

Sure Partners Limited

ARKLOW BANK WIND PARK
PHASE 2

**ONSHORE GRID
INFRASTRUCTURE**

VOLUME III

Chapter 12 APPENDICES

Appendix 12.7 Baseline Winter and
Coastal Bird Survey

ARUP

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Renewables

Appendix 12.7

Baseline Winter and Coastal Bird Survey

Baseline Winter and Coastal Bird Survey On Behalf of Arup



Arklow Bank Wind Park Phase 2 Onshore Grid Infrastructure

March 2021

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Project	Baseline Winter and Coastal Bird Survey at Arklow Bank Wind Park Phase 2 Onshore Grid Infrastructure, Co. Wicklow		
Client	Arup		
Project ref	Report no	Client ref	
2069	2069	-	
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Table of Contents

1. Introduction	4
1.1 Background	4
1.2 Survey location	4
1.3 Survey conditions	5
1.4 Conservation Designations	6
1.5 Authors of Report	6
2. Winter bird surveys	7
2.1 Coastal winter bird survey	7
2.1.1 Coastal winter bird survey methodology.....	7
2.1.2 Coastal winter bird survey results.....	9
2.2 Terrestrial winter bird survey	13
2.2.1 Desktop study	13
2.2.2 Terrestrial winter bird survey methodology.....	13
2.2.3 Terrestrial winter bird survey results.....	14
3. Coastal breeding bird survey	16
3.1 Coastal breeding bird survey location	16
3.2 Coastal breeding bird survey methodology	17
3.3 Coastal breeding bird survey results	17
4. Status of birds of conservation concern	18
5. Conclusion	19
References	19
Appendices	22

1. Introduction

1.1 Background

A baseline bird assessment was carried out by DixonBrosnan Environmental Consultants at the request of Arup. This survey will inform the Environmental Assessment Report (EIAR) for the proposed Arklow Bank Wind Park (ABWP) Phase 2 Onshore Grid Infrastructure (the proposed development).

This report describes three bird surveys that were carried out at coastal habitats within and in the vicinity of the planning boundary, which could provide suitable habitat for wading birds, waterfowl and seabirds. It is noted that with the exception of the landfall location, all coastal habitats described here are outside the planning boundary. The surveys were as follows:

- a) Coastal winter bird survey – Survey of coastal habitats in the vicinity of the planning boundary to identify birds using these habitats (November 2019 to March 2020).
- b) Terrestrial winter bird survey - Survey of areas of interest for terrestrial wintering wading birds and waterfowl (November 2020 to February 2021)
- c) Coastal breeding bird survey – Survey of coastal/cliff habitats at and in the vicinity of the landfall location (July 2020)

1.2 Survey location

The coastal winter bird survey area was observed from three vantage points (VP) overlooking the coast between Arklow Harbour and Johnstown North. At the commencement of surveys (November 2019), two sites were being actively considered as possible cable landfall locations for the proposed development and surveys were carried out at both sites. One of these potential landfall locations was located at Arklow town. VP-A was chosen to survey this location (Refer to **Figure 1**). The other potential site was located near Johnstown North approximately 4.5km north of Arklow Harbour. VP-B and VP-C were chosen to survey this site (refer to **Figure 1**). Following an assessment of the overall constraints relating to both sites, it was determined that the proposed (southern) Arklow landfall location would not be utilised. Notwithstanding, survey results for this site have been included below as they provide general information on bird usage within this overall geographical area.

The location which was ultimately chosen as the proposed landfall site is located in the townland of Johnstown North, Co. Wicklow approximately 4.5km northeast of Arklow Harbour. This site is located immediately south of VP-B and approximately 120m north of VP-C. It is noted that the planning boundary at the landfall location (**Figure 1** red line boundary), covers a coastal area of approximately 320m. The surrounding landscape is agricultural with a mixture of pasture and arable land. The coastline in this location is dominated by vegetated cliffs with sections of sand/gravel beach. Generally, within the landfall area the cliffs are not vertical and there are no significant sections of rocky cliff habitat or sea stacks with the potential to provide significant breeding habitat for sea birds. However, it is noted that there are areas of rocky cliff and sea stacks within the survey area.

Tillage and grassland habitats within and in the vicinity of the planning boundary could potentially provide foraging or roosting habitat for terrestrial wading birds and waterfowl.

Following consultation with the National Parks and Wildlife Service (NPWS) a site to the northeast of the landfall location was identified which could provide potential feeding and roosting grounds for terrestrial waders and waterfowl. The location of terrestrial winter bird surveys (TWB) is shown in **Figure 1**.



Figure 1. Bird survey locations and location of planning boundary

1.3 Survey conditions

The weather, dates and times of winter surveys and summer survey are summarised in **Table 1**. Full details on survey conditions as well as the times and tides during coastal winter bird surveys are included in **Appendix 1**.

Table 1. Dates, times and weather conditions during bird surveys

Type	Date	Start Time	Weather
Coastal Winter Bird Survey	05/11/2019	11:40	Overcast, with gentle to fresh breeze, Temperature 10°C. Dry. Sea state smooth to moderate.
Coastal Winter Bird Survey	18/11/2019	12:00	Light cloud. Light air. Temperature 7-9 °C. Dry. Sea state calm
Coastal Winter Bird Survey	16/12/2019	09:30	Sunny with light breeze. Temperature 3-6 °C. Dry. Sea state smooth.
Coastal Winter Bird Survey	25/01/2020	10:25	Cloudy with light to moderate breeze. Temperature 10°C. Dry. Sea state smooth to moderate
Coastal Winter Bird Survey	13/02/2020	11:20	Scattered clouds with light breeze. Temperature 12-14°C. Dry. Sea moderate
Coastal Winter Bird Survey	27/03/2020	11:00	Sunny with light breeze. Temperature 8°C. Sea state slight.
Coastal Breeding Bird Survey	21/07/2020	11:30	Fine, with good visibility, little cloud and no wind
Terrestrial Winter Bird Survey	04/11/2020	08:30	Clear. Dry. Still. Temperature 6°C.
Terrestrial Winter Bird Survey	19/11/2020	08:30	Clear. Dry. Light breeze. Temperature 7°C
Terrestrial Winter Bird Survey	17/12/2020	03:00	Clear. Dry. Light breeze. Temperature 11°C
Terrestrial Winter Bird Survey	22/01/2020	03:10	Clear. Dry. Light cool breeze. Temperature 2°C
Terrestrial Winter Bird Survey	17/02/2020	08:30	Clear. Dry. Light breeze. Temperature 6°C

1.4 Conservation Designations

The survey area 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. The Buckronev-Brittias Dunes and Fen SAC is located approximately 320m northeast of the planning boundary at the landfall.

1.5 Authors of Report

This report was prepared by Carl Dixon MSc. (Ecological Monitoring) and Sorcha Sheehy PhD (Ecology/Ornithology). Surveys were carried out by Carl Dixon MSc (Ecology), Tara Challoner MSc (Ecology), Mark Donnelly BSc (Forestry) and Ian McDermott MSc (Ecological Monitoring).

Carl Dixon MSc (Ecology) is a senior ecologist who has over 20 years' experience in ecological and water quality assessments with particular expertise in freshwater ecology. He also has experience in mammal surveys, invasive species surveys and ecological supervision of large-scale projects. Projects in recent years include the Waste to Energy Facility Ringaskiddy, Shannon LNG Project, supervision of the Fermoy Flood Relief Scheme, Skibbereen Flood Relief Scheme, Upgrade of Mallow WWTP Scheme, Douglas Flood Relief Scheme, Great Island Gas Pipeline etc. He has carried out ecological surveys and prepared AA/NIS reports for a range of projects.

Sorcha Sheehy PhD (ecology/ornithology) is an experienced ecological consultant with over twelve years' experience. She has worked on Screening/NIS's for a range of small and large-scale projects with particular expertise in assessing impacts on birds. Recent projects include bird risk assessments for Dublin and Cork Airports, Waste to Energy Facility Ringaskiddy and Water Storage Schemes for Irish Water.

Tara Challoner MSc (Ecology) is an experienced ecologist and has worked on Screening/NIS's for a range of small and large-scale projects with expertise in surveying habitats and plants in particular, as well as bird and mammal surveys. She has carried out ecological surveys and prepared AA/NIS reports for a range of projects including quarries, industrial developments, pipelines, and landfill sites.

Ian McDermott MSc (Ecology) is an experienced ecologist with particular expertise in surveying for invasive species, mammal and bird surveys. He carries out ongoing water quality surveys for a range of projects including quarries, WWTPs etc. Likewise, he has carried out ecological surveys for a range of projects including industrial developments, pipelines, quarries, agricultural units etc.

Mark Donnelly holds a BSc. Hons in Forestry from Bangor University, Wales, and is a member of the Institute of Chartered Foresters. He worked as an arboricultural consultant and ecologist for the National Trust in Wales for 22 years and was a lecturer in Forest Ecology at Bangor University. In Ireland, he has completed ecological assessments for a range of projects including wind farms, quarries, local authorities, housing developments, roads and pipelines.

2. Winter bird surveys

2.1 Coastal winter bird survey

2.1.1 Coastal winter bird survey methodology

Six surveys were conducted between November 2019 and March 2020. On each visit, three counts were made of the coastal waters between Arklow town (VP-A), Johnstown North (VP-B) and at Johnstown South (VP-C). The survey methodology was based on that used by the British Trust for Ornithology (BTO), Wetland Bird Survey (WeBS) and also that for the Irish Wetland Bird Survey (I-WeBS), as outlined in Gilbert *et al.* (1998). An aerial overview of the vantage point sites is shown in **Figures 1- 3**. At each point, a 180° scan using a 20x telescope and 8x binoculars was made of the inshore waters and all species of wildfowl, waders and gulls were recorded. Bird identification followed Mullarney *et al* (1999). Detailed descriptions of the winter vantage point counts, including tidal conditions are included in **Appendix 1**.

VP-A: This VP is located on a breakwater within Arklow town. The existing pier is located within the survey area. There is a large pond (Arklow Pond) to the north of the VP. This pond, which supports large numbers of birds is not visible from VP-A (it is located north of the running track visible on **Figure 2**). However, birds which use the adjacent amenity grassland in proximity to the pond, as well as birds travelling to the pond from the coast, were visible from the vantage point.

VP-B and VP-C: To ensure sufficient visual coverage of this area, two vantage points were considered necessary (**Figure 3**). Both are located on grassy promontories overlooking large sections of coastline. VP-B is located to the immediate north of the landfall location and VP-C is located approximately 120m south of the landfall location.



Figure 2. Aerial view of Vantage Point A (VP-A)



Figure 3. Aerial View of Vantage Point B (VP-B) and Vantage Point C (VP-C)

2.1.2 Coastal winter bird survey results

Tables 2-7 show counts of wildfowl, waders and gulls along the coastal boundary of the site (Figure 1). The survey locations are shown in Photographs 1-3.



Photograph 1. View from Vantage Point A looking north (VP-A)



Photograph 2. View of cliffs looking south (Vantage Point B (VP-B))



Photograph 3. View of cliffs looking south (Vantage Point C (VP-C))

During both November surveys the majority of birds were recorded at VP-A (64.1% and 94.8%) (**Table 2 and 3**). Bird numbers on the 05/11/20 were low at all vantage points at low tide (**Table 2**). The majority of gulls at VP-A were observed loafing on the water, with Black-headed Gull *Chroicocephalus ridibundus* recorded foraging on amenity grassland adjacent to the Arklow Pond. Common Guillemot *Uria aalge* were seen foraging in open waters near VP-B and VP-C. Oystercatchers *Haematopus ostralegus* at VP-C displayed interchangeable behaviours i.e. loafing and foraging behaviour, and individuals noted in the small cove directly south of VP-C were predominately roosting. Red-throated Diver *Gavia stellate* and Common Guillemot were observed foraging within coastal waters at VP-C. Greylag Geese foraging on amenity grassland within adjoining park at VP-A.

Table 2. Vantage point counts 05/11/2019

Species		VP-A (Tide: Low (S))	VP-B (Tide: Low (F))	VP-C (Tide: Low (F))
Common Gull	<i>Larus canus</i>	1		
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	15		
Great Black-backed Gull	<i>Larus marinus</i>			1
Mediterranean Gull	<i>Ichthyaeetus melanocephalus</i>	1		
Herring Gull	<i>Larus argentatus</i>	2		
Red-throated Diver	<i>Gavia stellate</i>			1
Cormorant	<i>Phalacrocorax carbo</i>	1		1
Shag	<i>Phalacrocorax aristotelis</i>			
Common Guillemot	<i>Uria aalge</i>		2	1
Oystercatcher	<i>Haematopus ostralegus</i>		2	6
Greylag Geese	<i>Anser anser</i>	5		
Total number of birds		25	4	10
Percentage of birds in each area		64.1%	10.3%	25.6%

E=Ebb, F=Flood, S=Slack Water

On the 18/11/2020 a large flock of Common Gull *Larus canus* (577) and Black-headed Gull (64) were observed largely loafing and to a lesser extent foraging within a plume of water flowing from the mouth of the Avoca River at high tide (**Table 3**). Cormorant *Phalacrocorax carbo* and Shag *Phalacrocorax aristotelis* were seen foraging within the coastal waters at VP-B and VP-C. During both November surveys, the sea conditions were occasionally rough. The coastal defence system which runs along the shoreline as well as the adjoining park near VP-A was in constant use by walkers throughout the survey period, suggesting some level of habituation for the birds using the site.

Few birds were recorded at VP-B or VP-C during the November surveys. Small numbers of piscivorous bird species were recorded foraging within coastal waters i.e. Red-throated Diver, Cormorant, Common Guillemot and Shag. Oystercatcher, Shag, Cormorant and Herring Gull *Larus argentatus* were also recorded loafing on sea stacks and beaches.

Table 3. Vantage Point Counts 18/11/2019

Species		VP-A (Tide: High (S))	VP-B (Tide: Low (F))	VP-C (Tide: Low (F))
Common Gull	<i>Larus canus</i>	577		
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	64		
Mediterranean Gull	<i>Ichthyaetus melanocephalus</i>	3		
Herring Gull	<i>Larus argentatus</i>	6	2	5
Red-throated Diver	<i>Gavia stellate</i>			
Cormorant	<i>Phalacrocorax carbo</i>	3	5	3
Shag	<i>Phalacrocorax aristotelis</i>			1
Oystercatcher	<i>Haematopus ostralegus</i>		1	19
Total number of birds		653	8	28
Percentage of birds in each area		94.8%	1.2%	4.1%

E=Ebb, F=Flood, S=Slack Water

Total bird numbers at all three sub-sites were low in December (16/12/2019). The majority of birds were recorded at VP-A, with a total of 11 birds at high tide (**Table 4**). A total of three birds were recorded at VP-B and nine birds at VP-C. Small numbers of gulls were recorded loafing on the water at all three sub-sites. Red-throated diver were recorded foraging on the coastal waters near VP-A and VP-B.

Table 4. Vantage Point Counts 16/12/2019

Species		VP-A (Tide: High (S))	VP-B (Tide: High (F))	VP-C (Tide: Low (F))
Common Gull	<i>Larus canus</i>	2		
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	7		4
Lesser Black-backed Gull	<i>Larus fuscus</i>			1
Herring Gull	<i>Larus argentatus</i>	2	2	
Red-throated Diver	<i>Gavia stellata</i>		1	1
Oystercatcher	<i>Haematopus ostralegus</i>			3
Total number of birds		11	3	9
Percentage of birds in each area		47.8%	13.0%	39.1%

E=Ebb, F=Flood, S=Slack Water

A large number of Black-headed Gulls (98) were recorded at VP-A during the January site survey as well as smaller numbers of Common Gull (3) and Herring Gull (1) (**Table 5**). Large numbers of gulls were also seen overflying the site and many of these were following a fishing trawler as it entered the port at Arklow. Few birds were recorded at VP-B or VP-C with a total of six and five birds respectively. Red-throated diver were recorded foraging in the coastal waters at both sites. Cormorant were recorded loafing on the coastal stack near VP-B and VP-C.

Table 5. Vantage Point Counts 25/01/2020

Species		VP-A (Tide: High (E))	VP-B (Tide: High (E))	VP-C (Tide: Low (E))
Common Gull	<i>Larus canus</i>	3		
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	98		1
Great Black-backed Gull	<i>Larus marinus</i>			
Lesser Black-backed Gull	<i>Larus fuscus</i>		1	1
Herring Gull	<i>Larus argentatus</i>	1	2	
Red-throated Diver	<i>Gavia stellate</i>	2	1	1
Cormorant	<i>Phalacrocorax carbo</i>	1	2	2
Total number of birds		105	6	5
Percentage of birds in each area		90.5%	5.2%	4.3%

E=Ebb, F=Flood, S=Slack Water

The February site survey (13/02/20) with either side of high tide-with moderate bird numbers recorded at all three sub-sites (**Table 6**). At VP-A Greylag Geese *Anser anser*, Little Grebe *Tachybaptus ruficollis* and Black-headed Gull using the pond just outside the survey area. At VP-B a mixed flock of Black-headed gull and occasional Herring Gull were recorded loafing on the water. Large numbers of gulls overflowed the site on route to a recently ploughed tillage field outside the survey area. At VP-C, gulls were recorded loafing in the coastal waters.

Table 6. Vantage Point Counts 13/02/2020

Species		VP-A (Tide: High (F))	VP-B (Tide: High (E))	VP-C (Tide: Low (E))
Common Gull	<i>Larus canus</i>	22	30	12
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	10		3
Lesser Black-backed Gull	<i>Larus fuscus</i>			2
Herring Gull	<i>Larus argentatus</i>	1	1	
Red-throated Diver	<i>Gavia stellate</i>		1	
Common Guillemot	<i>Uria aalge</i>			1
Total number of birds		33	32	18
Percentage of birds in each area		39.8%	38.6%	21.6%

E=Ebb, F=Flood, S=Slack Water

Very low bird numbers were recorded at all sub-sites during the March site survey (27/03/2020). At VP-A Common Gull and Black-headed Gull were recorded loafing on the water and foraging on nearby amenity grassland (**Table 7**). Common Gull and Cormorant were recorded roosting on the sea-stack near VP-B and VP-C.

Table 7. Vantage Point Counts 27/03/2020

Species		VP-A (Tide: High (E))	VP-B (Tide: High (E))	VP-C (Tide: Low (E))
Common Gull	<i>Larus canus</i>	4	2	
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	3		
Lesser Black-backed Gull	<i>Larus fuscus</i>		3	1
Red-throated Diver	<i>Gavia stellate</i>			
Cormorant	<i>Phalacrocorax carbo</i>	1	2	1
Oystercatcher	<i>Haematopus ostralegus</i>			1
Total number of birds		8	7	3
Percentage of birds in each area		44%	39%	17%

E=Ebb, F=Flood, S=Slack Water

2.2 Terrestrial winter bird survey

2.2.1 Desktop study

A desktop study was carried out on lands on and in the vicinity of the planning boundary to determine their value for wintering birds. Wading birds and waterfowl such as Whooper Swan *Cygnus cygnus* and Curlew *Numenius arquata* could potentially forage or roost in this area. These birds are known to use common tillage and grassland habitats, which form a significant proportion of the habitats within the planning boundary.

The Irish Wetland Bird Survey (I-WeBS) monitors two sub-sites in the vicinity of Arklow Town i.e. Arklow Ponds (750m southeast of planning boundary) and the Avoca River at Arklow (50m southwest of planning boundary). The results of I-WEBS monitoring at these sites are summarised in **Appendix 2**. Both sites are used by a range of common duck, geese and gull species. With the exception of Greylag Goose, no nationally or internationally important numbers of birds were recorded at these sites between 2006 and 2016. Greylag Goose was recorded in nationally important numbers at Arklow Ponds in 2008/09 and 2009/2010 (39 and 35 individuals respectively). No Whooper Swans or Curlew were recorded at either of these sites between 2006-2016. The Buckroneys Fen sub-site located approximately 2.5km northwest of the landfall location, has not been monitored by I-WeBS in recent years.

The National Biodiversity Centre (NBDC) was consulted to identify potential Whooper Swan foraging grounds in the vicinity of the planning boundary. There are no NBDC records for Whooper Swan in tetrad T27 (the 10km grid square which the proposed development site is located). They have previously been recorded at Buckroneys Fen sub-site, and regularly used this site in small numbers (max. 7 individuals at most recent count of 2000/2001). Sites are considered internationally important for Whooper Swans if they regularly support 1% or more of the Icelandic breeding population, i.e. 1% or more of 20,900 (Delany & Scott 2006). Sites are considered nationally important for Whooper Swans if they regularly support 1% or more of the Irish wintering population of Whooper Swans, i.e. 1% or more of 12,700 (Crowe 2005). No nationally or internationally important numbers of Whooper Swan have been recorded in the vicinity of the proposed development site.

It is noted that if Whooper Swan feed within the survey area, then it may be sporadic. These birds often use common tillage and grassland habitats and usage will depend on sward height, season and stage of crop growth. Curlew are known to forage in the vicinity on the planning boundary but there are no records of breeding within T27 since the early 1990s. (1988-1991 Refer to Birdwatch Ireland 1993). It is noted that breeding bird surveys carried out along the planning boundary from during the bird breeding seasons of 2019 and 2020 did not record any signs of breeding Curlew.

2.2.2 Terrestrial winter bird survey methodology

Following consultation with the National Parks and Wildlife Service (NPWS) a site to the northeast of the landfall location was identified which could provide potential feeding and roosting grounds for terrestrial waders and waterfowl (**Figure 1** TWB survey). This site, located near Ennereilly Beach, is an area of rough grassland which is frequently inundated with water. Between here and the mouth of the Red Cross stream are a number of fields which could potentially provide foraging and roosting habitat for terrestrial wading birds and waterfowl. This area is of particular interest for Whooper Swan and Curlew.

A terrestrial winter bird survey was carried out from a transect of approximately 1.3km, which followed the road between Ennereilly Beach and the Red Cross Stream. Counts were carried out from five locations along this route using the WeBS core count methodology (Gilbert *et al.* 1998). (Refer to **Figure 4** Point A-Point F). Fields to the east and west of the route were surveyed. Surveys were carried out between November 2020 and February 2021 (Refer to **Table 1**).



Figure 4. Location of terrestrial winter bird survey Point A- Point F

2.2.3 Terrestrial winter bird survey results

The terrestrial winter bird survey route covered a range of land uses which could provide suitable habitat for terrestrial foraging or roosting wading birds and waterfowl. This included a range of semi-natural and agricultural grassland as well as arable fields which were flooded on occasion (**Photographs 4-7**). However, no wading birds or waterfowl were recorded on any survey date between November 2020 and February 2021.



Photograph 7. Seasonal flooding of arable field along TWB survey route



Photograph 8. Seasonal flooding on unimproved grassland along TWB survey route



Photograph 9. Wet grassland along TWB survey route



Photograph 10. Common Reed along Red Cross Stream

3. Coastal breeding bird survey

3.1 Coastal breeding bird survey location

Vegetated sea cliffs exhibit a complex pattern of vegetation reflecting the degree of maritime exposure, geology and geomorphology, biogeographical provenance and pattern of human management. Typically, on the most exposed cliffs there is a zonation from crevice and ledge communities of the steepest slopes beside the sea (*Crithmo-Armerietalia*, Géhu 1964 (from EC 2013)) through closed maritime grasslands on upper cliff slopes, cliff tops and cliff ledges where there is a deeper accumulation of soils (*Silenion maritimae* Malloch 1973 (from EC 2013)).

Further inland and on more sheltered cliffs, these grade into a complex assemblage of maritime and para-maritime types of heath, calcareous grassland, acid grassland, therophyte, tall herb scrub and wind-pruned woodland vegetation, each enriched by floristic elements

characteristic of coastal habitats. On soft coasts with much active movement, complex assemblages of maritime and non-maritime vegetation occur.

The soft cliffs at this location have a vegetated grassland cover for a distance of approximately 20m inland until the vegetation meets agricultural land. This habitat is an important habitat in its own right and presents EU Annex I habitat- *Vegetated sea cliffs of the Atlantic and Baltic Coasts (1230)*. The species recorded show a close affinity to a vegetative association described by BEC consultants as Group D. *Armeria maritima - Plantago maritima* maritime grassland (Barron *et al.* 2011).

Also present within the wider area are more severe rock cliffs, small rocky reefs and a sea stack which are potentially of more value for breeding birds. However, the cliffs are relatively low and ledges and crevices are largely absent and therefore these habitats do not provide high value nesting sites for sea birds.

3.2 Coastal breeding bird survey methodology

Although winter bird counts had determined that the potential for breeding bird colonies within the landfall area was low, a separate assessment was carried out from the shore to look at suitable habitat or signs of breeding such as nests, staining etc. This was done through a visual assessment of cliffs within 300m northeast and southwest of VP-B and VP-C. This area included the landfall location and all coastal lands within the planning boundary. This afforded reasonably good views of the relatively low and vegetated cliffs. Cliffs were observed using a 20x telescope and 8x binoculars. The survey methodology followed Walsh *et al.* (1995) and Gilbert *et al.* (1998).

It is noted that no suitable nesting habitat was identified in the vicinity of VP-A (Refer to **Photograph 1**) and therefore this area was not included in the assessment.

3.3 Coastal breeding bird survey results

This survey confirmed that there is no suitable sea bird breeding habitat at or in close proximity to the proposed landfall site. Given the limited height of the cliffs, which are largely vegetated and lack crevices and ledges the potential for breeding seabirds is minimal. A small sea stack was used by cormorant close to VP-C. However, it is considered of low value as a potential site for seabirds breeding. No evidence of breeding bird activity was recorded during the survey. A single Cormorant was observed and two Herring Gulls flew south past the cliffs. No other bird activity was observed along the coastline. Refer to **photographs 2, 3 and 11** for sea cliff view.



Photograph 11. View of cliffs

4. Status of birds of conservation concern

BirdWatch Ireland (BWI) have compiled a list identifying bird species of high, medium and low conservation priority in Ireland, based on several criteria (Colhoun & Cummins 2013). There are 37 species currently included on the Red List, which signifies species of high conservation concern (Colhoun & Cummins 2013). Rare and vulnerable bird species are also listed on Annex I of the E.U. Birds Directive (2009/147/EC).

Two red-listed species, Black-headed Gull and Herring Gull were recorded during the site surveys. Several small flocks of Black-headed Gull were recorded near VP-A. The internationally important threshold for this species has been set at 20,000 birds (Crowe 2005) and all flocks recorded at the proposed development site were significantly below this threshold (peak=98 T VP-A 25/01/20). Black-headed Gull are red-listed as there has been a greater than 70% decline in the Irish breeding population in the last 25 years (Colhoun & Cummins 2013).

Herring Gull were occasionally recorded in small numbers at VP-A, VP-B and VP-C. The internationally important threshold for this species has been set at 10,200 birds (Crowe 2005). All sightings of Herring Gull were significantly below this threshold, with peak numbers of 6 recorded at VP-A on the 18th of November 2019. Herring Gull are red-listed as there has been a greater than 90% decline in the Irish breeding population in the last 25 years (Colhoun & Cummins 2013).

One species, Red-throated Diver, recorded during the winter surveys is listed on Annex I of the EU Birds Directive (2009/147/EC). Red-throated Diver were regularly recorded in low numbers on the coastal waters off VP-B and VP-C. The numbers recorded did not exceed the nationally important threshold of 20 birds set for both this species (Crowe 2005).

A total of ten species of wildfowl, waders and gulls recorded during the winter surveys are on the BWI Amber list (**Table 8**). Amber-listed species are those which have undergone less severe declines, or are rare breeding species, or have a localised distribution or an unfavourable European conservation status (Colhoun & Cummins 2013).

Table 8. Amber-listed species recorded during winter surveys (after Colhoun & Cummins 2013)

Species	Moderate decline in Irish Breeding Population or range	Rare breeding species	> 50% of breeding/wintering population found in fewer than 10 sites	Unfavourable conservation status in Europe
Red-throated Diver		X		X
Cormorant	X		X (breeding)	
Common Gull	X			X
Common Guillemot			X (breeding)	
Great Black-backed Gull	X			
Lesser Black-backed Gull	X		X (breeding)	
Mediterranean Gull		X		
Shag			X (breeding)	
Oystercatcher			X (wintering)	
Greylag Goose			X (wintering)	

5. Conclusion

Overall, the proposed landfall site is not considered of high value for sea birds and lacks the large areas of mudflat habitat which provide high quality feeding habitat for wading birds in winter. Bird usage near the landfall location is dominated by gulls and small numbers of piscivorous bird species such as Common Guillemot, Red-throated Diver and Cormorant. Red-throated Diver is listed on Annex I of the Birds Directive and two Red Listed gull species namely Black-headed Gull and Herring Gull were recorded during the site surveys.

Bird usage on the coastal waters near Arklow town is dominated by gull species. Greylag Goose was recorded here on one occasion during November (05/11/2019) foraging on grassland adjoining VP-A. With the exception of Cormorant, no other bird species were recorded during surveys at the Arklow town site (VP-A).

No wading birds or waterfowl were recorded during the terrestrial winter bird surveys, although the habitats along the survey route could provide suitable habitat for these species. Breeding bird surveys carried out in 2019 and 2020, recorded common bird species and no breeding wader species were recorded in either survey (RPS 2019; DixonBrosnan 2021).

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Appendices

Appendix 1. Vantage point survey details

Arklow Winter Bird Survey – Fields Notes November 2019			Weather	VP-A	VP-B	VP-C	Weather	VP-A	VP-B	VP-C
			Wind (Beaufort)	Fresh Breeze	Light Breeze	Gentle Breeze	Cloud	Overcast	Overcast	Overcast
			Sea (Douglas)	Moderate	Smooth	Smooth	Temperature	10°C	10°C	10°C
Date: 05/11/2019	Tide: Low 11.39 (0.45m)		Rain	Dry	Dry	Dry	Visibility	Ok	Ok	Ok
Vantage Points	Start time	Bird Behaviour	Notes							
VP-A	11:40	Some foraging by Gull species as they traverse the site. Majority of Gulls noted loafing on water top. Small number of Black-headed Gull noted foraging within amenity grassland within adjoining park. Greylag Geese foraging on amenity grassland within adjoining park. Cormorant foraging within coastal waters.	Large swell on occasions with sea spray over rock armour. Coastal defence system i.e. bund and rock armour used as public walkway. Experiences a constant level of usage. Park adjoins survey area. Constant use by members of the general public. Large number of Gulls and some habituation to disturbance from general public. Otter (<i>Lutra lutra</i>) spraint noted next to VP location.							
VP-B	14:45	Waders displaying a mix of interchangeable behaviours i.e. loafing and foraging behaviour. Common Guillemot foraging. Presumably same bird that was recorded in VP-C.	Tide in flood during survey. Member of public walking on Ennereilly Beach prior to survey commencement. Followed by two people and a dog shortly after survey commencement. Remained for survey duration.							
VP-C	13:20	Oystercatchers displaying a mix of interchangeable behaviours i.e. loafing and foraging behaviour. Individuals noted in small cove directly south of VP were predominately roosting. Red-throated Diver and Common Guillemot foraging within coastal waters.	Tide in flood during survey. Single Grey Seal (<i>Halichoerus grypus</i>) noted commuting through survey area.							

		Cormorant and Great Black-backed Gull loafing on coastal stack in front of VP. Herring Gull loafing on water.	
Note	Vantage points B & C split into 45-minute survey durations. VP-A survey duration is 90 minutes. Birds re-locating within a survey site were not counted twice, however there may be some overlap been both VP-B & VP-C survey sites due to their close proximity.		

Arklow Winter Bird Survey – Fields Notes November 2019			Weather	VP-A	VP-B	VP-C	Weather	VP-A	VP-B	VP-C	
			Wind (Beaufort)	Light Air	Light Air	Light Air	Cloud	Lightly Cloudy	Lightly Cloudy	Lightly Cloudy	
			Sea (Douglas)	Calm (Glassy)	Calm (Glassy)	Calm (Glassy)	Temperature	9°C	7°C	8°C	
Date: 18/11/2019		Tide: High 12.47 (1.89m)		Rain	Dry	Dry	Dry	Visibility	Good	Good	Good
Vantage Points	Start time	Bird Behaviour	Notes								
VP-A	13:00	Majority of Gulls noted loafing on water top, concentrated within plume of water flowing from the mouth of the harbour entrance. Some interspersed foraging behaviour noted. Cormorant foraging within coastal waters.	Coastal defence system i.e. bund and rock armour used as public walkway. Experiences a constant level of usage. Park adjoins survey area. Constant use by members of the general public. Large number of Gulls some habituation to disturbance from general public. Otter (<i>Lutra lutra</i>) spraint noted next to VP location. Single Grey Seal (<i>Halichoerus grypus</i>) noted commuting through survey area. 13:25 boat enters harbour, no significant disturbance of birds noted.								
VP-B	11:00	Cormorant foraging within coastal waters. Oystercatcher loafing briefly within small cove before flying south.	Shoreline exposure that of low tide conditions, with tide noted to be in flood during survey. Dog walker on Ennereilly Beach for approximately 75% of the survey period.								
VP-C	12:00	Cormorant and Shag loafing on coastal stack in front of VP. Single Cormorant foraging within coastal waters. Waders displaying a mix of interchangeable behaviours i.e. loafing and foraging behaviour.	High tide conditions, with tide in flood during survey.								
Note	Vantage points B & C split into 45-minute survey durations. VP-A survey duration is 90 minutes. Birds re-locating within a survey site were not counted twice, however there may be some overlap been both VP-B & VP-C survey sites due to their close proximity.										

Arklow Winter Bird Survey – Fields Notes December 2019			Weather	VP-A	VP-B	VP-C	Weather	VP-A	VP-B	VP-C	
			Wind (Beaufort)	Light Breeze	Light Breeze	Light Breeze	Cloud	Sunny	Sunny	Scattered Clouds	
			Sea (Douglas)	Smooth	Smooth	Slight	Temperature	6°C	4°C	3°C	
Date: 16/12/2019		Tide: High 11.26 (1.43m)		Rain	Dry	Dry	Dry	Visibility	Good	Good	Good
Vantage Points	Start time	Bird Behaviour	Notes								
VP-A	11:20	Majority of Gulls noted loafing on water top, some foraging within adjoining park.	Coastal defence system i.e. bund and rock armour used as public walkway. Experiences a constant level of usage. Adjoining park included in survey area. Constant use by members of the general public. Large number of Gulls some habituation to disturbance from general public. Otter (<i>Lutra lutra</i>) spraint noted next to VP location.								
VP-B	10:25	Red-throated Diver foraging within coastal waters. Herring Gull loafing on stack to south of site.	Low tide conditions, with tide in flood during survey. Swimmer on Ennereilly Beach for approximately 10 minutes of the survey period. Single Grey Seal (<i>Halichoerus grypus</i>) recorded commuting through survey area.								
VP-C	09:30	Cormorant and Shag loafing on coastal stack in front of VP. Single Cormorant foraging within coastal waters. Oystercatcher displaying a mix of interchangeable behaviours i.e. loafing and foraging behaviour on beach to south of VP. Gulls loafing on water top. Red-throated Diver foraging within coastal waters.	Mid tide with tide in flood. Single female Grey Seal (<i>Halichoerus grypus</i>) noted commuting through survey area. Two Harbour porpoise (<i>Phocoena phocoena</i>) noted commuting through site with some foraging behaviour noted.								
Note	Vantage points B & C split into 45 minute survey durations. VP-A survey duration is 90 minutes.										

	Birds re-locating within a survey site were not counted twice, however there may be some overlap been both VP-B & VP-C survey sites due to their close proximity.
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Arklow Winter Bird Survey – Fields Notes January 2020		Weather	VP-A	VP-B	VP-C	Weather	VP-A	VP-B	VP-C		
		Wind (Beaufort)	Moderate	Light Breeze	Light Breeze	Cloud	Cloudy	Cloudy	Cloudy		
		Sea (Douglas)	Moderate	Smooth	Slight	Temperature	10°C	10°C	10°C		
Date: 25/01/2020		Tide: High 08.44 (1.38 m)		Rain	Dry	Dry	Dry	Visibility	Fair	Good	Good
Vantage Points	Start time	Bird Behaviour		Notes							
VP-A	13:25	Gulls attracted to pond in park. Generally observed overflying Trawler followed by large numbers of gulls, which inflates figures.		Coastal defence system i.e. bund and rock armour used as public walkway. Experiences a constant level of usage. Constant use by members of the general public. Large number of Gulls some habituation to disturbance from general public. Pond not visible from vantage point.							
VP-B	10:25	Red-throated Diver foraging within coastal waters. Cormorant roosting on stack.		Most birds overflying. Red-throated Diver feeding offshore.							
VP-C	14:00	Cormorant loafing on coastal stack in front of VP. Small flock off common gull observed on several occasions overflying. Red-throated Diver foraging within coastal waters.		Grey Seal (<i>Halichoerus grypus</i>) noted commuting through survey area. Some breakers on shore, moderately rough conditions.							
Note	Vantage points B & C split into 45 minute survey durations. VP-A survey duration is 90 minutes. Birds re-locating within a survey site were not counted twice, however there may be some overlap been both VP-B & VP-C survey sites due to their close proximity.										

Arklow Winter Bird Survey – Fields Notes February 2020		Weather	VP-A	VP-B	VP-C	Weather	VP-A	VP-B	VP-C		
		Wind (Beaufort)	Light Breeze	Light Breeze	Light Breeze	Cloud	Cloudy	Sunny	Scattered Clouds		
		Sea (Douglas)	Moderate	Moderate	Moderate	Temperature	12°C	14°C	13°C		
Date: 13/02/2020		Tide: High 11.40(1.42m)		Rain	Dry	Dry	Dry	Visibility	Good	Good	Good
Vantage Points	Start time	Bird Behaviour		Notes							
VP-A	11:20	Majority of Gulls noted loafing on water or overflying.		Coastal defence system i.e. bund and rock armour used as public walkway. Experiences a constant level of usage. Adjoining park included in survey area. Constant use by members of the general public. Large number of Gulls some habituation to disturbance from general public. Greylag Geese, Little Grebe and Black Headed Gulls using pond on the edge of survey area.							
VP-B	12:30	Flock of mixed gulls. Red-throated Diver foraging.		Flock of Black headed gull and occasional herring gull on water. Large numbers of gulls flying towards recently ploughed tillage field outside the survey area.							
VP-C	13.41			Flock of Black headed gull and occasional herring gull on water.							
Note	Vantage points B & C split into 45-minute survey durations. VP-A survey duration is 90 minutes. Birds re-locating within a survey site were not counted twice, however there may be some overlap been both VP-B & VP-C survey sites due to their close proximity.										

Arklow Winter Bird Survey – Fields Notes March 2020		Weather	VP-A	VP-B	VP-C	Weather	VP-A	VP-B	VP-C
		Wind (Beaufort)	Light Breeze	Light Breeze	Light Breeze	Cloud	Sunny	Sunny	Sunny
		Sea (Douglas)	Slight	Slight	Slight	Temperature	8°C	8°C	8°C
Date: 27/03/2020	Tide: High 10.14 (1.25m)	Rain	Dry	Dry	Dry	Visibility	Good	Good	Good
Vantage Points	Start time	Bird Behaviour	Notes						
VP-A	1:10	Majority of Gulls noted loafing on water top, some foraging within adjoining park. Also using pier.	Coastal defence system i.e. bund and rock armour used as public walkway. Experiences a constant level of usage. Adjoining park included in survey area. Constant use by members of the general public. Large number of gulls with some habituation to disturbance from general public. Otter (<i>Lutra lutra</i>) spraint noted.						
VP-B	11:00	Two cormorant roosting on sea stack Common gull roosting	Bird activity low.						
VP-C	12:00	Gulls noted but generally overflying Cormorant foraging offshore.	Generally low levels of bird activity. Sparrowhawk overflying.						
Note	Vantage points B & C split into 45-minute survey durations. VP-A survey duration is 90 minutes. Birds re-locating within a survey site were not counted twice, however there may be some overlap between both VP-B & VP-C survey sites due to their close proximity.								

Appendix 2. I-WEBS Site Summaries

I-WeBS count summaries Avoca River (Arklow) 2008/09 to 2017/18

Species	1% national	1% international	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Mean
Mute Swan	90.00	100.00	14	9	11	3				5	3	4	4
Greylag Goose	35.00	980.00		24									0
Feral/hybrid Goose			58	33	29	41				27	17	13	19
Teal	360.00	5000.00				3					2		1
Mallard	280.00	53000.00	53	90	65	52				71	67	60	66
Feral/hybrid Mallard type											2	1	1
Tufted Duck	270.00	8900.00			1								0
Cormorant	110.00	1200.00	3	2	5	6				11	17	8	12
Shag										2			1
Little Egret	20.00	1100.00										1	0
Grey Heron	25.00	5000.00	1	1	2					2	11	3	5
Moorhen			2	3	6	3				1	3	1	2
Common Sandpiper											1		0
Redshank	240.00	2400.00	1										0
Turnstone	95.00	1400.00								12	16	12	13
Black-headed Gull			470	330	680	570				317	349	705	457
Common Gull			82	12	15	155				92	19	64	58
Lesser Black-backed Gull			6	8	3	12				10	12	20	14
Herring Gull			232	187	145	139				133	286	433	284
Iceland Gull						1							0
Great Black-backed Gull			2	3	1	6				10	12	11	11

IWEBS Site Summaries Arklow Ponds 2008/09 to 2017/18

Species	1% national	1% international	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Mean
Mute Swan	90.00	100.00	17	13	12	12				8	9	8	8
Greylag Goose	35.00	980.00	39	35		16					1		0
Feral/hybrid Goose			31	13	12	16				31	33	30	31
Wigeon	560.00	14000.00								1	1	1	1
Gadwall	20.00	1200.00		1									0
Teal	360.00	5000.00			20	23					3		1
Mallard	280.00	53000.00	138	120	140	142				74	82	70	75
Feral/hybrid Mallard type										1	5		2
Shoveler	20.00	650.00	3			2							0
Goldeneye	40.00	11400.00			1								0
Little Grebe	20.00	4700.00	3	3	5	4				10	10	5	8
Little Egret	20.00	1100.00									1		0
Grey Heron	25.00	5000.00	2	1	2	1					1		0
Water Rail			1	1						2	4*		1
Moorhen			27	37	34	31				21	11	19	17
Coot	190.00	15500.00	5	4	3	13				5	1	4	3
Snipe				1						3	1	8	4
Whimbrel					2								0
Black-headed Gull			222	251	356	280				98	195	143	145
Common Gull			18	14	14	6				4	1	2	2
Lesser Black-backed Gull				2	2	1						1	0

Species	1% national	1% international	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Mean
Herring Gull			7	25	35	5				11	31	11	18
Iceland Gull					1							1	0
Great Black-backed Gull				2						1			0
Kingfisher										1			0