7. Ornithology

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7.1. Introduction

7.1.1. Ornithological surveys were carried out at Lochluichart Wind Farm in 2023 and 2024. These surveys were to discharge conditions within planning consent 21/02985/FUL for Lochluichart Wind Farm Extension II and consent 22/00244/S37 for the associated grid connection. The survey areas included the location of the proposed Lochluichart East BESS development, and the results have therefore been used to inform this assessment.

7.1.2. The surveys in 2023 and 2024 largely focussed on moorland breeding birds, breeding raptors and breeding divers. The habitat immediately around the BESS development area was not extensively surveyed as it was considered not suitable for moorland breeding birds or breeding divers. It was, however, surveyed for raptors, and any incidental sightings of notable species were recorded.

7.1.3. Additional surveys were carried out in 2025, focussing on breeding birds within the area of the development site.

7.2. Methodology

Desk Study

7.2.1. NatureScot's SiteLink and DEFRA's MAGIC websites were reviewed to ascertain the locations of any statutory designated sites notified for their ornithological interest that are relevant to the construction of the development.

2023 to 2024 Survey methodologies

7.2.2 The following ornithological field surveys were undertaken in 2023 and 2024:

- Moorland breeding bird survey of the site and 500 m buffer;
- Breeding diver survey of the site and 1 km buffer;
- Black grouse surveys of the site within 1.5 km buffer; and
- Breeding raptor survey of the site a 2 km buffer.

Moorland Breeding Bird Survey

7.2.3 The adapted Brown and Shepherd (1993) method was used to survey for moorland breeding bird (upland wader species) territories, with four visits being made between mid-April and early July (inclusive), in accordance with (SNH, 2017). This methodology ensured that every part of the survey area was visited to within 100 m, the surveyor walking parallel transects 200 m apart over each 500 m^2 quadrat and spending 20 to 25 minutes within each quadrat, with the survey route varied between visits. Regular stops were made to scan and listen for birds. Surveys were carried out between 08:00 and 18:00 and in favourable weather conditions as far as possible, and all wader species were recorded. Additional species were also noted as appropriate, such as raptors and notable passerines. Birds were recorded on electronic maps for accuracy, using standard BTO codes for species and activity as per Gilbert et al (1998).

Breeding Raptor Survey

7.2.4 A survey was undertaken to record the presence of breeding raptor species within a 2 km buffer to the site. Species listed on Annex I of the Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were sought, together with other species such as red and amber listed birds of conservation concern. Four visits were made between late March and July. Where confirmed or potential breeding activity was noted, during both raptor walkover survey and any other surveys, specific methodologies for the relevant species were employed on subsequent visits, as per Hardey et al (2013) and nest sites were monitored via vantage point watches from a suitable distance for their success. Signs of raptor presence, such as feeding remains, feathers and old nests were also recorded as appropriate. Data was collected digitally using background maps to ensure accuracy of location, particularly where nest sites were noted.

Breeding Diver Survey

7.2.5 Walkover surveys for red-throated diver and black-throated diver were undertaken on all waterbodies considered to provide suitable nesting habitat within a 1 km radius of the site. The survey area was covered during the moorland bird surveys and the raptor surveys, to avoid unnecessary disturbance of the site. Surveyors conducted initial watches from a safe distance in order to establish the presence of any divers on the waterbodies or their banks. Where divers were observed, their behaviour and activity were recorded digitally to ensure accuracy of location. Signs such as display, copulation and birds leaving the water to go ashore were taken to indicate breeding attempts.

7.2.6 Where no divers were observed at a suitable waterbody, the perimeter of the waterbody was walked to identify whether any breeding attempts had been made; evidence suggesting previous or failed breeding attempts was considered to include nest scrapes, broken eggshells and remains of young in addition to signs such as feathers from diver species.

Black Grouse Survey

7.2.7 Surveys are carried out between the end of March and mid-May at each site. These follow the survey methodology in Gilbert et al. 1998. Each visit is carried out from one hour before dawn to 07:00. The surveys are carried out using binoculars or a telescope from distances of 100-500m to avoid disturbance to the lek. Surveys are conducted only on mornings when weather conditions are suitable, with good visibility and light winds.

2025 Survey

7.2.8 A breeding bird survey was carried out in the area of the proposed development. This took the form of an adapted Common Bird Census Survey (Gilbert, Gibbons, & Evans, 1998). This methodology ensured that every part of the survey area was visited to within 50 m, by walking transects 100 m apart, and recording any birds that were seen or heard, with details of their behaviour.

7.3. Baseline

7.3.1. The site lies within 10 km of three special protection areas (SPA) (NatureScot, 2023) designated for birds as shown in **Figure 7.1 Statutory Designated Sites** and **Table 7.1.**

Table 7.1: Statutory designated sites within 10 km of the site.

Site Name	Designation	Distance & Orientation	Designated Features
Glen Affric to Strathconon	SPA	1.6 km south	Supports a population of European importance of golden eagle (*Aquila chrysaetos)* (10 active territories in 2003, 2.2% of the GB population).
Achanalt Marshes	SPA	6.0 km south-west	Supports a summer population of national importance of: Wood sandpiper (*Tringa glareola)* (3 breeding pairs between 1991-1995, representing 50% of the British breeding population). The site is also of interest for its assemblage of breeding waterfowl which includes, wigeon (*Anas penelope)* (6 pairs), teal (*Anas crecca)* (5 pairs), mallard (*Anas platyrhynchos)* (14 pairs), tufted duck (*Aythya fuligula)* (10 pairs), oystercatcher

			(*Haematopus ostralegus)* (3 pairs), lapwing (*Vanellus vanellus)* (3 pairs), dunlin (*Calidris alpina)* (3 pairs), snipe (*Gallinago gallinago)* (7 pairs), curlew (*Numenius arquata)* (7 pairs), redshank (*Tringa totanus)* (6 pairs), greenshank (*Tringa nebularia)* (4 pairs) and common sandpiper (*Actitis hypoleucos)* (5 pairs).
Ben Wyvis	SPA	9.7 km east	Supports a nationally important population of: Dotterel (Average of 20 pairs between 1987 and 1993, representing 2% of the British breeding population). Ben Wyvis SPA supports an important assemblage of montane species, including two further Annex 1 species: golden eagle (1 pair) and golden plover (*Pluvialis apricaria)* (13 pairs). Other montane species which breed on the site are ptarmigan (*Lagopus muta)* (10 pairs) and ring ouzel (*Turdus torquatus)* (1 pair).

Moorland Breeding Birds

7.3.2. Whilst several wader species were recorded in 2023 and 2024 in the wider area, only snipe (*Gallinago gallinago)* were recorded within 1 km of the development area, with one individual recorded approximately 500 m to the west of the development area (**Figure 7.2 Snipe Territories**).

Breeding Raptors

7.3.3. Nine raptor species were recorded within approximately 2 km of the development site. These are shown in **Table 7.2**. Records from 2024 are shown in **Figure 7.3 Raptors**.

Table 7.2 Raptors recorded within 2 km of the development site

Species	Conservation status	Breeding signs
Golden eagle (*Aquila chrysaetos)*	WCA Sh1, Annex I, BoCC Green	No
White-tailed eagle (*Haliaeetus albicilla)*	WCA Sh1, Annex I, BoCC Amber	No
Kestrel (*Falco tinnunculus)*	BoCC Amber	Yes
Osprey (*Pandion haliaetus)*	WCA Sh1, Annex I, BoCC Amber	Yes
Red kite *(Milvus milvus)*	WCA Sh1, Annex I, BoCC Green	No
Peregrine (*Falco peregrinus)*	WCA Sh1, Annex I, BoCC Green	No
Sparrowhawk (*Accipiter nisus)*	BoCC Amber	No
Merlin (*Falco columbarius)*	WCA Sh1, Annex I, BoCC Red	No
Buzzard (*Buteo buteo)*	BoCC Green	No
Key: WCA Sh1 – Listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) Annex 1 – EU Birds Directive Annex I BoCC Red and Amber – Included on Red List and Amber Lists in Birds of Conservation Concern 5 (Stanbury, et al., 2021)		

7.3.4. Osprey were recorded breeding on an overhead transmission tower approximately 320 m south of the boundary of the development site, and 360 m from any proposed infrastructure, during both years.

7.3.5. An active kestrel nest was recorded in 2023 on the southern crag of Beinn nan Cabag, approximately 2.3 km north of the development site. It was not recorded again in 2024.

7.3.6. Raptors recorded close to the development site were mainly buzzard and red kite. Golden eagles were recorded soaring in the area, with one being mobbed by a peregrine falcon.

7.3.7. During the 2025 Breeding Bird Surveys, one nest was found within the development area that could potentially be a buzzard or red kite nest. No activity was recorded at this nest despite it being watched, and it was considered to be an inactive nest. The habitat within the development area is considered suitable for nesting red kite and buzzard.

Breeding Divers

7.3.8. One diver was recorded flying in a southerly direction, approximately 1 km west of the development area. Breeding divers are present on both Lochluichart and Corriemoillie windfarms, with the nearest suitable lochans being over 2 km to the north of the development Site.

Black Grouse

7.3.9. Black grouse were recorded displaying on the southern slopes of Beinn a Bhric in 2023, approximately 800 m to the north of the development Site, although it was considered that the lek consisted of only one male.

7.3.10. A larger lek, with at least four displaying males, was recorded in 2024, approximately 1.5 km to the north of the development site, on the western slopes of Beinn a Bhric. Two females were also recorded flying over this lek before heading to the forest approximately 500 m north of the development site.

7.3.11. Lek locations are shown in **Figure 7.4 Black Grouse Records**.

2025 Survey

7.3.12. Fifteen species were recorded during the 2025 breeding bird survey, summarised in **Table 7.3.**

Table 7.3 Bird species recorded within the development area

Species	Conservation status
Bullfinch (Pyrrhula pyrrhula)	BoCC Amber
Chaffinch (Fringilla coelebs)	BoCC Green
Coal tit (*Periparus ater)*	BoCC Green
Crossbill (*Loxia spp)*	WCA Sh1, Annex 1 (Scottish Crossbill), BoCC Amber
Goldcrest (*Regulus regulus)*	BoCC Green
Goldfinch (*Carduelis carduelis)*	BoCC Green
Great tit (*Parus major)*	BoCC Green
Redpoll (*Acanthis flammeac)*	BoCC Red

Robin (*Erithacus rubecula)*	BoCC Green
Siskin (*Spinus spinus)*	BoCC Green
Song thrush (*Turdus philomelos)*	BoCC Amber
Treecreeper (*Certhia familiaris)*	BoCC Green
Willow warbler (*Phylloscopus trochilus)*	BoCC Amber
Woodpigeon (*Columba palumbus)*	BoCC Amber
Wren (*Troglodytes troglodytes)*	BoCC Amber

7.3.13. Whilst no confirmed breeding activity was directly observed, it is considered likely that all of these species are breeding within the development area or nearby. Sightings within the main survey area are shown in **Figure 7.5 2025 Survey Results**.

7.4. Impact Assessment

Designated Sites

7.4.1. Given the small scale of the development, its isolated location, and the lack of connectivity to any nearby designated sites, it is considered unlikely that there will be any significant adverse effect on any statutory designated sites.

Moorland Breeding Birds

7.4.2. The habitat in the development area itself is not suitable for moorland birds, however some of the surrounding habitat is. The only wader species recorded within 1 km of the development area was snipe, approximately 500 m to the west. The recommended disturbance buffer for snipe is 100 – 200 m, and therefore it is considered that the development will not have a significant adverse impact on snipe or other wader species.

Breeding Raptors

7.4.3. Osprey (*Pandion haliaetus*) are known to nest on an electricity pylon approximately 320 m to the south of the proposed Site, on the other side of the A832 road. These birds are likely to be hunting in Loch Luichart to the south of the nest site. The recommended buffer zone to avoid disturbance to breeding osprey is 350 m to 750 m. Given the distance between the proposed development site and the nest, the mostly woodland habitat between the proposed site and the nest, and the proximity of the nest site to the A832, it is considered unlikely that the development will cause significant additional disturbance to the nest site.

7.4.4. The habitat within the development site could be suitable for buzzard or red kite to nest, and one potential nest was recorded during the 2025 surveys, although it was not active. It is

considered that the loss of this habitat would not have a significant adverse effect on the local population of either species.

Breeding Divers

7.4.5. There is no suitable habitat for breeding divers within 1 km of the development site. It is considered that the development will have no significant adverse effect on this species.

Black Grouse

7.4.6. Male black grouse were recorded displaying approximately 800 m to the north and 1.5 km to the northwest of the development site. Females were recorded flying towards the forest approximately 500 m to the north of the development site.

7.4.7. NatureScot recommend a 500 to 750 m buffer for black grouse lek sites, and 100 to 150 m for nesting sites. As the nearest lek site and sightings of females are outside of these distances, it is considered unlikely that there would be any significant adverse effects from the development.

Other Breeding Birds

7.4.8. Given the nature of the habitat within the development site, it is reasonable to assume that breeding birds are present. One Schedule 1 species, crossbill, was recorded within the site and are likely breeding. The loss of habitat will have an adverse effect on breeding woodland birds, however due to the small size of the development, and the availability of similar suitable habitat nearby, it is considered that the impact will not be significant. Any vegetation clearance during the construction phase has the potential to destroy nests or disturb nesting birds, and mitigation will be required.

Visibility splays

7.4.9. The creation of visibility splays on the A832 will involve the loss of some trees next to the road. This habitat has potential for use by nesting birds, however the impact is not likely to be significant given the availability of suitable habitat in the surrounding area. Any vegetation clearance during the construction phase has the potential to destroy nests or disturb nesting birds, and mitigation will be required.

7.4.10. The nearest trees to be felled would be just over 500 m from the osprey nest, and on the opposite side of the road. The nest is shielded by trees to the west. NatureScot guidance on buffer zones is: "In the UK, osprey has the potential to be disturbed at nest sites, especially early on in the breeding season. Depending on the level of habituation to disturbance, a buffer zone of 350-750 m is suggested to protect ospreys during the breeding season from pedestrian disturbance. A buffer zone at the lower end of this range may be sufficient to protect individuals that have some habituation to human presence."

7.4.11. It is likely that these birds have some habituation to human presence, as the nest is known about and close to the busy A832 road.

7.4.12. It is considered unlikely that there would be ongoing disturbance to the nest from the visibility splay. The ospreys may have increased visibility of the access track, but the access itself is approximately 775 m from the nest.

7.5. Mitigation Measures

7.5.1. Breeding birds are present within the development area. The following mitigation measures are proposed to minimise the impact of the development on breeding birds during the construction activities.

Table 7.4 Mitigation measures

Controls/Mitigation Measures	Reason	Responsibility	Phase
Breeding Birds Protection Plan (BBPP) and Habitat Management Plan (HMP) to be produced and implemented by an Ecological/Environmental Clerk of Works (ECoW) who would have the authority to intervene during the works including the powers to stop works if necessary.	To provide oversight of mitigation measures and check adherence to works method statements.	Ecologist/ Contractor	All Times
Site access should be by marked tracks wherever possible & site speed limit to be obeyed	To prevent disturbance of birds and damage to birds' nests.	Contractor	Construction
Toolbox talks identifying site sensitivities to be provided to all staff through the site induction and during daily meetings as required.	To alert the workforce to the presence of breeding birds in the vicinity of the works and the mitigation measures that are to be put in place.	Ecologist/ Contractor	Construction
Vegetation clearance should be undertaken outside of the breeding bird season where possible (01 April to 15 August in this locale, due to the latitude). In the event that it is necessary to undertake ground clearance outwith these times then the area shall be subject to a pre-construction survey for breeding birds by a qualified ecologist no more than 24-hours before clearance occurs.	To prevent disturbance of birds and damage to birds' nests.	Contractor / Ecologist	Breeding season (April - August).

Controls/Mitigation Measures	Reason	Responsibility	Phase
During construction, walkover breeding bird surveys must be carried out within at least 500 m of works between 01 April to 15 August on a regular basis, to attempt to detect breeding territories and nests. If a nest is detected for any bird species, then an appropriate buffer zone would be employed to protect it from damage and/or disturbance.	To provide accurate information ahead of works to ensure appropriate species protection buffers can be implemented during the works. Buffers to follow the distances set out in Table 7.5.	Contractor / Ecologist	Breeding season (April - August).
If there is any evidence of black grouse lek(s), no construction shall take place (or any vehicle movements) within a minimum 750 m exclusion zone before 9am in the months of April and May inclusive.	To prevent disturbance of breeding black grouse.	Contractor / Ecologist	Breeding season (April - August).

7.5.2. If a nest is detected for any bird species during the surveys outlined above, then a buffer zone would be employed to protect it from damage and/or disturbance.

7.5.3. The buffer zone would be dependent upon the sensitivity of the species and its legal protection. Although legally only species listed on Schedule 1 of the Wildlife and Countryside Act (WCA) are protected from disturbance at or around their nest, it is good practice to minimise disturbance to Annex I species to try to reduce impacts on any nests which may occur. **Table 7.5** sets out the buffer zones to be employed for the species recorded on or around the site. These are based on published guidance (Goodship & Furness, 2022) which would also be used for any species not listed but which is found during surveys.

7.5.4. Two buffer distances have been provided; one in which no activity can occur and the second in which the ECoW can authorise work following a risk assessment to identify whether disturbance could occur and if so whether this would likely cause an adverse impact on the breeding birds. The ECoW may exercise additional professional judgement in the application of both buffer zones, if there are mitigating circumstances that mean disturbance would be highly unlikely, such as where breeding locations are visually separated from the work site (e.g., by topography) and works would not cause auditory or other disturbance.

7.5.5. Factors to be considered before works can be carried out within the discretionary buffer zone would include: stage of the breeding season; species disturbance sensitivity; visibility of the works; noise generation by the works; duration of the works; equipment and personnel likely to be used during the works.

Table 7.5 Buffer zones

Species	Buffer Area where No Work can Occur	Buffer Area where Work can Proceed on Approval by ECoW
Black Grouse	0-500 m from lekking males 0-100 m from nesting female	500-750 m from lekking males 100-150 m from nesting females
Osprey	0-350 m from nest/territory centre	350-750 m from nest/territory centre
Crossbill spp.	0 - 50 m from nest	50 - 200 m from nest
Other Schedule 1 species	As per Goodship & Furness	As per Goodship & Furness
Other Annex I species	As per Goodship & Furness	As per Goodship & Furness
Other species	0 to 5 m radius	5 to 10 m radius

Emergency Procedure

7.5.6. Should a bird species or nest be encountered unexpectedly during site works, the following emergency procedure should be followed:

- Stop the activity being undertaken immediately.
- The ECoW and Site Agent or Project Manager will be informed.
- The ECoW is to confirm presence of species and/or nest(s), establish a suitable buffer zone, and consult NatureScot (if appropriate) over suitable mitigation measures to implement.

7.5.7. No works should resume until written approval, detailing any appropriate mitigation, has been given by the Site Agent and the ECoW.

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