Moyvannan Electricity Substation

Environmental Impact Assessment Report

Annex 5.2: Bird Survey Report

Energia Renewables ROI Limited

Galetech Energy Services

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Winter Bird Survey Report 2023/2024

Moyvannan Substation and Grid Route

Galetech Energy Services

Clondargan, Stradone, Co. Cavan

Prepared by:

SLR Environmental Consulting (Ireland) Ltd

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N2Y7

SLR Project No.: 501.065165.00001

Client Reference No: N/A

7 June 2024

Revision: 00

This document contains confidential information on the locations of bird nests.

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
00	17 May 2024	Hugo Brooks	Dr Jonathon Dunn	Dr Jonathon Dunn
	Click to enter a date.			
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Basis of Report

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Table of Contents

Tables in Text

Appendices

1.0 Introduction

SLR Environmental Consulting (Ireland) (SLR) was commissioned by Galetech Energy Services to carry out fortnightly feeding distribution surveys between October 2023 and March 2024 for the proposed Moyvannan substation and grid route ('the Project').

1.1 Background to the Commission

No previous planning permission has been sought on the application site ('the Project Site') for the development of grid routes / substations by Galetech Energy Services or any other party.

1.2 Project Site Description

The Project Site is presented in **Figure 1** in **Appendix A**. The Project is approximately 5 km north-west of Athlone, Co. Westmeath but located in Co. Roscommon. The dominant habitats along the proposed grid route and within the substation site are agricultural grasslands, turloughs, broadleaf woodland, hedgerows, and treelines.

After the completion of surveys, a second grid route which was not surveyed was chosen (option A). Option A and option B (surveyed but not chosen) are presented in **Figure 1** in **Appendix A**.

1.3 Purpose of this Report

This report outlines the surveys undertaken and methods used. It then summarises the survey data obtained and provides descriptions of the legal and conservation status of the species recorded.

The assessment of impacts resulting from the Project and the development of mitigation measures, if required, are beyond the scope of this report.

2.0 Methodology

2.1 Scope of Work

The scope of survey work was based on existing knowledge of the area and proximity to nearby designated nature conservation sites (see section 3.1). Wintering wildfowl and waders were judged to be of key consideration, especially considering the presence of turloughs near the proposed substation area.

Consequently, feeding distribution surveys as described by NatureScot (NS; formerly Scottish Natural Heritage, SNH) guidance[1] were chosen as appropriate, with details of the methodology provided in **Table 2-1**. While this NS guidance is for wind farms, the feeding distribution survey methodology is appropriate for the current Project as it is like the Irish Wetland Bird Survey (I-WeBS) methodology, which is recommended by the Bird Survey Guidelines[2] where wetland habitats are present that have the potential to support waterbird species.

Details of survey dates and times are provided in **Appendix B** and a record of weather conditions during surveys is provided in **Appendix C**

Table 2-1: Scope of Ornithological Survey Work

Survey Type	Summary Methodology (see Section 2.2.2 for further details)
Feeding Distribution Surveys	Twelve feeding distribution surveys were carried out within the period October 2023 to March 2024, twice per month with approximately two weeks between surveys, to search for wildfowl and waders within a 500 m buffer of the Project Site.

2.2 Field Surveys

2.2.1 Field Survey Personnel

2.2.1.1 Huge Brooks – Graduate Ecologist

Hugo is a Graduate Ecologist with SLR. Hugo has a BSc (Hons) in Zoology from University College Dublin. Hugo's first professional role in ecology was as a temporary consultant ecologist with Scott Cawley Ltd. (March – October 2022), where he gained experience in bat surveys, bat call analysis and breeding bird surveys. He is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Since joining SLR, Hugo has worked on multiple renewable energy projects. He has carried out various bird surveys including vantage point, breeding wader, breeding raptor, hen harrier *Circus cyaneus*, swan and goose feeding/distribution and intertidal surveys. Hugo has also gained experience in bat transect surveys, bat roost potential surveys and general walkover habitat surveys.

2.2.1.2 Jake Matthews – Project Ecologist

Jake is a Project Ecologist with SLR. Jake holds a BSc (Hons) in Wildlife Conservation and Zoo Biology from University of Salford and an MSc in Ecology & Environment Management

[1] Scottish Natural Heritage (2017). *Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms V2.* Scottish Natural Heritage, Inverness.

[2] https://birdsurveyguidelines.org/wetland-bird-survey-webs/ Accessed 12/07/2024

from Liverpool Hope University. Jake has four years' experience in ecological consultancy both within the UK and Ireland. Jake has a diversified skillset within ecology, with an interest in ornithology and has strengths with Preliminary Ecological Appraisals, Appropriate Assessments, Biodiversity Net Gain Assessments, ECoW, as well as a range of species-specific surveys.

2.2.1.3 Darragh Nagle – Project Ecologist

Darragh is a Project Ecologist and graduated from University College Cork in 2020 with a BSc degree (Hons) in Ecology and Environmental Ecology. He is a qualifying member with CIEEM. Since joining SLR Darragh's field experience includes multiple diverse bird surveys on windfarm sites across Ireland with experience in vantage point, breeding wader, breeding raptor, feeding distribution, hen harrier roost and intertidal bird surveys.

2.2.1.4 Lorcan Kelly – Graduate Ecologist

Lorcan Kelly holds a BSc. in Science (Zoology) from University College Dublin and an MSc. in Applied Ecology and Conservation from the University of East Anglia. He has recently joined SLR having previously worked for The Ecology Consultancy, Norwich. He is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Lorcan has experience of bird surveys from working on wind farm projects within Ireland.

2.2.2 Feeding Distribution Surveys

Feeding distribution surveys were carried out on a fortnightly basis between October 2023 and March 2024 to search for wildfowl and waders using fields within at least 500 m of the Project Site. These were undertaken by driven transects, stopping on a regular basis to search for all fields for bird feeding activity. Where visibility of fields within the Project Site could not be obtained via driven transect, they were surveyed on foot. Other species of note were also recorded.

Details of survey dates, times and observers are provided in **Appendix B** and a record of weather conditions during surveys is provided in **Appendix C**. The survey area is shown in **Figure 1** in **Appendix A.**

2.3 Survey Limitations

An alternative grid route was identified as the surveys were coming to an end, therefore, much of this grid route was not surveyed. The location of the substation remains the same, as a result, data collected near the substation and overlapping areas of grid route A and B can be considered representative.

In places, certain areas within 500 m of the grid route (but not the proposed substation location) were not visible and were not accessible, as they were located within private lands.

3.0 Results

3.1 Desk-based Review

There are six SPAs within 20 km[3] of the Project Site with details shown in **Table 3-1**.

Table 3-1: SPAs within 20 km of the Project Site and their Qualifying Interests

Site Name	Site Code	Distance / Direction from Project Site	Qualifying Interests Relevant to the Non-Breeding Season
Lough Ree SPA	004064	2.1 km east	Eurasian coot *Fulica atra* Eurasian wigeon *Mareca penelope* Eurasian teal *Anas crecca* European golden plover Common goldeneye *Bucephala clangula* Common scoter *Melanitta nigra* Little grebe *Tachybaptus ruficollis* Mallard *Anas platyrhynchos* Northern lapwing *Vanellus vanellus* Northern shoveler *Anas clypeata* Tufted duck *Aythya fuligula* Whooper swan *Cygnus cygnus*
Lough Croan Turlough SPA	004319	7.7 km west	Greenland white-fronged goose *Anser albifrons flavirostris* Northern shoveler European golden plover

[3] 20 km represents the largest core foraging distance from any qualifying interest species found in Ireland

Site Name	Site Code	Distance / Direction from Project Site	Qualifying Interests Relevant to the Non-Breeding Season
Middle Shannon Callows SPA	0040096	9.7 km south-east	Black-headed gull *Larus fuscus* Black-tailed godwit *Limosa limosa* Corncrake *Crex crex* Eurasian wigeon European golden plover Northern lapwing Whooper swan
Four Roads Turlough SPA	004140	12.1 km east	European golden plover Greenland white-fronted goose
River Suck Callows SPA	004097	12.7 km east	European golden plover Eurasian wigeon Northern lapwing Whooper swan Greenland white-fronted goose
Mongan Bog SPA	004017	18.3 km south-east	Greenland white-fronted goose

3.2 Feeding Distribution Survey

A summary of results of the twice-monthly feeding distribution surveys undertaken throughout the winter season is presented in **Table 3-2**.

This presents the peak count obtained for each species per fortnightly survey.

Survey results are shown in **Figures 2** and **3** in **Appendix A.**

Table 3-2: Peak Counts Across Feeding Distribution Surveys

Month	Visit	Peak Count																		
		Black-headed gull	Cormorant	Common gull[4]	Common kestrel[5]	Eurasian coot	Eurasian curlew[6]	Eurasian teal	Eurasian wigeon	Great crested grebe[7]	Grey heron[8]	Northern lapwing	Lesser black-backed gull[9]	Little grebe	Mallard	Moorhen[10]	Mute swan[11]	Oystercatcher[12]	Tufted duck	Whooper swan
October	1	-	-	-	-	-	1	-	-	-	1	25	-	-	6	1	-	1	-	-
	2	-	-	-	-	-	-	12	-	1	-	1	-	-	6	1	2	-	-	-
November	1	11	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	95	-	-	-	-	-	-	6	1	-	70	-	-	-	-	3	-	-	3
December	1	20	-	1	-	-	-	3	-	-	-	19	-	-	4	2	2	-	-	-
	2	40	-	-	-	-	-	30	-	-	-	66	-	-	2	-	2	-	-	14
January	1	35	-	-	-	-	-	33	84	-	-	22	-	-	4	-	5	-	-	-
	2	108	-	-	-	-	-	-	-	-	-	56	-	-	-	-	-	-	-	9
February	1	60	-	-	-	2	-	29	68	-	1	120	3	-	6	2	-	-	8	-

[4] *Larus canus*
[5] *Falco tinnunculus*
[6] *Numenius arquata*
[7] *Podiceps cristatus*
[8] *Ardea cinerea*
[9] *Larus fuscus*
[10] *Gallinula chloropus*
[11] *Cygnus olor*
[12] *Haematopus ostralegus*

Month	Visit	Peak Count																		
		Black-headed gull	Cormorant	Common gull[4]	Common kestrel[5]	Eurasian coot	Eurasian curlew[6]	Eurasian teal	Eurasian wigeon	Great crested grebe[7]	Grey heron[8]	Northern lapwing	Lesser black-backed gull[9]	Little grebe	Mallard	Moorhen[10]	Mute swan[11]	Oystercatcher[12]	Tufted duck	Whooper swan
	2	65	1	-	-	2	-	22	59	-	-	53	1	2	2	-	2	-	3	-
March	1	90	-	-	-	5	-	15	19	-	-	-	3	1	-	2	2	-	2	-
	2	5	-	-	-	6	-	10	47	-	-	-	-	1	3	1	2	-	-	-

3.2.1 Black-headed Gull

Black-headed gull were commonly recorded both flying and foraging during the feeding distribution surveys. They were most frequently recorded on the turloughs south-west of the proposed substation location. A peak count of 108 was recorded in January 2024. Observations were also made of flocks of black headed gulls foraging in improved agricultural grassland within the 500 m buffer of where grid route A and grid route B overlap.

3.2.2 Cormorant

A single cormorant was recorded in February 2024 within 500 m of the grid route B.

3.2.3 Common gull

Common gulls were recorded during a survey in December 2023 only. Two observations were made of single birds foraging in fields along the overlapping sections of grid route A and B.

3.2.4 Common Kestrel

A single common kestrel was recorded in November 2023. This bird was observed along grid route B within the 500 m buffer.

3.2.5 Eurasian Coot

Eurasian coots were recorded in February and March 2024 only, across many ponds / turloughs within the 500 m buffer of gride route B and the proposed substation location. A peak count of six birds was recorded on the turloughs approximately 450 m south/south-west of the proposed substation location.

A Eurasian coot nest was recorded in March 2024 within the overlapping 500 m buffer area of grid route A and B (see **Figure 4** in **Appendix A**). This nest was in a pond approximately 100 m to the south of the L2018.

3.2.6 Eurasian Curlew

A single curlew was heard within 500 m of the proposed substation location in October 2023.

3.2.7 Eurasian Teal

Eurasian teal were frequently recorded across the survey period and had a peak count of 33 in January 2024. Most observations of Eurasian teal were within the turloughs south-west of the Project site (approximately 450 m from the proposed substation location). Smaller flocks were often observed in a pond within the 500 m buffer along the overlapping sections of grid route A and B.

3.2.8 Eurasian Wigeon

Eurasian wigeon were recorded during the surveys from November 2023 to March 2024. The highest concentration of this species was observed within the turloughs south-west of the proposed substation location, with a peak count of 84. These flocks ranged from 300-600 metres from the proposed substation location. Smaller flocks of Eurasian wigeon were observed within other turloughs within the 500 m buffer along the overlapping sections of grid route A and B.

3.2.9 Great Crested Grebe

Great crested grebes were observed on two occasions, once in October 2023 and once in November 2023; both observations were of a single bird. These observations were on the turloughs south-west of the proposed substation location, approximately 400 m from the proposed substation location.

3.2.10 Grey Heron

Grey herons were recorded in two occasions. A single bird was recorded in October 2023 within the turloughs south/south-west. Another recording of a single grey heron was made in in February 2024. This observation was within 500 m of grid route B.

3.2.11 Northern Lapwing

Observations of northern lapwing were made in the months of October 2023 to February 2024. The highest concentrations of lapwing were observed repeatedly on the turloughs south / south-west of the proposed substation location, with a peak count of 120 birds recorded in February 2024. These recordings ranged from approximately 400 – 700 m from the proposed substation location. Smaller flocks were observed foraging in improved agricultural grasslands along grid route B and in buffer areas where grid route A and B overlap.

3.2.12 Lesser Black-backed Gull

Lesser black-backed gulls were recorded on three occasions within the months of February and March 2024. These observations were concentrated around the turloughs south/south-west of the proposed substation location.

3.2.13 Little Grebe

Little grebe observations were made in February and March 2024, with a peak count of two birds recorded. This species was recorded within the turloughs south / south-west of the proposed substation location, and within a pond within the buffer area where grid route A and B overlap.

3.2.14 Mallard

Mallard observations were most made on the turloughs south of the proposed substation location. Mallards were recorded in all months except November 2023. A peak count of six birds was made in February 2024.

3.2.15 Moorhen

Moorhen were exclusively recorded on the turloughs south / south-west of the proposed substation location. Observations of this species were made in all months except November 2023 and January 2024. These recording were 400 – 700 m from the proposed substation location.

3.2.16 Mute Swan

Mute swans were recorded in every month during the feeding distribution surveys. A peak count of five mute swans were recorded during the first survey in January 2024. All but one observation of mute swan was on / around the turloughs south/south-west of the proposed substation location. Mute swans were recorded both within the developable area, the proposed substation location 500 m buffer, and grid route B 500 m buffer. The most heavily used area by mute swans was approximately 400 m from the proposed substation.

3.2.17 Oystercatcher

One oystercatcher was recorded across all the feeding distribution surveys. This individual was recorded in October 2023, north of the proposed substation location and beyond the 500 m survey buffer.

3.2.18 Tufted Duck

All recordings of tufted duck were within the turloughs south/south-west of the proposed substation location. Most recordings were made approximately 450 m for the proposed substation location. Tufted ducks were recorded in February and March 2024 and a peak count of eight birds was recorded in February.

3.2.19 Whooper Swan

Whooper swan were recorded during three of the twelve feeding distribution surveys. A peak of count of 14 whooper swans was recorded during the second survey of December 2023. Both adult and juvenile whooper swans were observed during the surveys. All whooper swan observations were exclusive to the turloughs south/south-west of the proposed substation location. No whooper swans were recorded within the developable area but were observed within the proposed substation and grid route B 500 m buffer, approximately 450 metres south-west of the proposed substation location.

4.0 Summary and Conclusion

Feeding distributions were carried out fortnightly along the proposed grid route B and substation location during the 2023/24 non-breeding season. The highest concentration of swans, wildfowl and waders were within two turloughs approximately 400 – 500 m south / south-west of the proposed substation location.

Many of the wildfowl and wader species were repeatedly recorded on these turloughs, with Eurasian teal, Eurasian wigeon, and northern lapwing having particularly high concentrations on these turloughs. Great crested grebes, moorhens, tufted ducks and whooper swans were exclusively recorded on these turloughs, but were not always present.

There was no notable change of the water level of the turloughs south / south-west of the proposed substation location across the survey period. The proximity of the turloughs to Lough Ree SPA and the constant high, water levels likely explains the observed diversity and flock size of wildfowl and wader species.

A Eurasian coot nest was recorded within 500 m of both grid route options.

5.0 Legal and Conservation Status of Species Recorded

Table 5-1 summarises the legal and conservation status of the species record during the feeding distribution surveys mentioned above. All Irish bird species are afforded general protection by the Wildlife Acts 1976 (as amended).

Table 5-1: Legal and Conservation Status of Bird Species

Species (BTO code)	Legal and Conservation Status[13]
Black-headed gull (BH)	BoCCI4 Amber
Cormorant (CA)	BoCCI4 Amber
Common gull (CM)	BoCCI4 Amber
Common kestrel (K.)	BoCCI4 Red
Eurasian coot (CO)	BoCCI4 Amber
Eurasian curlew (CU)	BoCCI4 Red
Eurasian teal (T.)	BoCCI4 Amber
Eurasian wigeon (WN)	BoCCI4 Amber
Great crested grebe (GG)	BoCCI4 Amber
Grey heron (H.)	BoCCI4 Green
Northern lapwing (L.)	BoCCI4 Red
Lesser black-backed gull (LB)	BoCCI4 Amber
Little grebe (LG)	BoCCI4 Green
Mallard (MA)	BoCCI4 Amber
Moorhen (MH)	BoCCI4 Green
Mute swan (MS)	BoCCI4 Amber
Whooper swan (WS)	Annex I; BoCCI4 Amber

[13] Key: Annex I = the species is listed under Annex I of the EC Birds Directive; BoCCI4 status (green, amber or red) = current Birds of Conservation Concern in Ireland status category.

Appendix A Figures

Winter Bird Survey Report 2023/2024

Moyvannan Substation and Grid Route

Galetech Energy Services

SLR Project No.: 501.065165.00001

7 June 2024

592000
594000
596000
598000
600000
750000
748000
746000
744000
501.065165.00001.0008.0 Survey Area

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

0 1 2
Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

WINTER BIRD SURVEY AREA

FIGURE 1

Scale	Date
1:30,000 @ A3	JULY 2024

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

501.065165.00001.0007.0 Feeding Distribution

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BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
BH - BLACK-HEADED GULL

FIGURE 2.1

Scale	Date
1:30,000 @ A3	JULY 2024

590000 592000 594000 596000 598000

748000

746000

744000

N

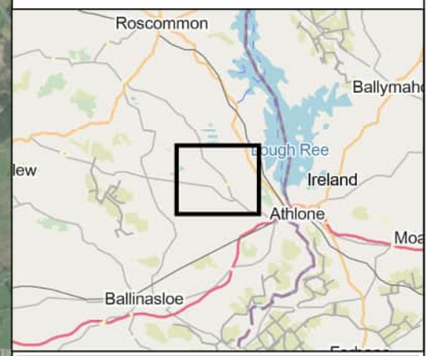
LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0



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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT WINTER BIRDS 2023/24

FEEDING DISTRIBUTION CA - CORMORANT

FIGURE 2.2

Scale	Date
1:30,000 @ A3	JULY 2024

0 1 2
Kilometers

501.065165.00001.0007.0 Feeding Distribution

590000 592000 594000 596000 598000

748000

746000

744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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BIRD SURVEY REPORT WINTER BIRDS 2023/24

FEEDING DISTRIBUTION CM - COMMON GULL

FIGURE 2.3

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
CO - COOT

FIGURE 2.4

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
CU - CURLEW

FIGURE 2.5

Scale: 1:30,000 @ A3

Date: JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
WN - EUROPEAN WIGEON

FIGURE 2.6

Scale	Date
1:30,000 @ A3	JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
GG - GREAT CRESTED GREBE

FIGURE 2.7

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

501.065165.00001.0007.0 Feeding Distribution

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BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
H. - GREY HERON

FIGURE 2.8

Scale 1:30,000 @ A3

Date JULY 2024

590000 592000 594000 596000 598000

748000

746000

744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
K. - KESTREL

FIGURE 2.9

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
L. - NORTHERN LAPWING

FIGURE 2.10

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000

748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2
Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
LB - LESSER BLACK-BACKED GULL

FIGURE 2.11

Scale: 1:30,000 @ A3
Date: JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
LG - LITTLE GREBE

FIGURE 2.12

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

501.065165.00001.0007.0 Feeding Distribution

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
MA - MALLARD

FIGURE 2.13

Scale: 1:30,000 @ A3

Date: JULY 2024

590000
592000
594000
596000
598000

748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

501.065165.00001.0007.0 Feeding Distribution

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
MH - MOORHEN

FIGURE 2.14

Scale	Date
1:30,000 @ A3	JULY 2024

590000
592000
594000
596000
598000

748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2
Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
MS - MUTE SWAN

FIGURE 2.15

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000

748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT WINTER BIRDS 2023/24

FEEDING DISTRIBUTION OC - OYSTERCATCHER

FIGURE 2.16

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2
Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
T. - TEAL

FIGURE 2.17

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
TU - TUFTED DUCK

FIGURE 2.18

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

590000
592000
594000
596000
598000
748000
746000
744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Expected Number of Birds (per 25 m²)

12

0

0 1 2

Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FEEDING DISTRIBUTION
WS - WHOOPER SWAN

FIGURE 2.19

Scale 1:30,000 @ A3

Date JULY 2024

501.065165.00001.0007.0 Feeding Distribution

592000 594000 596000 598000 600000

750000 748000 746000 744000

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer

Flightline

- Black-headed Gull
- Cormorant
- Grey Heron
- Northern Lapwing
- Lesser Black-Backed Gull
- Mute Swan

0 1 2

Kilometers

501.065165.00001.0010.0 W B Flightlines

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

FLIGHTLINE LOCATIONS

FIGURE 3

Scale 1:30,000 @ A3

Date JULY 2024

592000
594000
596000
598000
600000
750000
748000
746000
744000
501.065165.00001.0009.0 Nest Location

N

LEGEND

- Land Ownership Boundary
- Winter Bird Season 2023/2024 Survey Area Boundary
- Proposed Substation
- Proposed Grid Route Option A
- Proposed Grid Route Option B
- Proposed Substation and Grid Connection Routes 500 m Buffer
- Proposed Substation and Grid Connection Routes 1 km Buffer
- Coot Nest Location

0 1 2
Kilometers

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MOYVANNAN SUBSTATION AND GRID ROUTE

BIRD SURVEY REPORT
WINTER BIRDS 2023/24

COOT NEST LOCATION

FIGURE 4

Scale: 1:30,000 @ A3

Date: JULY 2024

Appendix B Survey Dates, Times and Observers

Winter Bird Survey Report 2023/2024

Moyvannan Substation and Grid Route

Galetech Energy Services

SLR Project No.: 501.065165.00001

7 June 2024

Surveyor initials are given in section 2.2.1.

Table A-1: Details of Feeding Distribution Surveys

Date	Surveyor	Start Time	End Time	Hours (hh:mm)
19/10/2023	JM	12:30	14:30	02:00
27/10/2023	JM	08:05	11:30	03:25
17/11/2023	HB	10:10	12:35	02:25
28/11/2023	HB	10:18	12:55	02:37
04/12/2023	LK	10:32	12:58	02:26
20/12/2023	HB	10:44	13:05	02:21
10/01/2024	HB	11:15	13:45	02:30
23/01/2024	DN	12:35	15:00	02:25
01/02/2024	HB	09:30	11:45	02:15
12/02/2024	HB	07:53	10:30	02:37
01/03/2024	HB	08:59	11:22	02:23
11/03/2024	HB	15:45	18:10	02:25
Total hours				**29:59**

Appendix C Weather Data

Winter Bird Survey Report 2023/2024

Moyvannan Substation and Grid Route

Galetech Energy Services

SLR Project No.: 501.065165.00001

7 June 2024

Weather key:

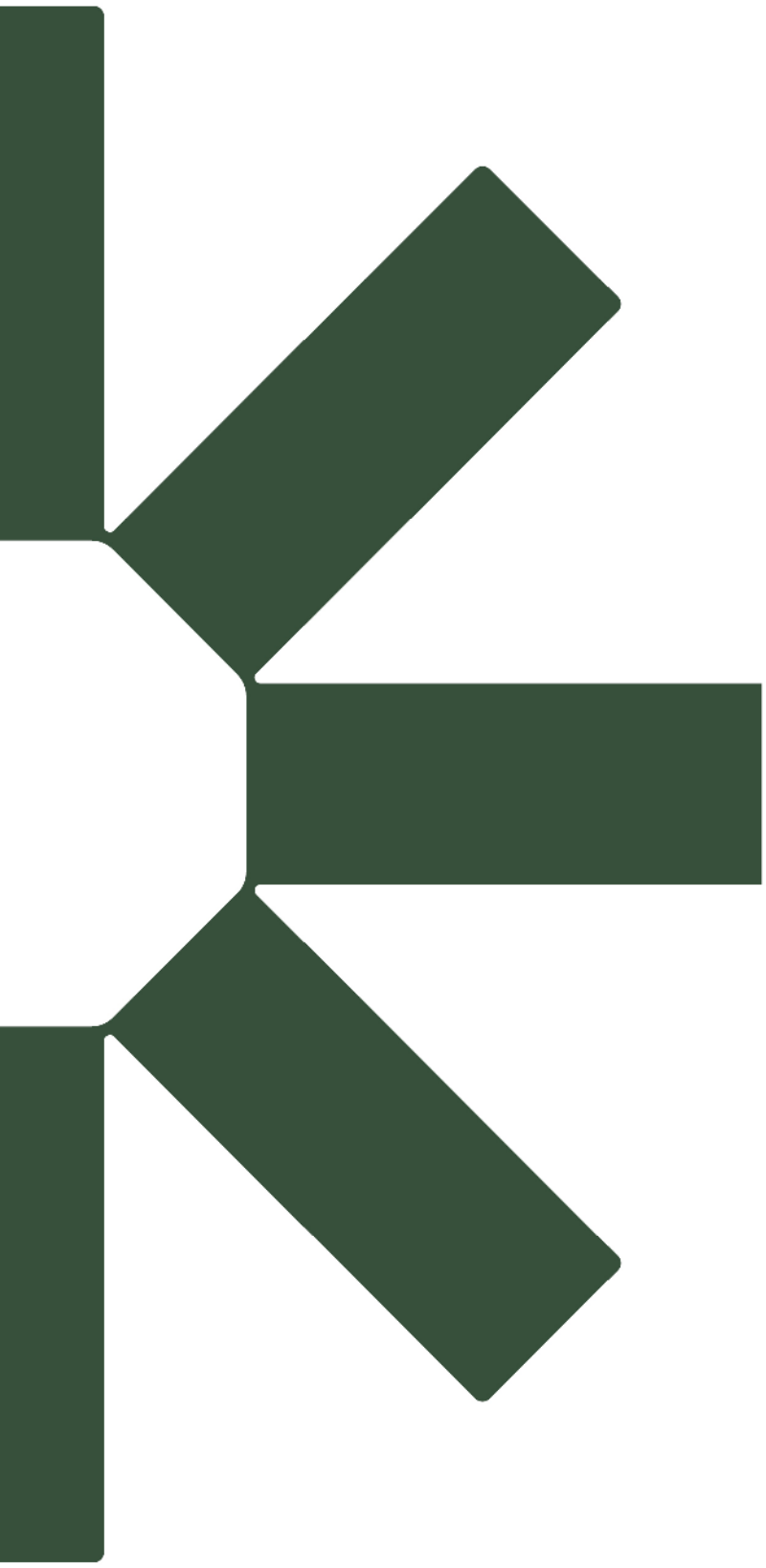
- Rain: None = 0; Drizzle = 1; Light showers/snow = 2; Heavy showers/snow = 3; Heavy rain/snow = 4.
- Cloud cover: Expressed in oktas (n/8).
- Cloud height: Height of cloud above average height of viewshed. <150 m = 0; 150 – 500 m = 1; >500 m = 2.
- Visibility: Poor (<1 km); Moderate (1-3 km); Good (> 3 km).
- Lying snow: None = 0; On site = 1; On higher ground = 2.
- Frost: None = 0; Ground = 1; All day = 2.

Table A-2: Weather Data Collected During Feeding Distribution Surveys

Date	Survey Start	Survey End	Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
19/10/2023	12:30	14:30	1	2	E	1	8	1		0	0	16
19/10/2023	12:30	14:30	2	2	E	0	8	2	2	0	0	16
19/10/2023	12:30	14:30	3	2	E	0	8	2	2	0	0	16
27/10/2023	08:05	11:30	1	3	SE	0	8	0	0	0	0	7
27/10/2023	08:05	11:30	2	1	S	0	8	0	0	0	0	8
27/10/2023	08:05	11:30	3	2	S	0	7	2	2	0	0	8
17/11/2023	10:10	12:35	1	2	SW	0	2	2	2	0	0	7
17/11/2023	10:10	12:35	2	2	SW	0	8	2	2	0	0	7
17/11/2023	10:10	12:35	3	2	S	0	8	2	2	0	0	8
28/11/2023	10:18	12:55	1	1	W	0	7	2	2	0	0	3

Date	Survey Start	Survey End	Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
28/11/2023	10:18	12:55	2	1	W	0	6	2	2	0	0	5
28/11/2023	10:18	12:55	3	1	W	0	7	2	2	0	0	6
04/12/2023	10:32	12:58	1	3	NW	0	1	2	2	0	1	2
04/12/2023	10:32	12:58	2	3	NW	0	2	2	2	0	1	3
04/12/2023	10:32	12:58	3	3	NW	0	1	2	2	0	1	4
20/12/2023	10:44	13:05	1	5	W	1	8	1	2	0	0	10
20/12/2023	10:44	13:05	2	5	W	1	8	2	2	0	0	10
20/12/2023	10:44	13:05	3	5	W	1	8	2	2	0	0	10
10/01/2024	11:15	13:45	1	2	NE	0	1	2	2	0	2	3
10/01/2024	11:15	13:45	2	2	NE	0	0	2	2	0	2	4
10/01/2024	11:15	13:45	3	2	NE	0	1	2	2	0	2	4
23/01/2024	12:35	15:00	1	6	SW	2	8	2	2	0	0	13
23/01/2024	12:35	15:00	2	6	SW	1	8	2	2	0	0	12
23/01/2024	12:35	15:00	3	6	SW	1	8	2	2	0	0	12
01/02/2024	09:30	11:45	1	2	S	0	7	2	2	0	0	4
01/02/2024	09:30	11:45	2	2	S	0	6	2	2	0	0	6
01/02/2024	09:30	11:45	3	2	S	0	7	2	2	0	0	6
12/02/2024	07:53	10:30	1	2	SW	0	3	2	2	0	1	3
12/02/2024	07:53	10:30	2	3	SW	0	2	2	2	0	1	4

Date	Survey Start	Survey End	Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
12/02/2024	07:53	10:30	3	3	SW	0	6	2	2	0	0	5
01/03/2024	08:59	11:22	1	3	NW	3	8	2	1	1	0	2
01/03/2024	08:59	11:22	2	4	NW	2	8	2	2	1	0	3
01/03/2024	08:59	11:22	3	4	NW	2	8	2	2	1	0	3
11/03/2024	15:45	18:10	1	2	SW	1	8	2	2	0	0	9
11/03/2024	15:45	18:10	2	2	S	2	8	2	2	0	0	9
11/03/2024	15:45	18:10	3	2	S	2	8	2	2	0	0	9



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