

Technical Appendix 7.1: Ecology

A7.1 Introduction

A7.1.1 This Technical Appendix presents the following information in support of Chapter 7: Ecology of the Environmental Impact Assessment Report (EIAR) of the Proposed Development:

- Details of habitat surveys carried out by Natural Power; and
- Details of protected mammal surveys carried out by Natural Power.

A7.2 Latin Names

A7.2.1 Latin names of all animal species referred to in Chapter 7: Ecology and within this Technical Appendix are given in Table A7.1. Latin names of all plant and lichen species referred to in Chapter 7 and this Technical Appendix are given in Table A7.2.

Table A7.1: Latin names of animal species referred to in Chapter 7

Taxon group	Scientific name	Common name
Amphibian	<i>Triturus cristatus</i>	Great crested newt
Fish	<i>Anguilliformes sp.</i>	Eel species
Fish	<i>Lampetra fluviatilis</i>	River lamprey
Fish	<i>Lampetra planeri</i>	Brook lamprey
Fish	<i>Salmo salar</i>	Atlantic salmon
Fish	<i>Salmo trutta</i>	Brown trout
Mollusc	<i>Margaritifera margaritifera</i>	Freshwater pearl mussel
Terrestrial Mammal	<i>Lutra lutra</i>	Otter
Terrestrial Mammal	<i>Martes martes</i>	Pine marten
Terrestrial Mammal	<i>Meles meles</i>	Badger
Terrestrial Mammal	<i>Sciurus vulgaris</i>	Red squirrel
Terrestrial Mammal	<i>Arvicola amphibius</i>	Water vole
Terrestrial Mammal - bat	<i>Myotis sp.</i>	Mouse-eared bat species
Terrestrial Mammal - bat	<i>Nyctalus sp.</i>	Noctule bat species
Terrestrial Mammal - bat	<i>Nyctalus leisleri</i>	Leisler's bat
Terrestrial Mammal - bat	<i>Nyctalus noctula</i>	Noctule bat
Terrestrial Mammal - bat	<i>Pipistrellus sp.</i>	Pipistrelle bat species
Terrestrial Mammal - bat	<i>Pipistrellus nathusii</i>	Nathusius' pipistrelle
Terrestrial Mammal - bat	<i>Pipistrellus pipistrellus</i>	Common pipistrelle
Terrestrial Mammal - bat	<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle
Terrestrial Mammal - bat	<i>Plecotus auritus</i>	Brown long-eared bat

Table A7.2: Latin and English names of plant and lichen species referred to in Chapter 7

Type	Scientific Name	Common Name
Herb	<i>Calluna vulgaris</i>	Heather
Herb	<i>Erica tetralix</i>	Cross-leaved heather
Herb	<i>Galium palustre</i>	Marsh bedstraw
Herb	<i>Galium saxatile</i>	Heath bedstraw
Herb	<i>Potentilla erecta</i>	Tormentil
Conifer	<i>Picea sitchensis</i>	Sitka spruce
Conifer	<i>Pinus sylvestris</i>	Scots pine
Tree/shrub	<i>Fagus sylvatica</i>	Common beech
Tree/shrub	<i>Betula pendula</i>	Silver birch
Tree/shrub	<i>Fraxinus excelsior</i>	Ash
Tree/shrub	<i>Larix decidua</i>	European larch
Tree/shrub	<i>Populus tremula</i>	Aspen
Tree/shrub	<i>Prunus spinosa</i>	Blackthorn
Tree/shrub	<i>Salix sp.</i>	Willow
Tree/shrub	<i>Sorbus aucuparia</i>	Rowan
Grass	<i>Agrostis stolonifera</i>	Creeping bent
Grass	<i>Cynosurus cristatus</i>	Crested dog's-tail
Grass	<i>Deschampsia cespitosa</i>	Tufted hairgrass
Grass	<i>Festuca ovina</i>	Sheep's fescue
Grass	<i>Holcus lanatus</i>	Yorkshire fog
Grass	<i>Lolium perenne</i>	Perennial ryegrass
Grass	<i>Molinia caerulea</i>	Purple moor-grass
Grass	<i>Nardus stricta</i>	Mat-grass
Grass	<i>Phalaris arundinacea</i>	Reed canary grass
Sedge	<i>Carex echinata</i>	Star sedge
Sedge	<i>Crex rostrata</i>	Bottle sedge
Sedge	<i>Eriophorum angustifolium</i>	Common cottongrass
Sedge	<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass
Sedge	<i>Scirpus cespitosus (Trichophorum cespitosum)</i>	Deergrass
Rush	<i>Juncus acutiflorus</i>	Sharp-flowered rush
Rush	<i>Juncus acutus</i>	Sharp rush
Rush	<i>Juncus effusus</i>	Soft rush
Rush	<i>Sparganium sp.</i>	Bur-reed species
Moss	<i>Sphagnum spp.</i>	Sphagnum Species
Moss	<i>Sphagnum auriculatum</i>	Cow-horn bog-moss
Moss	<i>Sphagnum recurvum</i>	Flat-topped bog-moss
Lichen	<i>Cladonia sp.</i>	Cup lichen species

A7.3 Survey Methods

Field Surveys

- A7.3.1 Baseline surveys were carried out between April 2020 and September 2021 (inclusive) to assess the habitats present in the Proposed Development Area and to quantify use of the Proposed Development Area and surrounding area by protected mammal species.
- A7.3.2 All field surveys were undertaken by the following experienced ecological surveyors:
- Adam Anderson (AA)
 - Helen Allinson (HA)
 - Jack Bell (JB)
- A7.3.3 The survey methods are as described below.

Habitat surveys

Phase 1 habitat survey

- A7.3.4 An extended Phase 1 habitat survey was carried out within 250 m of proposed turbine locations in August 2020. Additional surveys were undertaken in July 2021 within 250 m of the proposed access track and areas within 250 m of turbine locations that had not been covered during the 2020 survey. The Phase 1 habitat survey methodology provides a standardised system for classifying and mapping semi-natural vegetation and wildlife habitats over large areas of countryside.
- A7.3.5 Habitats across the survey area were identified and mapped using the standard Joint Nature Conservation Committee (JNCC) Phase 1 habitat classification (JNCC, 2010)¹.
- A7.3.6 The survey was 'extended' to search for and record signs of legally protected or other notable species, and to assess the potential for the habitats to support such species. Target Notes were taken to record any presence of notable species or potential habitat.

National Vegetation Classification (NVC)

- A7.3.7 National Vegetation Classification (NVC) surveys were carried out in conjunction with the Phase 1 Habitat surveys in August 2020 and July 2021. The NVC is a detailed phytosociological classification, which assesses the full suite of vascular plant, bryophyte and macro-lichen species within a certain vegetation type.

- A7.3.8 NVC community and sub-community types were identified in the field (based on extensive surveyor experience) and delineated and mapped using Global Positioning System (GPS) as per Chapter 10 of the NVC Users' Handbook (Rodwell, 2006)². Where areas were considered to comprise mosaics or complexes of different habitat communities, the proportion of each was estimated in percentage terms. Details of habitat types identified within the survey area are provided in Chapter 7: Ecology. Target Notes were recorded to provide an overview of the habitat types present and any features of ecological interest.

Habitat Loss Calculations (HLC)

- A7.3.9 Habitat loss calculations were carried out using a bespoke tool developed within the R statistical scripting environment (R Core Team, 2021)³. This tool imports shapefiles representing the different infrastructure features constituting the Proposed Development, as well as a shapefile containing the Phase 1 habitat classifications across the site based on the field surveys carried out for the development. Each infrastructure polygon is intersected with the habitat shapefile to allow calculation of the area of each habitat type that would be lost due to construction of that infrastructure feature. Any overlap in infrastructure features is dealt with in a hierarchical way to avoid inclusion of the same areas of habitat twice. Loss attributed to wind turbine foundations is calculated first, followed by additional loss associated with crane hardstands, compounds, and finally access tracks. Another bespoke tool that replicates this process developed using the graphical modeller in QGIS version 3.16 was also run and the results of each method were checked for consistency as part of the quality assurance process.
- A7.3.10 Habitat loss was calculated separately for:
- Access tracks (including new track and upgrades to existing tracks) (4.5 m width)
 - Substation compound (3031 m²)
 - 9 Crane hardstands (26131 m²)
 - 9 Wind turbine foundations (1697.4 m² diameter)
 - Borrow pit ID1 (53943 m²)
 - Borrow pit ID2 (48156 m²)
 - Substation (453.75 m²)
 - Battery storage compound (3870 m²)
 - Construction compound (3315 m²)
 - Enabling works compounds (844 m²)

¹ JNCC. (2010). Handbook for Phase 1 Habitat Survey: a Technique for Environmental Audit. Joint Nature Conservation Committee, Peterborough.

² Rodwell, J. S. (2006). National Vegetation Classification: Users' handbook. JNCC, Peterborough.

³ R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>.

A7.3.11 Borrow pits, crane hardstands and the temporary enabling works compounds were included in this habitat loss calculation, even though normally it is assumed the habitat associated with these features should be fully reinstated and therefore these features do not reflect permanent habitat loss. These were separated out in the calculation to easily identify the amount of temporary habitat loss.

A7.3.12 Total habitat loss was calculated by summing the loss associated with each individual feature. Additionally, for each habitat type, the proportion of the total area of that habitat type recorded during surveys within the site boundary lost was also calculated.

A7.3.13 Habitat data was combined from 2012, 2013, 2020 and 2021 with any overlapping areas superseded by the more recent surveys.

Bat Surveys

Preliminary Bat Roost Assessment

A7.3.14 Walkovers of the site and surrounding areas were undertaken in April 2020 and July 2021 to identify and assess potential bat roosts. Notes were taken where any habitat suitable for roosting was encountered during the survey, as well as any areas likely to provide key foraging or commuting habitat.

A7.3.15 Survey of any trees within 200 m of the proposed turbine locations which were current at the time of survey was undertaken in accordance with NatureScot (2021)⁴ and included a preliminary assessment of trees for any cracks, holes and crevices which would provide suitable roosting habitat. The inspection was undertaken from ground level with binoculars.

Bat Activity Surveys

A7.3.16 A total of 10 SM4 detectors were deployed following the methods outlined by NatureScot (2021)⁴ at sample locations within the site for 14 nights per survey period. All sample locations were deployed on the same day during each season in order to allow direct comparisons of bat activity. A summary of the automated survey schedule is provided in

Table A7.3.

A7.3.17 Detectors were programmed to commence recording from 1 hour before sunset and continue until 1 hour after sunrise, to cover the active period for all species potentially encountered on site. Detectors recorded data to a memory card which was downloaded and later analysed to identify species present. Activity levels can also be established from this data, based on the number of 'bat passes' recorded. Bat passes are defined here as a fifteen-second recording file which contains at least one bat call.

⁴ NatureScot (2021) Bats and onshore wind farms - survey, assessment and mitigation. SNH. Battleby

Table A7.3: Static bat detector deployment dates and locations

Detector ID	Grid Ref	Season	Date Out	Date In	No. Nights Deployed
1	NS 40696 06725	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14
2	NS 40243 07721	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14
3	NS 40720 07179	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14
4	NS 41349 06573	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14
5	NS 40724 08017	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14
6	NS 41253 07861	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14
7	NS 41706 07449	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14
8	NS 42234 06803	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14
9	NS 42612 07056	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14
10	NS 41385 06466	Spring	23/04/2021	07/05/2021	14
		Summer	02/06/2021	16/06/2021	14
		Autumn	16/08/2021	30/08/2021	14

Bat Survey Analysis

A7.3.18 Recorded data were analysed to determine the bat species present and to quantify the number of passes recorded. A bat pass was defined as a sequence of bat pulses captured on a 15 second sound file. One sound file was counted as one bat pass and different species within the same 15 second sound file were counted as separate bat

passes. Bat passes provide an index of bat activity rather than a measure of the actual number of individuals in a population. Bat activity indices are therefore indices of the amount of use bats make of an area.

- A7.3.19 Data analysis was undertaken using the software Kaleidoscope Pro (Wildlife Acoustics, version 5.4.2). This software can automatically process large batches of audio files, identify noise and files with an insufficient amount of information for adequate analysis, thereby reducing the amount of data that require manual checking. Signal parameters were set at 16-120 kHz, 2-500 ms, 500 ms maximum inter-syllable gap with a minimum of 2 pulses.
- A7.3.20 The batch process is further defined by selecting the appropriate classifier (e.g., Europe) which limits the software choices to species known to exist within the defined region, thus increasing accuracy of identification and decreasing batch processing times. The software uses a large database of sample-call characteristics collected from each species throughout their range and provides species identification along with call parameter statistics, allowing manual evaluation of the accuracy of the identification to be performed.
- A7.3.21 Following auto identification batch analysis, manual quality assurance (QA) checks of sonograms was carried out by an acoustic analyst trained in bat call identification. Species identities were confirmed or re-classified when necessary, based on call parameters as defined in Russ (2012⁵ and 2021)⁶ in combination with information on location (likelihood of species being present using the National Biodiversity Network database⁷), habitat (cluttered or open) and call association (clustering with other calls in dataset).
- A7.3.22 The Kaleidoscope Pro software is effective in handling large batches of data and known to be robust in the identification of certain species where call characteristics are reliably specific. Automatic identification was therefore assumed to be correct for common pipistrelles, soprano pipistrelles and for noise, and these records were not investigated further. Due to similarity in call characteristics of other species, the automatic identification is considered less reliable and manual QA checks were therefore performed on all other acoustic records. Species and/or species groups were identified based on visual inspection of sonograms paying particular attention to peak frequency, maximum and minimum frequency, duration and call shape.
- A7.3.23 *Myotis* species were not identified further than genus due to the overlap between species frequency calls within this genus. Pipistrelle, long-eared and *Nyctalus* bats

⁵ Russ, J. 2012. British Bat Calls. Pelagic Publishing. ISBN: 9781907807251

⁶ Russ, J. 2021. Bat Calls of Britain and Europe: A Guide to Species Identification. Pelagic Publishing. ISBN 9781784272258

⁷ <https://nbn.org.uk>

were manually identified to species when possible but as species groups (genus) when it was not possible to distinguish calls to species level. An additional review of calls initially assigned as Leisler's bat was performed using a 10% subset (340 out of 3,339 calls). The results suggested that the calls classified as Leisler's bat at this site often (98% of subset) fell within the potential range of noctule bat calls and that classification to genus rather than species was more appropriate. The general absence of the distinctive qCF call types means it is possible that the calls classified as Leisler's based on the FM/qCF call type could have been noctule bats. Therefore, these calls were reported as the genus *Nyctalus* instead of to species level. There were however a number of social calls distinctive of Leisler's bat and it is therefore believed that this species was present at the site during surveys.

- A7.3.24 At times when static detectors failed to operate, data were omitted from the analysis to avoid overestimating survey effort. For instances when a detector was operational, but did not record any bats, a count of zero was included in the analysis.
- A7.3.25 Datasets were processed using customized R (R Development Core Team, 2021)⁸ scripts creating subsets for manual QA checks, summaries and plots for weather data, effort calculations and plots and tables for reporting purposes.
- A7.3.26 Results were fitted to a specific template for upload to the online database Ecobat using an online tool⁹. This web-based interface allows users to upload activity data and to contrast results with a comparable reference range. Uploaded data then contributes to the overall database to provide increasingly robust outputs. As there are currently several issues with this tool, including incorrect calculation of genus level records and no option to include zero nights (e.g., due to unsuitable weather conditions or technical issues), a new version is being developed by The Mammal Society.
- A7.3.27 At this time, only Table 8 in the resulting Ecobat report is used for this analysis. This table provides a summary of median and max percentiles, 95% confidence intervals and number of nights bats were recorded. This information is combined using an R script, calculated site risk and information from NatureScot reference tables to generate a table of overall risk for each species recorded, providing a table specifying the number of nights of recorded bat activity which fell into each activity

band (low, moderate or high) for each species. All genus calls (except for *Myotis sp.*) were therefore excluded prior to data submission to Ecobat.

- A7.3.28 Database records used in analyses were limited to those within a similar time of year (within 30 days) and a within a similar geographic region (within 100 km). The reference range is the stratified dataset of bat results recorded in the same region, at the same time of year, by which percentile outputs can be generated. Guidelines¹⁰ recommend a minimum reference range of 200 nights to allow confidence in the relative activity levels calculated. The reference range criteria were met for common and soprano pipistrelle bats and for *Myotis* species but not for the other species included.

Protected Mammals

A summary of survey effort and weather conditions for protected mammal surveys is provided in **Error! Reference source not found.**

Otter and Water Vole Survey

- A7.3.29 Otter and water vole surveys were undertaken along River Doon, Lochhead Burn, Lambdoughty Burn, and their tributaries, within the Proposed Development Area plus a 250 m buffer of the watercourses. Surveys were carried out by experienced surveyors in suitable weather conditions. Otter field signs that were searched for were as described in Sargent & Morris (2003)¹¹, while water vole field signs that were searched for were as described in Strachan et al. (2011)¹².

- A7.3.30 Evidence of otter and water vole presence was recorded in the field, including the location of all signs via the use of a handheld GPS and photographs to visually catalogue each record.

Badger and Pine Marten Survey

- A7.3.31 Badger and pine marten surveys were undertaken in areas of suitable habitat within the Proposed Development Area and a 250 m buffer of Proposed Development. Surveys were carried out by experienced surveyors in suitable weather conditions. Badger and pine marten field signs that were searched for were as described in Bang & Dahlstrøm (2001)¹³ and Sargent & Morris (2003)¹¹.

Table A7.4: Protected mammal survey effort and weather 2020 and 2021

Date	Observer	Start time	End time	Precipitation (last 24 hours)	Water level
02/04/2020	HA	09:30	15:00	Drizzle	Medium

⁸ R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>.

⁹ <https://ecobat.org.uk>

¹⁰ Lintott, P.R., Davison, S., van Breda, J., Kuasiewicz, L., Dowse, D., Daisley, J., Haddy, E. and Mathews, F. (2017) Ecobat: An online resource to facilitate transparent, evidence-based interpretation of bat activity data. *Ecology and Evolution* 8 (2) 935-941.

¹¹ Sargent, G. & Morris, P. (2003). *How to Find & Identify Mammals*. The Mammal Society, London

¹² Strachan, R., Moorhouse, T. & Gelling, M. (2011). *The Water Vole Conservation Handbook*. Third Edition, Wildlife Conservation Research Unit, University of Oxford, Abingdon

¹³ Bang, P. and Dahlstrøm, P. (2001). *Animal Tracks and Signs*. Oxford University Press, Oxford.

05/08/2020	HA	10:00	15:00	Heavy showers	Medium
11/08/2020	HA/JK	10:30	16:30	Heavy showers	Medium
16/06/2021	JK	09:30	16:34	Light showers	Low
23/06/2021	HA	09:30	15:30	Drizzle	Medium

Great Crested Newt Surveys

A7.3.32 Great crested newt (GCN) surveys were undertaken in July 2021 in eight ponds within the Proposed Development Area and a 500 m buffer of Proposed Development. Surveys were not carried out in a further two ponds within the buffer, where access was not permitted. Surveys comprised of a Habitat Suitability Index (HSI) assessment and eDNA analysis.

A7.3.33 HSI assessment was used to score the ponds from poor to excellent suitability for GCN in ten different indicators, following methods described in Oldham *et al.* (2000)¹⁴. The HSI scores per indicator were then used to calculate overall HSI scores for each pond. Each indicator was scored from 0.01 - 1 for each pond, before multiplying all indices per pond to reach the overall HSI score.

A7.3.34 eDNA analysis was carried out on water samples taken from each pond to confirm the presence or likely absence of GCN in that pond. The testing kits used were from an approved laboratory.

Freshwater Pearl Mussel Surveys

A7.3.35 Freshwater pearl mussel (FWPM) habitat surveys were undertaken by Heritage Environmental Ltd (HEL) in September 2021. Surveys were carried out by experienced surveyors in suitable weather conditions. Watercourses within the study area were appraised for their suitability to support FWPM as described in Skinner *et al.* (2003)¹⁵ among other sources. An assessment was made of watercourse conditions within the study area, including: general substrate suitability; algal cover presence of salmonids; depth, width, gradient and speed of flow; any negative anthropogenic effects (e.g. presence of pollution); and adjacent land use.

A7.3.36 The habitat survey also entailed a search for dead FWPM shells on the study areas banks and strand/trash line.

Fish Habitat Surveys

A7.3.37 Fish habitat surveys were carried out in July 2021 within the Watercourse Study Area (comprising Keirs Burn, River Doon, Red Burn, Lochhead Burn and Lambdoughty Burn where within the Proposed Development) to evaluate habitat quality and important

features such as spawning locations, following guidance provided by the Scottish Fisheries Coordination Centre (SFCC)¹⁶. These surveys comprised of a short walk-over along all watercourses to record the relative proportions of different fish habitat characteristics (e.g., water depth, substrate, bankside structure) within 100 m stretches. Notes were made of potential pollution sources and obstructions to migration. This data was used to evaluate habitat quality and important features such as pools deep enough for spawning locations, shelter and food availability.

A7.4 Results

Field Surveys

Habitats

A7.4.1 Target notes recorded during habitat surveys are shown in Table A7.5 and Figure 7.4. Details of the location of the badger sett are provided in Ecology Confidential Appendix 7.2 and Confidential Figure 7.5

Table A7.5: Target notes recorded during habitat surveys in the Proposed Development Area 2020 and 2021

Date	Grid reference	ID	Notes
05/08/2020	NS 42168 06577	2	Small pond - protected species potential
05/08/2020	NS 42185 07023	4	Small pond - protected species potential
06/08/2020	NS 42294 07059	16	Three buzzard fledgelings present
26/07/2021	NS 42986 06774	1	Adder live sighting - large female
27/07/2021	Confidential	2	Badger sett - already known

¹⁴ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10(4), 143-155.

¹⁵ Skinner, A., Young M. and Hastie, L. (2003). Ecology of the Freshwater Pearl Mussel. Conserving Natura 2000 Rivers Ecology Series No. 2. English Nature, Peterborough.

¹⁶ SFCC Habitat Surveys Training Manual. (2007). Available at: <https://www.sfcc.co.uk/resources/habitat-surveying.html>

Habitat Loss Calculations (HLC)

A7.4.2 The results of HLC are detailed in Table A7.6 below.

Table A7.6: Habitat Loss Calculations (HLC) for the proposed development

Phase 1 code	Phase 1 name	Total area within Proposed Development Area (ha)	Area lost (ha)										Percentage total area lost (ha)
			Access Tracks	Battery storage compound	Borrow Pit ID 1	Borrow Pit ID 2	Construction compound	Crane hardstands	Enabling compound	Substation	Wind Turbine foundations	Total	
A1.1.1	Semi-natural broadleaved woodland	1.05	0	0	0	0	0	0	0	0	0	0.00	0
A1.1.2	Broadleaved plantation	1.35	0	0	0.17	0	0	0	0	0	0	0.17	12.69
A1.2.2	Conifer plantation	592.41	3.64	0.72	5.22	0.17	0.23	2.16	>0.01	0.02	0.13	12.30	2.08
A1.3.2	Mixed plantation	6.30	0	0	0	0	0	0	0	0	0	0.00	0
A2.2	Scattered scrub	0.05	0	0	0	0	0	0	0	0	0	0.00	0
A3.1	Scattered broadleaved trees	0.15	0	0	0	0	0	0	0	0	0	0.00	0
A4.2	Felled conifer	52.83	0.21	>0.01	0	4.12	0.07	0.45	0	0.02	0.04	4.92	9.31
B1.2	Semi-improved acid grassland	4.18	0	0	0	0	0	0	0	0	0	0.00	0
B2.1	Unimproved neutral grassland	21.51	0.03	0	0	0	0	0	0	0	0	0.03	0.14
B4	Improved grassland	5.23	0.18	0	0	0	0	0	0	0	0	0.18	3.43
B5	Marshy grassland	127.48	0.77	0	0	0	0	0	0	0	0	0.77	0.52
C3.1	Tall ruderal	0.19	0	0	0	0	0	0	0	0	0	0.00	0
D2	Wet heath	4.34	0.11	0	0	0	0	0	0	0	0	0.11	2.43
D6	Wet heath/acid grassland mosaic	9.12	0.07	0	0	0	0	0	0	0	0	0.07	0.80
E1.6.1	Blanket bog	36.73	0.28	0	0	0	0	0	0	0	0	0.28	0.76
E1.7	Wet modified bog	19.49	0.14	0	0	0	0	0	>0.01	0	0	0.14	0.70
E2.1	Acid flush	1.15	0	0	0	0	0	0	0	0	0	0.00	0
G1	Standing water	0.11	0	0	0	0	0	0	0	0	0	0.00	0
G2	Running water	1.84	0	0	0	0	0	0	0	0	0	0.00	0
I2.1	Quarry	0.63	0	0	0	0.52	0	0	0	0	0	0.52	83.33
J3.6	Buildings	0.01	0	0	0	0	0	0	0	0	0	0.00	0
J5	Track	<0.01	0	0	0	0	0	0	0	0	0	0.00	0
	Unsurveyed	3.52	0	0	0	0	0	0	0.04	0	0	0.00	0

Bat Surveys

A7.4.3 Potential Roost Features (PRFs) from the daytime inspection of trees and other structures with the potential to support bat roosts are presented in Table A7.7 and Table A7.8. Metrics recorded by static detectors for each species are shown in Table A7.9. Relative bat activity levels have also been assessed for each bat detector following NatureScot guidance⁴. Assessment of the median activity levels per season is in Table A7.10 and assessment of the maximum activity levels per season is in Table A7.11, confidence intervals for results presented in Table A7.10 and Table A7.11 are given in Table A7.12. Assessment of the median activity levels per bat detector location is in Table A7.13 and assessment of the maximum

activity levels per bat detector location is in Table A7.14. The breakdown of species activity during the periods of 30 minutes before sunrise, between sunrise and sunset, and 30 minutes after sunset can be found in Table A7.15 for spring, Table A7.16 for summer, Table A7.17 for autumn and Table A7.18 for the whole year.

Table A7.7: PRFs recorded in buildings and structures during surveys 2020

Grid Reference	Distance from Proposed Development (m)	Roof Design	Roof Material	Habitat	Roost Potential	Notes
NS 41159 05644	250	Pitched	Slate	Open farmland, small broadleaf wood nearby. Conifer plantation > 200m away	Confirmed	Bat droppings seen on floor of attic in barn. Only checked from stairs as floorboards looked rotted. Checked during barn owl survey.

Table A7.8: PRFs recorded in trees during bat walkover surveys 2021

Grid Reference	Distance from Proposed Development (m)	Roost Potential	Tree Species	Life Stage	PRF	Height (m)	Orientation	Notes
NS 43143 07891	135	Moderate	Larch	Over-mature	Snapped branch	7	South and north	Could not check whole wood due to access restrictions around High Keirs Cottage.
NS 43143 07891	135	Moderate	Larch	Over-mature	Snapped branch; Hole	6 - 8	West/north-west	Could not check whole wood due to access restrictions around High Keirs Cottage.
NS 43027 07672	75	Moderate	Ash	Over-mature	Hole	6	West	Has ash die back.
NS 43027 07672	75	Moderate	Sycamore	Over-mature	Hole; Lifting bark	4	South-east	
NS 43027 07672	75	Moderate	Ash	Over-mature	Internal crack; Lifting bark	5	North-west	Has ash die back.
NS 43027 07672	75	Moderate	Rowan	Over-mature	Lifting bark; Internal crack	1		

Table A7.9: Key metrics for each detector and bat species recorded

Detector ID	Species	Median Percentile	95% CIs	Max Percentile	Nights Recorded	Reference Range
1	<i>Myotis sp.</i>	18	1 - 48.5	63	12	2243
1	Leisler's bat	58	33 - 65	87	23	568.7
1	Noctule bat	63	37.5 - 69.5	76	15	487.6
1	Common pipistrelle	83	70 - 85.5	100	29	4734
1	Soprano pipistrelle	86	64 - 87	96	28	6793
1	Brown long-eared bat	1	1 - 1	1	7	386
2	<i>Myotis sp.</i>	34	17.5 - 49	58	14	2156
2	Leisler's bat	61	56.5 - 74.5	87	18	494.4
2	Noctule bat	34	17.5 - 58	82	13	486.1
2	Common pipistrelle	74	64.5 - 86.5	100	26	4498
2	Soprano pipistrelle	85	66.5 - 90	99	24	7065

Detector ID	Species	Median Percentile	95% CIs	Max Percentile	Nights Recorded	Reference Range
2	Brown long-eared bat	1	1 - 17.5	49	8	386
3	<i>Myotis sp.</i>	34	1 - 49	49	6	2251
3	Leisler's bat	74	68.5 - 79	81	8	277
3	Noctule bat	42	25 - 49	49	6	484
3	Nathusius' pipistrelle	1	0	1	1	15
3	Common pipistrelle	99	54.5 - 100	100	10	4384
3	Soprano pipistrelle	98	78.5 - 100	100	10	7256
3	Brown long-eared bat	1	1 - 1	1	4	386
4	<i>Myotis sp.</i>	48	32.5 - 63	92	22	2092
4	Leisler's bat	42	25 - 60	86	19	512.4
4	Noctule bat	1	1 - 38	58	10	486.7
4	Nathusius' pipistrelle	1	0.5 - 0.5	1	2	25
4	Common pipistrelle	79	72.5 - 84	93	28	4617
4	Soprano pipistrelle	78	68.5 - 84.5	93	27	7124
4	Brown long-eared bat	18	1 - 41.5	49	6	344.8
5	<i>Myotis sp.</i>	9	5 - 48.5	71	15	2070
5	Leisler's bat	88	76.5 - 90	97	27	539.7
5	Noctule bat	49	49 - 82.5	89	15	488.8
5	Nathusius' pipistrelle	71	71 - 71	71	3	28.33
5	Common pipistrelle	99	96 - 99.5	100	34	4294
5	Soprano pipistrelle	97	90.5 - 97.5	100	30	6558
5	Brown long-eared bat	34	1 - 41.5	49	6	386
6	<i>Myotis sp.</i>	34	21.5 - 46	65	19	2177
6	Leisler's bat	71	56.5 - 76.5	90	26	530.9
6	Noctule bat	42	17.5 - 70	82	12	486.2
6	Nathusius' pipistrelle	22	1 - 42	65	4	25
6	Common pipistrelle	99	97 - 99	100	34	4394
6	Soprano pipistrelle	95	86.5 - 95.5	99	32	6709
6	Brown long-eared bat	1	1 - 1	34	4	386
7	<i>Myotis sp.</i>	4	1 - 65	65	4	1968
7	Leisler's bat	62	50 - 74	77	8	836
7	Noctule bat	0	0 - 0	77	3	493
7	Nathusius' pipistrelle	65	0	65	1	35
7	Common pipistrelle	90	68.5 - 92.5	100	27	4598
7	Soprano pipistrelle	73	40 - 78	96	16	6718
8	<i>Myotis sp.</i>	7	4 - 37.5	68	14	1953

Detector ID	Species	Median Percentile	95% CIs	Max Percentile	Nights Recorded	Reference Range
8	Leisler's bat	76	65.5 - 82.5	93	14	316.9
8	Noctule bat	58	41.5 - 71	74	7	484
8	Common pipistrelle	81	73.5 - 87	98	27	4569
8	Soprano pipistrelle	75	53.5 - 83	96	22	6864
8	Brown long-eared bat	1	1 - 17.5	34	6	386
9	<i>Myotis sp.</i>	34	32 - 62.5	78	20	2173
9	Leisler's bat	85	69.5 - 93	97	22	505.7
9	Noctule bat	61	32 - 73	84	12	484.8
9	Nathusius' pipistrelle	5	4.5 - 4.5	9	2	20
9	Common pipistrelle	94	89 - 95.5	99	30	4568
9	Soprano pipistrelle	84	72.5 - 90.5	98	27	7302
9	Brown long-eared bat	58	46 - 64.5	71	11	386
10	<i>Myotis sp.</i>	34	25 - 53.5	68	20	2131
10	Leisler's bat	77	62.5 - 88	99	20	584.5
10	Noctule bat	42	21.5 - 45.5	49	9	490
10	Nathusius' pipistrelle	34	1 - 81	81	3	21.67
10	Common pipistrelle	97	84 - 97	100	32	4553
10	Soprano pipistrelle	96	87 - 96.5	100	29	6974
10	Brown long-eared bat	34	34 - 34	71	4	386

Table A7.10: Ecobat relative bat activity for the median activity level (percentile) of bats recorded across each night of the bat survey for the Proposed Development summarised by season and for the whole year

Species	Spring	Summer	Autumn	Year
<i>Myotis</i> sp.	Low	Low	Low to moderate	Low to moderate
Leisler's bat	Low to moderate	Moderate to high	Moderate to high	Moderate to high
Noctule	NA	Moderate	Moderate	Moderate
Nathusius' pipistrelle	Low	Moderate to high	Low	Low to moderate
Common pipistrelle	Moderate to high	High	High	High
Soprano pipistrelle	Moderate	High	High	High
Brown long-eared	NA	Low	Low	Low

Table A7.11: Ecobat relative bat activity for the maximum activity level (percentile) of bats recorded across each night of the bat survey for the Proposed Development summarised by season and for the whole year

Species	Spring	Summer	Autumn	Year
<i>Myotis</i> sp.	Moderate	High	Moderate to high	High
Leisler's bat	Moderate	High	High	High
Noctule	NA	High	High	High
Nathusius' pipistrelle	Low	High	Low to moderate	High
Common pipistrelle	High	High	High	High
Soprano pipistrelle	High	High	High	High
Brown long-eared	NA	Low	Moderate to high	Moderate to high

Table A7.12: Relative bat activity confidence intervals* for Table A7.10 and Table A7.11

Species	Spring	Summer	Autumn
<i>Myotis</i> sp.	9-9	53.5-53.5	38.5-63
Leisler's bat	0-0	84-98	84.5-96
Noctule	NA	78-78	41.5-82.5
Nathusius' pipistrelle	0-0	71-71	17.5-17.5
Common pipistrelle	88-88	99.5-100	97-99.5
Soprano pipistrelle	9-90	90.5-98	93-99.5
Brown long-eared	NA	0-0	46-64.5

*The 95% confidence intervals represent the range of values that you can be 95% certain contains the true average bat activity for each species based on the range of data used in the assessment.

Table A7.13: Ecobat relative bat activity for the median activity level (percentile) of bats recorded across each night of the bat survey for each detector location summarised for the whole year

Species	Detector ID									
	1	2	3	4	5	6	7	8	9	10
<i>Myotis</i> sp.	Low	Low-Mod	Low-Mod	Mod	Low	Low-Mod	Low	Low	Low-Mod	Low-Mod
Leisler's bat	Mod	Mod-High	Mod-High	Mod	High	Mod-High	Mod-High	Mod-High	Mod-High	Mod-High
Noctule	Mod-High	Low-Mod	Mod	Low	Mod	Mod	Low	Mod	Mod-High	Mod
Nathusius' pipistrelle	NA	NA	Low	Low	Mod-High	Low-Mod	Mod-High	High	Low	Low-Mod
Common pipistrelle	High	Mod-High	High	Mod-High	High	High	High	High	High	High
Soprano pipistrelle	High	High	High	Mod-High	High	High	Mod-High	Mod-High	High	High
Brown long-eared	Low	Low	Low	Low	Low-Mod	Low	NA	Low	Mod	Low-Mod
Dist. from turbine (m)	150	181	228	346	293	118	345	227	100	441

Table A7.14: Ecobat relative bat activity for the maximum activity level (percentile) of bats recorded across each night of the bat survey for each detector location summarised for the whole year

Species	Detector ID									
	1	2	3	4	5	6	7	8	9	10
<i>Myotis</i> sp.	Mod-High	Mod	Mod	High	Mod-High	Mod-High	Mod-High	Mod-High	Mod-High	Mod-High
Leisler's bat	High	High	High	High	High	High	Mod-High	High	Mod-High	High
Noctule	Mod-High	High	Mod	Mod	High	High	Mod-High	Mod-High	High	Mod
Nathusius' pipistrelle	NA	NA	Low	Low	Mod-High	Mod-High	Mod-High	High	Low	High
Common pipistrelle	High	High	High	High	High	High	High	High	High	High
Soprano pipistrelle	High	High	High	High	High	High	High	High	High	High
Brown long-eared	Low	Mod	Low	Mod	Mod	Mod-Low	NA	Low-Mod	Mod-High	Mod-High
Dist. from turbine (m)	150	181	228	346	293	118	345	227	100	441

Table A7.15: Temporal distribution of bat calls by species for spring deployment

Species	No. calls between sunrise and sunset	No. calls within 0.5 hrs of sunrise	No. calls within 0.5 hrs of sunset	Total calls	Percentage calls between sunrise and sunset	Percentage calls within 0.5 hrs of sunrise	Percentage calls within 0.5 hrs of sunset
<i>Myotis</i> sp.	18	0	0	18	100	0	0
<i>Nyctalus</i> sp.	3	0	0	3	100	0	0
Nathusius's pipistrelle	1	0	0	1	100	0	0
Common pipistrelle	580	158	0	738	78.59	0	21.41
Soprano pipistrelle	94	5	0	99	94.95	0	5.05

Table A7.16: Temporal distribution of bat calls by species for summer deployment

Species	No. calls between sunrise and sunset	No. calls within 0.5 hrs of sunrise	No. calls within 0.5 hrs of sunset	Total calls	Percentage calls between sunrise and sunset	Percentage calls within 0.5 hrs of sunrise	Percentage calls within 0.5 hrs of sunset
<i>Myotis</i> sp.	133	0	0	133	100	0	0
Noctule	103	0	14	117	88.03	0	11.97
<i>Nyctalus</i> sp.	1791	0	24	1815	98.68	0	1.32
Nathusius's pipistrelle	31	0	0	31	100	0	0
Common pipistrelle	22030	11	44	22085	99.75	0.05	0.20
Soprano pipistrelle	4780	2	0	782	99.96	0.04	0
Pipistrellus sp.	755	0	0	755	100	0	0
Brown long-eared	1	0	0	1	100	0	0

Table A7.17: Temporal distribution of bat calls by species for autumn deployment

Species	No. calls between sunrise and sunset	No. calls within 0.5 hrs of sunrise	No. calls within 0.5 hrs of sunset	Total calls	Percentage calls between sunrise and sunset	Percentage calls within 0.5 hrs of sunrise	Percentage calls within 0.5 hrs of sunset
<i>Myotis</i> sp.	246	0	0	246	100	0	0
Noctule	232	9	47	288	80.55	3.13	16.32
<i>Nyctalus</i> sp.	2078	19	99	2196	95	0.87	4.5

Nathusius's pipistrelle	9	0	0	9	100	0	0
Common pipistrelle	20087	6	148	20241	99.24	0.03	0.73
Soprano pipistrelle	13329	46	33	13408	99.41	0.34	0.25
Pipistrellus sp.	366	0	1	367	99.73	0	0.27
Brown long-eared	115	0	0	115	100	0	0

Table A7.18: Temporal distribution of bat calls by species for the whole year

Species	No. calls between sunrise and sunset	No. calls within 0.5 hrs of sunrise	No. calls within 0.5 hrs of sunset	Total calls	Percentage calls between sunrise and sunset	Percentage calls within 0.5 hrs of sunrise	Percentage calls within 0.5 hrs of sunset
<i>Myotis</i> sp.	397	0	0	397	100	0	0
Leisler's bat	3309	4	81	3394	97.50	0.11	2.39
Noctule	335	9	61	405	82.72	2.22	15.06
<i>Nyctalus</i> sp.	3872	19	123	4014	96.46	0.47	3.06
Nathusius' pipistrelle	41	0	0	41	100	0	0
Common pipistrelle	42697	17	350	43064	99.15	0.04	0.81
Soprano pipistrelle	18203	48	38	18289	99.53	0.26	0.21
Pipistrellus sp.	1121	0	1	1122	99.91	0	0.09
Brown long-eared	116	0	0	116	100	0	0

Protected Mammal Surveys

A7.4.4 A summary of all protected mammal signs recorded within the Proposed Development in 2020 and 2021 is presented in Table A7.19. Locations of confidential records are detailed in Ecology Confidential Appendix 7.2 and Confidential Figure 7.5.

Table A7.19: Protected mammal signs within the Proposed Development in 2020 and 2021

Date	Survey	Grid reference	Species	Confidence of record	Nature of record	No. signs	Freshness of sign	Status	Comments
02/04/2020	Incidental found during bat roost survey	NS 241471 606403	Pine marten	Possible	Spraint/scat	1	Recent	n/a	
02/04/2020	Incidental found during bat roost survey	NS 241699 606303	Badger	Definite	Snuffle hole	1	Recent	n/a	
02/04/2020	Incidental found during bat roost survey	NS 241144 606529	Pine marten	Definite	Spraint/scat	1	Recent	n/a	
05/08/2020	Badger survey	Confidential	Badger	Definite	Sett	2	Recent	Active	Two entrance sett below felled Sitka. Recent digging, hair and bedding in spoil pile.
05/08/2020	Badger survey	Confidential	Badger	Definite	Sett	1	Recent	Active	Third entrance just below first two. Under young alder tree. Fresh digging, hair and bedding in spoil. Probably main sett.
05/08/2020	Badger survey	NS 241678 608031	Badger	Definite	Scat	1	Recent	n/a	
05/08/2020	Badger survey	Confidential	Badger	Definite	Sett	1	Recent	Active	Annex sett, roughly 15-20m from main sett. Single entrance. Fresh spoil.
05/08/2020	Badger survey	NS 241824 606421	Badger	Definite	Snuffle hole	3	Recent	n/a	Snuffle holes on edge of forestry.

05/08/2020	Badger survey	NS 241831 606417	Badger	Probable	Run	1	Recent	n/a	Path leading from forestry edge where snuffle holes were to under the fence into the field. Path lost in field.
11/08/2020	Otter and water vole survey	Confidential	Otter	Possible	Couch			Unconfirmed	Overhanging rock just above burn. Fresh vegetation growth. No sign of use but could potentially be used.
11/08/2020	Otter and water vole survey	Confidential	Otter	Possible	Couch			Unconfirmed	Potential otter couch, no signs of recent use. Overhanging tree root
11/08/2020	Otter and water vole survey	NS 240493 607754	Otter	Definite	Spraint/scat	1	Recent	n/a	Spraint on old wall stone next to burn.
11/08/2020	Otter and water vole survey	NS 240536 607673	Otter	Definite	Spraint/scat	1	Recent	n/a	Spraint on gap in wall within 10m of burn. On path to burn.
11/08/2020	Otter and water vole survey	NS 241888 606511	Pine marten	Probable	Spraint/scat	1	Recent	n/a	Fairly recent scat on moss hummock. Small mammal remains.
11/08/2020	Otter and water vole survey	NS 241225 606026	Otter	Definite	Tracks/footprint	1	Recent	n/a	
16/06/2021	Badger Survey	NS 243283 607152	Badger	Definite	Feeding sign	2	Recent	n/a	Snuffle holes.
16/06/2021	Badger Survey	NS 243490 607938	Badger	Definite	Snuffle hole	3	Recent	n/a	
16/06/2021	Badger Survey	Confidential	Badger	Definite	Sett	7	Recent	Active	Seven entrance sett with fresh kickout and bedding.
16/06/2021	Badger Survey	NS 243799 608149	Badger	Definite	Latrine	7	Recent	n/a	Snuffle holes.
23/06/2021	Mammal survey	NS 243806 608112	Otter	Definite	Spraint/scat	1	Old	n/a	
23/06/2021	Mammal survey	NS 243778 608168	Otter	Definite	Spraint/scat	3	Recent	n/a	Multiple spraints on rocks in middle of river. Varying ages.
23/06/2021	Mammal survey	NS 243750 608196	Badger	Definite	Feeding sign	3	Recent	n/a	Dug out sand martin nest and eaten chick. Collapsed bank with digging signs and snuffle holes.
23/06/2021	Mammal survey	Confidential	Otter	Potential	Couch			Unconfirmed	Over hanging tree with probably undercut bank.
23/06/2021	Mammal survey	NS 243095 607748	Badger	Definite	Snuffle hole	1	Recent	n/a	
23/06/2021	Mammal survey	NS 243127 606238	Otter	Definite	Spraint/scat	2	Recent	n/a	Two spraints under road bridge.

Great Crested Newt Surveys

A7.4.5 Results of the GCN HSI assessment are listed below in Table A7.20.

Table A7.20: GCN HSI scores for all ponds assessed 2021

Pond	Geographical location	Pond area	Permanence	Water quality	Shade	Waterfowl	Fish	Pond count	Terrestrial habitat	Macrophytes	HSI	HSI
1	0.5	1	0.9	0.67	0.8	1	1	0.4	1	0.8	0.77	Good
2	0.5	0.2	0.9	0.67	1	1	1	0.6	1	0.6	0.68	Average
3	0.5	0.2	0.9	0.67	0.6	1	1	0.4	1	0.2	0.56	Below Average
4a	0.5	0.2	0.5	NA	1	1	1	0.9	1	0.4	0.64	Average
4b	0.5	0.2	0.5	NA	1	1	1	0.9	1	0.4	0.64	Average
5	0.5	0.2	0.9	0.67	1	1	1	0.8	1	0.9	0.73	Good
6	0.5	0.05	1	0.33	0.2	1	1	0.9	1	0.8	0.51	Below Average
9	0.5	0.05	0.9	0.33	0.2	1	1	0.9	1	0.9	0.51	Below Average
10	0.5	0.05	1	0.33	0.2	1	1	0.9	1	0.3	0.46	Poor

<0.5 = poor suitability, 0.5 - 0.59 = below average suitability, 0.6 - 0.69 = average suitability, 0.7 - 0.79 = good suitability, > 0.8 = excellent suitability

Freshwater Pearl Mussel Surveys

A7.4.6 Table A7.21 shows notes recorded during the FWPM habitat assessment surveys. Photographs taken during the assessment can be provided upon request.

Table A7.21: Freshwater pearl mussel habitat assessment notes in the Proposed Development Area 2021

Sample	Easting	Northing	Description	Habitat suitability
1	243804	608140	Section of River Doon within the Proposed Development Area glide to 1 m depth and to 10 m wetted width (ww). Boulders appear present although they are associated with silts and not gravels, likely making the section unsuitable habitat.	Unsuitable
2	243762	608180	Glide is present downstream of a deep run with elements of riffles present at the north edges. Wetted width to 12 m with depth of the runs to c. 40 cm (glide to 1.2 m). Substrate appears to be 60 % pebbles, 10 % cobbles, 20 % gravels and 10 % coarse sands making the section suitable (although sub-optimal) for FWPM.	Sub-optimal
3	243612	608257	Glide of River Doon with in-stream aquatic vegetation. Wetted width here to 8.5 m with water depth of c. 1.5 m. Soft sediment (silts at water's edge, likely unsuitable habitat).	Unsuitable
4	243506	608324	River Doon remains a glide with increased width (to 10 m). Depth to 1.5 m substrates include gravels and coarser sands (as assessed by feel). In-stream vegetation present (water weeds and <i>Sparganium sp.</i>). Presence of gravels suggests section may be sub-optimal although water depth and slow flow likely precludes FWPM.	Unsuitable
5	2433406	608398	Edges of River Doon here with significant silt. Depth > 2 m of wetted width 9 m of the glide. Swamp (reed canary grass) borders river.	Unsuitable
6	243377	608500	Reed canary grass banked glide of River Doon. Substrate unknown with depth > 2 m and wetted width to 8 m. Likely unsuitable due to water depth.	Unsuitable
7	243389	608650	River Doon glide wetted width to 9 m depth > 1 m. Substrate unknown although edges heavily silted. Likely unsuitable with such high silt levels.	Unsuitable
8	243467	608738	Glide of > 1.5 m depth and wetted width to 7 m. River Doon bordered by swamp-like habitat to south and pasture to north. Substrate unknown but with silts at edges. Likely too deep for sub-optimal habitat.	Unsuitable
9	243441	608803	Bridge over River Doon. Flow runs east to west. Deep glide (>0.5 m) goes into shallow run with riffles to the west. Substrate here appears to be of boulders (10 %), cobbles (35 %), pebbles (30 %), gravels (15 %) and coarser sands (5 %). Wetted width to 9 m.	Sub-optimal/Optimal
10	243194	607877	Water course, with very limited water levels (to 2 cm) present. Gradient to woodland to north-west > 6 %.	Unsuitable
11	243279	607814	Running water present with water relatively clear (turbidity 1-2). Wetted width to 15 cm in places and depth to 5 cm. Some sections subterranean with areas showing poaching.	Unsuitable
12	243322	607761	Large sections of burn are poached by cattle with some pooling in mud. No flow apparent on ground surface.	Unsuitable
13	243500	607491	Small burn within rough pasture. Wetted width to 15 cm depth to only 2 cm. Largely silts (75 %) but with boulders present (likely from hillside). Some water pollutants (oil?) present on surface.	Unsuitable
14	243129	607918	Confluence of three tributaries in very steep-sided wooded gorge (100% shaded) generally (> 6° gradient). Very low flow noted although likely high energy spate burn - no stable substrates noted. c. 1.5 m wetted width and <0.05 m deep over predominantly bedrock with boulders.	Unsuitable
15	242884	607465	No distinct channel, diffuse flush dominated by soft-rush <i>Juncus effusus</i> .	Unsuitable
16	243069	607652	Short section of watercourse where gradient is steep (>5o) and substrate is bedrock. Minimal water flow, depth < 0.05 m.	Unsuitable
17	243120	607794	Burn through steep-sided flush (> 6° gradient) c. 0.5 m wetted width and <0.02 m deep over substrate predominantly sediment (70%) with cobbles and pebbles. Bedrock exposures noted upstream.	Unsuitable
18	243047	607883	Flush vegetation. No water present.	Unsuitable
19	242957	608012	Downstream of track ford. Dry channel in wooded gorge.	Unsuitable
20	242708	608174	No channel present. Diffuse through flush vegetation.	Unsuitable
21	242990	606432	Small channel wetted width (ww) to 12 cm and with minimal peaty water (turbidity 3) to 1cm depth. Sediment - 100% fine silt. Banks vegetated (ferns, purple moor grass, sharp rush & tufted hair grass).	Unsuitable
22	243003	606367	Almost completely dry channel within marshy grassland. The water that is present is not flowing and to a depth of 1-2 mm (high peat content).	Unsuitable
23	243057	606324	Water present to a depth of 4 cm within channel (ww to 15 cm). No flow present of turbid/peaty water. Within marshy grassland.	Unsuitable
24	242829	606219	No water flow within channel of ww 12 cm and depth of peat-stained water to 4 cm. Sediment 100 % silt.	Unsuitable
25	242738	606226	Water present to a depth of 5 cm within water channel to 30 cm wetted width. No flow. Sediment base of some gravel (10%), coarser sand (10%), silt (75%) with some pebbles (5%). Turbidity 2 (of 1-3 scale).	Unsuitable
26	242676	606240	Water channel to 20 cm wide and with (slight flowing) water to a depth of 5 cm. Turbidity 1-2, with slight peat-staining. Sediment at least 90 % silt.	Unsuitable
27	242662	606236	Water-less ditch.	Unsuitable
28	242405	606639	Channel is no longer present within marshy grassland.	Unsuitable
29	242374	606565	Water to a depth of 15 cm within a channel of wetted width 25 cm that pools within planted coniferous woodland. No flow present with <i>Sphagnum</i> mosses within channel and significant algal cover.	Unsuitable

30	242406	606629	Soon loses any water and becomes vegetated flush. Channel with potential for water flow present - but dry.	Unsuitable
31	241903	606613	Watercourse lies within conifer plantation. Gradient of c. 3% with ww to 40 cm and peat-stained water depth to 10 cm. Majority of substrate is silt with occasional larger moss-covered cobble. Some water flow present. Heavily shaded.	Unsuitable
32	241922	606539	Channel within conifer plantation woodland substrate 90 % silt, 5 % coarse sand and 5 % larger cobbles/pebbles present. Average water depth to 10 cm of ww 30 cm channel. Heavily shaded.	Unsuitable
33	241911	606528	Confluence of tributary and main stem within plantation woodland. Wetted width to 60 cm but peat-stained water to a maximum of 10 cm depth only. Significant bedrock exposed (to 50 %) suggesting flash flooding with c. 30 % silts and 20 % sands and gravels.	Unsuitable
34	241894	606516	Gradient >5 % as water course drops through plantation. Bedrock exposed (5%) with a mixture of boulders, cobbles, pebbles, gravel (to 30%) coarse sands and silt. Wetted width of channel to 85 cm but a depth of 5 cm of peat-stained water (turbidity 2-3).	Unsuitable
35	241838	606439	Tributary exits Proposed Development Area onto marshy grassland. Here 90 % silts, producing turbid (3) waters. Some subterranean sections also present.	Unsuitable
36	241587	606212	Lambdoughty burn re-enters the Proposed Development Area at plantation woodland. Burn includes cobbles, pebbles (25%) gravels (40%), coarse sands and only a small amount of silts (to 5%). However, burn (ww to 80cm) has a water depth to only 10 cm maximum.	Unsuitable
37	241465	606245	Gradient of burn to c. 5% within woodland. (area of larches has been felled with a large number now overhanging the burn). Bedrock is exposed in areas (to 10%) with large material (boulders et al) also present suggesting high energy spate events. Presently some water pooled to depths of c. 15 cm within channel (ww to 140 cm).	Unsuitable
38	241367	606270	Section on reduced gradient beneath sample 38 within woodland. Larger material present (boulders, cobbles etc.) many covered here by mosses, suggesting flooding events occasional. Wetted width to 220 cm and water depth to a maximum of 10 cm. Occasional pools deeper but with high silt substrate levels (>90%)	Unsuitable
39	241300	606229	A drop pool within plantation woodland. Largely a substrate of bedrock, boulders and cobbles with some finer silt also present as a top layer. Depth to 80 cm.	Unsuitable
40	241268	606109	Gentle water flow (shallow glide) of burn now outside plantation woodland. The presence of cobbles and pebbles (both to 30 %) suggests faster and deeper flow sometimes present. Wetted width to 200 cm and a depth of 5 cm only.	Unsuitable
41	241186	605996	Shallow glide has elements of shallow run here: water flow slightly increased with occasional surface ripples noted. Pebbles (40 %) are the dominant substrate here with some silts (to 30 %) associated downstream of the sitting pebbles. Wetted width up to 250 cm although water depth generally only to a maximum of 10cm.	Unsuitable
42	241081	605936	Sections of the burn here extend to 450 cm width - although largely un-wetted at present. Water depth to only a maximum of 10 cm where present. Gradient only c. 1% here of slight peat-stained water (turbidity 2). Significant levels of cobbles and pebbles although silt present within pooled areas.	Unsuitable
43	241004	605900	Blocked ditch at Grid Ref. with tributary to Lambdoughty burn coming off hillside to north has been destroyed by forestry works. Lambdoughty burn at this position includes increased silt substrate (to 65%) with water flow (depth to 10 cm) reduced to a glide.	Unsuitable
44	240962	605909	Faster shallow runs start to appear in association with reduced silt substrates (to 20%). Pebbles and gravels dominate, but channel (ww. To 100cm) with only a maximum of 10 cm depth of peat-stained water (turbidity 2).	Unsuitable
45	240843	605981	Reduced flow speed with associated gravels behind boulders present. Depth of gravels > 5 cm in water depth of up to 15 cm. Wetted width of channel to 150 cm of mildly turbid water (2). Silts to 5 % only, boulders dominate (30 %) with other substrates at c. 15 % cover.	Sub-optimal
46	240579	606065	Lambdoughty burn to a wetted width of 280 cm and depth of 15 cm here. Burn substrate has a mixture of gravels (35 %) with larger cobbles/pebbles and also silts present. Water appears clearer (1-2 turbidity). Burn flows as a glide but with occasional riffles also present in shallower narrower sections.	Sub-optimal
47	240529	606075	Tributary from hillside to north. Narrow (to 20 cm) wetted width of water to 5 cm depth. Gradient > 6 %.	Unsuitable
48	240503	606024	A section of the Lambdoughty burn with glides, shallow runs and occasional small pools. A mixture of substrates present with boulders (15 %) to silts (10 %), the latter associated with the pools. Depth of water to only 10 cm maximum.	Unsuitable
49	240400	606011	Substrate to 60 % silts here at Lambdoughty burn. The tributary to the north appears non-existent with a small area of silts/sands suggesting it has been blocked during forestry works. Lambdoughty burn here with signs of surface oil pollution (possibly from forestry) Turbidity (2-3) also higher here in water to depth of 15 cm.	Unsuitable
50	240449	605960	Section of Lambdoughty burn with larger boulders present (to 30 %) as well as cobbles (15%) but also gravels (to 25 %). Wetted width to 200 cm of water to depth 10-15 cm.	Sub-optimal
51	240414	605936	Bloom associated with pasture land to the south covers burn substrate.	Unsuitable
52	240382	605859	Water clears and runs as a glide with a wetted width to 200 cm and depth to only 5-10 cm (unsuitable). Cobbles, pebbles and sands make up the majority of the substrate.	Unsuitable
53	240339	605828	Drainage channel that links into Lambdoughty burn, covered with vegetation - depth to 15 cm but with silt substrate only.	Unsuitable
54	240324	605802	Lambdoughty burn runs as a glide to a wetted width of 120 cm and depth of maximum 15 cm. Substrate of cobbles, pebbles, gravels and coarse sands. Water turbidity moderate (2). Very heavily shaded.	Unsuitable
55	240242	605701	Bridge to forestry track. Lambdoughty burn substrate of 20 % cobbles, 30 % pebbles, 20 % gravel, 20 % sands and minimal silts (10 %). Wetted width here to 250 cm and depth to 20 cm. Flow very slow glide with reduced light levels.	Unsuitable
56	239080	607751	Lower reach of watercourse at outfall to Loch Spallander Reservoir. Slack section with no discernible flow. Full depth not visible as turbid water but where visible substrate appears to be chiefly sediment. Unsuitable FWPM habitat	Unsuitable

57	239174	607648	Very shallow run > 6° gradient with c. 1.2 m wetted width and <0.05 m deep over bedrock. Watercourse very heavily shaded with many sections completely overgrown.	Unsuitable
58	239393	607417	Ill-defined channel (occasionally non-existent) through flush vegetation. No open water noted and completely vegetated over/shaded.	Unsuitable
59	239664	607330	Incised burn channel on steeper ground through flush vegetation. c. 1.2 m wetted width and <0.05 m deep (no discernible flow) over rocky substrate with boulders and cobbles where visible. Completely overgrown/shaded.	Unsuitable
60	239526	607923	Ill-defined channel (occasionally subterranean) through flush vegetation. Where present, wetted width c 0.2 m and c 0.2 m deep over mud/peat substrate. No open water: completely vegetated over/shaded.	Unsuitable
61	239585	608032	Lochhead Burn near outfall to Loch Spallander Reservoir. Slack section with no discernible flow. Full depth not visible as turbid water but where visible substrate appears to be chiefly sediment.	Unsuitable
62	239769	608068	Lochhead Burn. Very shallow run c. 1.5 m wetted width and <0.05 m deep over rocky substrate composed of boulders (c. 10%), cobbles (c. 50%), pebbles (c. 30%), gravels (c. 5%) and sediment (c. 5%). Sediment noted smothering all rocky substrate. Areas of open water but very heavily shaded.	Unsuitable
63	239985	608100	Lochhead Burn. Completely vegetated over/shaded from grid ref to 639844 608060.	Unsuitable
64	239993	608171	Lochhead Burn. Very shallow run and glide series c. 1.5 m wetted width and <0.1 m deep over rocky substrate composed of bedrock (c. 25%), boulders (c. 25%), cobbles (c. 25%), pebbles (<1%), gravels (<5%) and sediment (c. 20%). Sediment noted smothering all rocky substrate. Areas of open water but very heavily shaded.	Unsuitable
65	240254	608080	Lochhead Burn. Very shallow run c. 0.5 m wetted width and <0.1 m deep over rocky substrate composed predominantly of boulders (c. 75%) with cobbles (c. 5%), pebbles (c. 10%) and gravels (c. 10%). Watercourse completely shaded (tunnel vegetation).	Unsuitable
66	240370	607957	Wetted width c. 2 m, water depth < 0.1 m, substrate comprised of bedrock, boulders and cobbles with small falls. High energy environment subject to spate. Gradient becomes steep downstream c. 5°.	Unsuitable
67	240456	607774	Wetted width c. 1.5 m wide, water depth < 0.1 m. Substrate of boulders, cobbles, pebbles and fine sediment. Watercourse characterised as a very shallow run.	Unsuitable
68	240559	607612	Channel c. 0.5 m wide, water depth < 0.1 m deep, slow to moderate flow. Substrate comprised of cobbles and fine sediment. Wetted channel 100% shaded by dense vegetation.	Unsuitable
69	240590	607515	Open channel within forestry plantation, wetted width c. 0.75 m, water depth c. 0.1 m with a slow flow. Substrate comprised of cobbles and fine sediment.	Unsuitable
70	240721	607370	Narrow channel with wetted width c. 1m, shallow c. 0.1m deep. Clear, gentle flow over cobble and pebble substrate heavily covered with moss and algae. Channel quite deeply incised with banks dominated by marshy grassland.	Unsuitable
71	240889	607106	Distinct channel with running water c. 0.4 m wide. Shallow, < 0.1 m deep, substrate peat/fine sediment. Channel obscured by dense vegetation.	Unsuitable
72	240978	606944	Flush vegetation dominated by rushes <i>Juncus spp.</i> No open water present. Vegetated channel c. 2 m wide within forestry ride c. 10m wide.	Unsuitable
73	241076	606855	Distinct channel through bog vegetation with only occasional patch of still water. Channel < 0.5 m wide, water depth < 0.1m, peat substrate.	Unsuitable
74	241221	606799	No discernible channel with line of watercourse vegetated and dominated by hare's-tail cottongrass <i>Eriophorum vaginatum</i> , <i>Sphagnum</i> and bottle sedge <i>Carex rostrata</i> .	Unsuitable
75	240592	607592	Lochhead Burn within plantation ride, channel c. 0.5 m wide with minimal water flow. Substrate chiefly comprised of fine sediment. Channel shaded by dense vegetation.	Unsuitable
76	240696	607676	Small tributary less than 0.5 m wide with water depth < 0.1 m. Substrate largely comprised of cobbles. Minimal flow.	Unsuitable
77	240773	607541	Small tributary as per TN76.	Unsuitable
78	240868	607487	Narrow channel < 0.5 m wide with minimal flow and fine sediment substrate. Watercourse becomes a diffuse flush with no discernible channel upstream.	Unsuitable
79	240558	608140	Forestry drain running along edge of clear-fell plantation and completely shaded/overgrown with flush vegetation. Very little water and no flow at grid ref location. Measurements of watercourse characteristics not possible.	Unsuitable
80	241165	607832	Forestry drain culverted beneath track and running along edge of clear-fell plantation. No flow at grid ref location. Measurements of watercourse characteristics not possible.	Unsuitable
81	242168	607501	Channel/drainage ditch through ride with wetted width of < 0.5 m and water depth < 0.1 m with minimal flow. Peat substrate.	Unsuitable
82	242228	607519	No watercourse present. Channel through conifer plantation choked with <i>Sphagnum</i> .	Unsuitable
83	242346	607548	Channel through conifer plantation c. 0.6 m wide though no real flow, channel full of <i>Sphagnum</i> .	Unsuitable
84	242094	607698	Channel through ride shaded by dense vegetation. Channel c. 0.6 m wide with minimal flow. Substrate of pebbles and fine sediment.	Unsuitable
85	242096	607976	Narrow channel within shallow valley within forestry ride. Wetted width c. 0.5 m, water depth < 0.05 m. Substrate comprised of cobbles, pebbles and fine sediment.	Unsuitable
86	241775	608093	Very narrow channel through flush vegetation c. 0.2 m wetted width and <0.05 m deep. Completely overgrown/shaded.	Unsuitable
87	241971	608247	No channel present. Diffuse through flush vegetation.	Unsuitable
88	242016	608319	East channel upstream of minor confluence. Incised burn channel on through flush vegetation. Burn c. 0.5 m wetted width and <0.05 m deep (very slow, low flow) over substrate composed of boulders (c. 10%), cobbles (c. 45%), pebbles (c. 25%) and sediment (c. 20%). Completely overgrown/shaded.	Unsuitable

89	242000	608444	Incised burn channel on through flush vegetation. Burn c. 1 m wetted width and <0.05 m deep (very slow, low flow) over substrate composed of boulders (c. 50%), cobbles (c. 15%), pebbles (c. 15%), coarse gravel (c. 10%) and sediment (c. 10%). Completely overgrown/shaded.	Unsuitable
90	242199	608272	Ditch line along edge of plantation. No open channel.	Unsuitable
91	242268	608399	No channel present. Diffuse through flush vegetation.	Unsuitable
92	242242	608400	No channel present. Diffuse rush Juncus spp. dominated flush.	Unsuitable
93	242127	08443	No channel present. Diffuse rush Juncus spp. dominated flush.	Unsuitable
94	241928	608535	Burn becomes steeper (> 6° gradient) with c. 1.2 m wetted width and <0.05 m deep over substrate composed of boulders (c. 85%), cobbles (c. 5%), pebbles (c. 5%), coarse gravel (c. 5%). Very heavily shaded.	Unsuitable
95	241775	608660	Section of small falls to confluence with Meikleholm Burn.	Unsuitable
96	241810	608745	Meikleholm Burn. High energy spate burn (> 6° gradient) with c. 2 m wetted width and <0.075 m deep over substrate composed of boulders (c. 50%), cobbles (c. 25%), pebbles (c. 10%), coarse gravel (c. 15%). No stabilised substrate noted and burn heavily shaded. Salmonid parr noted downstream of red line boundary.	Unsuitable
97	241721	608666	Meikleholm Burn. High energy spate burn c. 1 m wetted width and <0.05 m deep over rocky substrate with occasional small falls. Very heavily shaded.	Unsuitable
98	241441	608608	No channel present. Diffuse through flush vegetation.	Unsuitable
99	242060	608762	No channel present. Diffuse through flush vegetation.	Unsuitable

Fish Habitat Surveys

A7.4.7 Descriptions of all habitats recorded during the fish habitat survey within the Proposed Development Area are presented in Table A7.22.

Table A7.22: Fish habitat survey results in the Proposed Development Area 2021

Date	Watercourse	Grid Ref.	Habitat details				Flow constrictions	Structures	Instream sediment type (%)								Additional Site Info				Depth (m)			Notes	
			Riffle	Glides	Slack	Pools			Sand	Gravel	Pebble	Cobble	Boulder	Bedrock	Silt	Clay	Flow	Visibility	Bank Vegetation	Instream vegetation	LHS	Middle	RHS		Width (m)
13/07	Keirs Burn	NS 43121 07801	0	10	60	40	Broken bridge; bridge; slab of sand stone; stream above very low water not suitable.	Broken bridge	50	20	20			10			Low	Clear	100% No trees, heavily vegetated			0.2		0.6	
13/07	Keirs Burn	NS 43132 07869	0	10	60	40			50	20	20			10			Low	Clear	100% bank vegetation and trees			0.2		0.6	No access to high area unable to survey past point.
13/07	Keirs Burn	NS 43167 07891	0	40	40	20			25	25	30	10		10			Low	Clear	100% bank vegetation and trees			0.2		0.5	
13/07	Keirs Burn	NS 43247 07846	0	40	40	20	Boulders mostly underground past this point.	Fence line	25	25	20	15	10	5			Low	Clear	100% bank vegetation and trees			0.2		0.4	
Keir's Burn Assessment			Watercourse very narrow and shallow with mostly sandy substrate and relatively steep gradient in parts. Limited suitability for salmon, trout and lamprey spawning and nursery areas. Low suitability for supporting young eels.																						
13/07	River Doon	NS 43660 08235	0	90	19	0	Low hanging tree		Yes								High	Peaty, no visibility	100% bank vegetation, 5% trees		1	>2	1	7	River too deep to see sediment; fish rising in river.
13/07	River Doon	NS 43462 08349	0	90	10	0			Yes								High	High	100% bank vegetation, 2% trees		1	>2	1	7	
13/07	River Doon	NS 43768 08174	60	10		30	Small patch of vegetation		Yes	Yes	Yes	Yes	Yes				High	High	100% bank vegetation		1	1	1	14	

Date	Watercourse	Grid Ref.	Habitat details				Flow constrictions	Structures	Instream sediment type (%)							Additional Site Info				Depth (m)			Notes			
			Riffle	Glides	Slack	Pools			Sand	Gravel	Pebble	Cobble	Boulder	Bedrock	Silt	Clay	Flow	Visibility	Bank Vegetation	Instream vegetation	LHS	Middle		RHS	Width (m)	
13/07	River Doon	NS 43814 08036	40	40	10	10			Yes				Yes				High	High	100% bank vegetation, 30% trees		1	2	0.7	11	To boundary wall	
River Doon Assessment			Watercourse wide and deep with fast flowing water and sandy substrate. Unlikely to be used for spawning by salmon, trout or lamprey but likely to be used by adult salmon and trout for feeding and migrating. Could be some areas suitable for older eels.																							
14/07	Red Burn	NS 43247 06379	20	20	20	40			95			5					Low	Clear	100% bank vegetation				0.5		1	
14/07	Red Burn	NS 43132 06244	0	10	80	10		B741 bridge	10	20	20	45		5			Low	Clear	100% bank vegetation				0.2		2	
Red Burn Assessment			Watercourse slow flowing with shallow gradient. Some areas of mostly larger substrate with shallow depth, but also areas of very sandy substrate. Some limited suitability for spawning and nursery areas for salmon, trout and lamprey. Could be some limited suitability for eels.																							
14/07	Lochhead Burn	NS 40307 08003	5	20	35	40	High ledges, tree debris			20	5	15	15	40	5		Low	Clear, peaty	100%				0.2		1	Pools deeper 50-70cm
14/07	Lochhead Burn	NS 40356 07961	5	25	25	45	Multiple high ledges			20	10	20	30	20			Low	Clear	100%				0.2		1	
14/07	Lochhead Burn	NS 40422 07946	5	30	25	40	High ledges, fallen tree			25	15	10	20	30			Low	Clear	100%				0.3		1	
Lochhead Burn Assessment			Watercourse entirely surrounded by forestry plantation or felled forestry and upstream of Loch Spallander Reservoir. Dam on reservoir likely to be a barrier to migratory fish. Substrate and depth suggests that there could be some limited potential for salmon, trout and lamprey spawning and nursery areas and habitat for older fish, including eels, if fish can pass the dam and the water quality is sufficient (given the surrounding forestry plantation). Lamprey and eels highly unlikely to be present in the watercourse due to the dam on Loch Spallander.																							
14/07	Lambdoughty Burn	NS 40324 05801	10	20	20	50	Bridge		40	20	20	10	10				Low	Clear	100% bank vegetation				0.2		0.02	
14/07	Lambdoughty Burn	NS 40376 05852	20	15	15	50			40	20	20	10	10				Low	Clear	100% bank vegetation				0.4		0.02	
14/07	Lambdoughty Burn	NS 40421 05936	15	20	25	40	Ledge of bedrock		50	10	10	10	20				Low	Clear	100% bank vegetation				0.2		0.02	
14/07	Lambdoughty Burn	NS 40407 06009	5	15	20	60			5	15	15	20	5		5								0.5		0.03	
14/07	Lambdoughty Burn	NS 40496 06091	5	20	25	50			40	20	20	10	10										0.4		0.02	
14/07	Lambdoughty Burn	NS 40630 06090	5	20	15	60	Fallen tree		20	30	20	10	15	5			Low	Clear	100% bank vegetation				0.2		0.02	
14/07	Lambdoughty Burn	NS 40909 05944	5	10	25	60	Tree debris at wall fate and debris		20	10	20	30	10	10									0.2		0.02	
14/07	Lambdoughty Burn	NS 41076 05935	10	20	30	40	Tree debris		40	5	30	20	5										0.1		0.01	

Date	Watercourse	Grid Ref.	Habitat details				Flow constrictions	Structures	Instream sediment type (%)								Additional Site Info				Depth (m)			Notes	
			Riffle	Glides	Slack	Pools			Sand	Gravel	Pebble	Cobble	Boulder	Bedrock	Silt	Clay	Flow	Visibility	Bank Vegetation	Instream vegetation	LHS	Middle	RHS		Width (m)
14/07	Lambdoughty Burn	NS 41198 06004	0	15	35	50			50	20	15	15										0.1		0.02	
14/07	Lambdoughty Burn	NS 41299 06165	0	20	20	60	Large islands		10	20	25	30	0	10	15		Low	Clear	100%			0.05		0.01	
14/07	Lambdoughty Burn	NS 41306 06231	0	60	20	20	Large bedrock ledge		20	10	20	15	15	20								0.02		0.02	

Lambdoughty Burn Assessment

Very narrow and shallow watercourse with a relatively sandy substrate bordered on one side by forestry plantation. Waterfalls in Lambdoughty Glen downstream of the Proposed Development are thought likely to pose an obstacle to migration for lamprey and eels and possibly salmon and trout. Watercourse unlikely to have much suitable habitat for salmon or trout spawning or nursery areas due to the size and substrate of the watercourse.