</p> 				<p>Potential value to fish and fisheries</p> <p>The reach provides good juvenile salmonid habitat, but lacks spawning habitat.</p>		<p>Sensitivities</p> <p>No sensitive habitats were recorded at or downstream of the proposed crossing point.</p> <p>Care should be taken to ensure that drilling works do not further destabilise banks.</p>

Watercourse	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Unnamed	31/03/22	Trench	INVER B	NH 31811 05659	NH 31924 05581	NH 31787 05672
Stream habitats and fish access						
<p>Crossing location</p> 				<p>Access for migratory salmonids is uncertain due to a natural obstacle downstream. This small tributary of Allt Achadh nan Darach Beag holds good mixed juvenile trout habitat. Flow is mainly shallow run and glide over a substrate of cobble, pebble and small boulder. There is an accumulation of spawning-calibre substrate at the confluence with the Allt Achadh nan Darach Beag, approximately 200 m downstream of the proposed crossing point, but no further spawning habitat was found in the surveyed reach. Habitat at the crossing point is shallow run and riffle with a moderately stable mixed substrate and stable, well-vegetated banks</p>		
<p>Habitat downstream of crossing location</p> 				<p>Potential value to fish and fisheries</p> <p>The reach provides good juvenile salmonid habitat. There are no spawning areas close to the crossing point but a useful area was noted 200 m downstream.</p>		<p>Sensitivities</p> <p>No significant impacts expected to spawning habitat or ova, provided downstream impacts are avoided.</p>

Watercourse	Date surveyed	Crossing type	Crossing code	Crossing location	Downstream limit	Upstream limit
Allt Achadh nan Darach Beag	31/03/22	Directional Drilling	INVER C	NH 31929 05750	NH 31924 05581	NH 31982 05845
Stream habitats and fish access						
<p>Crossing location</p> 		<p>Access for migratory salmonids is uncertain due to a natural obstacle downstream. Allt Achadh nan Darach is a spate-prone stream 3-5 m in width and 5-20 cm deep. The substrate is an unstable and unsorted mix of boulder, cobble and pebble with run, riffle and shallow glide flow. No spawning habitat was recorded in the survey reach. Banks are unstable and erosion-prone.</p> <p>The watercourse splits into two channels at the crossing location, but in other respects is much like the remainder of the survey reach with unstable bed and eroding banks.</p>				
<p>Watercourse downstream of crossing location</p> 		<p>Potential value to fish and fisheries</p> <p>Good habitat for juvenile salmonids. No significant spawning potential within surveyed reach.</p>		<p>Sensitivities</p> <p>No sensitive habitats were recorded at or downstream of the proposed crossing point. Care should be taken to ensure that drilling works do not further destabilise banks.</p>		

Linear Habitat Survey – Invervigar Burn

1.4.11 Approximately 3 km of stream were surveyed, taking in the upper Invervigar Burn and the lower reaches of several tributaries including Allt Achadh nan Darach Beag (see **Annex B**).

Sections IB1 and IB2 (NH 32063 65453 to NH 31810 05533)

1.4.12 The upper reaches of the Invervigar Burn are fairly stable but spate-prone, with a trash line above the bank top indicating that the river can rise significantly in periods of heavy rain.

1.4.13 Sections IB1 and IB2 are fairly stable and hold good juvenile trout habitat, with a substrate composed mainly of small boulder, cobble and pebble. Two short steeper reaches have bedrock and boulder substrate, and there is a challenging but probably passable obstacle in section IB1 at (NH 31936 05385). Flow is mainly run, glide and shallow pool. Upstream of the second boulder/bedrock reach the gradient levels off and there is a reach of gentle runs and glides with cobble and pebble substrate. There are no substantial accumulations of spawning substrate, but spawning is possible in frequent patches of suitable substrate throughout this reach.

1.4.14 The surrounding land is mixed moorland and rough pasture with scattered broadleaved trees, and is heavily grazed by sheep and cattle. Recently clear-felled conifer plantation extends quite close to the left bank of the stream through much of this reach, and freshly-exposed bare peat and abundant organic debris are likely to have had some impacts on instream habitat and water quality.

1.4.15 River banks are boulder, earth and bedrock with turf and tree roots; they are largely stable, though some small areas of erosion were noted.

1.4.16 **Plate 5** shows a typical stretch of these sections of the watercourse.



Plate 5: Typical Stretch of Sections IB1 and IB2

Sections IB3 and IB4 (NH 31810 05533 to NH 30877 04856)

1.4.17 Much of Section IB3 is deep glide (water depth 30-80 cm) with deep soft substrate and low peat banks. Macrophytes are abundant in shallower parts. The remainder is short reaches of shallow fry habitat with pebble substrate; some spawning habitat is available in these areas, and fry were seen during the survey. Section IB4 holds alternating sections of peat channel - sometimes very narrow (0.5 m) with deep glide flow and soft peat substrate - and reaches of blocky boulder or bedrock. Peat channel sections are underground in places, increasingly frequently to top of section, and the flow is sluggish. There is no spawning substrate was recorded

in IB4 and no fish were seen during the survey. **Plate 6** shows a typical stretch of these sections of the watercourse.



Plate 6: Typical Stretch of Sections IB3 and IB4

Linear Habitat Survey – Allt Achadh nan Darach Beag

Section ADB1 (NH 31981 05408 to NH 31982 05845)

- 1.4.18 The surveyed reach of Allt Achadh nan Darach holds unstable mixed juvenile habitat with an unsorted substrate of boulder, cobble and pebble. There is an impassable obstacle a short distance upstream of the confluence with the Invervigar Burn in the form of a waterfall with no pool at the base.
- 1.4.19 Upstream of the waterfall the habitat is moderately good for any resident trout, with a small area of good spawning substrate at the confluence with a small tributary. The banks are rather unstable, and the surrounding ground is recently clear-felled conifer plantation, with large expanses of bare peat and abundant organic debris, which are likely to have some impact on instream habitats and water quality.
- 1.4.20 **Plate 7** shows a typical stretch of this section of the watercourse.



Plate 7: Typical Stretch of Section IB5

Section 6 (Invervigar Burn) : Summary of Sensitivities

- The banks at crossing points INVER A and INVER C are unstable and erosion-prone.

- No substantial areas of spawning habitat were found in the survey area; however small pockets of spawning habitat are found throughout so standard mitigations to minimise impacts are advised.

1.5 Interpretation

Section 2: Skye

- 1.5.1 All of the surveyed streams are potentially accessible to sea trout and salmon with the exception of unnamed stream at crossing SKYE G, which appears naturally inaccessible. Other streams along the proposed cable route were briefly inspected but were found mainly to be too small and steep to provide significant areas of productive fish habitat. Many were inaccessible from the sea due to obstacles and steep gradient. Thus, the detailed surveys covered those streams most likely to be of value to sea trout or (larger watercourses only) salmon.
- 1.5.2 From a fisheries perspective, the most significant watercourse in the Skye section of the underground cable route is the River Sligachan (SKYE A), a substantial river which supports both salmon and trout, and which is popular with anglers. Salmon fry and parr have been recorded at sites on the lower River Sligachan in the past few years, and adult salmon have been caught (Watt 2010, Skye and Wester Ross Fisheries Trust 2020).
- 1.5.3 The River Sligachan crossing location holds a large expanse (45 m²) of spawning substrate suitable for both salmon and larger trout. Although spawning habitat is widespread in the lower river (Watt 2010) the crossing location should be treated as a sensitive site in relation to salmonid fish. It is important that works do not cause damage to the spawning habitat, or disruption to spawning fish or developing eggs. Potential negative impacts would include badly timed instream works, siltation or excessive vibration during the spawning and early incubation periods.
- 1.5.4 The second largest of the surveyed watercourses was the Abhainn Ceann Loch Ainort (SKYE I). This river may have supported salmon in the past but there are no recent records; however, trout are present and were seen at the time of the crossing survey. An area of moderate-quality spawning habitat particularly suitable for trout was found at the proposed crossing location, amounting to approximately 25 m². There is no further spawning habitat downstream of the crossing location before the NTL is reached; the survey was extended upstream for 400 m but no further spawning substrate was found, suggesting that this location may be of some importance in the context of the lower river, and should be treated as a sensitive site. Drilling below the riverbed is unlikely to disrupt habitats but timing of work will be important to avoid disturbance to spawning fish or (potentially) mechanical shock to ova.
- 1.5.5 No substantial spawning areas were found at other crossing locations, but small pockets of spawning substrate were found near to crossings SKYE D (Allt na Beiste), SKYE E (Allt Mòr Doire Mhic-ùin) and SKYE J (unnamed watercourse at the head of Loch Ainort).
- 1.5.6 No significant sensitivities were identified at the remaining five crossing points.
- 1.5.7 Linear watercourse surveys in the Abhainn Torra-mhichaig found good quality juvenile salmonid habitat and some small pockets of spawning substrate. Unstable and eroding banks were also noted along this watercourse. The proposed cable route runs close to the river in places, and in trenching and burying the cable it will be important to avoid destabilising banks, exacerbating natural bank erosion processes or exposing soils to heavy rainfall resulting in downstream silt impacts.
- 1.5.8 Other sensitivities noted during surveys were unstable or eroding banks at several crossing points, and at some points along the Abhainn Torra-michaig.

Section 6: Invervigar Burn

- 1.5.9 Based on electric fishing results the headwaters of the Invervigar Burn are likely to be inaccessible to salmon (Ness DSFB 2020). However, it is not known if sea trout can access these areas as the progeny of sea trout and resident brown trout are indistinguishable from one another during standard electric fishing surveys.
- 1.5.10 Three crossing points were surveyed in the headwaters of the Invervigar Burn. No spawning habitat was found at any of the three locations.
- 1.5.11 The proposed cable route runs close to the watercourse in several places in the headwaters of the Invervigar Burn. Small pockets of spawning habitat are found throughout the burn, and care should be taken to avoid damage to this habitat through silt run-off from trenching and burying the cable. It should be noted that the recent clear-felling of an area of conifer plantation may already have had some impact on the watercourses in in the study area.
- 1.5.12 The banks at crossing points INVER A and INVER C are unstable and erosion-prone. Care should be taken to avoid exacerbating naturally-occurring erosion at these crossing points.

1.6 Recommendations

- Considerable care should be taken around crossing points SKYE A on the River Sligachan and SKYE I on the Abhainn Ceann Loch Ainort, both of which hold potentially important spawning areas. Directional drilling is already proposed for these sites to minimise direct disturbance of the streambed. The timing of drilling will be of importance (see next point). As an additional safeguard it is recommended that no vehicles should take access to the drilling site by driving in or through the river between October and May.
- Where practicable, subject to review by the Principal Contractor against detailed construction programming, it would be preferable for directional drilling at the crossings of the River Sligachan and Abhainn Ceann Loch Ainort to be carried out between March and late September to avoid impacts on spawning fish and eggs in the vulnerable early stages of development when they are susceptible to mechanical shock. Further consultation with SEPA and the relevant District Salmon Fisheries Board will be undertaken as part of this process and prior to works commencing.
- Due to the presence of small areas of spawning habitats close to crossing points and downstream, care should be taken to avoid instream working or downstream impacts from machinery involved in directional drilling between late October and early May at crossings SKYE E (Allt Mòr Doire Mhic-ùin) and SKYE J (unnamed watercourse at the head of Loch Ainort).
- Ideally, instream works, including trenching, should be carried out between early May and late October, in accordance with SEPA guidance^{2,3}. However, constraints imposed by other environmental factors mean this may be impossible for some smaller streams. Given the absence of significant areas of spawning habitat at proposed trenched crossing locations, instream works are unlikely to have significant impacts on fish or fisheries in these streams provided wider downstream impacts are avoided.
- Particular care should be taken at sites SKYE A, SKYE H, INVER A and INVER C to avoid exacerbating naturally-occurring erosion of unstable banks.
- Machinery should be kept well back from the stream banks in the section of cable route alongside the Abhainn Torra-mhichaig, to avoid further damage to unstable banks.

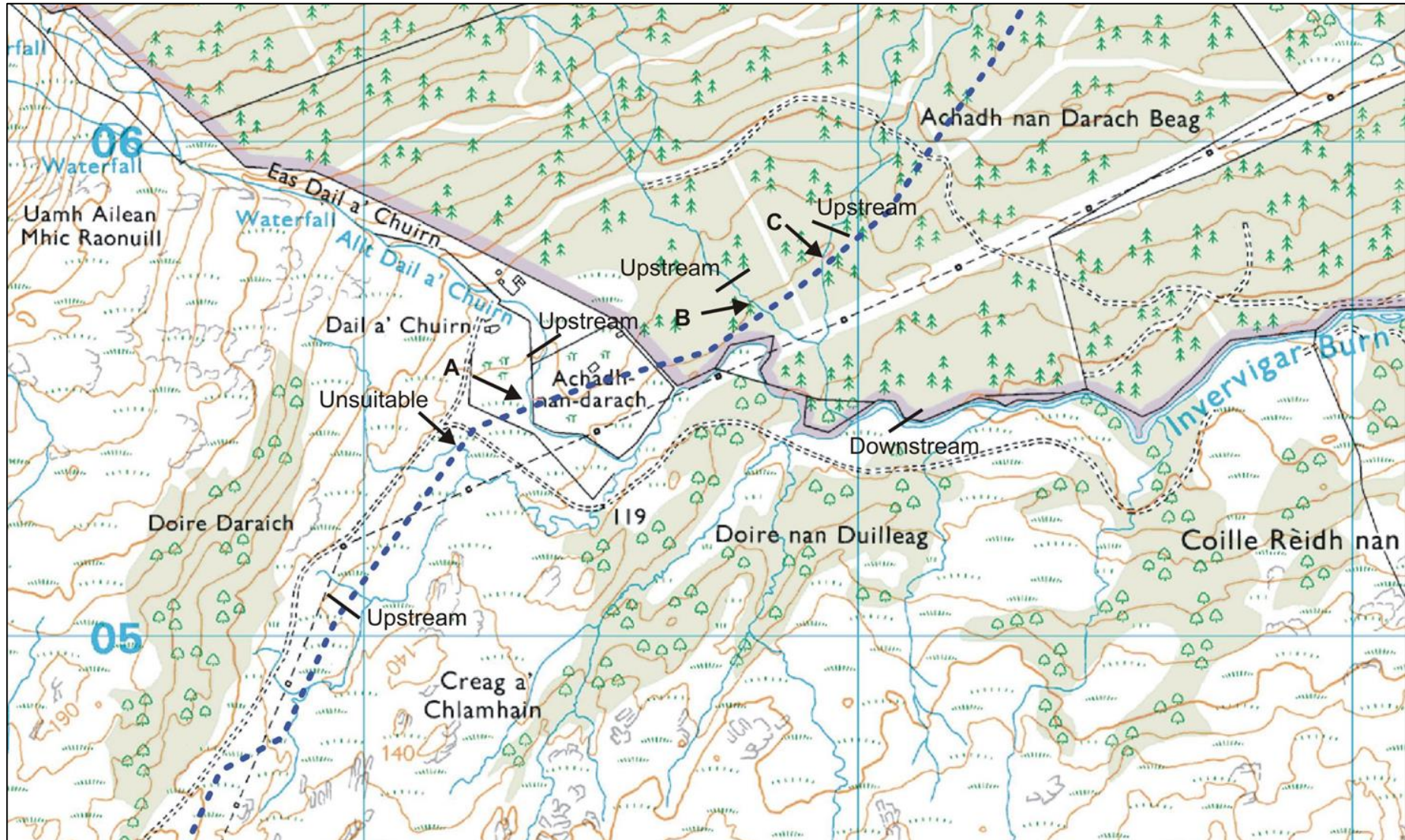
² https://www.sepa.org.uk/media/151323/managing_river_habitats_fisheries.pdf

³ https://www.sepa.org.uk/media/352604/know_the_rules_one_page.pdf

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Annex B: Section 6 Inverigarr Burn: Cable route, crossing locations subject to detailed surveys and linear survey reaches (downstream and upstream limits)



Annex C: Section 2 Skye: Spawning habitats recorded during stream crossing surveys

Watercourse	Crossing code	NGR	Area (m ²)	Quality	Notes
River Sligachan	SKYE A	NG 48927 30432	30	Good	Run flow over pebble and small cobble. Suitable for salmon and larger trout
River Sligachan	SKYE A	NG 48933 30456	5	Moderate	Run into pool at confluence of two channels.
River Sligachan	SKYE A	NG 48900 30449	10	Moderate	Pebble and gravel at the confluence of Allt Dubh and River Sligachan
Unnamed stream	SKYE B	NG 49098 30355	2	Poor	Shallow run over pebble and gravel. Much interstitial silt.
Allt na Beiste	SKYE D	various	2	Moderate	Plenty of small pockets of clean spawning substrate (trout only) scattered through reach downstream of crossing
Allt Mòr Doire Mhic-ùin	SKYE E	NG 53410 29721	3	Moderate	Mobile clean pebble, gravel and cobble. Some cobble too large to be easily moved but some good patches suitable for trout.
Abhainn Ceann Loch Ainort	SKYE I	NG 53919 27044	25	Moderate	Patches of spawning substrate scattered through large area of run over cobble and pebble. This is the best spawning habitat available on the lower river. Better suited to trout than salmon.
Unnamed stream	SKYE J	NG 54316 26814	1.5	Poor	Small pebble and gravel at tail of pool above man-made rock step. Poor spawning substrate due to high proportion of sand in mix, but could be used by trout.

Annex D: Section 2 Skye: Extended linear stream survey sections and habitat descriptions

Watercourse	Section code	NGR		Instream habitat notes	Banks
		Downstream	Upstream		
Abhainn Torra-Mhichaig	ATM1	NG 53736 30680	NG 53691 30178	Excellent juvenile salmonid habitat. Gentle run/riffle with small pools (1 larger holding pool). Substrate is a mix of cobble and boulder with some pebble, unstable; there is a bedrock reach in the middle of the section. Pocket spawning but substrate mostly too large. Large-scale bank erosion at bends where banks are high. Cable will run close to river here so care needs to be taken.	Low fairly stable heather/turf over peat and boulder, apart from some short sections of high eroding banks where river cuts into drumlin-type features
Abhainn Torra-Mhichaig	ATM2	NG 53691 30178	NG 53502 29748	Very similar to previous section. Less bank erosion, several small deep pools. More frequent pocket spawning totalling 6 m2.	Low fairly stable heather/turf over peat and boulder
Abhainn Torra-Mhichaig	ATM3	NG 53502 29748	NG 53374 29512	Short section of good mixed juvenile habitat turning quickly to bedrock, with accumulations of pebble and gravel in pools and hollows providing some better spawning habitat than found lower down the river. Fry seen. Unstable	Low fairly stable heather/turf over peat and boulder
Allt Mhic Mhoirein	AMM1	NG 54012 27702	NG 53825 27888	Much of section is good mixed juvenile habitat, better suited to parr than fry, with run/riffle/glide flow over a substrate of boulder, cobble and pebble. Habitat becomes steeper and increasingly boulder-dominated upstream of the road bridge. Approximately 70 m upstream of road bridge the substrate changes to bedrock. A single small area of unstable spawning habitat was recorded.	Bedrock and boulder banks, some erosion on outsides of bends
Allt Mhic Mhoirein	AMM2	NG 53825 27888	NG 53652 27830	Bedrock substrate with frequent obstacles, some probably impassable	Entrenched. Bedrock banks

Annex E: Section 6 Invervigar Burn: Extended linear stream survey sections and habitat descriptions

Watercourse	Section code	NGR		Instream habitat notes	Banks
		Downstream	Upstream		
Invervigar Burn	IB1	NH 32063 65453	NH 31810 05533	Fairly stable but spate-prone mixed juvenile habitat. Mixed substrate mostly small boulder/cobble/pebble but some bedrock and large boulder reaches. Flow mainly run/glide/shallow pool. Some good spawning and plentiful pocket spawning	Some erosion but localised. Boulder/earth banks with turf and roots, some bedrock
Invervigar Burn	IB2	NH 31810 05533	NH 31562 05352	From start of section to NH 3174 0556 has substrate of small cobble and pebble. No ideal spawning habitat found, cobbles slightly too large, but spawning would be possible in many parts throughout the reach. Remainder of section mainly cobble substrate with small boulder and pebble, and patchy pockets spawning but no accumulations of spawning substrate. Flow is shallow run and glide with occasional small pools. Stable, with moderate cover.	Stable turf with broadleaves over earth and boulder
Invervigar Burn	IB3	NH 31562 05352	NH 31213 05329	Much of this section is deep glide with deep soft substrate and low peat banks, water depth 30-80 cm. Abundant macrophytes in shallower parts. Remainder is short reaches of shallow fry habitat with pebble substrate. Some spawning habitat is available in these areas. Fish seen.	Low peat banks with boulders. Undercuts and draped vegetation provide good bankside cover
Invervigar Burn	IB4	NH 31213 05329	NH 30877 04856	Alternating sections of peat channel, sometimes very narrow (0.5 m) with deep glide flow and soft peat substrate, and reaches of blocky boulder or bedrock. Peat channel sections are underground in places, increasingly frequently to top of section. Slow flow. No fish seen. No spawning.	Low peat banks with boulders. Undercuts and draped vegetation provide good bankside cover
Allt Achadh nan Darach Beag	ADB1	NH 31981 05408	NH 31982 05845	Unstable mixed juvenile habitat, unsorted boulder, cobble and pebble substrate. Impassable obstacle at start of section. Surrounding ground is clear-felled conifer plantation, much bare earth and organic debris	Unstable eroding cobble and boulder banks.

Annex F: Section 2 Skye: spawning habitats in extended linear habitat surveys

Watercourse	Section	NGR	Area (m ²)	Quality	Notes
Abhainn Torra-Mhichaig	ATM1	various	3	Moderate	Pockets downstream of boulders. Scattered through reach. Infrequent
Abhainn Torra-Mhichaig	ATM2	NG 53630 30001	3	Moderate	Small pebbles, shallow run at mouth of tiny unmapped left-bank tributary.
Abhainn Torra-Mhichaig	ATM2	various	6	Moderate	Pockets downstream of boulders. Scattered through reach. Infrequent
Abhainn Torra-Mhichaig	ATM3	NG 53424 29582	2.5	Good	Excellent bank of small pebble/gravel at side of pool. This is the best area of spawning habitat recorded in the survey reach.
Abhainn Torra-Mhichaig	ATM3	NG 53393 29558	1	Good	Pebble and gravel accumulating in bedrock pool. Unstable. Fry seen.
Abhainn Torra-Mhichaig	ATM3	various	1.5	Moderate	Pebble and gravel in pools and hollows over bedrock. Unstable. Fry seen.
Allt Mhic Mhoirein	AMM1	NG 53898 27861	1	Moderate	Small pebble and gravel at tail of bedrock pool

Annex G: Section 6 Invervigar Burn: spawning habitats in extended linear habitat surveys

Watercourse	Section	NGR	Area (m ²)	Quality	Notes
Invervigar Burn	IB1	NH 31886 05412	10	Good	Accumulation of pebbles in shallow run from glide into shallow pool. Good spawning habitat
Invervigar Burn	IB1	various	10	Moderate	Pockets of spawning substrate scattered throughout reach
Invervigar Burn	IB2	various	6	Moderate	Pockets of spawning substrate scattered throughout reach
Invervigar Burn	IB3	NH 31337 05245	5	Poor	Patchy areas 0.3 - 0.5 m ² , small pebble with shallow run flow.
Allt Achadh nan Darach Beag	ADB1	NH 31964 05437	2	Good	Good small pebble/gravel at tail of pool immediately below obstacle ADB1.1
Allt Achadh nan Darach Beag	ADB1	NH 31924 05581	3	Moderate	Pebble and gravel in very shallow run at mouth of tributary stream