

# Collision rate estimates of seabirds at Neart na Gaoithe

Collision rate modelling  
using the SOSS Band model



M.P. Collier  
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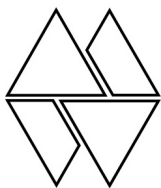
**Bureau Waardenburg bv**  
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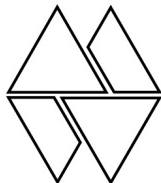


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## Preface

In 2009-2012 ship-based surveys following the European Seabirds at Sea (ESAS) methodology have been carried out as part of the baseline study for wind farm initiatives at Neart na Gaoithe off the east coast of Fife, Scotland.

Mainstream has commissioned Bureau Waardenburg to carry out collision rate modelling based on the densities of flying birds recorded during the surveys. This report presents the collision rate estimates for birds at Neart na Gaoithe.

The project team of Bureau Waardenburg consisted of and was responsible for:

M.P. Collier            collision rate modelling, report

M. Japink             database management

M.J.M. Poot          project management, collision rate, modelling, report

Cork Ecology, Colin Barton and Claire Pollock, have been particularly helpful with providing their databases and answering questions. This project was commissioned by Mainstream Renewable Energy and coordinated by Zoe Crutchfield, who also ensured that data for the collision rate modelling were available.

Theo Boudewijn provided comments on previous versions of this report. The authors thank everyone who has contributed during discussions over these analyses for their contribution, particularly Colin Barton and Claire Pollock (both Cork Ecology), Digger Jackson (Natural Research), Phil Bloor (Pelagica) and Phil Whitfield (Natural Research).



# Table of contents

Preface .....	3
1 Introduction.....	7
2 Methods.....	9
2.1 Base Material.....	9
2.2 Collision rate modelling.....	13
3 Collision rate modelling using the basic model - option 1 .....	15
3.1 Introduction .....	15
3.2 Results Year 1 .....	17
3.3 Results Year 2 .....	23
3.4 Results Year 3 .....	29
3.5 Results Years 1, 2 and 3 combined .....	35
3.6 Results additional species .....	41
4 Discussion.....	53
4.1 Collision rate modelling using the basic model - option 1.....	53
5 Literature.....	55
Appendix 1 .....	57





# 1 Introduction

In 2009-2012 ship-based surveys following the European Seabirds at Sea (ESAS) methodology have been carried out as part of the baseline study for wind farm initiatives at Neart na Gaoithe (NnG) off the east coast of Fife, Scotland.

Mainstream has commissioned Bureau Waardenburg to carry out collision rate modelling based on the densities of flying birds recorded during the surveys.

In this report, the analysis and results collision rate estimates for birds at Neart na Gaoithe are presented as determined following the SOSS Band model (see §2.2). This report should be regarded as background document to support the understanding of collision rate estimates for Neart na Gaoithe. The main goal of this report is to provide a clear overview of the analyses carried out and present the results in a comprehensive and accessible form. The data presented within this report are delivered as electronic data files, enabling the data to be easily processed for presentation in final documents.



## 2 Methods

### 2.1 Base Material

In this section we describe the procedures carried out during the handling of ESAS data collected at Neart na Gaoithe. The data analysed in this report were collected according to ESAS ship-based survey methodology (Tasker *et al.* 1984; Camphuysen *et al.* 2004). Monthly surveys at Neart na Gaoithe were carried out from November 2009 until October 2012 (with the exception of November 2010 and December 2011). Survey conditions and observations *etc.* are given in Mainstream Renewable Power (2012).

#### ***Preparation of database (ESAS model)***

The physical data model was built on a PostgreSQL database server and was based on the 'SAST Coding Manual v 6.pdf' along with some additions (see figure 2.1). All coding lists were imported in tables and survey data from Neart na Gaoithe were imported to the database. Geometric fields for spatial querying of the data are non-projected in WGS84.

During the uploading of the data some fundamental checks were carried out using a Microsoft (MS) Access database as a front-end to the PostgreSQL database. Therefore, all PostgreSQL tables are ODBC-linked in MS Access and the data table-structures for trips, environment, bird and base data are hard copied.

#### ***Processing data (trip, environment, bird, base) ready for analysis***

The different steps of how the base data were processed are described below. The different steps indicated are presented schematically in figure 2.2.

#### ***Formatting paradox export files***

Paradox exports are required to be in text format. In this case files were delivered in csv format, therefore, the following steps were undertaken:

- replacing spaces with underscores in column names in the csv files;
- replacing all ',' with ';' as field delimiter.

#### ***Read into MS Access front-end***

- All formatted files were read in hard copied MS Access native tables prior to adding to PostgreSQL.
- A record count was made to ensure all data were successfully imported.

#### ***Check against coding lists***

- Each field was checked against its coding list to find missing values *etc.*

#### ***Upload in database***

During the import some fields were recalculated.

- Latitude and longitude minutes were changed back to '.' separated values.

### *Corrections*

The only corrections made to the data were in the field 'distance'.

- a new field 'flight\_altitude' was populated with the numeric information from the 'distance' field.
- all 'distance' fields with numeric data were replaced with 'F' to indicate flying birds.

### *Additions*

The ESAS database structure has been extended with some extra fields and an extra table.

- a geometry field in the base table was updated with point locations based on the coordinates in latitude and longitude.
- an 'in\_out' field in the base table was updated with a 'study area' number, see figure 2.3 for a visible representation.
- an extra survey table was populated with lines calculated from base points with the following criteria 'count\_type' =1 AND key fields from the Neart na Gaoithe survey data AND 'in\_out' is not null'.
- line lengths were calculated in UTM 30N projection.
- *N.B.* For Distance analyses, line lengths were halved as Distance software assumes that observations along transects are made on two sides.

### *SELECT and analyse*

Following loading and checking the data were ready for use in analysis.

- selection of major sea state, wind direction and observer for each survey for each transect.
- selection of flying or 'distance birds'.
- export of required data for Distance and density calculations.

Data used in the collision rate modelling were based on:

- flying birds in transect (in the 'snapshot' count);
- birds not associated with the observer base or similar vessels;
- only birds within the area of interest, *i.e.* Neart na Gaoithe development area.

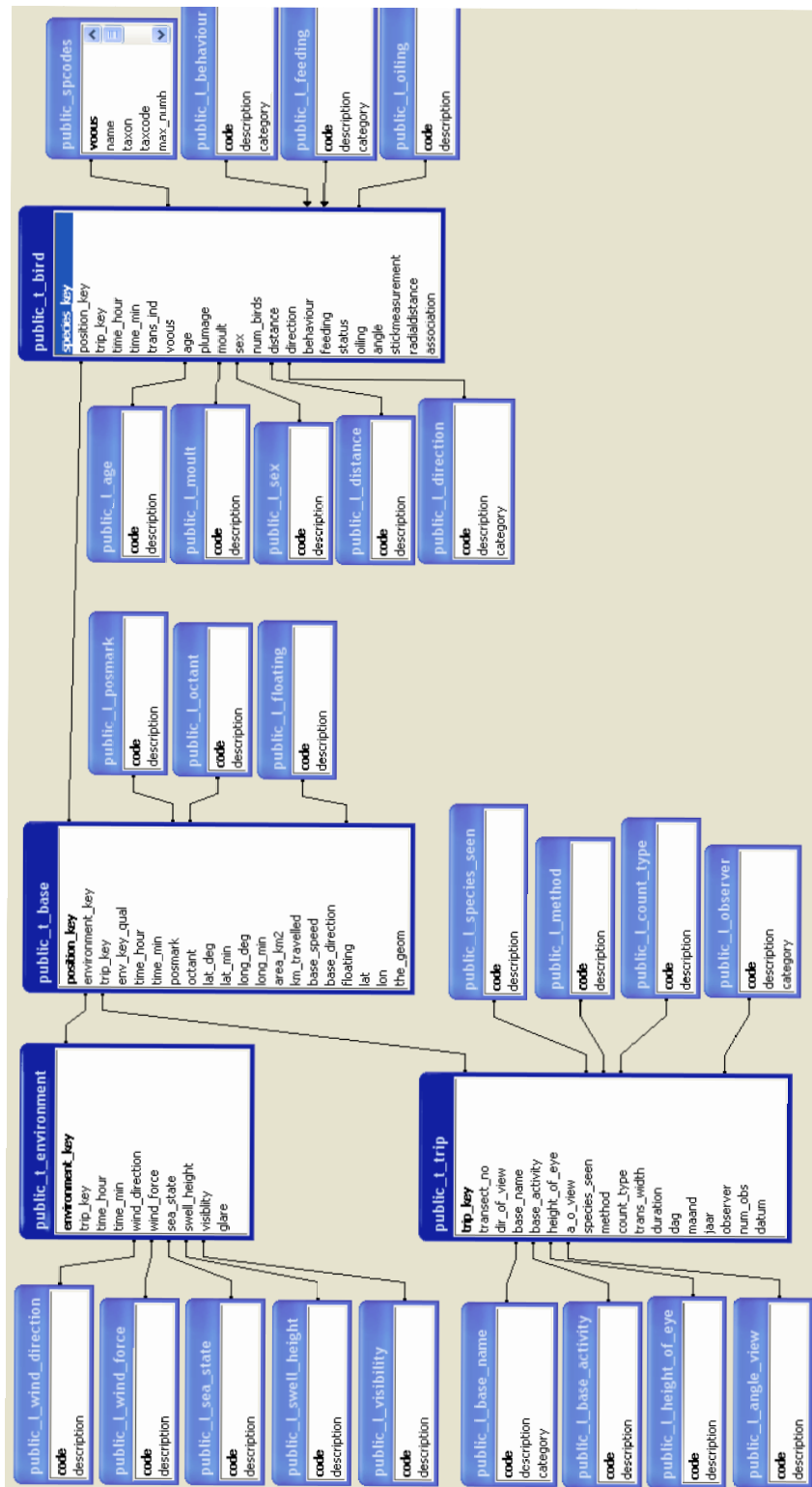


Figure 2.1 Overview of the database according the ESAS data model.

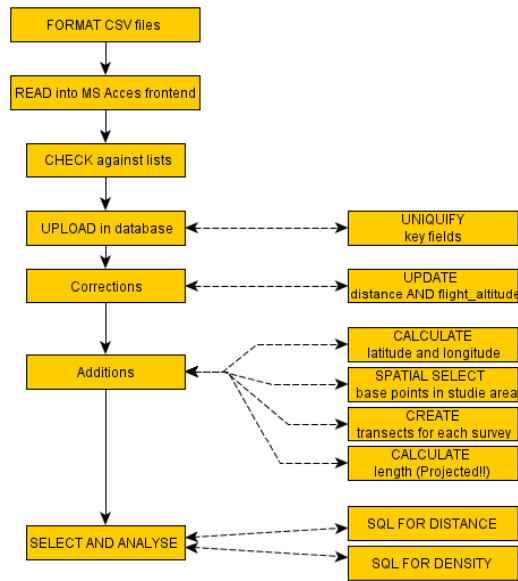


Figure 2.2 Overview of the processing steps to make the data ready for analysis.

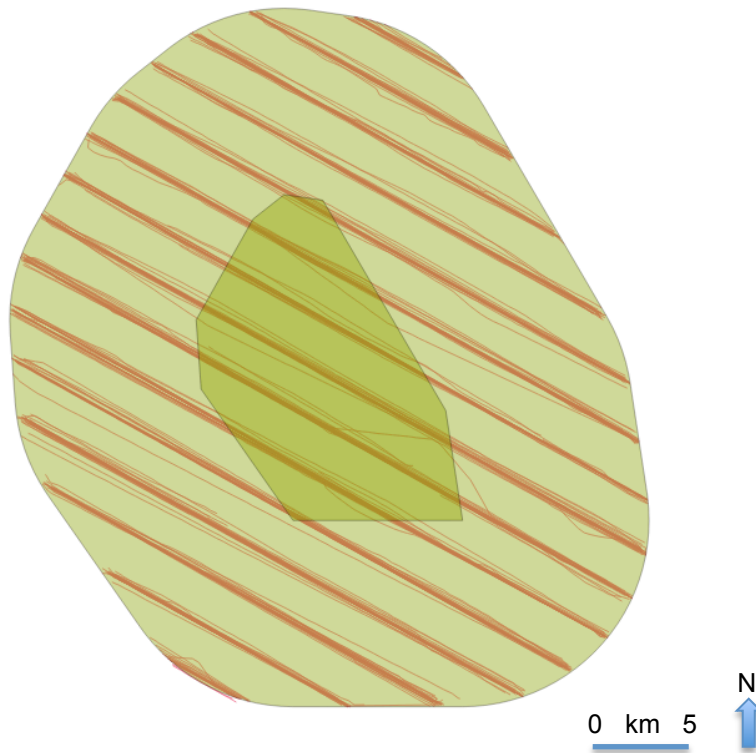


Figure 2.3 For the Collision rate modelling, densities of flying birds from within the development area (mid-green) were used and the flight heights calculated from birds also in the Neart na Gaoithe area (light green). Observations outside the delimited study area of Neart na Gaoithe were excluded. The transect (red lines) lengths were amended accordingly.

## 2.2 Collision rate modelling

For various bird species, the level of collision-related mortality was estimated by collision rate modelling. The model used was that published by the Crown Estate Strategic Ornithological Support Services group in August 2012 (Band 2012; available from <http://www.bto.org/science/wetland-and-marine/soss/projects>). This model, based on the SNH/Band collision risk model (Band *et al.* 2007; available from <http://www.snh.gov.uk/planning-and-development/renewable-energy/onshore-wind/assessing-bird-collision-risks/>), has been extended to allow the direct input of density data and to allow the comparison of various avoidance rates on the estimated collision rates.

Based on the physical characteristics of both the turbine and species of bird, a turbine/species-specific probability of collision for a single bird crossing the rotor-swept area can be calculated. This probability is then applied to the number of birds crossing the rotor-swept area of an entire wind farm, which is estimated based on the density of flying birds and the size and number of turbines. Finally, an avoidance factor is applied that accounts for birds avoiding turbines, were they present.

Within this model, Option 1 (Basic model) was used to estimate the Overall Collision Risk.

The model also allows a correction factor for large arrays, which assumes a decreasing density of birds across the wind farm that is relative to numbers of birds that have been assumed to collide. For the current wind farm scenarios, this correction factor has the effect of reducing the estimates of the numbers of collisions by a fraction of a percent, and has therefore not been applied.

The collision risk model makes a number of assumptions and is further sensitive to changes in avoidance rates (Chamberlain *et al.* 2006), which urge caution when interpreting the results. Here, four different avoidance rates have been applied: 95%, 98%, 99% and 99.5%.

Data for the various wind farm variants and turbine-specific data were provided by Mainstream and are given in section 6.1. Data for species-specific parameters, such as length, wingspan and flight speed, were obtained from literature. These are also given in section 6.1. Not all data were available for all wind farm scenarios or for all species modelled. Missing data were estimated based on similar turbines or on similar species.

The proportions of each species flying at rotor height were calculated from data recorded during the ship-based surveys (see section 2.1). The heights of flying birds were recorded in 5m categories. For each turbine variant, the proportions of birds recorded in the height categories of the rotor tip at its lowest point to the rotor tip at its highest point were taken as the proportion flying at rotor height. For the turbines with

a minimum rotor height of 27.5m above mean sea level (MSL), proportions of birds at rotor heights were taken as being in the 30m category (27.5 - 32.5m) and above, thus from 27.5 m.

Only flying birds recorded as 'in transect', thus within the snapshot count, were included when calculating species-specific densities (see sections 2.1 and 2.2). Monthly densities, and therefore monthly collision rates, were calculated, which were summed to provide annual collision rates. In cases of missing data, annual collision rates were calculated based on mean of monthly data extrapolated across the entire year.

An additional 22 species were assessed based on a fixed number of passages per year (flux), from which aerial densities were calculated. This flux was based on 1,000 birds passing through the development area in a north-south/south-north direction two times a year. The width of the development area was taken as 8.22km. Aerial density was calculated following Annex 2 of the guidance published by the Crown Estate Strategic Ornithological Support Services group. The assumption was made that 1,000 individuals of each species assessed passed through the development area during April and then again in September. This would yield the same results if these birds passed during any time frame within the year. Flight heights for these additional species were based on published data (section 3.1). The results of the collision rate modelling for the additional species are given in section 6.5.



### 3 Collision rate modelling using the basic model - option 1

#### 3.1 Introduction

Below the results of the collision rate modelling are presented for years 1 (November 2009 to October 2010), 2 (November 2010 to October 2011) and 3 (November 2011 to October 2012) and on the basis of all three years worth of data (November 2009 to October 2012). A total of four wind farm variants were modelled. The parameters of each variant that were used in the collision rate modelling are given in table 3.1.1. For each of the wind farm variants a monthly operating time was provided by Mainstream (table 3.1.2).

**Table 3.1.1** *Parameters used in collision rate modelling, for four wind farm variants at Neart na Gaoithe.*

Variant	Number of blades	Rotation speed (rpm)	Rotor radius (m)	Minimum rotor height	Maximum blade width (m)	Pitch (°)	Number of turbines	Latitude (DD)
90 x 5MW	3	10.20	67.5	27.5 <sup>2</sup>	4.8	15 <sup>1</sup>	90	56.27
73 x 6.15MW	3	9.90	63	27.5 <sup>2</sup>	4.5	15 <sup>1</sup>	73	56.27
73 x 6.15MW	3	8.25	76	27.5 <sup>2</sup>	4.5	15 <sup>1</sup>	73	56.27
75 x 6MW	3	8.00	77	27.5 <sup>2</sup>	5.0	15 <sup>1</sup>	75	56.27

<sup>1</sup> Data based on nominal value.

<sup>2</sup> For mean sea level (MSL).

**Table 3.1.2** *Monthly operating times as used in collision rate modelling, for four wind farm variants at Neart na Gaoithe. Figures were provided by Mainstream.*

Variant	Proportion of time in operation											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
90 x 5MW	0.88	0.85	0.85	0.83	0.83	0.82	0.81	0.79	0.83	0.85	0.87	0.84
73 x 6.15MW	0.88	0.85	0.85	0.83	0.83	0.82	0.81	0.79	0.83	0.85	0.87	0.84
73 x 6.15MW	0.88	0.85	0.85	0.83	0.83	0.82	0.81	0.79	0.83	0.85	0.87	0.84
75 x 6MW	0.89	0.86	0.87	0.85	0.86	0.85	0.84	0.82	0.86	0.87	0.89	0.86

For each of the four wind farm variants, collision rate modelling was carried out for a total of 34 species or species-groups. For 12 species this was based on recorded densities and for the 22 additional species on a predefined flux of 1,000 bird passages occurring twice a year. The parameters of each species that were used in the collision rate modelling are given in table 3.1.3.

Results of the collision rate modelling are given in § 3.2 to 3.6. Firstly, data based on the densities of birds recorded during the each study year are presented, followed by those based on mean densities from all three years. Finally the results for the additional species are presented, which are based on densities calculated from fluxes of 1,000 in the month of April and 1,000 in September (see 2.2). Note that results for

Pink-footed Goose and Great Skua in § 3.2 to 3.5 are based on recorded densities and use the recorded proportions at rotor height.

*Table 3.1.3 Parameters used in collision rate modelling for 34 bird species/groups.*

Species	Length <sup>1</sup> (m)	Wingspan <sup>1</sup> (m)	Flight speed (m/s)	Flapping (0) or gliding (1)	Nocturnal activity factor <sup>5</sup> (1-5)	Proportion at rotor height <sup>6</sup>
Gannet	0.935	1.725	14.9 <sup>3</sup>	0	2	0.047
Kittiwake	0.39	1.075	13.1 <sup>2</sup>	0	3	0.042
Guillemot	0.395	0.67	19.1 <sup>4</sup>	0	2	0.001
Razorbill	0.38	0.655	16.0 <sup>4</sup>	0	1	0.000
Puffin	0.275	0.55	17.6 <sup>3</sup>	0	1	0.000
Herring Gull	0.61	1.44	12.8 <sup>2</sup>	0	3	0.321
Pink-footed Goose	0.76	1.61	17.3 <sup>2,10</sup>	0	5	0.991
Great Skua	0.58	1.40	15.6 <sup>2</sup>	0	1	0.000
Little Gull	0.28	0.69	11.5 <sup>2</sup>	0	2	0.526
Lesser Black-backed Gull	0.56	1.34	13.1 <sup>2</sup>	0	3	0.079
Great Black-backed Gull	0.74	1.66	13.7 <sup>2</sup>	0	3	0.181
Large gulls combined	0.64 <sup>7</sup>	1.48 <sup>7</sup>	13.2 <sup>7</sup>	0	3	0.253
<i>additional species</i>						
Red-throated Diver	0.74	1.1	18.6	0	1	0.02 <sup>9</sup>
Black-throated Diver	0.85	1.22	19.3	0	1	0.01 <sup>9</sup>
Bean Goose	0.88	1.74	17.3	0	5	0.75 <sup>11</sup>
Pink-footed goose	0.76	1.61	17.3 <sup>2</sup>	0	5	0.75 <sup>11</sup>
Barnacle Goose	0.70	1.42	17.0	0	5	0.75 <sup>11</sup>
Bar-tailed Godwit	0.41	0.72	18.3	0	5	0.75 <sup>11</sup>
Black-tailed Godwit	0.42	0.74	18.3	0	5	0.75 <sup>11</sup>
Knot	0.26	0.53	20.1	0	5	0.75 <sup>11</sup>
Curlew	0.57	1.06	16.3	0	5	0.75 <sup>11</sup>
Dunlin	0.21	0.36	15.3	0	5	0.75 <sup>11</sup>
Sanderling	0.21	0.45	15.3	0	5	0.75 <sup>11</sup>
Grey Plover	0.29	0.63	17.9	0	5	0.75 <sup>11</sup>
Lapwing	0.31	0.72	12.8	0	5	0.75 <sup>11</sup>
Ringed Plover	0.20	0.41	19.5	0	5	0.75 <sup>11</sup>
Redshank	0.27	0.53	9.6	0	5	0.75 <sup>11</sup>
Turnstone	0.24	0.49	14.9	0	5	0.75 <sup>11</sup>
Oystercatcher	0.44	0.83	13.0	0	1	0.75 <sup>11</sup>
Arctic Skua	0.405	1.13	13.3 <sup>3</sup>	0	1	0.038 <sup>9</sup>
Great Skua	0.58	1.40	15.6 <sup>2</sup>	0	1	0.043 <sup>9</sup>
Common Tern	0.355	0.75	10.55	0	1	0.127 <sup>9</sup>
Arctic Tern	0.36	0.715	10.9	0	1	0.028 <sup>9</sup>
Sandwich Tern	0.43	0.97	11.8 <sup>8</sup>	0	1	0.036 <sup>9</sup>

<sup>1</sup> Taken from Cramp & Perrins (1974-1994) or Snow & Perrins (1997)

<sup>2</sup> Taken from Alerstam et al. (2007).

<sup>3</sup> Taken from Pennycuik (1997).

<sup>4</sup> Taken from Pennycuik (1987).

<sup>5</sup> Taken from Garthe & Hüppop (2004).

<sup>6</sup> Based on observed flight heights from ship-based surveys carried out at Neart na Gaoithe between November 2009 and October 2012.

<sup>7</sup> Taken as the mean values of Herring Gull, Lesser Black-backed Gull and Great Black-backed Gull.

<sup>8</sup> Taken from Wakeling & Hodgson (1992).

<sup>9</sup> Taken from Cook et al. (2012).

<sup>10</sup> Based on Bean Goose.

<sup>11</sup> Taken from Wright et al. (2012).

### 3.2 Results Year 1

Table 3.2.1 Densities of flying birds at Neart na Gaoithe development area between November 2009 and October 2010. Data gathered during ship-based surveys, see § 2.1.

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0.064	0.188	4.079	1.216	1.451	2.208	0.838	1.667	3.415	1.506	0.192	0.000
Kittiwake	0.000	0.000	0.000	0.064	0.396	0.189	0.387	0.064	1.576	1.255	0.192	0.127
Guillemot	0.000	0.313	0.118	1.345	1.055	0.063	0.000	0.000	0.000	0.314	0.128	0.064
Razorbill	0.064	0.000	0.059	0.192	0.264	0.000	0.064	0.000	0.000	0.000	0.064	0.000
Puffin	0.000	0.000	0.000	2.305	0.198	0.379	0.387	1.090	0.000	0.000	0.000	0.000
Herring Gull	0.192	0.063	0.236	0.064	0.000	0.063	0.000	0.000	0.000	0.000	0.192	0.255
Pink-footed Goose	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Great Skua	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Little Gull	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.063	0.000	0.000
Lesser Black-backed Gull	0.000	0.000	0.000	0.064	0.066	0.000	0.064	0.000	0.000	0.000	0.000	0.000
Great Black-backed Gull	0.128	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.066	0.000	0.064	0.191
Large gulls combined	0.320	0.063	0.236	0.128	0.066	0.063	0.064	0.000	0.066	0.000	0.256	0.445

**Table 3.2.2 Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2010. Potential number of transits through the rotor-swept area.**

**Neart na Gaoithe 90 x 5MW**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	TOTAL transits through rotor-swept area per YEAR
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Gannet	0.079	556	1651	44910	14521	19642	30397	11671	21455	38300	15470	1686	0	200260	
Kitwake	0.062	0	0	0	700	4727	2255	4700	743	16637	12807	1779	1169	45518	
Guillemot	0.055	0	56	27	328	292	18	0	0	0	66	23	11	819	
Razorbill	0.056	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0.052	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	0.072	13292	4146	18535	5180	0	5558	0	0	0	0	13155	17291	77157	
Pink-footed Goose	0.070	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0.066	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0.059	0	0	0	0	0	0	0	0	0	5601	0	0	5601	
Lesser Black-backed Gull	0.069	0	0	0	1296	1458	0	1449	0	0	0	0	0	4203	
Great Black-backed Gull	0.075	5341	0	0	0	0	0	0	0	3090	0	2643	7816	18890	
Large gulls combined	0.072	18020	3373	15077	8427	4739	4521	4712	0	4170	0	14267	24614	101920	

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	TOTAL transits through rotor-swept area per YEAR
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Gannet	0.079	421	1250	33999	10993	14870	23012	8835	16242	28995	11711	1276	0	151604	
Kitwake	0.062	0	0	0	530	3579	1707	3558	563	12595	9696	1347	885	24459	
Guillemot	0.055	0	43	20	248	221	13	0	0	0	50	17	8	620	
Razorbill	0.056	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0.052	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	0.071	10062	3139	14032	3921	0	4208	0	0	0	0	9958	13090	58410	
Pink-footed Goose	0.070	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0.067	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0.058	0	0	0	0	0	0	0	0	0	4240	0	0	4240	
Lesser Black-backed Gull	0.069	0	0	0	981	1103	0	1097	0	0	0	0	0	3182	
Great Black-backed Gull	0.075	4043	0	0	0	0	0	0	0	2339	0	2001	5917	14301	
Large gulls combined	0.072	13642	2553	11414	6379	3588	3423	3567	0	3157	0	10801	18633	77157	

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	TOTAL transits through rotor-swept area per YEAR
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Gannet	0.065	508	1508	41014	13262	17938	27760	10658	19594	34978	14128	1540	0	182887	
Kitwake	0.051	0	0	0	640	4317	2059	4292	679	15194	11696	1625	1068	41569	
Guillemot	0.046	0	51	24	299	266	16	0	0	0	60	21	10	748	
Razorbill	0.047	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0.043	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	0.059	12139	3786	16927	4730	0	5076	0	0	0	0	12013	15791	70463	
Pink-footed Goose	0.058	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0.048	0	0	0	0	0	0	0	0	0	5116	0	0	5116	
Lesser Black-backed Gull	0.057	0	0	0	1184	1331	0	1324	0	0	0	0	0	3838	
Great Black-backed Gull	0.062	4878	0	0	0	0	0	0	0	2822	0	2414	7138	17252	
Large gulls combined	0.060	16457	3080	13769	7696	4328	4129	4303	0	3808	0	13030	22478	93079	

**Neart na Gaoithe 75 x 6MW**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	TOTAL transits through rotor-swept area per YEAR
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Gannet	0.068	528	1569	42692	13804	18672	28896	11095	20396	36409	14706	1602	0	190370	
Kitwake	0.054	0	0	0	666	4494	2144	4468	706	15816	12175	1691	1111	43270	
Guillemot	0.049	0	53	25	312	277	17	0	0	0	63	22	10	779	
Razorbill	0.050	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0.047	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	0.062	12635	3941	17620	4924	0	5284	0	0	0	0	12505	16437	73346	
Pink-footed Goose	0.051	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0.058	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0.051	0	0	0	0	0	0	0	0	0	5325	0	0	5325	
Lesser Black-backed Gull	0.060	0	0	0	1232	1386	0	1378	0	0	0	0	0	3995	
Great Black-backed Gull	0.065	5077	0	0	0	0	0	0	0	2937	0	2512	7430	17957	
Large gulls combined	0.062	17130	3206	14333	8011	4505	4298	4479	0	3964	0	13563	23398	96887	

**Table 3.2.3 Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2010. Potential number of collisions assuming an avoidance rate of 95%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.95												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	2	6	150	47	64	99	37	67	126	52	6	0	656
Kittiwake	0	0	0	2	12	6	12	2	43	34	5	3	119
Gullmott	0	0	0	1	1	0	0	0	0	0	0	0	2
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	42	13	57	15	0	16	0	0	0	0	41	52	237
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	14	0	0	14
Lesser Black-backed Gull	0	0	0	4	4	0	4	0	0	0	0	0	12
Great Black-backed Gull	18	0	0	0	0	0	0	0	10	0	9	25	61
Large gulls combined	57	10	46	25	14	13	14	0	13	0	45	75	313

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.95												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	1	4	113	36	49	74	28	51	95	39	4	0	495
Kittiwake	0	0	0	1	9	4	9	1	33	25	4	2	89
Gullmott	0	0	0	1	1	0	0	0	0	0	0	0	1
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	32	9	43	12	0	12	0	0	0	0	31	39	178
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	10	0	0	10
Lesser Black-backed Gull	0	0	0	3	3	0	3	0	0	0	0	0	9
Great Black-backed Gull	13	0	0	0	0	0	0	0	7	0	7	19	46
Large gulls combined	43	8	35	19	11	10	10	0	9	0	34	56	235

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.95												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	1	4	114	36	49	74	28	51	95	39	4	0	496
Kittiwake	0	0	0	1	9	4	9	1	33	26	4	2	89
Gullmott	0	0	0	1	1	0	0	0	0	0	0	0	1
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	32	9	43	12	0	12	0	0	0	0	31	39	178
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	10	0	0	10
Lesser Black-backed Gull	0	0	0	3	3	0	3	0	0	0	0	0	9
Great Black-backed Gull	13	0	0	0	0	0	0	0	7	0	7	19	46
Large gulls combined	43	8	35	19	11	10	10	0	9	0	34	56	236

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.95												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	2	5	126	40	54	83	32	57	106	43	5	0	553
Kittiwake	0	0	0	2	11	5	10	2	37	29	4	3	101
Gullmott	0	0	0	1	1	0	0	0	0	0	0	0	2
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	35	11	48	13	0	14	0	0	0	0	35	44	198
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	12	0	0	12
Lesser Black-backed Gull	0	0	0	3	4	0	3	0	0	0	0	0	10
Great Black-backed Gull	15	0	0	0	0	0	0	0	8	0	7	21	51
Large gulls combined	47	9	39	21	12	11	12	0	11	0	38	63	262

**Table 3.2.4 Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2010. Potential number of collisions assuming an avoidance rate of 98%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	1	2	60	19	26	39	15	27	50	21	2	0	0	262										
Kittiwake	0	0	0	1	5	2	5	1	17	14	2	1	47											
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1											
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0											
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0											
Herring Gull	17	5	23	6	0	7	0	0	0	0	17	21	95											
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0											
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0											
Little Gull	0	0	0	0	0	0	0	0	0	6	0	0	6											
Lesser Black-backed Gull	0	0	0	1	2	0	2	0	0	0	0	0	5											
Great Black-backed Gull	7	0	0	0	0	0	0	0	4	0	3	10	24											
Large gulls combined	23	4	19	10	6	5	6	0	5	0	18	30	125											

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	1	2	45	14	19	30	11	20	38	16	2	0	198											
Kittiwake	0	0	0	1	4	2	4	1	13	10	1	1	36											
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1											
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0											
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0											
Herring Gull	13	4	17	5	0	5	0	0	0	0	12	16	71											
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0											
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0											
Little Gull	0	0	0	0	0	0	0	0	0	4	0	0	4											
Lesser Black-backed Gull	0	0	0	1	1	0	1	0	0	0	0	0	4											
Great Black-backed Gull	5	0	0	0	0	0	0	0	3	0	3	7	18											
Large gulls combined	17	3	14	8	4	4	4	0	4	0	14	22	94											

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	1	2	45	14	19	30	11	20	38	16	2	0	198											
Kittiwake	0	0	0	1	4	2	4	1	13	10	1	1	36											
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1											
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0											
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0											
Herring Gull	13	4	17	5	0	5	0	0	0	0	12	16	71											
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0											
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0											
Little Gull	0	0	0	0	0	0	0	0	0	4	0	0	4											
Lesser Black-backed Gull	0	0	0	1	1	0	1	0	0	0	0	0	4											
Great Black-backed Gull	5	0	0	0	0	0	0	0	3	0	3	7	18											
Large gulls combined	17	3	14	8	4	4	4	0	4	0	14	22	94											

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	1	2	50	16	22	33	13	23	42	17	2	0	221											
Kittiwake	0	0	0	1	4	2	4	1	15	11	2	1	40											
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1											
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0											
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0											
Herring Gull	14	4	19	5	0	6	0	0	0	0	14	18	79											
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0											
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0											
Little Gull	0	0	0	0	0	0	0	0	0	5	0	0	5											
Lesser Black-backed Gull	0	0	0	1	1	0	1	0	0	0	0	0	4											
Great Black-backed Gull	6	0	0	0	0	0	0	0	3	0	3	8	20											
Large gulls combined	19	3	16	9	5	5	5	0	4	0	15	25	105											

**Table 3.2.5 Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2010. Potential number of collisions assuming an avoidance rate of 99%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99																				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	1	30	9	13	20	7	13	25	10	1	0	0	131																					
Kittiwake	0	0	0	0	0	2	1	2	0	9	7	1	1	1	24																					
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Herring Gull	8	3	11	3	0	3	0	0	0	0	0	8	10	47																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Little Gull	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0																					
Lesser Black-backed Gull	0	0	0	1	1	0	1	0	0	0	0	0	0	2	0																					
Great Black-backed Gull	4	0	0	0	0	0	0	0	2	0	2	5	12	0	0																					
Large gulls combined	11	2	9	5	3	3	3	0	3	0	9	15	63	0	0																					

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99																				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	1	23	7	10	15	6	10	19	8	1	0	0	99																						
Kittiwake	0	0	0	0	2	1	2	0	7	5	1	0	18	0																						
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	6	2	9	2	0	2	0	0	0	6	8	36	0	0																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	2	0	0	2	0	0																						
Lesser Black-backed Gull	0	0	0	1	1	0	1	0	0	0	0	2	0	0																						
Great Black-backed Gull	3	0	0	0	0	0	0	0	1	0	1	4	9	0																						
Large gulls combined	9	2	7	4	2	2	2	0	2	0	7	11	47	0	0																					

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99																				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	1	23	7	10	15	6	10	19	8	1	0	0	99																						
Kittiwake	0	0	0	0	2	1	2	0	7	5	1	0	18	0																						
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	6	2	9	2	0	2	0	0	0	6	8	36	0	0																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	2	0	0	2	0	0																						
Lesser Black-backed Gull	0	0	0	1	1	0	1	0	0	0	0	2	0	0																						
Great Black-backed Gull	3	0	0	0	0	0	0	0	1	0	1	4	9	0																						
Large gulls combined	9	2	7	4	2	2	2	0	2	0	7	11	47	0	0																					

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99																				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	1	25	8	11	17	6	11	21	9	1	0	0	111																						
Kittiwake	0	0	0	0	2	1	2	0	7	6	1	1	20	0																						
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	7	2	10	3	0	3	0	0	0	7	9	40	0	0																						
Herring Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	2	0	0	2	0	0																						
Lesser Black-backed Gull	0	0	0	1	1	0	1	0	0	0	0	2	0	0																						
Great Black-backed Gull	3	0	0	0	0	0	0	0	2	0	1	4	10	0																						
Large gulls combined	9	2	8	4	2	2	2	0	2	0	8	13	52	0	0																					

**Table 3.2.6 Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2010. Potential number of collisions assuming an avoidance rate of 99.5%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	1	15	5	6	10	4	7	13	5	1	0	0	0	66									
Kittiwake	0	0	0	0	1	1	1	0	4	3	0	0	0	0	12									
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Herring Gull	4	1	6	2	0	2	0	0	0	0	4	5	24											
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
Little Gull	0	0	0	0	0	0	0	0	0	1	0	0	1											
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	1											
Great Black-backed Gull	2	0	0	0	0	0	0	0	1	0	1	2	6											
Large gulls combined	6	1	5	3	1	1	1	0	1	0	4	7	31											

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	11	4	5	7	3	5	10	4	0	0	0	49										
Kittiwake	0	0	0	0	1	0	1	0	3	3	0	0	9											
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0											
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0											
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0											
Herring Gull	3	1	4	1	0	1	0	0	0	0	3	4	18											
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0											
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0											
Little Gull	0	0	0	0	0	0	0	0	0	1	0	0	1											
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	1											
Great Black-backed Gull	1	0	0	0	0	0	0	0	1	0	1	2	5											
Large gulls combined	4	1	3	2	1	1	1	0	1	0	3	6	24											

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	11	4	5	7	3	5	10	4	0	0	0	50										
Kittiwake	0	0	0	0	1	0	1	0	3	3	0	0	9											
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0											
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0											
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0											
Herring Gull	3	1	4	1	0	1	0	0	0	0	3	4	18											
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0											
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0											
Little Gull	0	0	0	0	0	0	0	0	0	1	0	0	1											
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	1											
Great Black-backed Gull	1	0	0	0	0	0	0	0	1	0	1	2	5											
Large gulls combined	4	1	3	2	1	1	1	0	1	0	3	6	24											

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	13	4	5	8	3	6	11	4	0	0	55											
Kittiwake	0	0	0	0	1	0	1	0	4	3	0	0	10											
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0											
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0											
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0											
Herring Gull	3	1	5	1	0	1	0	0	0	0	3	4	20											
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0											
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0											
Little Gull	0	0	0	0	0	0	0	0	0	1	0	0	1											
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	1											
Great Black-backed Gull	1	0	0	0	0	0	0	0	1	0	1	2	5											
Large gulls combined	5	1	4	2	1	1	1	0	1	0	4	6	26											



### 3.3 Results Year 2

Table 3.3.1 Densities of flying birds at Neart na Gaoithe development area between November 2010 and October 2011. Data gathered during ship-based surveys, see § 2.1.

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0.125	3.607	0.710	1.676	7.463	5.760	11.913	6.910	5.920	2.895	0.836	0.063
Kittiwake	0.063	0.131	0.059	0.451	0.753	0.259	2.125	0.258	0.191	0.836	0.836	6.602
Guillemot	0.439	0.197	0.296	2.450	0.878	0.712	0.322	0.194	0.000	0.064	0.064	0.189
Razorbill	0.000	0.000	0.000	0.129	0.376	0.194	0.000	0.000	0.000	0.772	0.000	0.063
Puffin	0.000	0.066	0.000	0.451	1.003	1.230	1.932	0.517	0.000	0.000	0.000	0.000
Herring Gull	0.376	0.131	0.118	0.000	0.000	0.194	0.000	0.000	0.000	0.000	0.000	0.063
Pink-footed Goose	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Great Skua	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Little Gull	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.382	0.000	0.000	0.000
Lesser Black-backed Gull	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Great Black-backed Gull	0.063	0.000	0.000	0.000	0.000	0.065	0.000	0.000	0.064	0.000	0.000	0.063
Large gulls combined	0.439	0.131	0.118	0.000	0.000	0.259	0.000	0.000	0.064	0.000	0.000	0.126

**Table 3.3.2 Results of collision rate modelling for Neart na Gaoithe development area between November 2010 and October 2011. Potential number of transits through the rotor-swept area.**

**Neart na Gaoithe 90 x 5MW**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	TOTAL transits through rotor-swept area per YEAR
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Gannet	0.079	1088	31726	7821	20010	101016	79282	165917	88934	66394	29747	0	0	525	646320
Kittiwake	0.062	587	1175	627	4937	8989	3084	25824	2994	2016	8537	0	0	60643	130269
Guillemot	0.055	78	35	67	597	243	200	92	51	0	13	0	0	32	1536
Razorbill	0.056	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0.052	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0.072	26026	8693	9280	0	0	17104	0	0	0	0	0	0	4271	71316
Pink-footed Goose	0.070	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0.066	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0.059	0	0	0	0	0	0	0	0	37223	0	0	0	0	40607
Lesser Black-backed Gull	0.069	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	0.075	2615	0	0	0	0	3436	0	0	2995	0	0	0	2574	12677
Large gulls combined	0.072	24699	7071	7549	0	0	18551	0	0	4042	0	0	0	6948	75119

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	TOTAL transits through rotor-swept area per YEAR
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Gannet	0.079	824	24018	5921	15148	78473	60019	125605	67326	50283	22520	0	0	398	489288
Kittiwake	0.062	444	890	475	3738	6805	2335	19550	2266	1526	6463	0	0	45909	98619
Guillemot	0.055	59	27	50	452	184	151	69	39	10	0	0	0	24	1162
Razorbill	0.056	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0.052	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0.071	19703	6581	7025	0	0	12948	0	0	0	0	0	0	3233	53989
Pink-footed Goose	0.070	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0.067	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0.058	0	0	0	0	0	0	0	0	28179	0	0	0	0	30741
Lesser Black-backed Gull	0.069	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	0.075	1979	0	0	0	0	2801	0	0	2267	0	0	0	1949	9597
Large gulls combined	0.072	18698	5353	5715	0	0	14043	0	0	3060	0	0	0	5260	56868

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	TOTAL transits through rotor-swept area per YEAR
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Gannet	0.065	994	28974	7142	18274	92253	72404	151523	81219	60634	27167	0	0	480	590252
Kittiwake	0.051	536	1073	573	4509	8209	2816	23584	2734	1841	7797	0	0	55383	118969
Guillemot	0.046	71	32	61	545	222	183	84	46	0	12	0	0	29	1402
Razorbill	0.047	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0.043	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0.059	23768	7938	8475	0	0	15620	0	0	0	0	0	0	3900	65130
Pink-footed Goose	0.058	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0.048	0	0	0	0	0	0	0	0	33994	0	0	0	0	37085
Lesser Black-backed Gull	0.057	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	0.062	2388	0	0	0	0	3138	0	0	2735	0	0	0	2351	11577
Large gulls combined	0.060	22556	6457	6894	0	0	16941	0	0	3691	0	0	0	6346	68603

**Neart na Gaoithe 75 x 6MW**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	TOTAL transits through rotor-swept area per YEAR
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Gannet	0.068	1035	30159	7435	19022	96027	75367	157723	84542	63115	28278	0	0	499	614403
Kittiwake	0.054	558	1117	596	4693	8545	2932	24549	2846	1916	8116	0	0	57649	123836
Guillemot	0.049	74	34	63	568	231	190	87	48	0	13	0	0	31	1460
Razorbill	0.050	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0.047	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0.062	24741	8263	8822	0	0	16259	0	0	0	0	0	0	4060	67795
Pink-footed Goose	0.051	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0.058	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0.051	0	0	0	0	0	0	0	0	35385	0	0	0	0	38602
Lesser Black-backed Gull	0.060	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	0.065	2485	0	0	0	0	3267	0	0	2847	0	0	0	2447	12051
Large gulls combined	0.062	23479	6722	7176	0	0	17634	0	0	3842	0	0	0	6605	71410

**Table 3.3.3 Results of collision rate modelling for Neart na Gaoithe development area between November 2010 and October 2011. Potential number of collisions assuming an avoidance rate of 95%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Dec
Gannet	4	106	26	65	331	257	531	279	219	100	0	2	2093		
Kittiwake	2	3	2	13	23	8	65	7	5	23	0	158	337		
Guillemot	0	0	0	1	1	0	0	0	0	0	0	0	3		
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0		
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0		
Herring Gull	82	26	28	0	0	51	0	0	0	0	0	13	219		
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0		
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0		
Little Gull	0	0	0	0	0	0	0	0	92	0	0	0	100		
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0		
Great Black-backed Gull	9	0	0	0	0	11	0	0	9	0	0	8	40		
Large gulls combined	79	22	23	0	0	55	0	0	12	0	0	21	231		

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Dec
Gannet	3	80	20	49	250	194	401	210	165	75	0	1	1578	
Kittiwake	1	2	1	10	18	6	49	6	4	17	0	119	254	
Guillemot	0	0	0	1	0	0	0	0	0	0	0	0	3	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	62	20	21	0	38	0	0	0	0	0	0	10	164	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	68	0	0	0	0	75	
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Black-backed Gull	7	0	0	0	8	0	7	0	7	0	0	6	30	
Large gulls combined	59	16	17	0	41	0	9	0	9	0	0	16	174	

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Dec
Gannet	3	80	20	49	250	194	401	210	165	75	0	1	1581	
Kittiwake	1	2	1	10	18	6	49	6	4	17	0	119	254	
Guillemot	0	0	0	1	0	0	0	0	0	0	0	0	3	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	62	20	21	0	38	0	0	0	0	0	0	10	165	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	69	0	0	0	0	75	
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Black-backed Gull	7	0	0	0	8	0	7	0	7	0	0	6	30	
Large gulls combined	59	16	17	0	42	0	9	0	9	0	0	16	174	

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Dec
Gannet	3	88	22	55	280	217	451	236	184	83	0	1	1767	
Kittiwake	1	3	1	11	20	7	56	6	4	19	0	135	288	
Guillemot	0	0	0	1	0	0	0	0	0	0	0	0	3	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	68	22	24	0	43	0	0	0	0	0	0	11	183	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	78	0	0	0	0	85	
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Black-backed Gull	7	0	0	0	9	0	8	0	8	0	0	7	34	
Large gulls combined	65	18	20	0	47	0	10	0	10	0	0	18	193	

**Table 3.3.4 Results of collision rate modelling for Neart na Gaoithe development area between November 2010 and October 2011. Potential number of collisions assuming an avoidance rate of 98%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98																			
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Gannet	2	42	10	26	132	103	213	111	87	40	0	1	837																						
Kittiwake	1	1	1	5	9	3	26	3	2	9	0	63	135																						
Guillemot	0	0	0	1	0	0	0	0	0	0	0	0	1																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	33	11	11	0	0	20	0	0	0	0	0	5	88																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	37	0	0	0	40																						
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Black-backed Gull	3	0	0	0	0	4	0	0	4	0	0	3	16																						
Large gulls combined	31	9	9	0	0	22	0	0	5	0	0	8	92																						

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98																				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Gannet	1	32	8	20	100	78	160	84	66	30	0	1	631																						
Kittiwake	0	1	0	4	7	2	20	2	2	7	0	48	102																						
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	25	8	9	0	0	15	0	0	0	0	0	4	66																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	27	0	0	0	30																						
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Black-backed Gull	3	0	0	0	0	3	0	0	3	0	0	2	12																						
Large gulls combined	24	6	7	0	0	17	0	0	4	0	0	6	69																						

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98																				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Gannet	1	32	8	20	100	78	161	84	66	30	0	1	633																						
Kittiwake	0	1	1	4	7	2	20	2	2	7	0	48	102																						
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	25	8	9	0	0	15	0	0	0	0	0	4	66																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	27	0	0	0	30																						
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Black-backed Gull	3	0	0	0	0	3	0	0	3	0	0	2	12																						
Large gulls combined	24	7	7	0	0	17	0	0	4	0	0	6	70																						

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98																				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Gannet	1	35	9	22	112	87	180	95	73	33	0	1	707																						
Kittiwake	1	1	1	4	8	3	23	3	2	8	0	54	115																						
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	27	9	10	0	0	17	0	0	0	0	0	4	73																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	31	0	0	0	34																						
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Black-backed Gull	3	0	0	0	0	4	0	0	3	0	0	3	13																						
Large gulls combined	26	7	8	0	0	19	0	0	4	0	0	7	77																						

**Table 3.3.5 Results of collision rate modelling for Neart na Gaoithe development area between November 2010 and October 2011. Potential number of collisions assuming an avoidance rate of 99%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99																					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	1	21	5	13	66	51	106	56	44	20	0	0	0	419																					
Kittiwake	0	1	0	0	3	5	2	13	1	1	5	0	32	67																						
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	1																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	16	5	6	0	0	10	0	0	0	0	0	0	3	44																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	0	18	0	0	0	20																						
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Black-backed Gull	2	0	0	0	0	2	0	2	0	2	0	0	2	8																						
Large gulls combined	16	4	5	0	0	11	0	0	0	2	0	0	4	46																						

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99																					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	16	4	10	50	39	80	42	33	15	0	0	0	316																						
Kittiwake	0	0	0	2	4	1	10	1	1	3	0	24	51																							
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1																							
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Herring Gull	12	4	4	0	8	0	0	0	0	0	0	2	33																							
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Little Gull	0	0	0	0	0	0	0	0	14	0	0	0	15																							
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Great Black-backed Gull	1	0	0	0	2	0	0	1	0	0	0	1	6																							
Large gulls combined	12	3	3	0	8	0	0	2	0	0	0	3	35																							

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99																						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	16	4	10	50	39	80	42	33	15	0	0	0	316																						
Kittiwake	0	0	0	2	4	1	10	1	1	3	0	24	51																							
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1																							
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Herring Gull	12	4	4	0	8	0	0	0	0	0	0	2	33																							
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Little Gull	0	0	0	0	0	0	0	0	14	0	0	0	15																							
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Great Black-backed Gull	1	0	0	0	2	0	0	1	0	0	0	1	6																							
Large gulls combined	12	3	3	0	8	0	0	2	0	0	0	3	35																							

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99																						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	18	4	11	56	43	90	47	37	17	0	0	0	353																						
Kittiwake	0	1	0	2	4	1	11	1	1	4	0	27	58																							
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1																							
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Herring Gull	14	4	5	0	9	0	0	0	0	0	0	2	37																							
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Little Gull	0	0	0	0	0	0	0	0	16	0	0	0	17																							
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0																							
Great Black-backed Gull	1	0	0	0	2	0	0	2	0	0	0	1	7																							
Large gulls combined	13	4	4	0	9	0	0	2	0	0	0	4	39																							

**Table 3.3.6 Results of collision rate modelling for Neart na Gaoithe development area between November 2010 and October 2011. Potential number of collisions assuming an avoidance rate of 99.5%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995																					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	11	3	7	33	26	53	28	22	10	0	0	209																						
Kittiwake	0	0	0	0	1	2	1	7	1	1	2	0	16	34																						
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	8	3	3	0	0	5	0	0	0	0	0	0	1	22																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	0	9	0	0	0	10																						
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Black-backed Gull	1	0	0	0	0	1	0	0	1	0	0	0	1	4																						
Large gulls combined	8	2	2	0	0	6	0	0	1	0	0	0	2	23																						

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995																					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	8	2	5	25	19	40	21	16	8	0	0	158																						
Kittiwake	0	0	0	0	1	2	1	5	2	1	0	2	12	25																						
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	6	2	2	0	0	4	0	0	0	0	0	0	1	16																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	0	7	0	0	0	7																						
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Black-backed Gull	1	0	0	0	0	1	0	0	1	0	0	0	1	3																						
Large gulls combined	6	2	2	0	0	4	0	0	1	0	0	0	2	17																						

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995																					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	8	2	5	25	19	40	21	17	8	0	0	158																						
Kittiwake	0	0	0	0	1	2	1	5	1	0	2	12	25																							
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	6	2	2	0	0	4	0	0	0	0	0	0	1	16																						
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	0	7	0	0	0	7																						
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Black-backed Gull	1	0	0	0	0	1	0	0	1	0	0	0	1	3																						
Large gulls combined	6	2	2	0	0	4	0	0	1	0	0	0	2	17																						

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995																					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	9	2	6	28	22	45	24	18	8	0	0	177																						
Kittiwake	0	0	0	0	1	2	1	6	1	0	2	13	29																							
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Herring Gull	7	2	2	0	0	4	0	0	0	0	0	1	18																							
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Little Gull	0	0	0	0	0	0	0	0	0	8	0	0	9																							
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0																						
Great Black-backed Gull	1	0	0	0	0	1	0	0	1	0	0	0	1	3																						
Large gulls combined	6	2	2	0	0	5	0	0	1	0	0	0	2	19																						

### 3.4 Results Year 3

Table 3.4.1 Densities of flying birds at Neart na Gaoithe development area between November 2011 and October 2012. Data gathered during ship-based surveys, see § 2.1.

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0.063	0.191	2.283	0.828	4.322	2.290	2.610	2.610	3.946	4.893	2.417	0.381
Kittiwake	0.378	0.000	0.507	0.127	0.699	0.254	0.318	0.318	0.191	0.191	0.318	1.335
Guillemot	1.449	0.318	0.254	0.382	0.890	0.827	0.000	0.000	0.000	0.000	0.064	0.494
Razorbill	0.000	0.000	0.000	0.000	0.254	0.191	0.191	0.191	0.000	0.000	0.064	0.141
Puffin	0.000	0.000	0.063	0.191	0.636	0.700	1.782	1.782	0.064	0.000	0.254	0.000
Herring Gull	0.126	0.000	0.000	0.064	0.254	0.000	0.127	0.127	0.000	0.000	0.000	0.000
Pink-footed Goose	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Great Skua	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Little Gull	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lesser Black-backed Gull	0.000	0.000	0.000	0.000	0.127	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Great Black-backed Gull	0.189	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.064
Large gulls combined	0.315	0.000	0.000	0.064	0.381	0.000	0.127	0.127	0.000	0.000	0.000	0.064

Table 3.4.2 Results of collision rate modelling for Neart na Gaoithe development area between November 2011 and October 2012. Potential number of transits through the rotor-swept area.

Neart na Gaoithe 90 x 5MW

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Gannet	0.079	549	1681	25140	9870	58376	31432	36257	50719	54850	24857	3353	0		
Kittiwake	0.062	3544	0	5378	1392	8339	3026	3862	2211	2012	3248	12368	0		
Guillemot	0.055	258	57	57	93	245	232	0	0	0	13	89	0		
Razorbill	0.056	0	0	0	0	0	0	0	0	0	0	0	0		
Puffin	0.052	0	0	0	0	0	0	0	0	0	0	0	0		
Herring Gull	0.072	8735	0	0	5147	22425	0	11423	0	0	0	0	0		
Pink-footed Goose	0.070	0	0	0	0	0	0	0	0	0	0	0	0		
Great Skua	0.066	0	0	0	0	0	0	0	0	0	0	0	0		
Little Gull	0.059	0	0	0	0	0	0	0	0	0	0	0	0		
Lesser Black-backed Gull	0.069	0	0	0	0	2805	0	0	0	0	0	0	0		
Great Black-backed Gull	0.075	7897	0	0	0	0	0	0	0	0	0	2625	0		
Large gulls combined	0.072	17763	0	0	4187	27362	0	9292	0	0	0	3543	0		

Neart na Gaoithe 73 x 6.15MW - 126

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	0.079	416	1273	19032	7472	44193	23795	27448	38396	41524	18818	2538	0	
Kittiwake	0.062	2683	0	4071	1054	6313	2291	2923	1674	1523	2459	9363	0	
Guillemot	0.055	195	43	43	70	186	175	0	0	0	10	67	0	
Razorbill	0.056	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0.052	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	0.071	6613	0	0	3897	16977	0	8647	0	0	0	0	0	
Pink-footed Goose	0.070	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0.067	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0.058	0	0	0	0	0	0	0	0	0	0	0	0	
Lesser Black-backed Gull	0.069	0	0	0	0	2124	0	0	0	0	0	0	0	
Great Black-backed Gull	0.075	5979	0	0	0	0	0	0	0	0	0	1987	0	
Large gulls combined	0.072	13447	0	0	3170	20714	0	7034	0	0	0	2682	0	

Neart na Gaoithe 73 x 6.15MW - 152

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	0.065	501	1535	22959	9013	53312	26705	33112	46319	50092	22701	3062	0	
Kittiwake	0.051	3236	0	4912	1271	7616	2763	3527	2019	1837	2966	11295	0	
Guillemot	0.046	235	52	52	85	224	212	0	0	0	12	81	0	
Razorbill	0.047	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0.043	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	0.059	7977	0	0	4701	20480	0	10432	0	0	0	0	0	
Pink-footed Goose	0.058	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0.055	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0.048	0	0	0	0	0	0	0	0	0	0	0	0	
Lesser Black-backed Gull	0.057	0	0	0	0	2562	0	0	0	0	0	0	0	
Great Black-backed Gull	0.062	7212	0	0	0	0	0	0	0	0	0	2397	0	
Large gulls combined	0.060	16222	0	0	3824	24989	0	8486	0	0	0	3235	0	

Neart na Gaoithe 75 x 6MW

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area	Potential number of transits through rotor-swept area
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	0.068	522	1598	23899	9382	55494	29880	34467	48214	52142	23629	3187	0	
Kittiwake	0.054	3369	0	5113	1323	7928	2876	3671	2102	1912	3087	11757	0	
Guillemot	0.049	245	54	54	88	233	220	0	0	0	13	84	0	
Razorbill	0.050	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0.047	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	0.062	8304	0	0	4893	21318	0	10859	0	0	0	0	0	
Pink-footed Goose	0.061	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0.058	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0.051	0	0	0	0	0	0	0	0	0	0	0	0	
Lesser Black-backed Gull	0.060	0	0	0	0	2667	0	0	0	0	0	0	0	
Great Black-backed Gull	0.065	7507	0	0	0	0	0	0	0	0	0	2496	0	
Large gulls combined	0.062	16886	0	0	3980	26011	0	8833	0	0	0	3388	0	



**Table 3.4.3 Results of collision rate modelling for Neart na Gaoithe development area between November 2011 and October 2012. Potential number of collisions assuming an avoidance rate of 95%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	0.95
Gannet	2	6	84	32	191	102	116	159	181	83	12	0	0	0	1055
Kittiwake	10	0	14	4	22	8	10	5	5	9	34	0	0	0	130
Guillemot	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	28	0	0	15	67	0	33	0	0	0	0	0	0	0	157
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	8	0	0	0	0	0	0	0	0	0	9
Great Black-backed Gull	26	0	0	0	0	0	0	0	0	0	9	0	0	0	38
Large gulls combined	56	0	0	13	82	0	27	0	0	0	11	0	0	0	207

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	0.95
Gannet	1	4	63	24	144	77	88	120	136	63	9	0	0	0	796
Kittiwake	7	0	11	3	16	6	7	4	4	6	25	0	0	0	98
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	21	0	0	11	50	0	25	0	0	0	0	0	0	0	118
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	6	0	0	0	0	0	0	0	0	0	7
Great Black-backed Gull	20	0	0	0	0	0	0	0	0	0	6	0	0	0	29
Large gulls combined	42	0	0	9	62	0	21	0	0	0	8	0	0	0	156

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	0.95
Gannet	1	4	64	24	145	77	88	120	136	63	9	0	0	0	797
Kittiwake	7	0	11	3	16	6	7	4	4	6	25	0	0	0	98
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	21	0	0	12	50	0	25	0	0	0	0	0	0	0	118
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	6	0	0	0	0	0	0	0	0	0	7
Great Black-backed Gull	20	0	0	0	0	0	0	0	0	0	7	0	0	0	29
Large gulls combined	43	0	0	9	62	0	21	0	0	0	8	0	0	0	156

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	0.95
Gannet	2	5	71	27	162	86	98	135	152	69	10	0	0	0	890
Kittiwake	8	0	12	3	19	7	8	5	4	7	28	0	0	0	111
Guillemot	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	23	0	0	13	57	0	28	0	0	0	0	0	0	0	132
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	7	0	0	0	0	0	0	0	0	0	7
Great Black-backed Gull	22	0	0	0	0	0	0	0	0	0	7	0	0	0	31
Large gulls combined	47	0	0	11	70	0	23	0	0	0	9	0	0	0	174

**Table 3.4.4 Results of collision rate modelling for Neart na Gaoithe development area between November 2011 and October 2012. Potential number of collisions assuming an avoidance rate of 98%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	1	2	34	13	77	41	46	64	72	33	5	0	0	0	0	422								
Kittiwake	4	0	6	1	9	3	4	2	2	3	13	0	0	0	0	52								
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1								
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Herring Gull	11	0	0	6	27	0	13	0	0	0	0	0	0	0	0	63								
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Lesser Black-backed Gull	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4								
Great Black-backed Gull	10	0	0	0	0	0	0	0	0	0	0	3	0	0	0	15								
Large gulls combined	23	0	0	5	33	0	11	0	0	0	4	0	0	0	0	83								

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	1	2	25	10	58	31	35	48	54	25	3	0	0	0	0	318								
Kittiwake	3	0	4	1	7	2	3	2	2	3	10	0	0	0	0	39								
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1								
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Herring Gull	8	0	0	5	20	0	10	0	0	0	0	0	0	0	0	47								
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Lesser Black-backed Gull	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3								
Great Black-backed Gull	8	0	0	0	0	0	0	0	0	0	0	3	0	0	0	11								
Large gulls combined	17	0	0	4	25	0	8	0	0	0	3	0	0	0	0	62								

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	1	2	25	10	58	31	35	48	55	25	3	0	0	0	0	319								
Kittiwake	3	0	4	1	7	2	3	2	2	3	10	0	0	0	0	39								
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1								
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Herring Gull	8	0	0	5	20	0	10	0	0	0	0	0	0	0	0	47								
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Lesser Black-backed Gull	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3								
Great Black-backed Gull	8	0	0	0	0	0	0	0	0	0	0	3	0	0	0	11								
Large gulls combined	17	0	0	4	25	0	8	0	0	0	3	0	0	0	0	62								

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	1	2	28	11	65	34	39	54	61	28	4	0	0	0	0	356								
Kittiwake	3	0	5	1	7	3	3	2	2	3	11	0	0	0	0	44								
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1								
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Herring Gull	9	0	0	5	23	0	11	0	0	0	0	0	0	0	0	53								
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Lesser Black-backed Gull	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3								
Great Black-backed Gull	9	0	0	0	0	0	0	0	0	0	0	3	0	0	0	13								
Large gulls combined	19	0	0	4	28	0	9	0	0	0	4	0	0	0	0	70								

**Table 3.4.5 Results of collision rate modelling for Neart na Gaoithe development area between November 2011 and October 2012. Potential number of collisions assuming an avoidance rate of 99%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.99												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	0	1	17	6	38	20	23	32	36	17	2	0	211
Kittiwake	2	0	3	1	4	2	2	1	1	2	7	0	26
Gullmott	0	0	0	0	0	0	0	0	0	0	0	0	1
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	6	0	0	3	13	0	7	0	0	0	0	0	31
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	2	0	0	0	0	0	0	0	2
Great Black-backed Gull	5	0	0	0	0	0	0	0	0	0	2	0	8
Large gulls combined	11	0	0	3	16	0	5	0	0	0	2	0	41

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.99												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	0	1	13	5	29	15	18	24	27	13	2	0	159
Kittiwake	1	0	2	1	3	1	1	1	1	1	5	0	20
Gullmott	0	0	0	0	0	0	0	0	0	0	0	0	0
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	4	0	0	2	10	0	5	0	0	0	0	0	24
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	1
Great Black-backed Gull	4	0	0	0	0	0	0	0	0	0	1	0	6
Large gulls combined	8	0	0	2	12	0	4	0	0	0	2	0	31

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.99												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	0	1	13	5	29	15	18	24	27	13	2	0	159
Kittiwake	1	0	2	1	3	1	1	1	1	1	5	0	20
Gullmott	0	0	0	0	0	0	0	0	0	0	0	0	0
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	4	0	0	2	10	0	5	0	0	0	0	0	24
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	1
Great Black-backed Gull	4	0	0	0	0	0	0	0	0	0	1	0	6
Large gulls combined	9	0	0	2	12	0	4	0	0	0	2	0	31

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.99												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	0	1	14	5	32	17	20	27	30	14	2	0	178
Kittiwake	2	0	2	1	4	1	2	1	1	1	6	0	22
Gullmott	0	0	0	0	0	0	0	0	0	0	0	0	0
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	5	0	0	3	11	0	6	0	0	0	0	0	26
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	1
Great Black-backed Gull	4	0	0	0	0	0	0	0	0	0	1	0	6
Large gulls combined	9	0	0	2	14	0	5	0	0	0	2	0	35

**Table 3.4.6 Results of collision rate modelling for Neart na Gaoithe development area between November 2011 and October 2012. Potential number of collisions assuming an avoidance rate of 99.5%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	1	8	3	19	10	12	16	18	8	1	0	0	0	106									
Kittiwake	1	0	1	0	2	1	1	1	1	1	3	0	0	0	13									
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Herring Gull	3	0	0	2	7	0	3	0	0	0	0	0	0	0	16									
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1									
Great Black-backed Gull	3	0	0	0	0	0	0	0	0	0	1	0	0	0	4									
Large gulls combined	6	0	0	1	8	0	3	0	0	0	1	0	0	0	21									

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	6	2	14	8	9	12	14	6	1	0	0	0	80									
Kittiwake	1	0	1	0	2	1	1	0	0	1	3	0	0	0	10									
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Herring Gull	2	0	0	1	5	0	3	0	0	0	0	0	0	0	12									
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1									
Great Black-backed Gull	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3									
Large gulls combined	4	0	0	1	6	0	2	0	0	0	1	0	0	0	16									

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	6	2	14	8	9	12	14	6	1	0	0	0	80									
Kittiwake	1	0	1	0	2	1	1	0	0	1	3	0	0	0	10									
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Herring Gull	2	0	0	1	5	0	3	0	0	0	0	0	0	0	12									
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1									
Great Black-backed Gull	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3									
Large gulls combined	4	0	0	1	6	0	2	0	0	0	1	0	0	0	16									

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	0	7	3	16	9	10	13	15	7	1	0	0	0	89									
Kittiwake	1	0	1	0	2	1	1	0	0	1	3	0	0	0	11									
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Herring Gull	2	0	0	1	6	0	3	0	0	0	0	0	0	0	13									
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1									
Great Black-backed Gull	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3									
Large gulls combined	5	0	0	1	7	0	2	0	0	0	1	0	0	0	17									

### 3.5 Results Years 1, 2 and 3 combined

Table 3.5.1 Densities of flying birds at Neart na Gaoithe development area between November 2009 and October 2012. Data gathered during ship-based surveys, see § 2.1.

Species	Proportion at rotor height	Density (birds/km <sup>2</sup> )											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0.047	0.084	1.328	2.358	1.240	4.412	3.419	5.120	4.175	4.742	2.272	0.287	0.031
Kittiwake	0.042	0.147	0.044	0.189	0.214	0.616	0.234	0.943	0.171	0.653	0.803	0.764	3.364
Guillemot	0.001	0.629	0.538	0.223	1.392	0.941	0.534	0.107	0.065	0.000	0.147	0.311	0.222
Razorbill	0.000	0.064	0.000	0.020	0.107	0.298	0.128	0.065	0.000	0.000	0.279	0.103	0.031
Puffin	0.000	0.000	0.022	0.021	0.982	0.612	0.769	1.367	0.557	0.000	0.085	0.000	0.000
Herring Gull	0.321	0.231	0.065	0.118	0.043	0.085	0.086	0.042	0.000	0.000	0.000	0.096	0.159
Pink-footed Goose	0.991	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Great Skua	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Little Gull	0.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.127	0.021	0.000	0.000
Lesser Black-backed Gull	0.079	0.000	0.000	0.000	0.021	0.064	0.000	0.021	0.000	0.000	0.000	0.000	0.000
Great Black-backed Gull	0.181	0.127	0.000	0.000	0.000	0.000	0.022	0.000	0.000	0.043	0.000	0.064	0.127
Large gulls combined	0.253	0.358	0.065	0.118	0.064	0.149	0.107	0.064	0.000	0.043	0.000	0.160	0.286

**Table 3.5.2 Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2012. Potential number of transits through the rotor-swept area.**

**Neart na Gaoithe 90 x 5MW**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area Jan	Potential number of transits through rotor-swept area Feb	Potential number of transits through rotor-swept area Mar	Potential number of transits through rotor-swept area Apr	Potential number of transits through rotor-swept area May	Potential number of transits through rotor-swept area Jun	Potential number of transits through rotor-swept area Jul	Potential number of transits through rotor-swept area Aug	Potential number of transits through rotor-swept area Sep	Potential number of transits through rotor-swept area Oct	Potential number of transits through rotor-swept area Nov	Potential number of transits through rotor-swept area Dec	TOTAL transits through rotor-swept area per YEAR
Gannet	0.079	733	11703	25960	14789	59598	46840	71142	53650	53168	23372	2522	264	363838
Kittiwake	0.062	1377	392	2002	2342	7346	2785	11447	1982	6887	8201	7075	30966	82802
Guillemot	0.065	112	97	50	339	260	150	30	17	0	31	56	38	1179
Razorbill	0.056	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0.052	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0.072	16039	4283	9272	3441	7475	7542	3808	0	0	6586	10802	69247	69247
Pink-footed Goose	0.070	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0.066	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0.059	0	0	0	0	0	0	0	0	12403	1869	0	0	14272
Lesser Black-backed Gull	0.069	0	0	0	432	1420	0	482	0	0	0	0	0	2335
Great Black-backed Gull	0.075	5289	0	0	0	0	1144	0	0	2028	0	2636	5205	16301
Large gulls combined	0.072	20184	3484	7543	4203	10699	7678	4666	0	2737	0	8914	15811	85918

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area Jan	Potential number of transits through rotor-swept area Feb	Potential number of transits through rotor-swept area Mar	Potential number of transits through rotor-swept area Apr	Potential number of transits through rotor-swept area May	Potential number of transits through rotor-swept area Jun	Potential number of transits through rotor-swept area Jul	Potential number of transits through rotor-swept area Aug	Potential number of transits through rotor-swept area Sep	Potential number of transits through rotor-swept area Oct	Potential number of transits through rotor-swept area Nov	Potential number of transits through rotor-swept area Dec	TOTAL transits through rotor-swept area per YEAR
Gannet	0.079	555	8860	19652	11196	45118	35535	53857	40615	40250	17693	1909	200	275439
Kittiwake	0.062	1042	297	1516	1773	5561	2109	8666	1500	5214	6208	5356	23442	62684
Guillemot	0.055	85	73	38	257	196	113	23	13	0	23	42	29	893
Razorbill	0.056	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0.052	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0.071	12142	3242	7020	2605	5659	5709	2882	0	0	4986	8177	52423	52423
Pink-footed Goose	0.070	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0.067	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0.058	0	0	0	0	0	0	0	0	9390	1415	0	0	10804
Lesser Black-backed Gull	0.069	0	0	0	327	1075	0	365	0	0	0	0	0	1767
Great Black-backed Gull	0.075	4004	0	0	0	0	866	0	0	1535	0	1995	3941	12341
Large gulls combined	0.072	15280	2637	5710	3182	8099	5813	3532	0	2072	0	6748	11970	65043

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area Jan	Potential number of transits through rotor-swept area Feb	Potential number of transits through rotor-swept area Mar	Potential number of transits through rotor-swept area Apr	Potential number of transits through rotor-swept area May	Potential number of transits through rotor-swept area Jun	Potential number of transits through rotor-swept area Jul	Potential number of transits through rotor-swept area Aug	Potential number of transits through rotor-swept area Sep	Potential number of transits through rotor-swept area Oct	Potential number of transits through rotor-swept area Nov	Potential number of transits through rotor-swept area Dec	TOTAL transits through rotor-swept area per YEAR
Gannet	0.065	669	10688	23708	13506	54427	42868	64970	48996	48556	21344	2303	241	332276
Kittiwake	0.051	1258	358	1828	2139	6709	2544	10454	1810	6289	7490	6461	28280	75619
Guillemot	0.046	102	88	46	310	237	137	28	15	0	28	51	35	1077
Razorbill	0.047	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0.043	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0.059	14647	3911	8468	3143	6827	6888	3477	0	0	6014	9865	63240	63240
Pink-footed Goose	0.058	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0.048	0	0	0	0	0	0	0	0	11327	1707	0	0	13034
Lesser Black-backed Gull	0.057	0	0	0	394	1297	0	441	0	0	0	0	0	2132
Great Black-backed Gull	0.062	4830	0	0	0	0	1044	0	0	1852	0	2407	4754	14887
Large gulls combined	0.060	18433	3182	6888	3838	9770	7012	4261	0	2499	0	8141	14440	78465

**Neart na Gaoithe 75 x 6MW**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area Jan	Potential number of transits through rotor-swept area Feb	Potential number of transits through rotor-swept area Mar	Potential number of transits through rotor-swept area Apr	Potential number of transits through rotor-swept area May	Potential number of transits through rotor-swept area Jun	Potential number of transits through rotor-swept area Jul	Potential number of transits through rotor-swept area Aug	Potential number of transits through rotor-swept area Sep	Potential number of transits through rotor-swept area Oct	Potential number of transits through rotor-swept area Nov	Potential number of transits through rotor-swept area Dec	TOTAL transits through rotor-swept area per YEAR
Gannet	0.068	697	11125	24678	14058	56654	44622	67628	51000	50543	22217	2397	251	345871
Kittiwake	0.054	1309	373	1903	2226	6983	2648	10882	1884	6547	7796	6725	29437	78713
Guillemot	0.049	106	92	48	322	247	142	29	16	0	29	53	36	1121
Razorbill	0.050	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0.047	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0.052	15247	4071	8815	3271	7106	7169	3620	0	0	6261	10268	65828	65828
Pink-footed Goose	0.061	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0.058	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0.051	0	0	0	0	0	0	0	0	11791	1777	0	0	13567
Lesser Black-backed Gull	0.060	0	0	0	410	1350	0	459	0	0	0	0	0	2219
Great Black-backed Gull	0.065	5027	0	0	0	0	1087	0	0	1928	0	2506	4948	15496
Large gulls combined	0.062	19187	3312	7170	3995	10170	7299	4435	0	2602	0	8474	15031	81675



**Table 3.5.4 Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2012. Potential number of collisions assuming an avoidance rate of 98%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.98												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	1	16	35	19	78	61	91	67	70	31	3	0	473
Kittiwake	2	0	2	2	8	3	12	2	7	9	8	32	86
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	20	5	11	4	9	9	4	0	0	0	8	13	85
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	12	2	0	0	14
Lesser Black-backed Gull	0	0	0	0	2	0	1	0	0	0	0	0	3
Great Black-backed Gull	7	0	0	0	0	1	0	0	3	0	3	7	21
Large gulls combined	26	4	9	5	13	9	5	0	3	0	11	19	105

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.98												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	1	12	26	15	59	46	69	51	53	24	3	0	357
Kittiwake	1	0	2	2	6	2	9	1	5	7	6	24	65
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	15	4	9	3	7	7	3	0	0	0	6	10	64
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	9	1	0	0	11
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	2
Great Black-backed Gull	5	0	0	0	0	1	0	0	2	0	3	5	16
Large gulls combined	19	3	7	4	10	7	4	0	2	0	8	14	79

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.98												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	1	12	26	15	59	46	69	51	53	24	3	0	357
Kittiwake	1	0	2	2	6	2	9	1	5	7	6	24	65
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	15	4	9	3	7	7	3	0	0	0	6	10	64
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	9	1	0	0	11
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	2
Great Black-backed Gull	5	0	0	0	0	1	0	0	2	0	3	5	16
Large gulls combined	19	3	7	4	10	7	4	0	2	0	8	14	79

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.98												TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	1	13	29	16	66	51	77	57	59	26	3	0	399
Kittiwake	1	0	2	2	7	2	10	2	6	7	7	27	74
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	1
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	17	4	10	3	8	8	4	0	0	0	7	11	71
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	10	2	0	0	12
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	2
Great Black-backed Gull	6	0	0	0	0	1	0	0	2	0	3	6	18
Large gulls combined	21	4	8	4	11	8	5	0	3	0	9	16	88



**Table 3.5.5 Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2012. Potential number of collisions assuming an avoidance rate of 99%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	1	0	8	17	10	39	30	46	34	35	16	2	0	0	0	0	237							
Kittiwake	1	0	1	1	1	4	1	6	1	4	4	4	16	43	0	0	0							
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Herring Gull	10	3	6	2	4	4	2	0	0	0	4	7	42	0	0	0								
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Little Gull	0	0	0	0	0	0	0	0	0	6	1	0	0	7	0	0								
Lesser Black-backed Gull	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0								
Great Black-backed Gull	4	0	0	0	0	0	1	0	0	1	0	2	3	11	0	0								
Large gulls combined	13	2	5	3	6	5	3	0	2	0	6	10	53	0	0	0								

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	6	13	7	29	23	34	25	26	12	1	0	178	0	0	0								
Kittiwake	1	0	1	1	3	1	4	1	3	3	3	12	33	0	0	0								
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Herring Gull	8	2	4	2	3	3	2	0	0	0	3	5	32	0	0	0								
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Little Gull	0	0	0	0	0	0	0	0	5	1	0	0	5	0	0	0								
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0								
Great Black-backed Gull	3	0	0	0	0	1	0	0	1	0	1	2	8	0	0	0								
Large gulls combined	10	2	3	2	5	3	2	0	1	0	4	7	40	0	0	0								

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	6	13	7	30	23	34	25	26	12	1	0	179	0	0	0								
Kittiwake	1	0	1	1	3	1	4	1	3	3	3	12	33	0	0	0								
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Herring Gull	8	2	4	2	3	3	2	0	0	0	3	5	32	0	0	0								
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Little Gull	0	0	0	0	0	0	0	0	5	1	0	0	5	0	0	0								
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0								
Great Black-backed Gull	3	0	0	0	0	1	0	0	1	0	1	2	8	0	0	0								
Large gulls combined	10	2	3	2	5	3	2	0	1	0	4	7	40	0	0	0								

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0	7	15	8	33	26	39	29	29	13	1	0	200	0	0	0								
Kittiwake	1	0	1	1	3	1	5	1	3	4	3	14	37	0	0	0								
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Herring Gull	8	2	5	2	4	4	2	0	0	0	3	5	35	0	0	0								
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Little Gull	0	0	0	0	0	0	0	0	5	1	0	0	6	0	0	0								
Lesser Black-backed Gull	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0								
Great Black-backed Gull	3	0	0	0	0	1	0	0	1	0	1	3	9	0	0	0								
Large gulls combined	11	2	4	2	5	4	2	0	1	0	5	8	44	0	0	0								

**Table 3.5.6** Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2012. Potential number of collisions assuming an avoidance rate of 99.5%.

**Neart na Gaoithe 90 x 5MW**

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995
	per month with avoidance rate 0.995 Jan	per month with avoidance rate 0.995 Feb	per month with avoidance rate 0.995 Mar	per month with avoidance rate 0.995 Apr	per month with avoidance rate 0.995 May	per month with avoidance rate 0.995 Jun	per month with avoidance rate 0.995 Jul	per month with avoidance rate 0.995 Aug	per month with avoidance rate 0.995 Sep	per month with avoidance rate 0.995 Oct	per month with avoidance rate 0.995 Nov	per month with avoidance rate 0.995 Dec	per month with avoidance rate 0.995	
Gannet	0	4	9	5	20	15	23	17	17	8	1	0	118	
Kittiwake	0	0	1	1	2	1	3	0	2	2	2	8	22	
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	5	1	3	1	2	2	1	0	0	0	2	3	21	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	3	0	0	0	4	
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	1	
Great Black-backed Gull	2	0	0	0	0	0	0	0	1	0	1	2	5	
Large gulls combined	6	1	2	1	3	2	1	0	1	0	3	5	26	

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995
	per month with avoidance rate 0.995 Jan	per month with avoidance rate 0.995 Feb	per month with avoidance rate 0.995 Mar	per month with avoidance rate 0.995 Apr	per month with avoidance rate 0.995 May	per month with avoidance rate 0.995 Jun	per month with avoidance rate 0.995 Jul	per month with avoidance rate 0.995 Aug	per month with avoidance rate 0.995 Sep	per month with avoidance rate 0.995 Oct	per month with avoidance rate 0.995 Nov	per month with avoidance rate 0.995 Dec	per month with avoidance rate 0.995	
Gannet	0	3	7	4	15	11	17	13	13	6	1	0	89	
Kittiwake	0	0	0	0	1	1	2	0	1	2	1	6	16	
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	4	1	2	1	2	2	1	0	0	0	2	2	16	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	2	0	0	0	3	
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	1	
Great Black-backed Gull	1	0	0	0	0	0	0	0	0	0	1	1	4	
Large gulls combined	5	1	2	1	2	2	1	0	1	0	2	4	20	

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995
	per month with avoidance rate 0.995 Jan	per month with avoidance rate 0.995 Feb	per month with avoidance rate 0.995 Mar	per month with avoidance rate 0.995 Apr	per month with avoidance rate 0.995 May	per month with avoidance rate 0.995 Jun	per month with avoidance rate 0.995 Jul	per month with avoidance rate 0.995 Aug	per month with avoidance rate 0.995 Sep	per month with avoidance rate 0.995 Oct	per month with avoidance rate 0.995 Nov	per month with avoidance rate 0.995 Dec	per month with avoidance rate 0.995	
Gannet	0	3	7	4	15	11	17	13	13	6	1	0	89	
Kittiwake	0	0	0	0	1	1	2	0	1	2	1	6	16	
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	4	1	2	1	2	2	1	0	0	0	2	2	16	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	2	0	0	0	3	
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	1	
Great Black-backed Gull	1	0	0	0	0	0	0	0	0	0	1	1	4	
Large gulls combined	5	1	2	1	2	2	1	0	1	0	2	4	20	

**Neart na Gaoithe 75 x 6MW**

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995
	per month with avoidance rate 0.995 Jan	per month with avoidance rate 0.995 Feb	per month with avoidance rate 0.995 Mar	per month with avoidance rate 0.995 Apr	per month with avoidance rate 0.995 May	per month with avoidance rate 0.995 Jun	per month with avoidance rate 0.995 Jul	per month with avoidance rate 0.995 Aug	per month with avoidance rate 0.995 Sep	per month with avoidance rate 0.995 Oct	per month with avoidance rate 0.995 Nov	per month with avoidance rate 0.995 Dec	per month with avoidance rate 0.995	
Gannet	0	3	7	4	16	13	19	14	15	7	1	0	100	
Kittiwake	0	0	0	1	2	1	2	0	2	2	2	7	18	
Guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	4	1	2	1	2	2	1	0	0	0	2	3	18	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	3	0	0	0	3	
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	1	
Great Black-backed Gull	1	0	0	0	0	0	0	0	1	0	1	1	4	
Large gulls combined	5	1	2	1	3	2	1	0	1	0	2	4	22	

### 3.6 Results additional species

Table 3.6.1 Monthly densities of additional species at Neart na Gaoithe development area as calculated from fluxes of 1,000 of each species passing during the months of April and September (see § 2.3).

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Red-throated diver	0	0	0	0	0.007	0	0	0	0	0.007	0	0
Black-throated diver	0	0	0	0	0.006	0	0	0	0	0.007	0	0
Bean Goose	0	0	0	0	0.007	0	0	0	0	0.008	0	0
Pink footed goose	0	0	0	0	0.008	0	0	0	0	0.009	0	0
Barnacle goose	0	0	0	0	0.007	0	0	0	0	0.008	0	0
Bar-tailed godwit	0	0	0	0	0.007	0	0	0	0	0.008	0	0
Black-tailed godwit	0	0	0	0	0.007	0	0	0	0	0.008	0	0
Knot	0	0	0	0	0.006	0	0	0	0	0.007	0	0
Curlew	0	0	0	0	0.008	0	0	0	0	0.008	0	0
Dunlin	0	0	0	0	0.008	0	0	0	0	0.009	0	0
Sanderling	0	0	0	0	0.008	0	0	0	0	0.009	0	0
Grey plover	0	0	0	0	0.007	0	0	0	0	0.008	0	0
Lapwing	0	0	0	0	0.010	0	0	0	0	0.011	0	0
Ringed plover	0	0	0	0	0.006	0	0	0	0	0.007	0	0
Redshank	0	0	0	0	0.013	0	0	0	0	0.014	0	0
Turnstone	0	0	0	0	0.008	0	0	0	0	0.009	0	0
Oystercatcher	0	0	0	0	0.010	0	0	0	0	0.011	0	0
Arctic skua	0	0	0	0	0.009	0	0	0	0	0.010	0	0
Great skua	0	0	0	0	0.008	0	0	0	0	0.009	0	0
Common tern	0	0	0	0	0.012	0	0	0	0	0.013	0	0
Arctic Tern	0	0	0	0	0.011	0	0	0	0	0.013	0	0
Sandwich tern	0	0	0	0	0.011	0	0	0	0	0.012	0	0

**Table 3.6.2 Results of collision rate modelling for Neart na Gaoithe development area as calculated from fluxes of 1,000 of each species passing during the months of April and September (see § 2.3). Potential number of transits through the rotor-swept area.**

**Neart na Gaoithe 90 x 5MW**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area Jan	Potential number of transits through rotor-swept area Feb	Potential number of transits through rotor-swept area Mar	Potential number of transits through rotor-swept area Apr	Potential number of transits through rotor-swept area May	Potential number of transits through rotor-swept area Jun	Potential number of transits through rotor-swept area Jul	Potential number of transits through rotor-swept area Aug	Potential number of transits through rotor-swept area Sep	Potential number of transits through rotor-swept area Oct	Potential number of transits through rotor-swept area Nov	Potential number of transits through rotor-swept area Dec	TOTAL transits through rotor-swept area per YEAR
Red-throated diver	0.065	0	0	0	36	0	0	0	0	36	0	0	0	73
Black-throated diver	0.068	0	0	0	18	0	0	0	0	18	0	0	0	36
Bean Goose	0.074	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Pink footed goose	0.070	0	0	0	2490	0	0	0	0	2748	0	0	0	5238
Barnacle goose	0.068	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Bar-tailed godwit	0.056	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Black-tailed godwit	0.056	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Knot	0.051	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Curlew	0.063	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Dunlin	0.050	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Sanderling	0.051	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Grey plover	0.053	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Lapwing	0.058	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Ringed plover	0.049	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Redshank	0.063	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Turnstone	0.052	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Oystercatcher	0.063	0	0	0	2317	0	0	0	0	2558	0	0	0	4875
Arctic skua	0.063	0	0	0	69	0	0	0	0	69	0	0	0	139
Great skua	0.066	0	0	0	78	0	0	0	0	78	0	0	0	157
Common tern	0.065	0	0	0	232	0	0	0	0	232	0	0	0	463
Arctic Tern	0.064	0	0	0	51	0	0	0	0	51	0	0	0	102
Sandwich tern	0.066	0	0	0	66	0	0	0	0	66	0	0	0	131

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area Jan	Potential number of transits through rotor-swept area Feb	Potential number of transits through rotor-swept area Mar	Potential number of transits through rotor-swept area Apr	Potential number of transits through rotor-swept area May	Potential number of transits through rotor-swept area Jun	Potential number of transits through rotor-swept area Jul	Potential number of transits through rotor-swept area Aug	Potential number of transits through rotor-swept area Sep	Potential number of transits through rotor-swept area Oct	Potential number of transits through rotor-swept area Nov	Potential number of transits through rotor-swept area Dec	TOTAL transits through rotor-swept area per YEAR
Red-throated diver	0.065	0	0	0	28	0	0	0	0	28	0	0	0	55
Black-throated diver	0.068	0	0	0	14	0	0	0	0	14	0	0	0	28
Bean Goose	0.074	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Pink footed goose	0.070	0	0	0	1885	0	0	0	0	2081	0	0	0	3965
Barnacle goose	0.068	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Bar-tailed godwit	0.056	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Black-tailed godwit	0.056	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Knot	0.051	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Curlew	0.063	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Dunlin	0.050	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Sanderling	0.051	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Grey plover	0.053	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Lapwing	0.057	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Ringed plover	0.049	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Redshank	0.061	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Turnstone	0.052	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Oystercatcher	0.062	0	0	0	1754	0	0	0	0	1936	0	0	0	3690
Arctic skua	0.063	0	0	0	52	0	0	0	0	52	0	0	0	105
Great skua	0.066	0	0	0	59	0	0	0	0	59	0	0	0	119
Common tern	0.063	0	0	0	175	0	0	0	0	175	0	0	0	351
Arctic Tern	0.063	0	0	0	39	0	0	0	0	39	0	0	0	77
Sandwich tern	0.065	0	0	0	50	0	0	0	0	50	0	0	0	99

Table 3.6.2 continued

Neart na Gaoithe 73 x 6.15MW - 152

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area Jan	Potential number of transits through rotor-swept area Feb	Potential number of transits through rotor-swept area Mar	Potential number of transits through rotor-swept area Apr	Potential number of transits through rotor-swept area May	Potential number of transits through rotor-swept area Jun	Potential number of transits through rotor-swept area Jul	Potential number of transits through rotor-swept area Aug	Potential number of transits through rotor-swept area Sep	Potential number of transits through rotor-swept area Oct	Potential number of transits through rotor-swept area Nov	Potential number of transits through rotor-swept area Dec	TOTAL transits through rotor-swept area per YEAR
Red-throated diver	0.054	0	0	0	33	0	0	0	0	33	0	0	0	67
Black-throated diver	0.056	0	0	0	17	0	0	0	0	17	0	0	0	33
Bean Goose	0.061	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Pink footed goose	0.058	0	0	0	2274	0	0	0	0	2510	0	0	0	4784
Barnacle goose	0.056	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Bar-tailed godwit	0.046	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Black-tailed godwit	0.047	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Knot	0.042	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Curlew	0.052	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Dunlin	0.042	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Sanderling	0.042	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Grey plover	0.044	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Lapwing	0.048	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Ringed plover	0.041	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Redshank	0.051	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Turnstone	0.043	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Oystercatcher	0.051	0	0	0	2116	0	0	0	0	2336	0	0	0	4452
Arctic skua	0.052	0	0	0	63	0	0	0	0	63	0	0	0	127
Great skua	0.055	0	0	0	72	0	0	0	0	72	0	0	0	143
Common tern	0.053	0	0	0	212	0	0	0	0	211	0	0	0	423
Arctic Tern	0.052	0	0	0	47	0	0	0	0	47	0	0	0	93
Sandwich tern	0.054	0	0	0	60	0	0	0	0	60	0	0	0	120

Neart na Gaoithe 75 x 6MW

Species	Probability of collision during single rotor crossing	Potential number of transits through rotor-swept area Jan	Potential number of transits through rotor-swept area Feb	Potential number of transits through rotor-swept area Mar	Potential number of transits through rotor-swept area Apr	Potential number of transits through rotor-swept area May	Potential number of transits through rotor-swept area Jun	Potential number of transits through rotor-swept area Jul	Potential number of transits through rotor-swept area Aug	Potential number of transits through rotor-swept area Sep	Potential number of transits through rotor-swept area Oct	Potential number of transits through rotor-swept area Nov	Potential number of transits through rotor-swept area Dec	TOTAL transits through rotor-swept area per YEAR
Red-throated diver	0.057	0	0	0	35	0	0	0	0	35	0	0	0	69
Black-throated diver	0.059	0	0	0	17	0	0	0	0	17	0	0	0	35
Bean Goose	0.064	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Pink footed goose	0.061	0	0	0	2367	0	0	0	0	2613	0	0	0	4979
Barnacle goose	0.059	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Bar-tailed godwit	0.050	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Black-tailed godwit	0.050	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Knot	0.046	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Curlew	0.055	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Dunlin	0.045	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Sanderling	0.045	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Grey plover	0.047	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Lapwing	0.051	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Ringed plover	0.044	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Redshank	0.054	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Turnstone	0.046	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Oystercatcher	0.054	0	0	0	2203	0	0	0	0	2431	0	0	0	4634
Arctic skua	0.055	0	0	0	66	0	0	0	0	66	0	0	0	132
Great skua	0.057	0	0	0	75	0	0	0	0	75	0	0	0	149
Common tern	0.056	0	0	0	220	0	0	0	0	220	0	0	0	440
Arctic Tern	0.055	0	0	0	49	0	0	0	0	49	0	0	0	97
Sandwich tern	0.057	0	0	0	62	0	0	0	0	62	0	0	0	125

**Table 3.6.3 Results of collision rate modelling for Neart na Gaoithe development area as calculated from fluxes of 1,000 of each species passing during the months of April and September (see § 2.3). Potential number of collisions assuming an avoidance rate of 95%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bean Goose	0	0	0	7	0	0	0	0	8	0	0	0	15	
Pink footed goose	0	0	0	7	0	0	0	0	7	0	0	0	15	
Barnacle goose	0	0	0	6	0	0	0	0	8	0	0	0	14	
Bar-tailed godwit	0	0	0	5	0	0	0	0	6	0	0	0	11	
Black-tailed godwit	0	0	0	5	0	0	0	0	6	0	0	0	11	
Knot	0	0	0	5	0	0	0	0	5	0	0	0	10	
Curlew	0	0	0	6	0	0	0	0	7	0	0	0	13	
Dunlin	0	0	0	5	0	0	0	0	5	0	0	0	10	
Sanderling	0	0	0	5	0	0	0	0	5	0	0	0	10	
Grey plover	0	0	0	5	0	0	0	0	6	0	0	0	11	
Lapwing	0	0	0	6	0	0	0	0	6	0	0	0	12	
Ringed plover	0	0	0	6	0	0	0	0	5	0	0	0	10	
Redshank	0	0	0	6	0	0	0	0	7	0	0	0	13	
Turnstone	0	0	0	5	0	0	0	0	6	0	0	0	11	
Oystercatcher	0	0	0	6	0	0	0	0	7	0	0	0	13	
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Common tern	0	0	0	1	0	0	0	0	1	0	0	0	1	
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	Collisions per month with avoidance rate 0.95	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bean Goose	0	0	0	5	0	0	0	0	6	0	0	0	11	
Pink footed goose	0	0	0	5	0	0	0	0	6	0	0	0	12	
Barnacle goose	0	0	0	5	0	0	0	0	5	0	0	0	10	
Bar-tailed godwit	0	0	0	4	0	0	0	0	5	0	0	0	9	
Black-tailed godwit	0	0	0	4	0	0	0	0	5	0	0	0	9	
Knot	0	0	0	4	0	0	0	0	4	0	0	0	8	
Curlew	0	0	0	5	0	0	0	0	5	0	0	0	10	
Dunlin	0	0	0	4	0	0	0	0	4	0	0	0	8	
Sanderling	0	0	0	4	0	0	0	0	4	0	0	0	8	
Grey plover	0	0	0	4	0	0	0	0	4	0	0	0	8	
Lapwing	0	0	0	4	0	0	0	0	5	0	0	0	9	
Ringed plover	0	0	0	4	0	0	0	0	4	0	0	0	8	
Redshank	0	0	0	4	0	0	0	0	5	0	0	0	9	
Turnstone	0	0	0	4	0	0	0	0	4	0	0	0	8	
Oystercatcher	0	0	0	4	0	0	0	0	5	0	0	0	10	
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	1	
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table 3.6.3 continued

Neart na Gaoithe 73 x 6.15MW - 152

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	per month with avoidance rate 0.95 Jan	per month with avoidance rate 0.95 Feb	per month with avoidance rate 0.95 Mar	per month with avoidance rate 0.95 Apr	per month with avoidance rate 0.95 May	per month with avoidance rate 0.95 Jun	per month with avoidance rate 0.95 Jul	per month with avoidance rate 0.95 Aug	per month with avoidance rate 0.95 Sep	per month with avoidance rate 0.95 Oct	per month with avoidance rate 0.95 Nov	per month with avoidance rate 0.95 Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	5	0	0	0	0	6	0	0	0	0	11
Pink footed goose	0	0	0	5	0	0	0	0	6	0	0	0	0	12
Barnacle goose	0	0	0	5	0	0	0	0	6	0	0	0	0	10
Bar-tailed godwit	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Black-tailed godwit	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Knot	0	0	0	4	0	0	0	0	4	0	0	0	0	8
Curlew	0	0	0	5	0	0	0	0	5	0	0	0	0	10
Dunlin	0	0	0	4	0	0	0	0	4	0	0	0	0	8
Sanderling	0	0	0	4	0	0	0	0	4	0	0	0	0	8
Grey plover	0	0	0	4	0	0	0	0	4	0	0	0	0	8
Lapwing	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Ringed plover	0	0	0	4	0	0	0	0	4	0	0	0	0	8
Redshank	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Turnstone	0	0	0	4	0	0	0	0	4	0	0	0	0	8
Oystercatcher	0	0	0	5	0	0	0	0	5	0	0	0	0	10
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Neart na Gaoithe 75 x 6MW

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.95
	per month with avoidance rate 0.95 Jan	per month with avoidance rate 0.95 Feb	per month with avoidance rate 0.95 Mar	per month with avoidance rate 0.95 Apr	per month with avoidance rate 0.95 May	per month with avoidance rate 0.95 Jun	per month with avoidance rate 0.95 Jul	per month with avoidance rate 0.95 Aug	per month with avoidance rate 0.95 Sep	per month with avoidance rate 0.95 Oct	per month with avoidance rate 0.95 Nov	per month with avoidance rate 0.95 Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	6	0	0	0	0	7	0	0	0	0	13
Pink footed goose	0	0	0	6	0	0	0	0	7	0	0	0	0	13
Barnacle goose	0	0	0	6	0	0	0	0	6	0	0	0	0	12
Bar-tailed godwit	0	0	0	5	0	0	0	0	5	0	0	0	0	10
Black-tailed godwit	0	0	0	5	0	0	0	0	5	0	0	0	0	10
Knot	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Curlew	0	0	0	5	0	0	0	0	6	0	0	0	0	11
Dunlin	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Sanderling	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Grey plover	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Lapwing	0	0	0	5	0	0	0	0	5	0	0	0	0	10
Ringed plover	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Redshank	0	0	0	5	0	0	0	0	6	0	0	0	0	11
Turnstone	0	0	0	4	0	0	0	0	5	0	0	0	0	9
Oystercatcher	0	0	0	5	0	0	0	0	6	0	0	0	0	11
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.6.4 Results of collision rate modelling for Neart na Gaoithe development area as calculated from fluxes of 1,000 of each species passing during the months of April and September (see § 2.3). Potential number of collisions assuming an avoidance rate of 98%.

Neart na Gaoithe 90 x 5MW

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	3	0	0	0	0	0	3	0	0	0	6
Pink footed goose	0	0	0	3	0	0	0	0	0	3	0	0	0	6
Barnacle goose	0	0	0	3	0	0	0	0	0	3	0	0	0	5
Bar-tailed godwit	0	0	0	2	0	0	0	0	0	2	0	0	0	5
Black-tailed godwit	0	0	0	2	0	0	0	0	0	2	0	0	0	5
Knot	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Curlew	0	0	0	2	0	0	0	0	0	3	0	0	0	5
Dunlin	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Sanderling	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Grey plover	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Lapwing	0	0	0	2	0	0	0	0	0	2	0	0	0	5
Ringed plover	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Redshank	0	0	0	2	0	0	0	0	0	3	0	0	0	5
Turnstone	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Oystercatcher	0	0	0	2	0	0	0	0	0	3	0	0	0	5
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Neart na Gaoithe 73 x 6.15MW - 126

Species	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	Collisions per month with avoidance rate 0.98	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	2	0	0	0	0	0	2	0	0	0	5
Pink footed goose	0	0	0	2	0	0	0	0	0	2	0	0	0	5
Barnacle goose	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Bar-tailed godwit	0	0	0	2	0	0	0	0	0	2	0	0	0	3
Black-tailed godwit	0	0	0	2	0	0	0	0	0	2	0	0	0	3
Knot	0	0	0	1	0	0	0	0	0	2	0	0	0	3
Curlew	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Dunlin	0	0	0	1	0	0	0	0	0	2	0	0	0	3
Sanderling	0	0	0	1	0	0	0	0	0	2	0	0	0	3
Grey plover	0	0	0	2	0	0	0	0	0	2	0	0	0	3
Lapwing	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Ringed plover	0	0	0	1	0	0	0	0	0	2	0	0	0	3
Redshank	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Turnstone	0	0	0	2	0	0	0	0	0	2	0	0	0	3
Oystercatcher	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Table 3.6.4 continued

Neart na Gaoithe 73 x 6.15MW - 152

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98
	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bean Goose	0	0	0	2	0	0	0	0	0	2	0	0	5	
Pink footed goose	0	0	0	2	0	0	0	0	0	2	0	0	5	
Barnacle goose	0	0	0	2	0	0	0	0	0	2	0	0	4	
Bar-tailed godwit	0	0	0	2	0	0	0	0	0	2	0	0	3	
Black-tailed godwit	0	0	0	2	0	0	0	0	0	2	0	0	3	
Knot	0	0	0	1	0	0	0	0	0	2	0	0	3	
Curlew	0	0	0	2	0	0	0	0	0	2	0	0	4	
Dunlin	0	0	0	1	0	0	0	0	0	2	0	0	3	
Sanderling	0	0	0	1	0	0	0	0	0	2	0	0	3	
Grey plover	0	0	0	2	0	0	0	0	0	2	0	0	3	
Lapwing	0	0	0	2	0	0	0	0	0	2	0	0	4	
Ringed plover	0	0	0	1	0	0	0	0	0	2	0	0	3	
Redshank	0	0	0	2	0	0	0	0	0	2	0	0	4	
Turnstone	0	0	0	2	0	0	0	0	0	2	0	0	3	
Oystercatcher	0	0	0	2	0	0	0	0	0	2	0	0	4	
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	

Neart na Gaoithe 75 x 6MW

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.98
	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	per month with avoidance rate 0.98	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	2	0	0	0	0	0	3	0	0	5
Pink footed goose	0	0	0	2	0	0	0	0	0	3	0	0	5
Barnacle goose	0	0	0	2	0	0	0	0	0	2	0	0	5
Bar-tailed godwit	0	0	0	2	0	0	0	0	0	2	0	0	4
Black-tailed godwit	0	0	0	2	0	0	0	0	0	2	0	0	4
Knot	0	0	0	2	0	0	0	0	0	2	0	0	4
Curlew	0	0	0	2	0	0	0	0	0	2	0	0	4
Dunlin	0	0	0	2	0	0	0	0	0	2	0	0	4
Sanderling	0	0	0	2	0	0	0	0	0	2	0	0	4
Grey plover	0	0	0	2	0	0	0	0	0	2	0	0	4
Lapwing	0	0	0	2	0	0	0	0	0	2	0	0	4
Ringed plover	0	0	0	2	0	0	0	0	0	2	0	0	4
Redshank	0	0	0	2	0	0	0	0	0	2	0	0	4
Turnstone	0	0	0	2	0	0	0	0	0	2	0	0	4
Oystercatcher	0	0	0	2	0	0	0	0	0	2	0	0	4
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0

*Table 3.6.5 Results of collision rate modelling for Neart na Gaoithe development area as calculated from fluxes of 1,000 of each species passing during the months of April and September (see § 2.3). Potential number of collisions assuming an avoidance rate of 99%.*

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	1	0	0	0	0	2	0	0	0	0	3
Pink footed goose	0	0	0	1	0	0	0	0	2	0	0	0	0	3
Barnacle goose	0	0	0	1	0	0	0	0	1	0	0	0	0	3
Bar-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Black-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Knot	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Curlew	0	0	0	1	0	0	0	0	1	0	0	0	0	3
Dunlin	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Sanderling	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Grey plover	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Lapwing	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Ringed plover	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Redshank	0	0	0	1	0	0	0	0	1	0	0	0	0	3
Turnstone	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Oystercatcher	0	0	0	1	0	0	0	0	1	0	0	0	0	3
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	Collisions per month with avoidance rate 0.99	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Pink footed goose	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Barnacle goose	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Bar-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Black-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Knot	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Curlew	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Dunlin	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Sanderling	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Grey plover	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Lapwing	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Ringed plover	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Redshank	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Turnstone	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Oystercatcher	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.6.5 continued

Neart na Gaoithe 73 x 6.15MW - 152

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99
	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bean Goose	0	0	0	1	0	0	0	0	1	0	0	0	2	
Pink footed goose	0	0	0	1	0	0	0	0	1	0	0	0	2	
Barnacle goose	0	0	0	1	0	0	0	0	1	0	0	0	2	
Bar-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	2	
Black-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	2	
Knot	0	0	0	1	0	0	0	0	1	0	0	0	2	
Curlew	0	0	0	1	0	0	0	0	1	0	0	0	2	
Dunlin	0	0	0	1	0	0	0	0	1	0	0	0	2	
Sanderling	0	0	0	1	0	0	0	0	1	0	0	0	2	
Grey plover	0	0	0	1	0	0	0	0	1	0	0	0	2	
Lapwing	0	0	0	1	0	0	0	0	1	0	0	0	2	
Ringed plover	0	0	0	1	0	0	0	0	1	0	0	0	2	
Redshank	0	0	0	1	0	0	0	0	1	0	0	0	2	
Turnstone	0	0	0	1	0	0	0	0	1	0	0	0	2	
Oystercatcher	0	0	0	1	0	0	0	0	1	0	0	0	2	
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	

Neart na Gaoithe 75 x 6MW

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.99
	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	per month with avoidance rate 0.99	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	1	0	0	0	0	1	0	0	0	3
Pink footed goose	0	0	0	1	0	0	0	0	1	0	0	0	3
Barnacle goose	0	0	0	1	0	0	0	0	1	0	0	0	2
Bar-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	2
Black-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	2
Knot	0	0	0	1	0	0	0	0	1	0	0	0	2
Curlew	0	0	0	1	0	0	0	0	1	0	0	0	2
Dunlin	0	0	0	1	0	0	0	0	1	0	0	0	2
Sanderling	0	0	0	1	0	0	0	0	1	0	0	0	2
Grey plover	0	0	0	1	0	0	0	0	1	0	0	0	2
Lapwing	0	0	0	1	0	0	0	0	1	0	0	0	2
Ringed plover	0	0	0	1	0	0	0	0	1	0	0	0	2
Redshank	0	0	0	1	0	0	0	0	1	0	0	0	2
Turnstone	0	0	0	1	0	0	0	0	1	0	0	0	2
Oystercatcher	0	0	0	1	0	0	0	0	1	0	0	0	2
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0

**Table 3.6.6 Results of collision rate modelling for Neart na Gaoithe development area as calculated from fluxes of 1,000 of each species passing during the months of April and September (see § 2.3). Potential number of collisions assuming an avoidance rate of 99.5%.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Pink footed goose	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Barnacle goose	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Bar-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Black-tailed godwit	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Knot	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Curlew	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Dunlin	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Sanderling	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Grey plover	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Lapwing	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Ringed plover	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Redshank	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Turnstone	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Oystercatcher	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	Collisions per month with avoidance rate 0.995	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Pink footed goose	0	0	0	1	0	0	0	0	1	0	0	0	0	1
Barnacle goose	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Bar-tailed godwit	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Black-tailed godwit	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Knot	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Curlew	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Dunlin	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Sanderling	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grey plover	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lapwing	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Ringed plover	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Redshank	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Turnstone	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Oystercatcher	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Table 3.6.6 continued**  
 Neart na Gaoithe 73 x 6.15MW - 152

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995
	per month with avoidance rate 0.995 Jan	per month with avoidance rate 0.995 Feb	per month with avoidance rate 0.995 Mar	per month with avoidance rate 0.995 Apr	per month with avoidance rate 0.995 May	per month with avoidance rate 0.995 Jun	per month with avoidance rate 0.995 Jul	per month with avoidance rate 0.995 Aug	per month with avoidance rate 0.995 Sep	per month with avoidance rate 0.995 Oct	per month with avoidance rate 0.995 Nov	per month with avoidance rate 0.995 Dec	per month with avoidance rate 0.995		
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bean Goose	0	0	0	1	0	0	0	0	0	1	0	0	0	1	
Pink footed goose	0	0	0	1	0	0	0	0	0	1	0	0	0	1	
Barnacle goose	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
Bar-tailed godwit	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Black-tailed godwit	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Knot	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Curlew	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
Dunlin	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Sanderling	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Grey plover	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Lapwing	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Ringed plover	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Redshank	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Turnstone	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Oystercatcher	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Neart na Gaoithe 75 x 6MW

Species	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	Collisions	TOTAL COLLISIONS PER YEAR WITH AVOIDANCE RATE OF 0.995
	per month with avoidance rate 0.995 Jan	per month with avoidance rate 0.995 Feb	per month with avoidance rate 0.995 Mar	per month with avoidance rate 0.995 Apr	per month with avoidance rate 0.995 May	per month with avoidance rate 0.995 Jun	per month with avoidance rate 0.995 Jul	per month with avoidance rate 0.995 Aug	per month with avoidance rate 0.995 Sep	per month with avoidance rate 0.995 Oct	per month with avoidance rate 0.995 Nov	per month with avoidance rate 0.995 Dec	per month with avoidance rate 0.995	
Red-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-throated diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bean Goose	0	0	0	1	0	0	0	0	0	1	0	0	0	1
Pink footed goose	0	0	0	1	0	0	0	0	0	1	0	0	0	1
Barnacle goose	0	0	0	1	0	0	0	0	0	1	0	0	0	1
Bar-tailed godwit	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Black-tailed godwit	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Knot	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Curlew	0	0	0	1	0	0	0	0	0	1	0	0	0	1
Dunlin	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Sanderling	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grey plover	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lapwing	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Ringed plover	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Redshank	0	0	0	1	0	0	0	0	0	1	0	0	0	1
Turnstone	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Oystercatcher	0	0	0	1	0	0	0	0	0	1	0	0	0	1
Arctic skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctic Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sandwich tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0



## 4 Discussion

### 4.1 Collision rate modelling using the basic model - option 1

The results of the collision rate modelling for four wind farm variants in the Neart na Gaoithe development area are presented in chapter 6. For the 12 main species, these results are presented on the basis of densities of flying birds recorded in the development area during a three-year period. In addition, a further 22 species were assessed based on a fixed number of passages per year; these results are discussed at the end of this chapter. The results based on the mean density across the three years are discussed here in relation to the modelled estimates in order to prevent repetition.

A total of four wind farm variants were modelled. These variants differed in the type, size and operating characteristics of turbines as well as the numbers of turbines. These differences translate into differing collision risk for a single transit across the rotor-swept area and also the total number of transits through this area. In terms of the model used, in general a larger turbine relates to a lower collision risk per transit but a greater potential number of transits through the rotor-swept area for any given species. The total number of transits per wind farm is also influenced by the total number of turbines. For the variants modelled, the highest collision risk per transit was for the second smallest and that turbine with the fastest rotation speed (5MW Areva) and the lowest collision risk was for the second largest turbine (6.15MW 6M-152 RePower). The total number of transits per year was lowest for the variant with the fewest turbines (6.15MW 6M-126 RePower) and highest for the variant with the most turbines (5MW Areva).

For the model used, and for any given turbine, collision risk is related to the size and flight speed of the bird in question. Of the 12 species assessed, the largest, Northern Gannet, had the highest collision risk and the smallest, Puffin, the lowest. Collision risk per transit varied from 4.3% for Puffin with a 6.15MW (6M-152 RePower) turbine to 7.9% for Northern Gannet with the 5MW (Areva) and 6.15MW (6M-126 RePower) turbines. The combination of this collision risk and the potential number of transits resulted in the species-specific and variant-specific collision rates to which various avoidance factors were applied. This avoidance factor reduces the estimated numbers of collisions proportionately. Here avoidance rates of 95%, 98%, 99% and 99.5% were applied, which reduced the estimated numbers of collisions correspondingly.

The application of avoidance rates reduced the estimated number of collisions per year. For the highest collision rate calculated before avoidance (appendix 1), for Northern Gannet and the 90 x 5MW Areva variant, an avoidance rate of 99% reduced the estimated number of collisions to 237 per year; for a rate of 99.5% this was 118 estimated collisions per year.

The estimated numbers of collisions for the 22 additional species are fairly similar between species. This is a consequence of the identical fluxes and similar proportions flying at rotor height used. The latter value was taken from literature and for many species was a generic value leading to identical values being used for all species within a group, *i.e.* geese. The differences in results are therefore mainly due to bird characteristics (size and flight speed) and are relatively small compared. The numbers of birds used in the model is directly proportional to the estimated numbers of collisions. Therefore, increasing the flux two-fold would double the numbers of collisions. In this respect the results for these additional species, which are based on a known number of flights, provide a useful reference for species seldom recorded during the field surveys.

The estimates of collision rates for birds at Neart na Gaoithe development area were produced using the SOSS Band model, which makes a number of assumptions and simplifications of birds, turbines and their interactions. Furthermore, simplification of input data adds to the variability and uncertainty of output values. The main sources of uncertainty are outlined in Band (2012) and include, amongst others, the use of fixed parameters for dynamic variables like wingspan, flight speed, flight direction, turbine speed, wind speed and bird abundance. Uncertainty also exists in the data for bird abundance, which often shows high variability, both spatially and temporally. These factors influence the uncertainty surrounding estimates to varying degrees, however, it is arguably avoidance behaviour that has most influence on this uncertainty. Currently, few published figures exist for the level of avoidance exhibited by birds in relation to wind turbines, certainly for the offshore environment. This, coupled with the strong influence of the avoidance rate on the modelled results, means that the uncertainty arising from avoidance rates used are likely to overshadow any uncertainty resulting due to other factors. Band (2012) outlines the uncertainty surrounding the modelled results should be expressed numerically. For most factors, however, these cannot be assessed empirically and would therefore be an ambiguous appraisal of the error involved.



## 5 Literature

- Alerstam, T., M. Rosén, J. Bäckman, P.G.P. Ericson & O. Hellgren, 2007. Flight speeds among bird species: Allometric and phylogenetic effects. *PLoS Biol* 5(8): e197. doi:10.1371/journal.pbio.0050197.
- Band, W., M. 2012. Using a collision risk model to assess bird collision risks for offshore windfarms. SOSS, The Crown Estate, 62pp. <http://www.bto.org/science/wetland-and-marine/soss/projects>.
- Band, W., M. Madders & D.P. Whitfield, 2007. Developing field and analytical methods to assess avian collision risk at wind farms. in M. de Lucas, G.F.E. Janss & M. Ferrer. *Birds and Wind Farms: Risk Assessment and Mitigation*. pp. 259-275. Quercus. Madrid.
- Buckland, S.T., Anderson, D.R., Burnham, K.P., Laake, J.L. 1993. *DISTANCE Sampling: Estimating abundance of biological populations*. Chapman & Hall, London, reprinted 1999 by RUWPA, University of St. Andrews, Scotland.
- Buckland, S.T., Anderson, D.R., Burnham, K.P., Laake, J.L., Borchers, D.L., Thomas, L. 2001. *Introduction to Distance Sampling*. Oxford University Press, Oxford. 432pp.
- Buckland, S.T., Anderson, D.R., Burnham, K.P., Laake, J.L., Borchers, D.L., Thomas, L. (eds) 2004. *Advanced Distance Sampling*. Oxford University Press, Oxford. 434pp.
- Camphuysen, C.J., A.D. Fox, M.F. Leopold & I.K. Petersen, 2004. Towards standardised seabirds at sea census techniques in connection with environmental impact assessments for offshore wind farms in the U.K. - A comparison of ship and aerial sampling methods for marine birds, and their applicability to offshore wind farm assessments. Report COWRIE - BAM -02-2002.
- Chamberlain, D.E., M.R. Rehfisch, A.D. Fox, M. Desholm & S.J. Anthony, 2006. The effect of avoidance rates on bird mortality predictions made by wind turbine collision risk models. *Ibis* 148: 198-202.
- Cook, A.S.C.P., Wright, L.J., and Burton, N.H.K. (2012). A Review of flight heights and avoidance rates of birds in relation to offshore windfarms. Crown Estate Strategic Ornithological Support Services (SOSS), project SOSS-02.
- Cramp, S. & C.M. Perrins, 1977-1994. *Handbook of the birds of Europe, the Middle East and Africa. The birds of the western Palearctic*. Oxford University Press, Oxford.
- Mainstream Renewable Power (2012). *Meart na Gaoithe Offshore Wind Farm Environmental Statement Appendix 12.1 Ornithological Technical Report*.
- Pennycuik, C.J. 1997. Actual and 'optimum' flight speeds: Field data reassessed. *The Journal of Experimental Biology* 200: 2355-2361.
- Pennycuik, C.J. 1987. Flight of auks (Alcidae) and other northern seabirds compared with southern Procellariiformes: ornithologist observations. *Journal of Experimental Biology* 128: 335-347.
- Snow, D.W. & C. Perrins 1997. *Birds of the Western Palearctic. Concise edition. Volume 1, Non-passerines*. Oxford University Press, Oxford.
- Thaxter, C.B., S. Wanless, F. Daunt, M.P. Harris, S. Benvenuti, Y. Watanuki, D. Grénillet & K.C. Harmer, 2010. Influence of wing loading on the trade-off between pursuit-diving and flight in common guillemots and razorbills. *The Journal of Experimental Biology* 213: 1018-1025.

- Thomas, L., Buckland, S.T., Rexstad, E.A., Laake, J.L., Strindberg, S., Hedley, S.L., Bishop, J.R.B., Marques, T.A. and Burnham, K.P. (2010) Distance software: design and analysis of distance sampling surveys for estimating population size. *Journal of Applied Ecology* 47: 5-14
- Tasker, M.L., P.H. Jones, T.J. Dixon & B.F. Blake, 1984. Counting seabirds at sea from ships: a review of methods employed and a suggestion for a standardized approach. *Auk* 101: 567-577.
- Wakeling, J.M. & J. Hodgson, 1992. Optimisation of the flight speed of the little, common and Sandwich tern. *Journal of Experimental Biology*. 169; 261-266.
- Wright, L. J., Ross-Smith, V. H., Massimino, D., Dadam, D., Cook, A. S. C. P., & Burton, N. H. K. 2012. *Assessing the risk of offshore wind farm development to migratory birds designated as features of UK Special Protection Areas (and other Annex 1 species)*. BTO report to the Strategic Ornithological Support Service (SOSS), Thetford.

# Appendix 1

Results of collision rate modelling for Neart na Gaoithe development area assuming no avoidance.

**Table A.1.1** Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2010. Potential number of collisions per year assuming no avoidance.

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO
	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	39	110	3007	947	1288	1971	748	1344	2521	1035	116	0	
Kittiwake	0	0	0	36	245	115	238	37	865	677	97	61	
Guillemot	0	3	1	15	13	1	0	0	0	3	1	0	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	842	252	1133	308	0	329	0	0	0	0	825	1043	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	0	281	0	0	
Lesser Black-backed Gull	0	0	0	74	84	0	81	0	0	0	0	0	
Great Black-backed Gull	354	0	0	0	0	0	0	0	194	0	173	493	
Large gulls combined	1146	206	925	503	285	269	277	0	252	0	899	1491	

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO
	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	29	83	2267	714	971	1486	564	1013	1901	781	87	0	
Kittiwake	0	0	1	27	184	87	179	28	652	510	73	46	
Guillemot	0	2	1	11	10	1	0	0	0	2	1	0	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	632	189	851	231	0	247	0	0	0	0	620	783	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	0	210	0	0	
Lesser Black-backed Gull	0	0	0	56	63	0	61	0	0	0	0	0	
Great Black-backed Gull	267	0	0	0	0	0	0	0	146	0	131	372	
Large gulls combined	862	155	696	379	214	202	208	0	189	0	676	1121	

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO
	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	29	83	2271	715	973	1489	565	1015	1904	782	88	0	
Kittiwake	0	0	0	27	185	87	179	28	652	511	73	46	
Guillemot	0	2	1	11	10	1	0	0	0	2	1	0	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	634	190	852	232	0	247	0	0	0	0	621	785	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	0	210	0	0	
Lesser Black-backed Gull	0	0	0	56	63	0	61	0	0	0	0	0	
Great Black-backed Gull	267	0	0	0	0	0	0	0	147	0	131	372	
Large gulls combined	864	155	697	379	215	202	208	0	189	0	677	1123	

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO	Collisions per month NO
	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Gannet	32	92	2524	800	1087	1661	634	1141	2119	865	97	0	
Kittiwake	0	0	0	31	210	99	205	32	739	574	82	52	
Guillemot	0	2	1	13	12	1	0	0	0	3	1	0	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	684	211	953	261	0	278	0	0	0	0	690	875	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	0	237	0	0	
Lesser Black-backed Gull	0	0	0	63	71	0	69	0	0	0	0	0	
Great Black-backed Gull	292	0	0	0	0	0	0	0	164	0	145	414	
Large gulls combined	946	173	779	427	241	227	235	0	212	0	753	1252	

**Table A.1.2 Results of collision rate modelling for Neart na Gaoithe development area between November 2010 and October 2011. Potential number of collisions per year assuming no avoidance.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS per YEAR
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE
Gannet	76	2116	524	1304	6623	5140	10627	5571	4370	1991	0	35	41866
Kittiwake	32	52	33	254	466	158	1307	148	105	451	0	3167	6745
Guillemot	4	2	3	27	11	9	4	2	0	1	0	1	70
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	1649	529	567	0	0	1012	0	0	0	0	0	258	4379
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	1840	0	0	0	2007
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	173	0	0	0	0	213	0	0	188	0	0	162	804
Large gulls combined	1571	432	463	0	0	1102	0	0	244	0	0	421	4618

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS per YEAR
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE
Gannet	57	1595	395	984	4994	3875	8013	4201	3295	1501	0	26	31566
Kittiwake	24	47	25	191	351	119	984	112	79	340	0	2385	5080
Guillemot	3	1	2	21	8	7	3	2	0	0	0	1	53
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	1238	397	426	0	0	760	0	0	0	0	0	194	3289
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	1370	0	0	0	1494
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	131	0	0	0	0	160	0	0	142	0	0	122	606
Large gulls combined	1182	325	348	0	0	829	0	0	183	0	0	317	3473

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS per YEAR
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE
Gannet	57	1598	396	985	5003	3883	8028	4209	3301	1504	0	26	31626
Kittiwake	24	47	25	192	351	119	985	112	79	340	0	2388	5087
Guillemot	3	1	2	21	8	7	3	2	0	0	0	1	53
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	1241	398	427	0	0	761	0	0	0	0	0	194	3295
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	1372	0	0	0	1497
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	131	0	0	0	0	161	0	0	142	0	0	123	607
Large gulls combined	1184	326	349	0	0	830	0	0	184	0	0	317	3479

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS per YEAR
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE
Gannet	62	1768	440	1103	5592	4333	9011	4729	3674	1662	0	29	35349
Kittiwake	27	53	28	218	399	135	1126	128	90	383	0	2692	5759
Guillemot	3	1	3	24	10	8	4	2	0	1	0	1	61
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	1360	443	477	0	0	855	0	0	0	0	0	216	3656
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	1562	0	0	0	1704
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	143	0	0	0	0	180	0	0	159	0	0	136	674
Large gulls combined	1297	362	390	0	0	933	0	0	206	0	0	353	3863

**Table A.1.3 Results of collision rate modelling for Neart na Gaoithe development area between November 2011 and October 2012. Potential number of collisions per year assuming no avoidance.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS per YEAR
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		AVOIDANCE
Gannet	38	112	1683	643	3828	2038	2322	3177	3610	1683	231	0	21105	
Kittiwake	194	0	284	72	432	155	195	109	105	172	672	0	2607	
Guillemot	12	3	3	4	11	10	0	0	0	1	4	0	53	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	553	0	0	306	1342	0	668	0	0	0	0	0	3130	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lesser Black-backed Gull	0	0	0	0	161	0	0	0	0	0	0	0	176	
Great Black-backed Gull	523	0	0	0	0	0	0	0	0	0	172	0	759	
Large gulls combined	1130	0	0	250	1644	0	545	0	0	0	223	0	4137	

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS per YEAR
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE
Gannet	29	85	1269	485	2886	1536	1751	2396	2722	1254	174	0	15913
Kittiwake	146	0	214	54	325	117	147	82	79	129	506	0	1964
Guillemot	9	2	2	3	8	8	0	0	0	0	3	0	40
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	416	0	0	230	1008	0	501	0	0	0	0	0	2351
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	121	0	0	0	0	0	0	0	132
Great Black-backed Gull	394	0	0	0	0	0	0	0	0	0	130	0	572
Large gulls combined	850	0	0	188	1236	0	410	0	0	0	168	0	3112

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS per YEAR
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE
Gannet	29	85	1271	486	2891	1539	1754	2400	2727	1257	174	0	15943
Kittiwake	147	0	215	54	326	117	147	83	79	129	507	0	1967
Guillemot	9	2	2	3	8	8	0	0	0	0	3	0	40
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	416	0	0	230	1010	0	502	0	0	0	0	0	2355
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	121	0	0	0	0	0	0	0	133
Great Black-backed Gull	395	0	0	0	0	0	0	0	0	0	130	0	573
Large gulls combined	851	0	0	188	1239	0	411	0	0	0	168	0	3117

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS per YEAR
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE
Gannet	31	94	1413	544	3232	1718	1969	2697	3035	1389	192	0	17797
Kittiwake	162	0	243	62	371	133	168	94	89	146	569	0	2222
Guillemot	11	2	2	4	10	9	0	0	0	1	4	0	46
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	456	0	0	260	1136	0	568	0	0	0	0	0	2640
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Gull	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	137	0	0	0	0	0	0	0	150
Great Black-backed Gull	432	0	0	0	0	0	0	0	0	0	144	0	628
Large gulls combined	933	0	0	212	1393	0	464	0	0	0	187	0	3479

**Table A.1.4 Results of collision rate modelling for Neart na Gaoithe development area between November 2009 and October 2012; mean of all three years. Potential number of collisions per year assuming no avoidance.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	per YEAR
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		NO AVOIDANCE	
Gannet	51	76	780	1738	964	3908	3043	4557	3361	3500	1564	173	17	23657	
Kittiwake	76	21	106	121	121	380	143	579	98	358	434	384	1617	4316	
Guillemot	5	4	2	15	12	7	1	1	0	1	3	2	2	54	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	1016	261	567	205	447	446	223	0	0	0	413	652	4229		
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	613	94	0	0	0	707	
Lesser Black-backed Gull	0	0	0	25	82	0	27	0	0	0	0	0	0	133	
Great Black-backed Gull	350	0	0	0	0	71	0	0	127	0	173	329	1050		
Large gulls combined	1284	213	463	251	643	456	274	0	165	0	562	958	5268		

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	per YEAR
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NO AVOIDANCE	
Gannet	38	57	588	1310	727	2946	2294	3436	2534	2639	1179	131	13	17837
Kittiwake	16	16	80	91	287	107	436	74	270	327	289	1218	3250	
Guillemot	4	3	2	12	9	5	1	1	0	1	2	1	41	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	763	196	425	154	336	335	167	0	0	0	310	489	3176	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	456	70	0	0	526	
Lesser Black-backed Gull	0	0	0	19	61	0	20	0	0	0	0	0	100	
Great Black-backed Gull	264	0	0	0	0	53	0	0	96	0	130	248	792	
Large gulls combined	966	160	348	189	483	343	206	0	124	0	422	720	3962	

**Neart na Gaoithe 73 x 6.15MW - 152**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	per YEAR
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NO AVOIDANCE	
Gannet	38	57	590	1313	728	2952	2299	3442	2539	2644	1182	131	13	17870
Kittiwake	16	16	80	91	287	108	437	74	270	327	290	1220	3255	
Guillemot	4	3	2	12	9	5	1	1	0	1	2	1	41	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	764	196	426	154	337	336	167	0	0	0	311	490	3182	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	457	70	0	0	527	
Lesser Black-backed Gull	0	0	0	19	62	0	20	0	0	0	0	0	101	
Great Black-backed Gull	265	0	0	0	0	53	0	0	96	0	131	248	793	
Large gulls combined	967	160	349	189	484	344	206	0	124	0	423	722	3969	

**Neart na Gaoithe 75 x 6MW**

Species	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	Collisions per month	TOTAL COLLISIONS
	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	NO AVOIDANCE	per YEAR
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NO AVOIDANCE	
Gannet	42	63	652	1459	815	3299	2566	3864	2853	2942	1306	145	15	19957
Kittiwake	18	18	90	104	326	122	499	85	306	368	326	1375	3681	
Guillemot	5	4	2	13	10	6	1	1	0	1	2	2	47	
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	
Puffin	0	0	0	0	0	0	0	0	0	0	0	0	0	
Herring Gull	838	218	477	174	379	377	189	0	0	0	346	547	3544	
Pink-footed Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	
Great Skua	0	0	0	0	0	0	0	0	0	0	0	0	0	
Little Gull	0	0	0	0	0	0	0	0	520	79	0	0	600	
Lesser Black-backed Gull	0	0	0	21	69	0	23	0	0	0	0	0	114	
Great Black-backed Gull	289	0	0	0	0	60	0	0	107	0	145	276	877	
Large gulls combined	1060	179	390	213	545	386	233	0	139	0	470	804	4419	

**Table A.1.5 Results of collision rate modelling for Neart na Gaoithe development area as calculated from a flux of 1,000 of each species passing twice during a year, once in April and once in September (see § 2.3). Potential number of collisions assuming no avoidance.**

**Neart na Gaoithe 90 x 5MW**

Species	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	TOTAL
	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	COLLISIONS
	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	per YEAR NO
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE	
Red-throated diver	0	0	0	2	0	0	0	0	2	0	0	0	0	4
Black-throated diver	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Bean Goose	0	0	0	141	0	0	0	0	157	0	0	0	0	298
Pink footed goose	0	0	0	144	0	0	0	0	160	0	0	0	0	304
Barnacle goose	0	0	0	130	0	0	0	0	144	0	0	0	0	274
Bar-tailed godwit	0	0	0	107	0	0	0	0	119	0	0	0	0	226
Black-tailed godwit	0	0	0	107	0	0	0	0	120	0	0	0	0	227
Knot	0	0	0	97	0	0	0	0	108	0	0	0	0	206
Curlew	0	0	0	121	0	0	0	0	135	0	0	0	0	256
Dunlin	0	0	0	97	0	0	0	0	108	0	0	0	0	204
Sanderling	0	0	0	98	0	0	0	0	109	0	0	0	0	206
Grey plover	0	0	0	101	0	0	0	0	113	0	0	0	0	214
Lapwing	0	0	0	111	0	0	0	0	124	0	0	0	0	235
Ringed plover	0	0	0	94	0	0	0	0	105	0	0	0	0	198
Redshank	0	0	0	121	0	0	0	0	135	0	0	0	0	257
Turnstone	0	0	0	100	0	0	0	0	112	0	0	0	0	212
Oystercatcher	0	0	0	120	0	0	0	0	134	0	0	0	0	254
Arctic skua	0	0	0	4	0	0	0	0	4	0	0	0	0	7
Great skua	0	0	0	4	0	0	0	0	4	0	0	0	0	9
Common tern	0	0	0	12	0	0	0	0	13	0	0	0	0	25
Arctic Tern	0	0	0	3	0	0	0	0	3	0	0	0	0	5
Sandwich tern	0	0	0	4	0	0	0	0	4	0	0	0	0	7

**Neart na Gaoithe 73 x 6.15MW - 126**

Species	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	TOTAL
	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	COLLISIONS
	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	per YEAR NO
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE	
Red-throated diver	0	0	0	1	0	0	0	0	2	0	0	0	0	3
Black-throated diver	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Bean Goose	0	0	0	107	0	0	0	0	119	0	0	0	0	227
Pink footed goose	0	0	0	110	0	0	0	0	122	0	0	0	0	232
Barnacle goose	0	0	0	99	0	0	0	0	110	0	0	0	0	209
Bar-tailed godwit	0	0	0	81	0	0	0	0	90	0	0	0	0	172
Black-tailed godwit	0	0	0	82	0	0	0	0	91	0	0	0	0	173
Knot	0	0	0	74	0	0	0	0	83	0	0	0	0	157
Curlew	0	0	0	92	0	0	0	0	102	0	0	0	0	194
Dunlin	0	0	0	73	0	0	0	0	81	0	0	0	0	154
Sanderling	0	0	0	74	0	0	0	0	82	0	0	0	0	156
Grey plover	0	0	0	77	0	0	0	0	86	0	0	0	0	163
Lapwing	0	0	0	83	0	0	0	0	93	0	0	0	0	176
Ringed plover	0	0	0	71	0	0	0	0	80	0	0	0	0	151
Redshank	0	0	0	89	0	0	0	0	99	0	0	0	0	188
Turnstone	0	0	0	76	0	0	0	0	84	0	0	0	0	160
Oystercatcher	0	0	0	90	0	0	0	0	100	0	0	0	0	190
Arctic skua	0	0	0	3	0	0	0	0	3	0	0	0	0	5
Great skua	0	0	0	3	0	0	0	0	3	0	0	0	0	6
Common tern	0	0	0	9	0	0	0	0	9	0	0	0	0	18
Arctic Tern	0	0	0	2	0	0	0	0	2	0	0	0	0	4
Sandwich tern	0	0	0	3	0	0	0	0	3	0	0	0	0	5

Table A.1.5 continued

Neart na Gaoithe 73 x 6.15MW - 152

Species	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	TOTAL
	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	COLLISIONS
	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	per YEAR NO
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		AVOIDANCE
Red-throated diver	0	0	0	0	1	0	0	0	0	2	0	0	0	3
Black-throated diver	0	0	0	0	1	0	0	0	0	1	0	0	0	2
Bean Goose	0	0	0	107	0	0	0	0	0	120	0	0	0	227
Pink footed goose	0	0	0	110	0	0	0	0	0	122	0	0	0	232
Barnacle goose	0	0	0	99	0	0	0	0	0	110	0	0	0	209
Bar-tailed godwit	0	0	0	81	0	0	0	0	0	91	0	0	0	172
Black-tailed godwit	0	0	0	82	0	0	0	0	0	91	0	0	0	173
Knot	0	0	0	74	0	0	0	0	0	83	0	0	0	157
Curlew	0	0	0	92	0	0	0	0	0	102	0	0	0	194
Dunlin	0	0	0	73	0	0	0	0	0	81	0	0	0	154
Sanderling	0	0	0	74	0	0	0	0	0	82	0	0	0	156
Grey plover	0	0	0	77	0	0	0	0	0	86	0	0	0	163
Lapwing	0	0	0	83	0	0	0	0	0	93	0	0	0	177
Ringed plover	0	0	0	71	0	0	0	0	0	80	0	0	0	151
Redshank	0	0	0	89	0	0	0	0	0	100	0	0	0	189
Turnstone	0	0	0	76	0	0	0	0	0	84	0	0	0	160
Oystercatcher	0	0	0	90	0	0	0	0	0	100	0	0	0	190
Arctic skua	0	0	0	3	0	0	0	0	0	3	0	0	0	5
Great skua	0	0	0	3	0	0	0	0	0	3	0	0	0	6
Common tern	0	0	0	9	0	0	0	0	0	9	0	0	0	19
Arctic Tern	0	0	0	2	0	0	0	0	0	2	0	0	0	4
Sandwich tern	0	0	0	3	0	0	0	0	0	3	0	0	0	5

Neart na Gaoithe 75 x 6MW

Species	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	Collisions per	TOTAL	
	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	month NO	COLLISIONS	
	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	AVOIDANCE	per YEAR NO	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVOIDANCE	
Red-throated diver	0	0	0	0	2	0	0	0	0	2	0	0	0	3
Black-throated diver	0	0	0	0	1	0	0	0	0	1	0	0	0	2
Bean Goose	0	0	0	121	0	0	0	0	0	134	0	0	0	255
Pink footed goose	0	0	0	124	0	0	0	0	0	138	0	0	0	262
Barnacle goose	0	0	0	112	0	0	0	0	0	124	0	0	0	235
Bar-tailed godwit	0	0	0	93	0	0	0	0	0	103	0	0	0	197
Black-tailed godwit	0	0	0	94	0	0	0	0	0	104	0	0	0	198
Knot	0	0	0	86	0	0	0	0	0	95	0	0	0	181
Curlew	0	0	0	104	0	0	0	0	0	115	0	0	0	220
Dunlin	0	0	0	85	0	0	0	0	0	94	0	0	0	178
Sanderling	0	0	0	86	0	0	0	0	0	95	0	0	0	180
Grey plover	0	0	0	89	0	0	0	0	0	99	0	0	0	187
Lapwing	0	0	0	96	0	0	0	0	0	106	0	0	0	202
Ringed plover	0	0	0	83	0	0	0	0	0	92	0	0	0	175
Redshank	0	0	0	102	0	0	0	0	0	113	0	0	0	215
Turnstone	0	0	0	87	0	0	0	0	0	97	0	0	0	184
Oystercatcher	0	0	0	102	0	0	0	0	0	114	0	0	0	216
Arctic skua	0	0	0	3	0	0	0	0	0	3	0	0	0	6
Great skua	0	0	0	4	0	0	0	0	0	4	0	0	0	7
Common tern	0	0	0	10	0	0	0	0	0	11	0	0	0	21
Arctic Tern	0	0	0	2	0	0	0	0	0	2	0	0	0	5
Sandwich tern	0	0	0	3	0	0	0	0	0	3	0	0	0	6





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