2025

Limekiln Battery Energy Storage System (BESS)

Appendix 7.1: Ornithology Technical Report

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LIMEKILN BATTERY ENERGY STORAGE SYSTEM (BESS)

ORNITHOLOGICAL SURVEYS IN 2025

Introduction

1. This report describes the ornithological surveys undertaken at the site of a proposed battery energy storage system (BESS) at Limekiln Wind Farm in Caithness in 2025. The surveys were undertaken by Natural Research (Projects) Ltd (NRP).

2. The objectives of these surveys were to:

    - Record and map the breeding bird community within the survey area, and
    - Locate and map any breeding attempts by scarce raptors and owls within the survey area.

Field methods

3. Surveys commenced on 15 April 2021 and were completed on 22 May 2025. The survey area was defined with reference to the location of the proposed BESS Compound Area and Attenuation Basin and encompasses a buffer of 500 meters (m) in radius. The survey area is located in close proximity to Limekiln Wind Farm near Reay, Caithness.

4. Fieldwork was undertaken by Dan Beadle (DWB) and Roddy Mavor (RAM), both experienced field ornithologists

<u>Breeding bird surveys</u>

5. Breeding bird territories were surveyed across the whole survey area. The Common Bird Census (CBC) (Marchant, 1983) method devised for censusing woodland and farmland birds was modified and where possible all parts of the survey area were approached to within 100 m or closer if necessary.

6. All bird species potentially breeding within the survey area or making substantial use of the survey area for foraging, were recorded.

7. The whole survey area was visited four times between mid-April and late May. Fieldwork was avoided in conditions that may have affected bird detection, for example strong winds (greater than Beaufort Force 4), persistent heavy precipitation, poor visibility (less than 300 m), or in unusually hot or cold temperatures (**Table 1**).

Table 1. Breeding bird survey effort and weather conditions.										
Date	**Start time**	**Duration**	**Obs.**	**Cloud (10ths)**	**Cloud base (m)**	**Wind direction**	**Wind force**	**Precip***	**Vis. (km)**	**Visit No.**
15/04/2025	0845	3.00	DWB	6	600	S	1	nil	5	visit 1
26/04/2025	1050	3.00	DWB	10	800	SSE	2	nil	5	visit 2
13/05/2025	0800	4.00	RAM	10	400	NE	3	nil	10	visit 3
22/05/2025	1130	3.00	DWB	6	900	N	3	nil	5	visit 4
Total		**13.00**								
*Precipitation codes: Continuous/Intermittent + Light/Heavy + Rain/Snow/Hail/Fog										

8. The survey aimed to cover the ground systematically with a constant search effort. All suitable ground was approached closely, typically to within 100 m. More open areas such as woodland edges, rides and tracks were examined carefully, and some ditches and streams were followed. The surveyor paused at regular intervals to scan and listen for calling and singing birds.

9. Careful attention was given to recording behaviour indicative of breeding and care was taken to try to avoid counting the same individual more than once. Where necessary, the surveyor retraced their steps in order to check the continued presence of previously recorded birds.

10. The location and activity of birds were mapped onto enlarged 1:25,000 scale OS maps using standard BTO codes (Marchant, 1983). The position of each bird was mapped at the point it was first detected.

11. At the end of each visit, a summary map was compiled showing the location of each identified territory or breeding pair. The following evidence was considered diagnostic of breeding:

    - Song, courtship or territorial display;
    - Territorial dispute;
    - Nest building and hole excavation;
    - Agitated behaviour by adult bird(s) indicating the presence of a nearby nest or young (e.g. repetitive alarm calling, distraction display);
    - Adult(s) carrying food;
    - Presence of newly fledged young;
    - Adult(s) removing faecal sac.

12. Where a number of breeding individuals were present and, after interpretation of the field data it was not possible to determine the exact number of breeding pairs, registrations of individual birds were deemed to represent discrete breeding territories / pairs if the

distance between them exceeded certain distance thresholds: 100 m in the case of small passerines. Whilst it is recognised that this distance is arbitrary and the territory size varies both inter- and intra-specifically, this approach produces a standardised index of abundance based on the distance that members of a breeding pair are likely to move during the survey period. In cases where two individuals were considered to constitute a pair of birds, the location of the pair was placed centrally by convention.

Scarce Raptors and Owls

13. Particular care was taken to search for scarce species of raptor and owl using methodology found in Hardey *et al*. (2013). The following species were considered most likely to occur in the habitats within the survey area; hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*), goshawk (*Accipiter gentilis*), osprey (*Pandion haliaetus*) and white-tailed eagle (*Haliaeetus albicilla*).

Hen harrier

14. Survey methods based on Hardey *et al*. (2013) were followed. Emphasis was given to searching habitats considered potentially suitable for nesting, in this case limited to areas of heath/bog with stands > 0.4m tall and areas of re-stock plantation.

Merlin

15. Survey methods based on Hardey *et al*. (2013) were followed. Within suitable habitats, old crow nests (which could be re-used by merlin), fenceposts, hummocks, bushes and trees were checked for signs of occupation (e.g. plucked prey, moulted feathers, pellets and faeces). Emphasis was given to heath bog habitats with stands of heather >0.4m tall and edges of closed canopy forestry plantations.

Goshawk

16. Survey methods based on Hardey *et al*. (2013) were followed. Checks were made for displaying and calling birds with searches of mature forestry to locate nests.

Osprey

17. Survey methods based on Hardey *et al*. (2013) were followed. Checks were made in areas where mature trees were present for nests and watches made for birds carrying fish or exhibiting territorial behaviour.

White-tailed eagle

18. Survey methods based on Hardey *et al*. (2013) were followed. Checks were made in areas where mature trees were present for nests and watches made for birds carrying food or exhibiting territorial behaviour.

Results and discussion

Breeding birds

19. Breeding bird surveys recorded evidence of breeding within the survey area by a total of fourteen species (**Table 2**). A number of other species were recorded but without any signs to indicate breeding attempts within the survey area, these included buzzard and sparrowhawk.

20. Of the fourteen species confirmed to breed, one is considered to be of high Nature Conservation Importance due to its listing on Schedule 1 of the Wildlife and Countryside Act 1981, and one is considered to be of moderate Nature Conservation Importance due to its classification on the Birds of Conservation Concern (BoCC) Red list (Stanbury *et al.,* 2021). A further five species confirmed to have bred are on the BoCC Amber list. No species listed on Annex 1 of the EU Birds Directive were recorded breeding.

Table 2. Territories recorded during breeding bird surveys.

Species	**Confirmed territories**
Schedule 1 species	
Common crossbill	2
Red listed species	
Lesser redpoll	3
Amber listed species	
Wren	15
Dunnock	4
Song Thrush	3
Meadow pipit	1
Willow warbler	1
Other species	
Robin	40
Goldcrest	36
Chaffinch	31
Siskin	27
Coal Tit	19
Blackcap	1
Woodpigeon	1

Passerines

21. Only one Schedule 1 passerine, common crossbill (*Loxia curvirostra*) and one Red-listed passerine, lesser redpoll (*Carduelis cabaret*), were recorded in very low densities. Of the Amber listed passerines, there were relatively high densities of wrens (*Troglodytes troglodytes*) and low densities of four other species. All the passerine species recorded were typical of commercial forest habitat found across the survey area.

Scarce raptors and owls

22. There was no evidence to indicate the presence of any breeding scarce raptor or owl species within the survey area.

Waders

23. A curlew was recorded in flight over the site, but no evidence of breeding was recorded. No other wader species was recorded.

References

Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors, a field guide for surveys and monitoring. The Stationery Office, Edinburgh.

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