

# Shannon Technology and Energy Park (STEP) Power Plant

## Appendix A7B.2: Breeding Bird Report

Shannon LNG Limited



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**DixonBrosnan**  
environmental consultants

Shannon Technology and Energy Park  
(STEP) Power Plant

Breeding Bird Report

April 2024



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# 1. Introduction

## 1.1 Project Background

DixonBrosnan Environmental Consultants were commissioned by New Fortress Energy to survey the lands within and in the vicinity of the Proposed Development site for breeding birds. The Proposed Development consists of a Power Plant together with associated infrastructure on an approximately 41ha area in the northeast of the overall 243ha landbank. The Proposed Development site consists of grassland on the southern shores of the Shannon Estuary and is surrounded by a mixture of agricultural land, rural housing, public roads and the Shannon Estuary.

The information in this report has been used to help determine the impacts on bird populations and also inform the conclusions of the Environmental Impact Assessment Report (EIAR) for the Proposed Development. Details of the study area are included in **Appendix 1**.

This report presents the results of breeding bird surveys conducted during the 2023 breeding season. The objective of the survey was to identify breeding bird activity within the planning boundary.

This report has been written in accordance with the Chartered Institute of Ecological and Environmental Management (CIEEM) *Guidelines for Ecological Report Writing* (CIEEM 2017).

The aim of this report is to provide a description of the bird survey methods used; to provide the results of breeding bird surveys; and to provide an interpretation of the results.



Figure 1. Overview of proposed development site | Source AECOM

## 1.2 Location

The Proposed Development will be located on the Shannon Estuary, approximately 4.5 km from Tarbert and 3.5 km from Ballylongford, Co. Kerry. Tarbert Power Station is located approximately 5 km to the north-east of the Site. Moneypoint Power Station is located on the northern shore of the Shannon Estuary, approximately 3 km to the north of the Site.

There are a small number of residential properties located within 500 m of the Site. Residential properties are also located along the existing L1010 road (Coast Road) immediately south of the Site, with additional residential properties, again to the south of the Site, to the east and west along the L1010 road.

The area of the Site to be developed is characterised by predominantly improved grassland in an agricultural setting. The field boundaries predominantly consist of hedgerows with small drainage ditches. The Site is in pasture, comprising primarily improved grassland with some wet grassland adjacent to the Shannon Estuary,

## 1.3 Conservation Status

The breeding bird study area, focused on terrestrial habitats within the Proposed Development site and does not form part of any Natural Heritage Area (NHA), Special Protection Area (SPA), Special Area of Conservation (SAC) or candidate Special Area of Conservation (cSAC), Nature Reserve, or National Park. It is noted that marine elements of the Proposed Development i.e. jetty and access trestle, overlap with estuarine habitats within the SAC and SPA. The River Shannon and River Fergus Estuaries form the largest estuarine complex in Ireland and the complex spans three counties, Clare (north shore), Limerick and Kerry (southern shoreline). The value of the site has been recognised at an international level, with some 32,000 hectares designated as the River Shannon and River Fergus Estuaries SPA (Site Code 4077) under the EU Bird's Directive. Details of surveys for winter birds within the estuarine habitats to the north of the Proposed Development site have been included in the *Shannon Energy and Technology Park Estuarine Bird Report* (DixonBrosnan 2024) which has been included in EIAR **Appendix 7B-3 of Volume 4**. It is noted that breeding and wintering Cormorants *Phalacrocorax carbo* are listed as a special conservation interested (SCI) for the SPA. However no breeding Cormorant were recorded within the Proposed Development site and the small trees within the site are not suitable for nesting or roosting Cormorant.

The conservation status of bird species in Ireland can be assigned in relation to inclusion on various schedules or annexes of national or European legislation or on relevant conservation lists. A species is considered to be of "conservation concern" if it is included on one or more of the following:

- Annex I of the EU Birds Directive (2009/147/EC);
- Part 1 of the Fourth Schedule of the Wildlife Act 1976 (as amended), and
- Birds of Conservation Concern in Ireland (BoCCI) Red or Amber list (Gilbert *et al.* 2021). Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland (BOCCI). These are bird species suffering declines in population size. BirdWatch Ireland and the Royal Society for the Protection of Birds have identified and classified these species by the rate of decline into Red and Amber lists. Red List

bird species are of high conservation concern and the Amber List species are of medium conservation concern. Green listed species are regularly occurring bird species whose conservation status is currently considered favourable.

## **1.4 Authors of Report**

This report was prepared by Carl Dixon MSc (Ecological Monitoring) and Sorcha Sheehy PhD (Ecology/ornithology).

Carl Dixon MSc (Ecology) is a senior ecologist who has over 25 years' experience in ecological and water quality assessments. Carl Dixon holds an Honours Degree (BSc) in Ecology and a Masters (MSc) in Ecological Monitoring from UCC. He is a senior ecologist who has over 25 years' experience in ecological assessment. Prior to setting up DixonBrosnan Environmental Consultants in 2000, Carl set up and ran Core Environmental Services which included Rural Environmental Protection Scheme (REPS) planning for landowners and ecological assessments. Carl has particular experience in freshwater ecology including electrofishing fish stock assessments and water quality assessments. He also has considerable experience in habitat mapping and mammal ecology including survey work and reporting in relation to badgers and bats. Other competencies include surveys for invasive species and bird surveys. Carl has extensive experience with regards to EIAR and NIS mitigation and impact assessment. He has particular experience in large-scale industrial developments with extensive experience in complex assessments as part of multi-disciplinary teams. Such projects include gas pipelines, incinerators, electrical cable routes, oil refineries and quarries.

Dr. Sorcha Sheehy PhD (ecology/ornithology) is an experienced ecological consultant specialising in bird behaviour. Sorcha received a BSc in Applied Ecology from UCC and subsequently went on to receive a PhD in behavioural ornithology at UCC. During her PhD research, Sorcha studied bird-aircraft collision with a particular focus on bird behaviour, included field-based behavioural observations at airports, bird cadaver examination and collision classification and the use of radar tracking to model collision risk. Sorcha has worked for over 15 years in a professional ecology role and specialises in the coordination of ecology projects and assessments. She has coordinated and contributed to Habitats Directive Assessments (AA screenings and NIS) and Environmental Impact Assessment Reports (EIAR) for a range of small and large-scale projects with particular expertise in assessing impacts on birds. Notable projects include Arklow Bank Wind Park, Shannon Technology and Energy Park and Waste to Energy Facility Ringaskiddy.

Tara Challoner MSc (Ecology) is an experienced ecologist with expertise in habitat evaluation and botanical surveys in particular, as well as breeding and wintering bird surveys. She has prepared AA/NIS/habitat reports for a range of projects including wind farm and industrial developments and housing and recreational facilities in sensitive areas

## **2. Methodology**

### **2.1 Breeding bird surveys**

The breeding bird survey was based on the BTO Common Bird Census (CBC) methodology (Bibby *et al.*, 2000 and Gilbert *et al.*, 1998) which aims to capture a snapshot of breeding bird activity within the study area.



The study area focused on terrestrial habitats within the Proposed Development site. The aim of the breeding bird surveys was to identify any valuable bird habitats within the Site boundary and to identify birds present within the Proposed Development site and surrounding landscape. This survey area encompassed terrestrial habitats along the survey route including hedgerows, treelines and agricultural fields.

Breeding bird surveys were carried out on the 27<sup>th</sup> of March 2023, 30<sup>th</sup> of April 2023, 12<sup>th</sup> May 2023 and 29<sup>th</sup> of June 2023 (**Table 2**). DixonBrosnan previously carried out breeding bird surveys at the site in 2019 and 2020 and the results of these surveys are also detailed in this report.

During breeding bird surveys the site was walked so that all habitats within 50m of potential nesting features were surveyed. A map illustrating the routes followed and sites visited for the purposes of the survey can be found in **Appendix 1** of this report. The ornithological surveyor slowly walked through the Site, stopping at regular intervals to scan with binoculars and to listen for bird calls or song. Birds were identified by sight and song, and observations were plotted on a map. Survey visits were made in the early morning to coincide with the peak period of bird activity and all species seen or heard in the study area and immediate environs were recorded including those in flight. Visits were made during favourable weather conditions.

All species encountered during the survey were mapped and coded using standard BTO species codes and activity recorded using the BTO codes for breeding evidence (**Appendix 2**). In an effort to minimise potential disturbance, no attempts were made to locate nests as such behaviours are generally sufficient to determine probable or confirmed breeding.

## 2.2 Historical Breeding Data of Species of Conservation Concern

Corncrake *Crex crex*, Grey Partridge *Perdix perdix*, Curlew *Numenius arquata*, Barn Owl *Tyto alba* and Yellowhammer *Emberiza citrinella* have historically bred within 10km of the Proposed Development site (Sharrock 1976, Gibbons *et al.* 1993). A national survey of breeding Hen Harriers *Circus cyaneus* in Ireland in 2015 and 2022, recorded no evidence of breeding Hen Harriers in the 10km grid square containing the Proposed Development (Ruddock *et al.* 2016; Ruddock *et al.* 2024).

It is noted that a juvenile Hen Harrier was recorded over the reed bed habitat to the west of the Site on the 19<sup>th</sup> of July 2021). However, there is no high value foraging or suitable breeding habitat for this species within the Site boundary and there are no records of breeding Hen Harrier within 10km of the Site boundary. The habitats within the Proposed Development site do not provide suitable breeding or foraging habitat for Hen Harrier.

It is noted that a number of juvenile White-Tailed Sea Eagles *Haliaeetus albicilla* have been released in the Tarbert area (Allan Mee, personal communication). White-tailed Sea Eagle have a foraging range of up to 250km<sup>2</sup> (Evans *et al.* 2011). During the February 2023 winter bird surveys a single bird was observed overflying the estuary from a vantage point at Knockfinglas Point.

## 2.3 NBDC Records

The National Biodiversity Centre (NBDC) online database lists 132 species of bird recorded within grid square R04. Of these species, a number are listed under Annex I of the Birds Directive and are Red Listed Birds of Conservation Concern in Ireland (Gilbert *et al.* 2021) (Table 1).

**Table 1. Bird species listed under Annex I of the Birds Directive and/or classified as Red Listed Birds of Conservation Concern in Ireland recorded within grid square R04**

Species	Annex I	Red List
Bar-tailed Godwit ( <i>Limosa lapponica</i> )	X	
Barn Owl ( <i>Tyto alba</i> )		X
Black-tailed Godwit ( <i>Limosa limosa</i> )		X
Common Goldeneye ( <i>Bucephala clangula</i> )		X
Common Kestrel ( <i>Falco tinnunculus</i> )		X
Common Kingfisher ( <i>Alcedo atthis</i> )	X	
Common Redshank ( <i>Tringa totanus</i> )		X
Common Snipe ( <i>Gallinago gallinago</i> )		X
Common Swift ( <i>Apus apus</i> )		X
Common Tern ( <i>Sterna hirundo</i> )	X	
Corn Crake ( <i>Crex crex</i> )	X	X
Dunlin ( <i>Calidris alpina</i> )	X	
Eurasian Curlew ( <i>Numenius arquata</i> )		X
Eurasian Oystercatcher ( <i>Haematopus ostralegus</i> )		X
Eurasian Woodcock ( <i>Scolopax rusticola</i> )		X
European Golden Plover ( <i>Pluvialis apricaria</i> )	X	X
European Nightjar ( <i>Caprimulgus europaeus</i> )	X	X
Great Northern Diver ( <i>Gavia immer</i> )	X	
Grey Partridge ( <i>Perdix perdix</i> )		X
Grey Plover ( <i>Pluvialis squatarola</i> )		X
Hen Harrier ( <i>Circus cyaneus</i> )	X	
Little Egret ( <i>Egretta garzetta</i> )	X	
Mediterranean Gull ( <i>Larus melanocephalus</i> )	X	
Merlin ( <i>Falco columbarius</i> )	X	
Northern Lapwing ( <i>Vanellus vanellus</i> )		X
Northern Shoveler ( <i>Anas clypeata</i> )		X
Peregrine Falcon ( <i>Falco peregrinus</i> )	X	
Red Grouse ( <i>Lagopus lagopus</i> )		X
Red Knot ( <i>Calidris canutus</i> )		X
Red-throated Diver ( <i>Gavia stellata</i> )	X	
Ruff ( <i>Philomachus pugnax</i> )	X	
Sandwich Tern ( <i>Sterna sandvicensis</i> )	X	
Whooper Swan ( <i>Cygnus cygnus</i> )	X	
Yellowhammer ( <i>Emberiza citrinella</i> )		X

Source NBDC 12/02/24

## 2.3 Previous Surveys

### 2.3.1 Cork Ecology 2006/2007

Winter bird surveys were carried out by Cork Ecology at the Proposed Development site between October 2006 and March 2007 (Refer to EIAR **Appendix 7B-3 of Volume 4** for further detail). As the main focus of this study was on distribution of wildfowl, waders and gulls in the coastal areas of the site in winter, a specific breeding bird survey was not conducted. However, all terrestrial bird species observed/heard during the winter months were recorded and are detailed in the report. Thirty-one bird species were recorded within the site boundary between October 2006 and March 2007, mostly along the hedgerows bordering fields. Two Red List species (Gilbert *et al.* 2021) were recorded during these site visits i.e., Meadow Pipit *Anthus pratensis* and Redwing *Turdus iliacus*.

### 2.3.2 DixonBrosnan 2019/2020

DixonBrosnan carried out breeding bird surveys at the proposed development site in 2019 and 2020. The survey area consisted primarily of a block of improved and semi-improved grassland, which runs along the southern shore of the Shannon Estuary. The shoreline to the west of this block of land was relatively sheltered and consists of shingle or low earthen cliffs. The farmland within the Proposed Development site was used primarily for grazing in the westerly fields and for production of hay/silage in the larger drier fields to the east. The intensity of agricultural management varied across the site. A small area of reed bed and lagoon habitat was located on the western edge of the study area, approximately 400m west of the Proposed Development site boundary.

A total of 37 species were recorded during the 2019/2020 breeding bird surveys (**Table 2**). One Annex I species, Little Egret *Egretta garzetta*, was recorded within the study area. Four species are classified as Red List species (Meadow Pipit, Merlin *Falco columbarius*, Quail *Coturnix coturnix* and Stock Dove *Columba oenas*). A male Quail was recorded within wet grassland at the Site on one occasion. However, no signs of breeding were recorded and this is likely to be a migrant species passing through the Site. Eleven Amber List species of conservation concern were also recorded during breeding bird surveys (Black-headed Gull *Larus ridibundus*, Herring Gull *Larus argentatus*, House Sparrow *Passer domesticus*, Linnet *Linaria cannabina*, Mallard *Anas platyrhynchos*, Shelduck *Tadorna tadorna*, Skylark *Alauda arvensis*, Starling *Sturnus vulgaris*, Swallow *Hirundo rustica* and Willow Warbler *Phylloscopus trochilus*).

While only three species were confirmed to be breeding, the majority of terrestrial species recorded are likely to breed within the area surveyed, with the exception of Quail. Quail was recorded during the April 2020 site survey. There are no records of breeding Quail in North Kerry. A single bird was recorded, with no signs of breeding and this was likely to be a migrant bird on passage. A single Woodcock *Scolopax rusticola*, also a Red List species, was also recorded on a trail camera recording during January 2020, although no sign of this species was recorded during breeding surveys. It is noted that the Red List species Snipe *Gallinago gallinago* were not recorded during the breeding bird survey but were recorded on a number of occasions during winter bird surveys at the site (Refer to EIAR **Appendix 7B-3 of Volume 4**). Snipe could potentially breed in wet grassland or less intensely managed agricultural grassland at the west of the Proposed Development site.

It is noted that Little Egret was recorded within the salt marsh habitat which is located outside the Proposed Development site boundary. A Merlin was recorded foraging to the east of the Site, near coniferous woodland. However, no signs of breeding Merlins were recorded within the Site boundary.

**Table 2. Bird species recorded during 2019 and 2020 breeding bird surveys**

Species		Breeding Status	Estimated number of territories	Conservation Status: Annex I of Birds Directive or Red/Amber List*
Black-headed Gull	<i>Larus ridibundus</i>	Possible	0	Amber List
Blackbird	<i>Turdus merula</i>	Possible	Several	
Blackcap	<i>Sylvia atricapilla</i>	Possible	2	
Blue tit	<i>Cyanistes caeruleus</i>	Possible	2	
Bullfinch	<i>Pyrrhula pyrrhula</i>	Possible	1	
Chaffinch	<i>Fringilla coelebs</i>	Possible	7	
Collared dove	<i>Streptopelia decaocto</i>	Possible	1	
Goldfinch	<i>Carduelis carduelis</i>	Possible	1	
Great Tit	<i>Parus major</i>	Possible	Several	
Grey Heron	<i>Ardea cinerea</i>	Possible	0-1	
Herring Gull	<i>Larus argentatus</i>	Possible	0	Amber List
Hooded crow	<i>Corvus cornix</i>	Possible	Several	
House sparrow	<i>Passer domesticus</i>	Probable	1	Amber List
Jackdaw	<i>Corvus monedula</i>	Possible	Several	
Linnet	<i>Carduelis cannabina</i>	Probable	1	Amber List
Little egret	<i>Egretta garzetta</i>	Possible	1 (outside Proposed Development site boundary)	Annex I
Magpie	<i>Pica pica</i>	Possible	Several	
Mallard	<i>Anas platyrhynchos</i>	Confirmed	Several (outside Proposed Development site boundary)	Amber List
Meadow pipit	<i>Anthus pratensis</i>	Possible	2-3	Red List
Merlin	<i>Falco columbarius</i>	Possible	1 (outside Proposed Development site boundary)	Red List
Mistle thrush	<i>Turdus viscivorus</i>	Possible	2	
Pied wagtail	<i>Motacilla alba yarrellii</i>	Probable	1	
Quail	<i>Coturnix coturnix</i>	Non-breeding	0	Red List
Raven	<i>Corvus corax</i>	Possible	1	
Reed bunting	<i>Emberiza schoeniclus</i>	Possible	1	
Robin	<i>Erithacus rubecula</i>	Possible	Several	

Species		Breeding Status	Estimated number of territories	Conservation Status: Annex I of Birds Directive or Red/Amber List*
Rock pipit	<i>Anthus petrosus</i>	Confirmed	1-2	
Rook	<i>Corvus frugilegus</i>	Possible	Several	
Sand martin	<i>Riparia riparia</i>	Possible	Several (Outside Proposed Development site boundary)	Amber List
Shelduck	<i>Tadorna tadorna</i>	Possible	0	Amber List
Skylark	<i>Alauda arvensis</i>	Possible	1	Amber List
Songthrush	<i>Turdus philomelos</i>	Possible	1	
Starling	<i>Sturnus vulgaris</i>	Possible	2	Amber List
Stock dove	<i>Columba oenas</i>	Probable	1	Red List
Stonechat	<i>Saxicola torquata</i>	Probable	2	
Swallow	<i>Hirundo rustica</i>	Confirmed	2	Amber List
Willow warbler	<i>Phylloscopus trochilus</i>	Possible	1	Amber List
Woodpigeon	<i>Columba palumbus</i>	Possible	Several	
Wren	<i>Troglodytes troglodytes</i>	Possible	Several	

\*Gilbert *et al.* (2021) \*\* Recorded by trail camera during winter months

Black-headed Gull, Grey Heron *Ardea Cinerea*, Little Egret, Mallard, Merlin, Shelduck and Sand Martin *Riparia riparia* are likely to be breeding outside the Proposed Development site boundary. A Sand Martin colony was recorded on sedimentary cliffs along shoreline to the north of the Proposed Development site boundary (east of Knockinglas Point). However, all these species could forage or roost within the Proposed Development site.

### 3. Results of Breeding Bird Surveys 2023

Dates, times and weather conditions for the surveys are included in **Table 3**. All species seen or heard were recorded, including those in flight over the site (**Table 4**). Maps of the survey location are included in **Appendix 1**.

**Table 3. Dates and weather of 2023 breeding bird surveys**

Date	Weather	Temperature	Wind	Rain	Cloud	Visibility
27/03/23	Sunny	13°C	7km/h from SSE	0mm	20%	Excellent
20/04/23	Cool	10°C	17km/h E	0mm	15%	Excellent
12/05/23	Mild	15°C	5km/h S	0mm	20%	Good
29/07/23	Sunny	15°C	15km/h W	0mm	20%	Good

A total of six transects were walked within and in the vicinity of the proposed development site (See **Appendix 1** for locations). The survey area consisted primarily of a block of improved and semi-improved grassland, which runs along the southern shore of the Shannon Estuary. The shoreline to the west of this block of land was relatively sheltered and consists of shingle or low earthen cliffs. The farmland within the Proposed Development site was used primarily for grazing in the westerly fields and for production of hay/silage in the larger drier fields to the east. The intensity of agricultural management varied across the survey areas, with less intensively managed grassland at the west of the survey area (outside the proposed development site). With less intensive grazing in these areas over the last number of years, scrub habitat has developed and hedgerows have matured. This has provided higher value habitat for breeding birds. Semi-natural grassland has also developed providing valuable habitat for ground nesting birds. A small area of reed bed and lagoon habitat was located on the western edge of the study area, approximately 400m west of the Proposed Development site boundary.

These transects are described below.

### **Transect 1**

Transect 1 traverses much of the proposed development site and is representative of fields throughout the Shannon Energy Park Landbank. The southern edge of this transect, which is located outside the proposed development site boundary, passes through a derelict farmyard with a complex of farm buildings. During dusk surveys on the 11<sup>th</sup> May 2023, Barn Owl chicks could be heard calling from the chimney on a disused within the farm complex located approximately 145m west of the proposed development site boundary (See **Appendix 1 (Location A)**). Subsequently an adult emerged and flew eastward. This is an old cottage with corrugated iron overlying a sod roof and with an intact chimney which is being used as a breeding site by this species.



**Plate 1 Chimney (middle chimney) used by nesting barn owl.**

This transect traverses managed agricultural grassland which is grazed and/or mown for hay. Habitats here provide excellent nesting and feeding opportunities which is enhanced by the

diversity in sward structure and increased invertebrates provided by cattle grazing. Wide grassy margins along these field provide increased benefit.

Birds recorded along the route include overflying/foraging Swallows and singing Willow Warbler. Meadow Pipits and Skylarks were recorded in fields adjoining the Shannon Estuary. Skylark and Chiffchaff continued to show signs of breeding late into the season (July survey).



**Plate 2. Field along midpoint of Transect 1**



**Plate 3. High value Hedgerow along Transect 1**

## **Transect 2**

This transect follows the western banks of the Ralappane Stream. This area is densely vegetated with overgrown hedgerows and areas of trees/scrub bordering intensively managed cattle grazed pasture. A number of BOCCI species were recorded along this transect i.e. Skylark, Linnet, Willow Warbler, Starling and Meadow Pipit.



**Plate 4. High value hedgerow with field vegetation kept open by cattle grazing along Transect 2**

### **Transect 3**

Transect 3 runs through fields adjoining the coastal headland along Knockfinglas Point. The small fields in this area are less intensively managed than grassland to the east. The hedgerows here, dense and unmanaged provide excellent cover and feeding resources for birds.

A number of BOCCI species were recorded along Transect 3 i.e. Skylark and Snipe.





**Plate 5. Hedgerows within Transect 3**

#### **Transect 4**

This transect traverses the small fields and shingle shores adjoining the Shannon Estuary and passes a lagoon and reedbed adjoining the coast. An abandoned Sand Martin colony is also located along this transect.

A number of Mallard and a single Curlew were recorded around the lagoon. Ringed Plover was recorded along the shingle shore. Birds recorded during the March survey overlapped within wintering surveys along the Shannon Estuary and Light-bellied Brent Goose and Teal were recorded along this transect in March.



**Plate 6. Looking East along Transect 4**



**Plate 7. Abandoned Sand Martin Colony along coast in Transect 4.**

### **Transect 5**

This route runs southwards from the Shannon Estuary towards the L1010 road, passing through several overgrown fields (many of rush pasture) and a disused farmyard. Buildings in the yard provide suitable habitat for nesting swallow and Barn owl, although no signs of nesting birds were recorded.

BOCCI species recorded along this transect include Kestrel, Meadow Pipit and Starling.



**Plate 8. Scots pine of biodiversity value outside derelict house along Transect 5**

## Transect 6

This transect runs east to west in agricultural fields near the L1010 road. A rookery is located here in the trees along the roadside.

**Table 4. Bird species recorded during 2023 breeding bird surveys**

Species		Breeding Status	Estimated number of territories within survey area	Recorded within proposed development site boundary	Conservation Status: Annex I of Birds Directive or Red/Amber List*
<b>Barn Owl</b>	<i>Tyto alba</i>	Confirmed	1	No	Red List
Black-headed Gull	<i>Larus ridibundus</i>	Possible	0	Yes (overflying)	Amber List
Blackbird	<i>Turdus merula</i>	Possible	Several	Yes	
Blackcap	<i>Sylvia atricapilla</i>	Possible	3	Yes	
Blue tit	<i>Cyanistes caeruleus</i>	Possible	3	Yes	
Bullfinch	<i>Pyrrhula pyrrhula</i>	Possible	2	Yes	
Chaffinch	<i>Fringilla coelebs</i>	Possible	5	Yes	
<b>Chiffchaff</b>	<i>Phylloscopus collybita</i>	Possible	3	Yes	
Collared dove	<i>Streptopelia decaocto</i>	Possible	1	Yes	
<b>Curlew</b>	<i>Numenius arquata</i>	Non-breeder	0	No	Red list
Goldfinch	<i>Carduelis carduelis</i>	Possible	1	Yes	
Great Tit	<i>Parus major</i>	Possible	Several	Yes	
Herring Gull	<i>Larus argentatus</i>	Possible	0	Yes (overflying)	Amber List
Hooded crow	<i>Corvus cornix</i>	Possible	1	No	
<b>Kestrel</b>	<i>Falco tinnunculus</i>	Possible	1	Yes	Red List
<b>Light-bellied Brent Goose</b>	<i>Branta bernicla hrota</i>	Non-breeder	0	No	Amber List (Wintering)
Linnet	<i>Carduelis cannabina</i>	Probable	1	No	Amber List
Little egret	<i>Egretta garzetta</i>	Possible	1	No	Annex I
Magpie	<i>Pica pica</i>	Possible	Several	No	
Mallard	<i>Anas platyrhynchos</i>	Confirmed	Several	No	Amber List
Meadow pipit	<i>Anthus pratensis</i>	Possible	Several	Yes	Red List
Mistle thrush	<i>Turdus viscivorus</i>	Possible	3	Yes	
Pied wagtail	<i>Motacilla alba yarrellii</i>	Probable	2	No	
Robin	<i>Erithacus rubecula</i>	Possible	Several	Yes	
Rook	<i>Corvus frugilegus</i>	Possible	Several	Yes	
<b>Sedge Warbler</b>	<i>Acrocephalus schoenobaenus</i>	Possible	1	No	
Shelduck	<i>Tadorna tadorna</i>	Non-breeder	0	No	Amber List
Skylark	<i>Alauda arvensis</i>	Possible	Several	Yes	Amber List
<b>Snipe</b>	<i>Gallinago gallinago</i>	Probable	3	Yes	Red List

Species		Breeding Status	Estimated number of territories within survey area	Recorded within proposed development site boundary	Conservation Status: Annex I of Birds Directive or Red/Amber List*
Songthrush	<i>Turdus philomelos</i>	Possible	1	No	
Starling	<i>Sturnus vulgaris</i>	Possible	2	No	Amber List
Stonechat	<i>Saxicola torquata</i>	Probable	3	Yes	
Swallow	<i>Hirundo rustica</i>	Probable	3	Yes (overflying)	Amber List
<b>Teal</b>	<i>Anas crecca</i>	Non-breeder	0	No	Amber List
Willow warbler	<i>Phylloscopus trochilus</i>	Possible	4	Yes	Amber List
Woodpigeon	<i>Columba palumbus</i>	Possible	Several	Yes	
Wren	<i>Troglodytes troglodytes</i>	Possible	Several	Yes	

Bold text- species not recorded during previous surveys

## 4. Conclusion

Overall, the Proposed Development site is considered of moderate value for breeding birds. While there is some variation between results from the 2019/2020 and 2023 surveys, the species assemblages recorded are broadly similar. The intensity of agricultural management varied across the survey areas (transects), with less intensively managed grassland at the west of the survey area (outside the proposed development site). With less intensive grazing in these areas over the last number of years, scrub habitat has developed and hedgerows have matured. This has provided higher value habitat for breeding birds. Semi-natural grassland has also developed providing valuable habitat for ground nesting birds.

One Annex I species, Little Egret, was recorded during site surveys. It is noted that Little Egret was recorded within the salt marsh habitat which is located outside the Proposed Development site boundary. Little Egret is a Green List species in Ireland with the first breeding record of this species dating to 2007.

The survey area provides breeding habitats for a range of BOCCI species including Barn Owl, Kestrel, Snipe, Meadow Pipit, Skylark and Willow Warbler. Species such as Skylark, Snipe, Linnet and Meadow Pipit are under threat due to intensification of agricultural practices as they rely on less intensively managed agricultural grassland habitat. The mix of less intensively managed agricultural land and wet grassland at the site provides valuable habitat for these species.

Barn Owl is a Red-listed Bird of Conservation Concern in Ireland, due to extensive declines in their breeding population and range (Gilbert *et al.* 2021). Although Barn Owl populations have declined over recent decades, there are indications that Barn Owl populations are recovering in certain parts of their range in Ireland. This may be due to mitigation measures for national road projects to reduce the scale of vehicle collisions, protection of known nest sites and the provision of artificial nest boxes for Barn Owls and in particular the introduction and subsequent range expansion of introduced small mammal species i.e. Bank Vole and Greater White-toothed Shrew (Lusby *et al.* 2020).

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## Appendix 2. British Trust for Ornithology breeding bird survey codes

Breeding status	Confirmed breeder (Br)	Probable breeder (Pr)	Possible breeder (Po)	Non-breeder (N)
Observed behaviours	Distraction-display or injury feigning (DD)	Pair in suitable nesting habitat (P)	Observed in suitable nesting habitat (H)	Flying Over (F)
	Used nest or eggshells found from current season (UN)	Permanent Territory (T)	Singing Male (S)	Migrant (M)
	Recently fledged young or downy young (FL)	Courtship and Display (D)		Summering non-breeder (U)
	Adults entering or leaving nest-site indicating occupied nest (ON)	Visiting probable nest site (N)		
	Adult carrying faecal sac or food for young (FF)	Agitated Behaviour (A)		
	Nest containing eggs (NE)	Brood patch of incubating bird (I)		
	Nest with young seen or heard (NY)	Nest Building or excavating nest-hole (B)		

## Appendix 3. Terrestrial Bird Species Recorded October 2006 to March 2007 (Cork Ecology)

Species	Status	Species	Status
Sparrowhawk	Occasional	Blue Tit	Regular
Pheasant	Regular	Great Tit	Regular
Skylark	Regular	Magpie	Regular
Meadow Pipit	Common	Jackdaw	Occasional
Rock Pipit	Regular	Rook	Regular
Pied Wagtail	Common	Hooded Crow	Common
Wren	Common	Raven	Occasional
Dunnock	Common	Starling	Occasional
Robin	Common	Chaffinch	Common
Stonechat	Common	Greenfinch	Regular
Blackbird	Common	Goldfinch	Regular
Song Thrush	Common	Linnet	Occasional
Redwing	Regular	Redpoll	Occasional
Goldcrest	Regular	Bullfinch	Occasional
Long-tailed Tit	Occasional	Reed Bunting	Common
Coal Tit	Regular		