FEARNA STORAGE

Fearna Pumped Storage Hydro Scheme
EIA Report

Appendix 10.2 – Field Survey Methodology

February 2025

Quality Information

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Revision History

Revision	Revision Date	Details	Authorised
01	February 2025	Issue to ECU	Fraser Allison

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1.1 Introduction

1.1.1 A targeted ornithological field survey, concentrating on locally important and legally protected bird species in the vicinity of the Proposed Development was undertaken by Mike Coleman Ecology between April 2022 and July 2024.

1.1.2 Care was taken to ensure that survey methods and the level and type of survey effort was consistent with NatureScot guidance available at the time surveys commenced. This report provides an overview of the surveys undertaken, and a spreadsheet of the records obtained.

1.1.3 All field survey records have been fully reported in the Mike Coleman Ecology documents *Fearna Pumped Storage Hydro Scheme Ornithology Report (March 2023), Fearna Pumped Storage Hydro Scheme Breeding Bird Survey and Common Scoter Monitoring Report (July 2023), Fearna Pumped Storage Hydro Scheme Winter 2023-24 Bird Survey Report (March 2024),* and *Fearna Pumped Storage Hydro Scheme 2024 Breeding Bird Survey Report (August 2024)*. Due to the confidential nature of some records, these reports can be found in **Appendix 10.1 - Ornithology – Confidential Appendix** of the EIAR.

1.2 Survey Background

Study Area

1.2.1 The Study Area encompasses the area over which all desk-based and field data were gathered to inform the assessment presented in **Chapter 10 – Ornithology** and **Appendix 10.1 – Ornithology – Confidential Appendix**.

1.2.2 The original Study Area incorporated the moorland around Loch Fearna and Coire Dubh, the open land along the Allt a' Mhèil to the south west of Fearna, the steep slopes along the Leac Doire Lochaidh to the south of Fearna, the disused quarry on the shores of Loch Quoich, as well as Loch Quoich itself.

1.2.3 At present, the entire proposed area of works comprises of heather moorland and acid grassland mosaic with narrow, fast-flowing watercourses tumbling down the steep-sided hills towards Loch Quoich. The land is used for upland grazing by sheep, and deer browsing is evident across the landscape. The south of the area is demarcated by Loch Quoich, and the disused quarry contains a marshy area, a shingle beach, and areas of gorse and birch scrub around the periphery.

1.2.4 All species within the immediate areas of potential works and the moorland areas adjacent to the proposed area of works were documented, as well as those species recorded within the woodland block to the south of Meall a' Mhèil (along the Loch Garry to Kinloch Hourn road in the south west of the survey area).

1.2.5 In 2024, there was an agreement with Forestry and Land Scotland (FLS) to use existing 25 kilometre long section of forestry track through Glengarry Forest as the preferred access route to the Proposed Development, and this area, known as the Southern Access Route (SAR) was surveyed.

1.2.6 The SAR, along which lies the proposed site compound area, runs between Invergarry and a block of woodland approximately three kilometres south-east of Quoich Dam, before re-joining the C1144 minor road between Glen Garry and Kinloch Hourn until the main site.

1.2.7 The SAR consists of mixed-age, mixed woodland blocks, with large tracts of clearfell, open moorland, several areas of upland bog, and passes open lochans and small-scale hydro schemes and narrow watercourses.

1.2.8 The existing track is in good condition and has a selection of borrow pits and quarries located along its length to provide material for the upkeep of FLS tracks in the area.

1.2.9 Although much of the Study Area lies outwith the Proposed Development, an approximate buffer of 200m was added to all areas of proposed works to ensure full coverage of potential ornithological constraints.

Field Surveyor

1.2.10 All field survey work was undertaken by Mike Coleman, an experienced and competent ornithologist, Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

1.2.11 Mike has extensive ornithological field experience of both lowland and upland areas across Europe, has two decades of experience working in the Highlands, including many renewable energy projects, and holds a NatureScot Schedule 1 Licence (Number 167304).

1.3 Methodology

Desk Study

1.3.1 A comprehensive desk study of published data was undertaken prior to the initial fieldwork commencing to inform the bird surveys, and is updated annually. The results of the desk study are used to identify if the Proposed Development could potentially impact upon any notable or protected species; to inform the field studies; and to provide information to guide any potential actions and priorities for any future ecological mitigation and enhancement.

1.3.2 The desk study involved a search of the appropriate sources (Sitelink[1]) for statutory designated sites concerning birds within a ten-kilometre radius (e.g. Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs), Ramsar Sites) and non-statutory designated sites (e.g. Important Bird Areas (IBAs), Local Nature Reserves (LNRs) and Sites of Importance for Nature Conservation (SINCs)).

1.3.3 The Highland Raptor Study Group (HRSG) were contacted in January 2022 for any records of nesting raptors within the vicinity of the Proposed Development, and again in May 2024 for historical records covering a wider search area.

1.3.4 Following regular consultation with the Royal Society for the Protection of Birds (RSPB), they were contacted for bird data pertaining to species afforded additional legal protection under European or national legislation covering a large area surrounding the Proposed Development, including all records since 2000 of Common Scoter (*Melanitta nigra*) and Black-throated Diver (*Gavia arctica*) – the two designated features of the nearby West Inverness-shire Lochs Special Protection Area (SPA).

1.3.5 All historical ornithological data obtained from the HRSG and RSPB has been used as background information to supplement the field study undertaken.

Field Study

1.3.6 The field survey consisted of two breeding season surveys and two winter bird surveys conducted between late-April 2022 and early-July 2024, designed to maximise records of all species, and to ensure that a full record of protected species activity was acquired through the breeding seasons, and a good understanding of bird activity during the non-breeding season was obtained during the winters.

1.3.7 The various survey methods are described below:

[1] NatureScot Sitelink: https://sitelink.nature.scot/home (Accessed July 2024)

Breeding Bird Survey

1.3.8 The breeding bird survey method was a combination of the Brown and Shepherd moorland breeding bird survey[2] and the BTO Breeding Bird Survey (BBS) method[3]. Brown and Shepherd is suitable for many moorland and open country species including waders, skuas, gulls, Red Grouse (*Lagopus scotica*) and some wildfowl species. However, NatureScot does not recommend the method for surveying moorland passerines. This survey is based on a constant search method involving walking in every square kilometre to ensure that all parts are approached to within 100m. At regular intervals, the surveyor scans the area for species and also listens out for calls and songs. These should cover the whole breeding season.

1.3.9 Timing of breeding varies between species and geographically across Scotland and this should be borne in mind when planning survey. Mistimed survey visits will fail to record many birds and will not be of an acceptable standard.

1.3.10 Population estimates in the study area can be derived by comparing the resulting summary maps for each of the main seasonal survey periods. Registrations/territories plotted during each period are considered to be separate from one another if more than 500m apart for larger species, 200m in the case of Dunlin and passerines. These distances are chosen to reflect the distances birds could plausibly move between survey periods (following Brown & Shepherd's 1993 methodology). When compiling figures of breeding birds, the approximate central location of all registrations recorded from different visits is used to identify a notional territory centre.

1.3.11 The BTO survey requires visits to be spread out across the entire breeding period, with all resident and migrant breeding birds likely to be recorded during the initial two site visits, and the final visit designed to coincide with post-breeding accumulations of locally breeding species and potential early passage of species migrating south from their Arctic breeding grounds. A route through the survey area is walked at a constant steady pace. All bird species seen or heard are documented, as is any relevant behaviour (gathering nesting material, territorial calling, fighting, feeding young, etc).

1.3.12 In lieu of any standard survey guidance for birds within forested environments, the SAR was surveyed by vehicle, stopping at regular intervals (approximately every 100-200 metres) and recording songs, calls and sightings of all species present, based on the traditional Point Count method[4].

1.3.13 This method relies on allowing a settling period before recording species within a 50 metre and 100 metre radius of the surveyor over a short time period. Each survey point was surveyed for between five and ten minutes, although the radii were not used along the SAR.

1.3.14 The SAR was divided into 16 sections, loosely based on changes of habitats and specific search areas in order to simplify the recording process and to analyse particular locations along the route if required.

1.3.15 The proposed site compound area and the area around Loch an Staic were surveyed using a combination of all the above methods, with 'point counts' used when the terrain became too difficult to negotiate.

1.3.16 All birds observed whilst driving were also recorded, giving a full inventory of species recorded along the entire SAR.

[2] A. F. Brown & K. B. Shepherd (1993) A method for censusing upland breeding waders, Bird Study, 40:3, 189-195. Or online at: https://www.tandfonline.com/doi/pdf/10.1080/00063659309477182 (Accessed August 2024)
[3] BTO BBS Method. Available online at: https://www.bto.org/our-science/publications/birdtrends/2019/methods/breeding-bird-survey. (Accessed August 2024)
[4] Bibby, C.J., Burgess, N.D., & Hill, D.A. (1992). Bird Census Techniques. Academic Press, London.

Common Scoter Monitoring

1.3.17 Recommended monitoring for Common Scoter consists of three visits between late-April and early-June to check for breeding pairs[5].

1.3.18 All water, shorelines and islands should be checked for scoter presence in good weather, concentrating in areas where Common Scoter has been known to have bred, and in potential areas near to known scoter sites.

1.3.19 Pairs of Common Scoter usually arrive back on their breeding grounds in late-April, with females usually incubating for approximately 30-31 days from the middle of June[6], and the ducklings are led straight to water, where they remain until they depart by mid-August. Males have often left by mid-June.

1.3.20 The nest site is buried under heather, bracken or other vegetation, and can be 100 metres from the nearest waterbody.

1.3.21 In 2023, monitoring of the scoter on Loch Fearna was undertaken as per the guidance, however in 2024, monitoring was incorporated into the regular breeding bird survey visits.

Winter Bird Survey

1.3.22 The three site visits were undertaken through the non-breeding period (October to March). This survey attempted to record all overwintering species and resident species, as well as potentially recording passage birds in the late-autumn and early-spring. The method was based on the Moorland Breeding Bird Survey Method devised by Brown & Shepherd, whereby a route through the survey area was walked at a slow and steady pace, and all birds encountered were documented.

1.3.23 The Study Area is illustrated in **Figure 10.2.1** of this document.

1.4 Fieldwork Dates

1.4.1 A programme of bird surveys was undertaken in order to identify those birds likely to be affected by the Proposed Development, and thereby inform the impact assessment process. The breeding surveys in 2022 and the two winter surveys consisted of three one-day visits, the breeding surveys in 2023 consisted of four one-day visits to coincide with the scoter monitoring, and the breeding surveys in 2024 consisted of three three-day visits to ensure that robust coverage of the SAR was included in the field study.

A summary table of all fieldwork dates and survey conditions during ornithological surveys for the Proposed Development is provided below in **Table 10.2.1**, below.

[5] Gilbert, G., Gibbons, D.W., & Evans, J. (1998). Bird Monitoring Methods: A Manual of Techniques for Key UK Species. Online at https://www.rbbp.org.uk/wp-content/uploads/2020/10/Common-Scoter-Gilbert-et-al.pdf (Accessed August 2024)

[6] Forrester, R.W., Andrews, I.J., McInerny, C.J., Murray, R.D., McGowan, R.Y., Zonfrillo, B., et al. (2007). The Birds of Scotland. Scottish Ornithologists Club, Aberlady.

Table 10.2.1: Fearna Pumped Storage Hydro Scheme Ornithology – Dates, Times and Conditions of Survey Effort

SURVEY +	DATE	SURVEY TIME	WIND DIRECTION*	WIND SPEED (/12)**	PRECIPITATION (/3)***	VISIBILITY^x	CLOUD COVER (/8)#	CLOUD BASE (m)##	TEMPERATURE (°C)	GROUND CONDITIONS
BBS	25/04/22	0645 - 1100	ENE	2	0 > 1	EXCELLENT	8 > 7	1000	8	FIRM
BBS	02/06/22	0550 - 0850	0	0	0	EXCELLENT	3 > 2	1500 +	5 > 12	SOFT
BBS	11/07/22	0630 - 1030	0	0	0	EXCELLENT	8	850	13	FIRM
WBS	19/10/22	0800 - 1130	ENE	3	0	EXCELLENT	6	c. 1000	5 > 8	SOFT
WBS	12/01/23	1045 - 1345	NE	1	2	POOR / GOOD	8	c. 500	4	SATURATED / SNOW
WBS	20/03/23	0630 - 1000	E	2	0	POOR > GOOD	8	<200 > 230	3 > 4	SATURATED
BBS & CX	02/05/23	0645 - 1130	E	2	0	EXCELLENT	8	900	5 > 12	SOFT
BBS & CX	23/05/23	0700 - 1230	W	2/3	0	EXCELLENT	8	600	10	SOFT
BBS & CX	05/06/23	0630 - 1300	0 > E	0 > 2	0	EXCELLENT (INITIALLY POOR AT L. FEARNA)	8	450 > 800	11 > 17	FIRM
BBS & CX	10/07/23	0620 - 1100	S	2	0	EXCELLENT	5	900 +	14 > 18	SOFT

SURVEY +	DATE	SURVEY TIME	WIND DIRECTION*	WIND SPEED (/12)**	PRECIPITATION (/3)***	VISIBILITY^x	CLOUD COVER (/8)#	CLOUD BASE (m)##	TEMPERATURE (°C)	GROUND CONDITIONS
WBS	30/10/2023	0740 - 1230	NNW > NE	4	0	EXCELLENT	5	900	6	SOFT
WBS	11/01/2024	0830 - 1300	NE	1	0	EXCELLENT > POOR	5 > 8	400	2	FROZEN
WBS	11/03/2024	0700 - 1315	ESE	2 > 3	0	EXCELLENT	3 > 7	1250 > 900	2 > 8	SOFT
BBS	10/04/2024	0630 - 1445	SSW	2/3	0 > 1	EXCELLENT	8	900	5 > 8	WET
BBS	11/04/2024	0620 - 1215	SW	4/5	0	EXCELLENT	4	1000 +	11 > 13	SOFT
BBS	12/04/2024	0630 - 1215	SW	5	0	EXCELLENT	6 > 8	850 > 600	9 > 11	SATURATED
BBS	22/05/2024	1420 – 2010	W	2	1	EXCELLENT	8	600 +	13	GOOD
BBS	23/05/2024	0415 - 1030	W	2/3	1	EXCELLENT	8	600 +	9 > 11	SOFT
BBS	24/05/2024	0700 -`1300	W	2	0	EXCELLENT	8	650 +	12 > 15	SOFT
BBS	01/07/2024	1630 – 2300	SW	3	0	EXCELLENT	5	1000 +	16 > 13	GOOD
BBS	02/07/2024	0350 - 0945	SW	1/2	1 > 0	EXCELLENT	8	950 +	11 > 14	GOOD

SURVEY +	DATE	SURVEY TIME	WIND DIRECTION*	WIND SPEED (/12)**	PRECIPITATION (/3)***	VISIBILITY X	CLOUD COVER (/8)#	CLOUD BASE (m)##	TEMPERATURE (°C)	GROUND CONDITIONS
BBS	03/07/2024	0610 - 1345	SW	1/2	1/2	EXCELLENT > GOOD	8	550 +	10 > 13	SOFT

LEGEND + Survey BBS=breeding bird survey, WBS=winter bird survey, CX=common scoter monitoring; * Wind Direction based on a 16 point compass direction; ** Wind Speed is based on the Beaufort Scale; *** Precipitation Scale is 0=none, 1=light showers, 2=persistent rain/heavy showers, 3=heavy rain; X Visibility scale is EXCELLENT=5km+,GOOD=2-5km,POOR=1-2km, ZERO=<1km; # Cloud Cover is based on oktas; ## Cloud Base is metres above sea level.

Figure 10.2.1 - Field Study Area