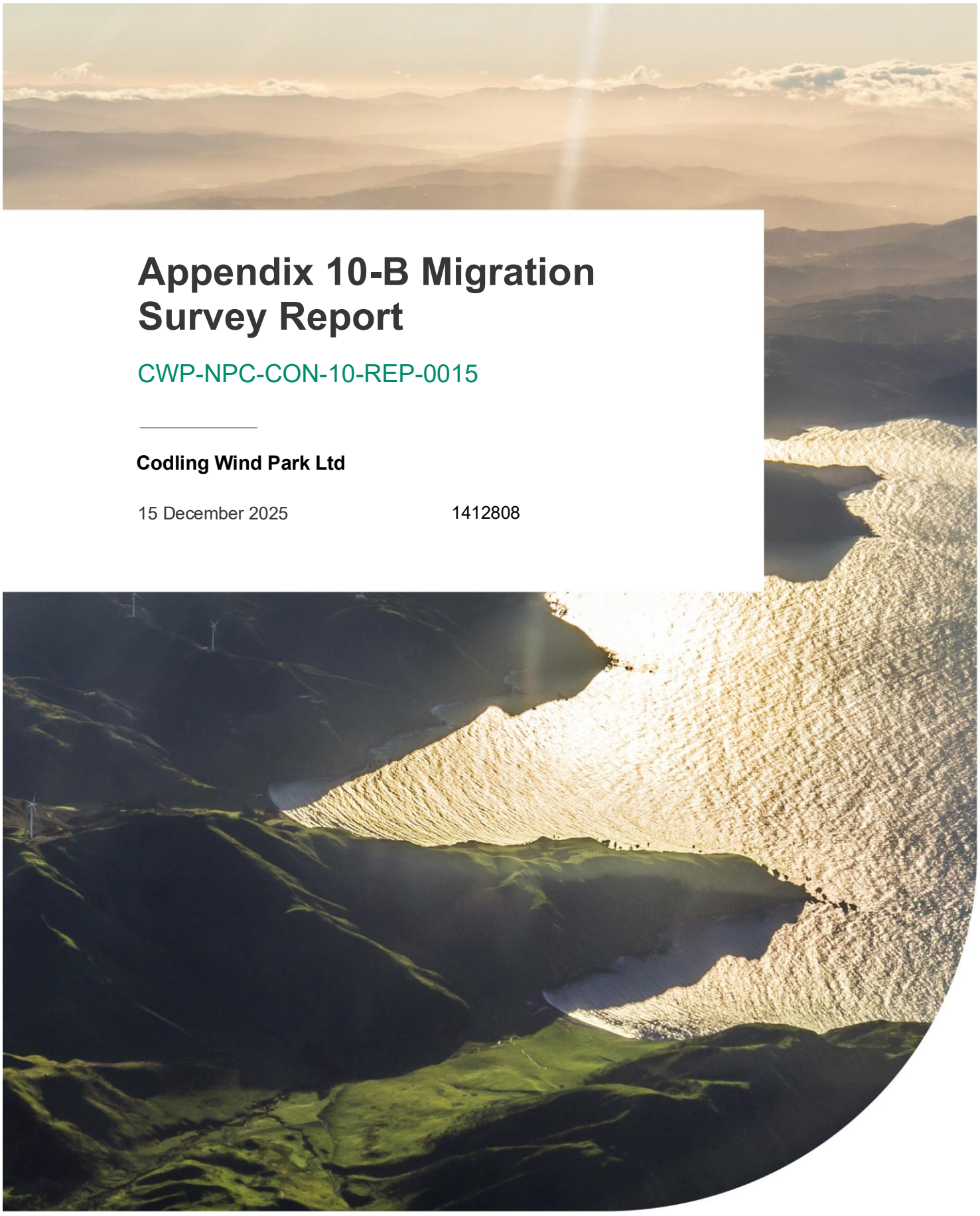
codling wind park

EIAR Addendum

Appendix 10-B Migration Survey Report



Appendix 10-B Migration Survey Report

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Codling Wind Park Ltd

15 December 2025 1412808

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Document history

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Contents

1. Introduction

This report presents the findings of migratory seabird surveys conducted in 2025 using three complementary approaches: acoustic monitoring, coastal vantage point (VP) observations, and vessel-based visual surveys. These surveys were completed in response to Item 7b in the FIR Response Document and supports Section 10 of the EIAR Addendum. These methods align with the core methods described within Irish guidance[1].

This report includes data collected in 2025 during the spring and autumn migration seasons, as well as historical data from previous survey rounds in 2013, 2018, 2019, and 2020. A comprehensive overview of seabird migration along the Irish coastline is provided, detailing the methodologies and results for each of the three surveys. The following survey reports provide an overview of the potential for seabird species to pass through the proposed Codling Wind Park during migration. This report, and the associated data, represents a comprehensive data validation exercise, providing contemporary and site-specific accounts to support and validate the characterisation approaches adopted within the EIAR and NIS and provides a clear and robust justification in response to the FIR.

2. Coastal VP Surveys

Introduction

Due to the central location of the proposed Codling Wind Park in relation to a number of Special Protection Areas (SPAs) designated for wintering geese and swans, Natural Power Consultants conducted coastal spring and autumn migration surveys from three coastal vantage points (VPs) in Ireland; two in County Wicklow and one on the County Wicklow / County Wexford border. The intention of these surveys was to provide information about the movements of geese and swans along the Irish coastline to / from SPAs during migration. The overall aim of these surveys was therefore to quantify any goose and / or swan migration through the proposed Codling Wind Park.

A number of internationally important SPAs for wintering (and therefore migratory) geese and swans are located along the Irish east coast within 75 km of the Codling Bank Wind Park. Species of particular interest include pale-bellied brent goose (*Branta bernicla hrota*) and Greenland white-fronted goose (*Anser albifrons flavirostris*), with Icelandic breeding greylag goose (*Anser anser*), whooper swan (*Cygnus cygnus*) and Bewick's swan (*Cygnus columbianus*) potential additional species.

Assessing potential connectivity between the proposed development and these SPAs involves determining the likelihood of those species utilising the East Atlantic migration flyways over the western Irish Sea (Burke et al., 2018)[2].

Methods

Since there is no guidance on migratory bird survey protocols for the Republic of Ireland, guidance developed by NatureScot (formerly Scottish Natural Heritage (SNH)) for onshore wind farm ornithology surveys was followed (SNH 2010). This aligns with the reference provided with the Irish guidance[1] which refers to Scottish guidance as representing best practice for coastal VP surveys.

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[1] Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Projects - PART II. Available at: f957f02d-guidance-on-marine-baseline-ecological-assessments-monitoring-activities-for-.pdf

[2] Burke, B., Fitzgerald, N. & Lewis, L. (2018). Irish Wetland Bird Survey : Results of waterbird monitoring in Ireland in 2015/16. BirdWatch Ireland, Wicklow

Surveys to record movements of geese during the 2025 spring and autumn migration periods were conducted from three coastal VPs:

- Kilmichael Point, County Wicklow / County Wexford border
- Bray Head, County Wicklow
- Wicklow Head, County Wicklow

The protocol followed during coastal migration VP surveys was a systematic 180° scan (including overhead) for birds in flight. The primary target species were geese and swans, with secondary target species being ducks, divers, waders, raptors and passerines. The surveys were not undertaken in weather conditions which were likely to preclude migration. The data collected for each observation were:

- Time of observation
- Species
- Flock size
- Flight height, using agreed bands (1 = 0-20 m, 2 = 20-200 m, 3 = 200-300 m, 4 > 300 m)
- Flight direction
- Distance from observer (to the nearest 100 m)
- Flight-lines drawn onto maps, which were later digitised in GIS (primary target species only)

H2 corresponds with the rotor-swept area of the proposed Codling Wind Park development.

Surveys were undertaken by an experienced local (Wexford) ornithologist, familiar with VP survey methodologies and identification of target species.

Effort

Coastal VP surveys were undertaken in spring & autumn 2013 and between autumn 2018 and spring 2020, inclusive, to inform and validate the baseline characteristics of the migratory ornithological features. The historical survey effort and weather conditions are detailed in **Table 2.1**. In accordance with Irish guidance[1] surveys were not undertaken in sea states greater than Beaufort force 4. This report includes a summary of the historical survey efforts and results, with the inclusion of the 2025 survey results.

Table 2.1: Historical survey effort & weather conditions

VP	Date	Season	Start	End	Wind Force	Wind direction	Cloud cover	Visibility
Kilmichael Point	29/03/2013	Spring	06:30	13:30	4	NNE-NE	6-8/8	Good
	04/04/2013		06:30	13:30	4	ENE	1-2/8	Good
	12/04/2013		07:30	14:30	4-5	SE-ESE	1-2/8	Good
	17/04/2013		08:45	15:45	4-5	SSW-SW	5-8/8	Good
	26/04/2013		09:30	16:30	5	WSW	5-8/8	Good
	02/05/2013		06:30	13:30	3-5	SE-ESE	2-4/8	Good
	13/09/2013	Autumn	09:00	16:00	2-3	NW-N	2-8/8	Good
	19/09/2013		09:00	16:00	3-5	NE-N	5-8/8	Moderate
	30/09/2013		07:30	14:30	3-5	ESE-SE	5-8/8	Moderate
	03/10/2013		07:30	14:30	3-4	SE-ESE	5-8/8	Moderate
	10/10/2013		08:30	15:30	3-4	N-NW	5-8/8	Moderate
	15/10/2013		08:45	15:45	4-5	NE-E	4-7/8	Moderate
	21/10/2013		09:30	16:30	4-5	ESE-E	5-8/8	Good
	01/11/2013		09:30	16:30	3-4	SW-WSW	5-8/8	Good
	08/10/2018	Autumn	07:30	14:30	4	SW-SSW	8/8	Good
	17/10/2018		12:15	15:15	2	NNW	2-3/8	Good
	30/10/2018		12:30	15:15	1	SSW	0-1/8	Good
	07/11/2018		12:15	15:15	3	WSW	3-6/8	Good
	19/11/2018		08:30	11:30	3	ENE	6-8/8	Good
	28/11/2018		11:30	14:30	5	S	4-6/8	Good

VP	Date	Season	Start	End	Wind Force	Wind direction	Cloud cover	Visibility
	11/12/2018		08:35	11:35	4	S	8/8	Good
	20/03/2019	Spring	10:00	13:00	2-3	SSW/SW	3-4/8	Good
	27/03/2019		09:30	12:30	1-2	W/WSW	4-6	Good
	02/04/2019		10:20	13:20	2-4	WSW/W	3-4/8	Good
	09/04/2019		06:10	09:10	1-2	SSE/SE	2-3/8	Good
	24/04/2019		18:10	21:10	3	E/ESE	5-6/8	Good
	06/05/2019		09:25	12:25	1-2	NNW/N	2-3/8	Good
	25/09/2019	Autumn	06:45	13:15	2	SW/WSW	4-7/8	Good
	05/10/2019		10:05	16:35	2-3	SSE/SE	7-8/8	Good
	16/10/2019		11:05	17:35	3-4	SW/WSW	6-8/8	Good
	28/10/2019		06:45	13:15	2-4	NNW/N/NE	2-6/8	Good
	01/11/2019		06:49	13:21	1-3	SSW/SW	7-8/8	Good
	11/11/2019		10:36	17:06	3-4	WSW/W	4-6/8	Good
	18/11/2019		07:22	13:52	1-2	W/WSW/S	2-3	Good
	09/03/2020	Spring	07:05	13:35	3-4	SW	6-8/8	Good
	17/03/2020		09:30	16:00	2-3	SSW/SW/S	5-8/8	Good
	24/03/2020		12:50	19:20	2-3	SW	5-7/8	Good
	24/04/2020		11:20	17:50	2-3	ENE/E	1-4/8	Good
	29/04/2020		08:00	14:30	3-4	SE/SSE	4-6/8	Good
Bray Head	31/03/2013	Spring	10:00	17:00	4	NNE-NE	6-8/8	Good
	05/04/2013		09:00	16:00	4-5	NE	5-6/8	Good
	08/04/2013		09:00	16:00	4-5	ENE-NE	8/8	Good

VP	Date	Season	Start	End	Wind Force	Wind direction	Cloud cover	Visibility
	16/04/2013		09:10	16:10	3-5	WSW-SW	2-3/8	Good
	25/04/2013		09:30	16:30	2-5	W	5-8/8	Moderate
	01/05/2013		09:00	16:00	4-5	SSE-SE	4-6/8	Good
	12/09/2013	Autumn	09:00	16:00	3-5	W	2-3/8	Good
	18/09/2013		09:00	16:00	4-5	NW	5-6/8	Moderate
	25/09/2013		08:30	15:30	4-5	NE-N	3-6/8	Good
	01/10/2013		08:30	15:30	4	S-SE	6-8/8	Good
	07/10/2013		08:00	15:00	3-4	S-SSW	7-8/8	Good
	16/10/2013		08:00	15:00	3-5	ESE-N	4-8/8	Good
	25/10/2013		09:00	16:00	4-5	SE-SW	8/8	Good
	04/11/2013		08:00	15:00	3-4	W-WSW	4-8/8	Good
	09/10/2018	Autumn	07:45	13:45	4-5	SSW/SW	6-8/8	Good
	17/10/2018		07:55	09:55	2-3	NW/NNW	3/8	Good
	30/10/2018		08:00	11:00	1-2	SSW/SW	0-1/8	Good
	07/11/2018		08:30	11:30	1-2	W	5-8/8	Good
	19/11/2018		12:15	15:15	4	E/ENE	7/8	Good
	28/11/2018		07:45	10:45	4-5	S/SE	4-5/8	Good
	11/12/2018		12:30	15:30	4-5	S	7-8/8	Good
	20/03/2019	Spring	14:00	17:00	3	SW	4-6/8	Good
	27/03/2019		05:41	08:41	1-2	WSW	5-6/8	Good
	02/04/2019		06:27	09:27	2	SW/WSW	2-3/8	Good
	09/04/2019		09:40	12:40	2-4	S/ESE	2-3/8	Good

VP	Date	Season	Start	End	Wind Force	Wind direction	Cloud cover	Visibility
	24/04/2019		14:30	17:30	3	E/ESE	6-7/8	Good
	06/05/2019		13:15	16:15	1	N/NW	3-4/8	Good
	27/09/2019	Autumn	07:10	13:40	3/4	SW/WSW/W	5-7/8	Good
	03/10/2019		07:00	13:10	3/4	SE/SSE	8/8	Good
	09/10/2019		10:00	16:30	3-4	WSW	5-8/8	Good
	15/10/2019		07:20	13:50	2-3	S	2-3/8	Good
	04/11/2019		06:55	13:25	2-4	N/NNE/WNW	7-8/8	Moderate-Good
	13/11/2019		07:13	13:43	2-3	W/WSW/SW	6-8/8	Good
	29/11/2019		10:13	16:43	1	WNW/W	0-2/8	Good
	12/03/2020	Spring	12:25	18:55	4-5	WSW/SW/W	1-6/8	Good
	19/03/2020		06:00	12:30	2-3	WNW/NW/N	3-6/8	Good
	27/03/2020		05:45	11:15	2-4	NNE/N	5-8/8	Good
	25/04/2020		05:30	12:00	0-1	NNE/NE	0/8	Good
	30/04/2020		09:20	15:50	3-4	WNW/W	7-8/8	Good
Wicklow	31/03/2013	Spring	10:00	17:00	4	NNE-NE	6-8/8	Good
	04/04/2013		06:30	12:30	4-5	ENE-NE	1-2/8	Good
	12/04/2013		07:30	13:30	4-5	SE-ESE	2-4/8	Good
	18/04/2013		08:30	14:30	4-6	SW	2-3/8	Good
	26/04/2013		08:30	14:30	5	SW-WSW	5-7/8	Good
	03/05/2013		09:00	16:00	4-6	SE-ESE	6-8/8	Good
	11/09/2013	Autumn	10:00	17:00	3-4	WNW-W	4-8/8	Good
	19/09/2013		07:30	13:30	4-5	NE-N	5-8/8	Moderate

VP	Date	Season	Start	End	Wind Force	Wind direction	Cloud cover	Visibility
	26/09/2013		08:30	14:30	4-5	NE-N	5-7/8	Moderate
	02/10/2013		08:30	14:30	4-5	SW	7-8/8	Good
	08/10/2013		09:00	15:00	4-5	W-WNW	2-6/8	Good
	15/10/2013		08:30	14:30	4-5	NE-E	4-7/8	Good
	21/10/2013		08:30	14:30	4-5	ESE	5-8/8	Good
	01/11/2013		09:30	15:30	3-4	SW-WSW	5-8/8	Good
	11/10/2018		07:25	14:25	3-4	SE/SSE/S	6-7/8	Good
	18/10/2018		10:04	13:04	1	NNW/NW	0/8	Good
	29/10/2018		07:35	10:35	1-2	SSE/SW	0-1/8	Good
	08/11/2018	Autumn	07:35	11:05	2-3	SE/SSE	0-2	Good
	20/11/2018		11:30	14:30	3-4	ENE	7-8/8	Good
	29/11/2018		11:00	14:00	3-4	SW/SSW	3-5/8	Good
	12/12/2018		08:00	11:00	2	SSE/SE	6-7/8	Good
	18/03/2019		06:04	09:04	2	WSW	7-8/8	Good
	29/03/2019		05:36	08:36	1	SE	1-2/8	Good
	03/04/2019	Spring	06:24	09:24	3-4	NW	2-4/8	Good
	28/04/2019		05:31	08:31	2-3	WSW/W	3-5/8	Good
	07/05/2019		05:14	08:14	0-1	N/NE	1-3/8	Good
	24/09/2019		07:00	13:30	2-3	S/SSE/SE	3-6/8	Good
	02/10/2019	Autumn	06:55	13:25	2-3	WNW/NW/NNW	1-5/8	Good
	12/10/2019		07:15	13:45	2-3	SW/SSW/WSW	1-3/8	Good
	30/10/2019		08:30	15:00	3-4	ENE/E	No data	No data

VP	Date	Season	Start	End	Wind Force	Wind direction	Cloud cover	Visibility
	05/11/2019		06:58	13:28	2-4	NNW/N	5-7/8	Good
	12/11/2019		07:10	13:40	4-5	W/WNW	4-7/8	Good
	21/11/2019		08:00	14:30	4-5	SE/ESE	8/8	Moderate-Good
	14/03/2020	Spring	06:10	12:40	1-3	SW/SSW	8/8	Good
	20/03/2020		05:55	12:25	2-4	N/NNE/ENE	0-2/8	Good
	26/03/2020		5:40	8:40	2	NE	2-4/8	Good
			15:40	18:40	2-3	NNE/NE	5-6/8	Good
	26/04/2020		05:30	12:00	1-3	NE/ENE	5-7/8	Good
	01/05/2020		07:00	13:30	3	WNW/W	1-3/8	Good

Source: Natural Power

During the spring migration period in 2025, six survey days were undertaken at each VP over a six-week period between late March and early May (**Table 2.2**). Each survey day consisted of two 3-hour observation periods separated by a 1-hour break, giving a total of 36 hours of observation for each coastal VP. The weather conditions during each survey day at each VP are shown in **Table 2.3**.

Table 2.2: Spring 2025 coastal migration survey dates

Survey no.	Kilmichael Point	Bray Head	Wicklow Head
1	28/03/2025	29/03/2025	29/03/2025
2	30/03/2025	31/03/2025	31/03/2025
3	02/04/2025	04/04/2025	03/04/2025
4	05/04/2025	07/04/2025	06/04/2025
5	08/04/2025	09/04/2025	08/04/2025
6	10/04/2025	11/04/2025	10/04/2025

Table 2.3: Spring 2025 coastal migration survey effort & weather

VP	Date	Start Time	End Time	Wind Force	Wind Direction	Cloud Cover	Visibility
Kilmichael Point	28/03/2025	12:30	18:30	2-4	W-WNW	2-0/8	Good
	30/03/2025	12:00	18:30	2-3	SSW-W	4-2/8	Good
	02/04/2025	11:15	17:45	21	E-ENE	0-1/8	Good
	05/04/2025	06:19	12:49	2-3	ENE-E	3-0/8	Good
	08/04/2025	06:12	12:45	<1-2	NE-ENE	0-1/8	Good
	10/04/2025	13:40	19:10	2-1	SE-ESE	0-2/8	Good
Bray Head	29/03/2025	13:25	19:25	2	SSW-SW	1-3/8	Good
	31/03/2025	13:56	20:26	<1-1	SW	2-1/8	Good
	04/04/2025	11:45	18:15	2-3	E-ENE	5-6/8	Good
	07/04/2025	06:14	12:44	1-2	E-ESE	1-0/8	Good
	09/04/2025	14:15	20:45	1	NE-ENE	1/8	Good
	11/04/2025	06:10	12:40	1-3	WSW-SE	1-0/8	Good
Wicklow Head	29/03/2025	06:01	12:31	2-3	SW-SSW	1-3/8	Good
	31/03/2025	06:34	13:04	2-3	SW-WSW	1-5/8	Good
	03/04/2025	12:10	18:40	3-4	NE-ENE	3-6/8	Good
	06/04/2025	06:17	12:47	<1-2	ENE-E	0-1/8	Good
	08/04/2025	14:15	20:45	2-1	ENE	0-1/8	Good
	10/04/2025	06:07	12:37	<1-2	ESE	3-0/8	Good

During the autumn migration period in 2025, eight survey days were undertaken at each VP across a six-week period between mid-September and early November (**Table 2.4**). As for the spring surveys, each survey day consisted of two 3-hour observation periods separated by a 1-hour break, giving a total of 36 hours of observation for each coastal VP. The weather conditions during each survey day at each VP are shown in **Table 2.5**.

Table 2.4: Autumn 2025 coastal migration survey dates

Survey no.	Kilmichael Point	Bray Head	Wicklow Head
1	19/09/2025	15/09/2025	20/09/2025
2	29/09/2025	28/09/2025	30/09/2025
3	01/10/2025	03/10/2025	02/10/2025
4	11/10/2025	17/10/2025	12/10/2025
5	18/10/2025	21/10/2025	20/10/2025
6	01/11/2025	03/11/2025	02/11/2025

Table 2.5: Autumn 2025 coastal migration survey effort & weather

VP	Date	Start Time	End Time	Wind Force	Wind Direction	Cloud Cover	Visibility
Kilmichael Point	19/09/2025	07:00	13:30	2-1	SSW-SW	6-7/8	Good
	29/09/2025	11:00	17:30	1-2	SSE-SSW	5-6/8	Good
	01/10/2025	06:57	13:27	2-3	SSW-S	5-8/8	Good
	11/10/2025	08:13	14:45	2-1	WNW-N	8/8	Good
	18/10/2025	07:28	13:58	2-4	SSE-SE	6-8/8	Good
	01/11/2025	06:51	13:21	2-3	WSW-SW	0-3/8	Good
Bray Head	15/09/2025	06:29	13:00	3-5	WSW-W	8/8	Good
	28/09/2025	13:10	19:40	<1-2	VAR-WSW	6-8/8	Good
	03/10/2025	08:50	15:20	3-5	S-SSW	6-8/8	Good
	17/10/2025	07:26	13:56	1-2	SSE-ESE	3-7/8	Good
	21/10/2025	07:34	14:04	2-4	WSW-W	6-8/8	Good
	03/11/2025	10:49	17:19	3-4	SSW-SW	6-7/8	Good
Wicklow Head	20/09/2025	07:40	14:20	<1-2	VAR-W	6-8/8	Good
	30/09/2025	13:00	19:30	2	SSW-SW	8/8	Good
	02/10/2025	07:00	13:30	2-3	SW-W	1-2/8	Good
	12/10/2025	07:17	13:47	1-2	NNW-E	8-6/8	Good
	20/10/2025	12:19	18:49	1-3	N-WNW	6/8	Good
	02/11/2025	06:53	13:32	1-3	WSW-W	0-3/8	Good

The total hours of effort at each VP across surveys conducted in 2013, 2018, 2019, 2020 and 2025 are detailed in **Table 2.6** below.

Table 2.6: Hours of effort at each VP: 2013, 2018, 2019, 2020 and 2025

VP	Year	Spring hours	Autumn hours	Total hours
Kilmichael Point	2013	42	56	98
	2018	N/A	25	25
	2019	18	45.5	63.5

VP	Year	Spring hours	Autumn hours	Total hours
	2020	32.5	N/A	32.5
	2025	37.5	39	76.5
	KILMICHAEL TOTAL	**130**	**165.5**	**295.5**
Bray Head	2013	42	56	98
	2018	N/A	23	23
	2019	18	45	63
	2020	31.5	N/A	31.5
	2025	38.5	39	77.5
	BRAY TOTAL	**130**	**163**	**293**
Wicklow Head	2013	38	49	87
	2018	N/A	25.5	25.5
	2019	15	45.5	60.5
	2020	32	N/A	32
	2025	39	39	78
	WICKLOW TOTAL	**124**	**159**	**283**
	FINAL TOTAL	**384**	**487.5**	**871.5**

Source: Natural Power

Results

The results from the coastal migration surveys have been collated into tabular form and are provided herein. A number of wildfowl species were recorded in flight off the headland VPs and details of the number of fly-pasts and individuals are presented below.

During the surveys described above, the following migratory bird species were recorded;

- Greenland White-fronted Goose
- Pale-bellied Brent Goose
- Greylag Goose
- Barnacle Goose
- Mute Swan
- Whooper Swan

The results are described below.

Greenland White-fronted Goose

Table 2.7: Number of Greenland white-fronted geese flights and individuals recorded during the spring coastal migration surveys

Year	Kilmichael Point	Bray Head	Wicklow Head	Total
2013	0	0	0	0
2019	5 (127)	0	1 (5)	1 (18)
2020	1 (12)	0	0	1(12)

Year	Kilmichael Point	Bray Head	Wicklow Head	Total
2025	0	0	0	0
TOTAL	**2 (30)**	**0**	**0**	**2 (30)**

Table 2.8: Number of Greenland white-fronted geese flights and individuals recorded during the autumn coastal migration surveys

Year	Kilmichael Point	Bray Head	Wicklow Head	Total
2013	4 (65)	0	1 (18)	4 (65)
2018	4 (84)	0	0	4 (84)
2019	3 (48)	0	0	3 (48)
2025	1 (22)	0	0	1 (22)
TOTAL	**12 (219)**	**0**	**1 (18)**	**13 (237)**

During the spring and autumn migration surveys, all Greenland white-fronted geese recorded were flying parallel to the coastline. No birds were recorded flying either to or from the direction of the CWP Array site.

93.3% of the Greenland white-fronted geese recorded during the spring and autumn coastal migration surveys were flying at altitudes of 20-200m. The remaining individuals were observed at altitudes <20m.

53.3% of the Greenland white-fronted geese recorded during the spring and autumn coastal migration surveys were flying <500m from the coast. 33.3% of flights were recorded 600-1000m from the coast, and 13.3% of flights were recorded at 1,500km from the coast.

Pale-bellied Brent Goose

Table 2.9: Number of Pale-bellied brent geese flights and individuals recorded during the spring coastal migration surveys

Year	Kilmichael Point	Bray Head	Wicklow Head	Total
2013	0	29 (436)	4 (59)	22 (495)
2019	9 (74)	10 (82)	9 (77)	28 (233)
2020	7 (96)	7 (113)	7 (117)	21 (326)
2025	2 (21)	4 (34)	3 (30)	9 (85)
TOTAL	**18 (191)**	**50 (665)**	**23 (283)**	**91 (1,139)**

Table 2.10: Number of Pale-bellied brent geese flights and individuals recorded during the autumn coastal migration surveys

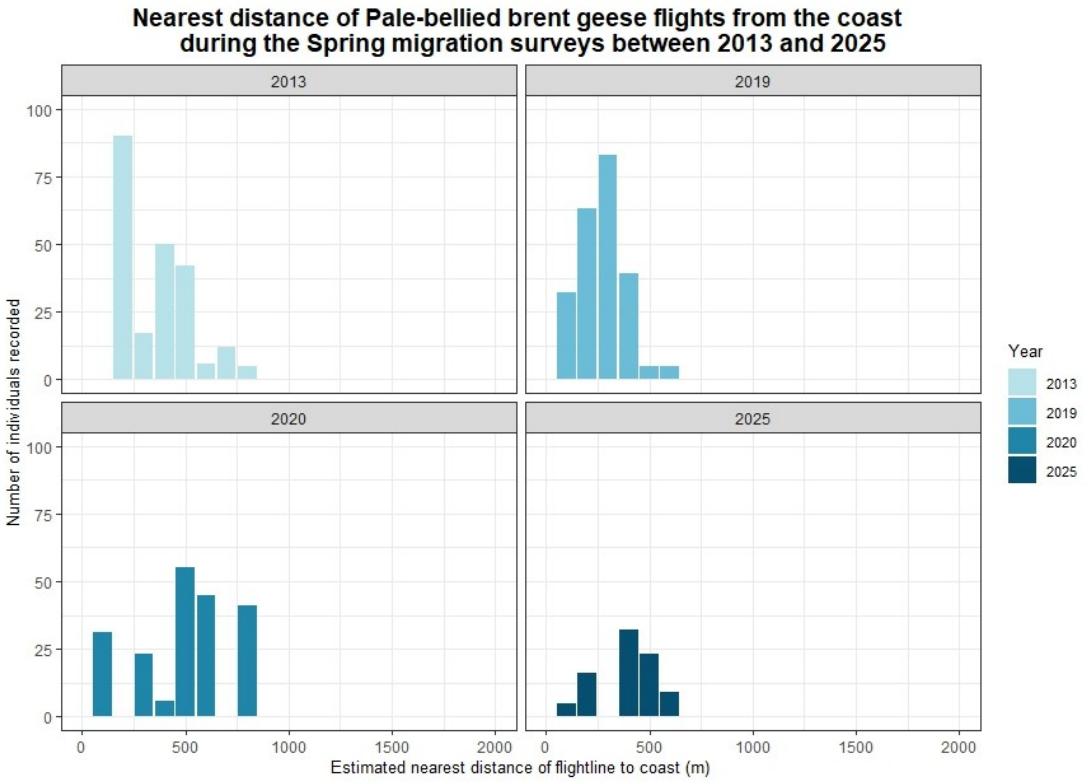
Year	Kilmichael Point	Bray Head	Wicklow Head	Total
2013	24 (334)	25 (274)	22 (243)	71 (851)
2018	2 (15)	6 (66)	5 (49)	13 (130)
2019	12 (215)	14 (203)	13 (219)	39 (637)
2025	8 (125)	6 (122)	5 (57)	19 (304)
TOTAL	**46 (689)**	**51 (667)**	**45 (568)**	**142 (1,924)**

During the spring and autumn migration surveys, all Pale-bellied brent geese recorded were flying parallel to the coastline. No birds were recorded flying either to or from the direction of the CWP Array site.

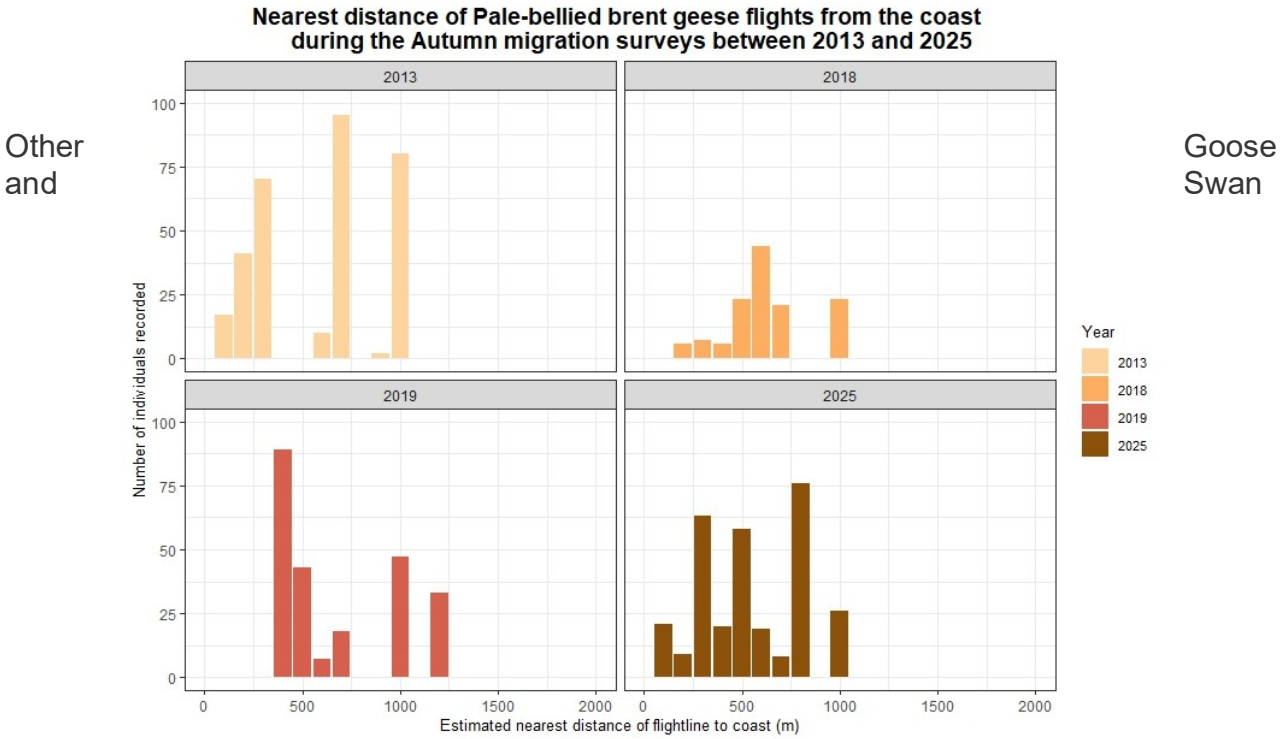
89.7% of the Pale-bellied brent geese flights recorded during the spring and autumn coastal migration surveys were flying at altitudes <20m. The remaining individuals were observed at altitudes of 20-200m.

The nearest distance of Pale-bellied brent geese from the coast during the spring and autumn coastal migration surveys are presented in Graph 1 and Graph 2, respectively, below. It should be noted that due to the variable effort between years of survey as described in **Table 2.6,** the number of individuals recorded per year will fluctuate as per this variation in effort. Nonetheless, the visualisation of these distances from coast indicates that the majority of flights were <500m from the coast, with no flights recorded further than 1km from the coast.

Graph 1: Nearest distance of Pale-bellied brent geese flights from the coast during the spring migration surveys between 2013 and 2025



Graph 2: Nearest distance of Pale-bellied brent geese flights from the coast during the autumn migration surveys between 2013 and 2025



Other and Goose Swan

Species

Table 2.11and **Table 2.12** detail observations of other goose and swan species that were recorded during the surveys. All species were recorded flying parallel to the coast.

Table 2.11: Observations of other goose and swan species during the spring coastal migration survey

Date	VP	Species	Number	Height
31st March 2013	Bray Head	Mute swan	2	<20m
25th April 2013	Bray Head	Mute swan	2	<20m
26th April 2013	Kilmichael Point	Mute swan	2	20-200m
18th March 2019	Wicklow Head	Mute swan	2	20-200m
2nd April 2019	Bray Head	Mute swan	2	20-200m
14th March 2020	Wicklow Head	Mute swan	5	20-200m
17th March 2020	Kilmichael Point	Whooper Swan	6	<20m
20th March 2020	Wicklow Head	Mute swan	2	20-200m
1st May 2020	Wicklow Head	Mute swan	2	20-200m
8th April 2025	Kilmichael Head	Greylag goose	11	<20m
10th April 2025	Kilmichael Head	Mute Swan	2	<20m

Table 2.12: Observations of other goose and swan species during the autumn coastal migration survey

Date	VP	Species	Number	Height
2nd October 2013	Wicklow Head	Greylag goose	23	20-200m
16th October 2013	Bray Head	Greylag goose	36	20-200m
21st October 2013	Kilmichael Point	Mute swan	2	20-200m
18th October 2018	Wicklow Head	Mute swan	2	<20m
29th October 2018	Wicklow Head	Mute swan	2	<20m
8th November 2018	Wicklow Head	Mute swan	2	<20m
20th November 2018	Wicklow Head	Greylag goose	12	20-200m
28th November 2018	Kilmichael point	Whooper swan	8	20-200m
29th November 2018	Wicklow Head	Mute swan	2	<20m
27th September 2019	Bray Head	Mute swan	2	20-200m
2nd October 2019	Wicklow Head	Mute swan	2	20-200m
5th October 2019	Kilmichael Point	Barnacle Goose	5	<20m
30th October 2019	Wicklow Head	Greylag goose	58	20-200m
11th November 2019	Kilmichael Point	Mute swan	5	<20m
12th November 2019	Wicklow Head	Mute swan	2	20-200m
19th September 2025	Kilmichael Point	Whooper swan	7	<20m
21st October 2025	Bray Head	Whooper swan	12	<20m

Discussion

The coastal VP surveys conducted in 2025 revealed patterns of migratory goose and swan movements that were consistent with those observed in previous survey years (2013, 2018, 2019, and 2020). The data showed that the majority of target species, including Greenland white-fronted geese and pale-bellied brent geese, continued to migrate parallel to the coastline, with no significant changes in flight paths or behaviour compared to earlier years. These results reinforce the understanding that migratory geese and swans are unlikely to pass through the CWP Array site in significant numbers, supporting the conclusions drawn in the EIAR.

3. Acoustic Surveys

Introduction

Vessel based acoustic surveys were conducted during nocturnal hours to gather information on migratory bird species present within the CWP Array site itself. Using passive acoustic recorders deployed offshore, these surveys aimed to detect and identify nocturnal flight calls, providing insight into the patterns of migratory birds that may not be captured through daytime visual surveys. The data collected through this approach contribute to a more comprehensive understanding of avian migration activity in relation to the proposed CWP Array site.

Methods

Data Collection

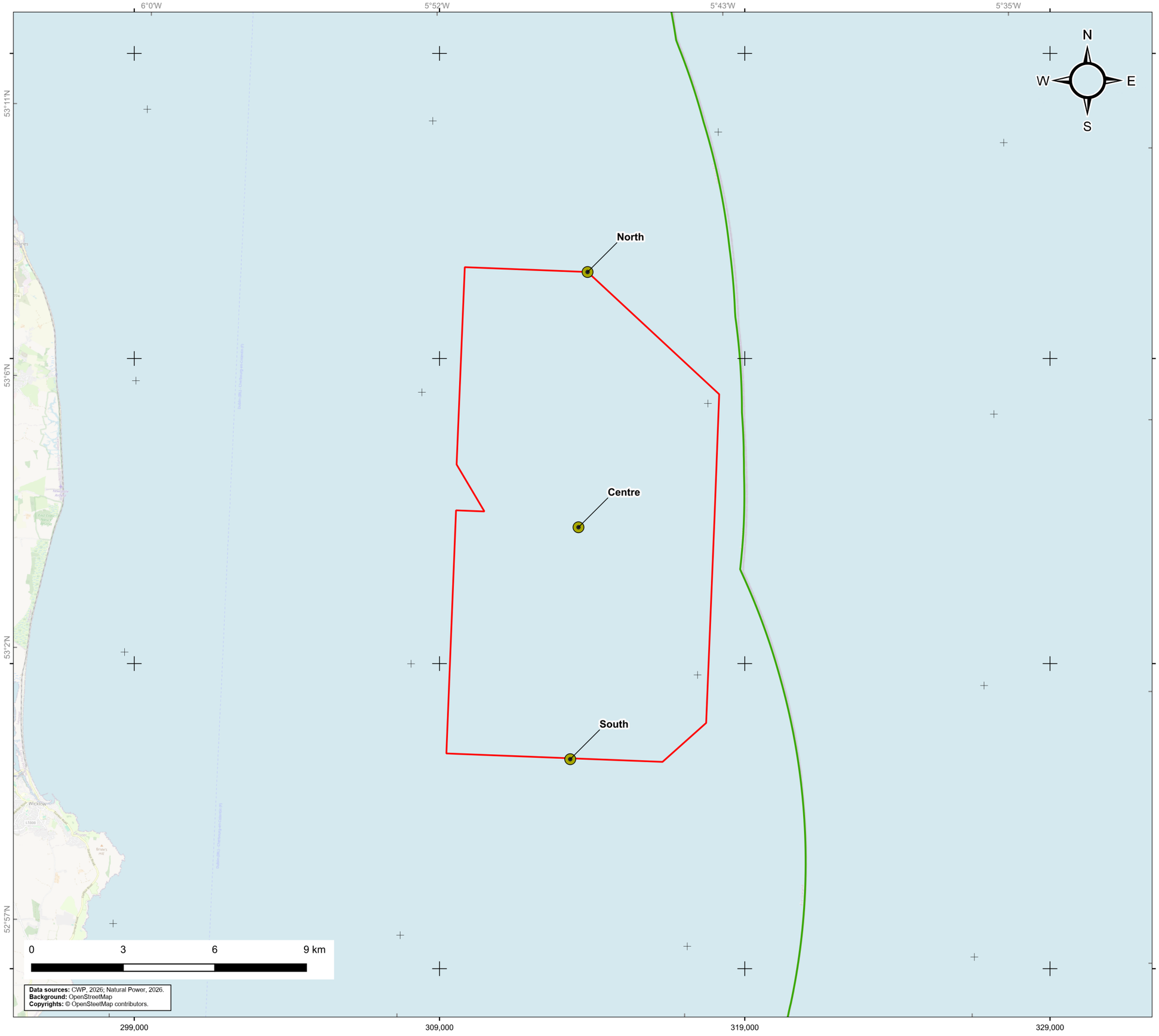
Nocturnal migratory bird flight calls were recorded using a passive acoustic recorder (Wildlife Acoustics Song Meter 4) deployed on the AMS Adventure during offshore boat surveys. The recorder was set to a 320,000 Hz sampling rate with an 85.7 dB gain, and files were saved in a 16-bit wav format.

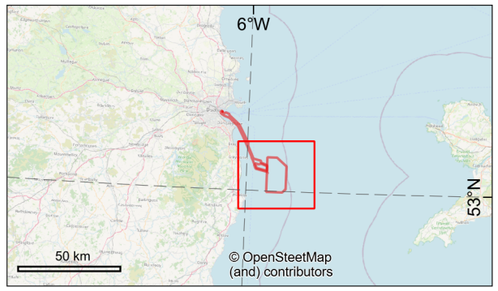
The vessel anchored for extended listening periods at three stations in the survey area following the survey protocol. These were intended to last for 2-4 hours per station for each survey but varied due to weather constraints or unsuitable sea conditions (e.g. hight swell height and sea states greater than Beaufort force 4). The co-ordinates of the listening stations are detailed in **Table 3.1**, and illustrated in **Figure 1.** A full account of the survey methodology is provided in the CWP nocturnal static detector RAMS[3]

Table 3.1: Locations of listening stations

Listening station	x	y	Lat	Lon
North	313849.1	5891834	53.13073	-5.75755
Centre	313551.5	5883467	53.0681	-5.78292
South	313280.8	5875864	52.99972	-5.78256

[3] CWP Nocturnal Static Detector Surveys Risk Assessment and Methods Statement (RAMS), August 2025, Natural Power Document Number 1389768.





Legend

- Array site
- Indicative location of nocturnal migratory bird listening stations
- 12 nautical mile (NM) limit

codling wind park

Project: Codling Wind Park

Contractor: www.naturalpower.com natural power

Figure 1
Nocturnal migratory bird listening stations

CWP doc. number: CWP-NPC-CON-09-MAP-2150

Internal descriptive code:	*Size:*	*CRS:*
N/A	A3	EPSG 25830
	Scale: 1:120,000	

Rev.	*Updates*	*Date*	*By*	*Chk'd*	*App'd*
00	For FIR submission	2026/04/20	AC	FM/EA	CM

Efforts were made to reduce noise levels from the vessel while stationary at these listening stations. However, background noise was generally high on the recordings collected (i.e. from wind, waves, vessel fenders and ropes on the ships mast) which could influence the detectability of bird calls. Details on the measures taken to overcome this are provided in the Data Analysis section below.

Some recordings were made off-effort, i.e. while in transit to the survey site and while in Wicklow Harbour where the vessel was moored between surveys.

Data analysis

The BTO (British Trust for Ornithology) Acoustic Pipeline (AP) was used for initial processing of the recorded sound files. The AP is an online classifier for processing audio recordings in the ultrasonic (e.g. bat echolocation) and audible frequency ranges (e.g. bird calls). The Nocturnal Flight Calls (Europe) classifier within the AP provides automatic species level identification for nocturnal flight calls of 50 species of migrating birds, including: crakes and rails, waterfowl and waders and passerines.

Version 2.1 of the Nocturnal Flight Calls (Europe) classifier was used to analyse the data collected. A metric is calculated for each identification made by the AP which represents the confidence in the correct identification of the sound profile. The default cut-off threshold of 0.8 provides high confidence that any identification suggested by the software is correct. Reducing this threshold may result in detection of more calls. However, the risk of false positives is also increased. Manual verification of calls with lower thresholds may be used to mitigate this effect. A full species list and further details about the thresholds is available here: https://www.bto.org/sites/default/files/acoustic_pipeline_classifier_technical_spec_nocturnalflightcallseurope.pdf.

For this analysis, the default threshold of 0.8 was initially used for the spring data set. Due to a low number of detections found using this threshold, the analysis was re-run using an adjusted (less stringent) threshold of 0.5. Reducing this threshold could increase the number of false positives (i.e. due to background noise) and manual verification was therefore vital for all calls identified by the classifier. The autumn data set was run only with the threshold of 0.5 followed by manual verification confirming each detection found.

The calls were manually verified by an expert acoustic analyst through visualisation within Kaleidoscope Pro version 5.6.8.

Results

Spring survey

A total of 984 sound files (596 in the spring and 388 in the autumn) were recorded and run through the BTO AP classifier.

At the 0.8 threshold, no nocturnal migratory bird call detections were identified among the sound files from any of the three listening locations in the spring. Four nocturnal migratory bird call detections were identified while the vessel was moored in Wicklow Harbour and these were all identified as grey heron *(Ardea cinerea).*

One additional grey heron call (within Wicklow Harbour) was identified when using the 0.5 threshold with the spring data set. A few other detections were made when the sound files were run with the lower threshold, but these were all verified as false positives of anthropogenic noise origin within the harbour. Details of the calls are presented in **Table 3.2**.

Table 3.2: Nocturnal migratory bird calls detetcted during spring migration surveys

Species	Date & time	Location
Grey heron	24/05/2025, 22:34:22	Wicklow Harbour
Grey heron	24/05/2025, 23:14:10	Wicklow Harbour
Grey heron	07/06/2025, 22:52:32	Wicklow Harbour
Grey heron	08/06/2025, 03:33:26	Wicklow Harbour
Grey heron	10/06/2025, 03:42:17	Wicklow Harbour

Autumn survey

No nocturnal migratory bird call detections were identified among the sound files from any of the three listening locations in the autumn. Using the 0.5 threshold, a total of 50 calls were identified in Wicklow harbour. This included 16 verified calls of 3 bird species; grey heron, robin *(Erithacus rubecula)* and black-headed gull *(Chroicocephalus ridibundus).* The remaining detections were verified as false positives of anthropogenic noise origin (e.g. dog barking, human speech, vessel noises) or of possible bird species (including Dunlin and small or juvenile gull species) but these calls were deemed to be of too poor quality for definite species classification. Details of the calls are presented in **Table 3.3**.

Table 3.3: Nocturnal migratory bird calls detetcted during spring migration surveys

Species	Date & time	Location
Robin	26/09/2025, 20:41:46	Wicklow Harbour
Grey heron	26/09/2025, 23:09:42	Wicklow Harbour
Grey heron	27/09/2025, 00:21:34	Wicklow Harbour
Grey heron	27/09/2025, 03:00:46	Wicklow Harbour
Grey heron	27/09/2025, 22:49:18	Wicklow Harbour
Grey heron	27/09/2025, 22:49:22	Wicklow Harbour
Black-headed gull	06/10/2025, 23:48:30	Wicklow Harbour
Grey heron	06/10/2025, 23:48:58	Wicklow Harbour
Grey heron	06/10/2025, 23:57:02	Wicklow Harbour
Black-headed gull	07/10/2025, 02:19:36	Wicklow Harbour
Grey heron	07/10/2025, 01:54:18	Wicklow Harbour
Black-headed gull	07/10/2025, 02:19:36	Wicklow Harbour
Black-headed gull	07/10/2025, 02:20:28	Wicklow Harbour
Black-headed gull	07/10/2025, 02:20:44	Wicklow Harbour
Black-headed gull	07/10/2025, 02:48:24	Wicklow Harbour
Black-headed gull	07/10/2025, 05:27:34	Wicklow Harbour

Discussion

The acoustic surveys at the proposed CWP Array site detected no migratory birds during the spring and autumn migration periods. This finding aligns with expectations outlined in the Environmental Impact Assessment Report

(EIAR), as grey heron is among the species anticipated to be present in Wicklow Harbour. While this suggests low levels of nocturnal migratory activity, it is important to note that the efficacy of the acoustic methodology was influenced by background noise and interference, which may have reduced the likelihood of detecting faint or infrequent calls. However, the equipment's ability to record bird calls at Wicklow Harbour confirms that it was functioning correctly and improves confidence in the conclusion that no birds were recorded in the array site.

The absence of migratory bird calls at the array site aligns with broader observations that migratory passage rates in this region are generally low. This is further supported by diurnal boat-based surveys, which found that migratory birds were rarely encountered and, when present, were not vocalising. These findings reinforce the conclusion that significant nocturnal migratory bird passage is unlikely through the proposed CWP Array site.

4. Vessel-Based Visual Surveys

Introduction

Vessel-based visual surveys were undertaken to record migratory and seabird activity within and around the CWP Array site. The surveys were conducted using the chartered vessel AMS Panther, a stable and suitably equipped offshore platform that allowed for safe and efficient data collection under a variety of sea and weather conditions. Surveys were designed and executed in accordance with the Dedicated Migration Observer (DMO) approach previously implemented during baseline boat-based surveys conducted between 2018 and 2020. This ensured methodological consistency and compatibility with existing datasets to enable meaningful long-term comparisons.

The principal aim of these vessel-based surveys was to collect baseline data to validate the characterisation approach adopted within the application, and support the environmental assessment process for the CWP project, with a particular focus on documenting offshore migratory passage and identifying key flight corridors, altitudinal patterns, and spatial distribution across the array area and surrounding waters.

A total of seven vessel-based surveys were undertaken between April and October 2025, covering the main migratory periods and providing temporal spread across spring, summer, and autumn. Each survey comprised a complete set of sixteen east–west transect lines extending across the array and an additional 4 km buffer zone.

All surveys were carried out under suitable sea states and visibility conditions to ensure optimal detection of birds on the water and in flight. Weather parameters, sea state, and survey effort were systematically recorded throughout, allowing for detailed analysis of survey quality and comparability across months.

The following sections outline the survey methodology in detail, including vessel operations, observer roles and responsibilities, data recording protocols, and environmental conditions encountered during the surveys.

Methods

This Method Statement describes the survey design, weather and effort criteria, surveyor layout, and recording procedures applied during the 2025 offshore migratory bird surveys undertaken by Natural Power on behalf of Codling Wind Park Limited. The approach retains continuity with the established baseline boat-based migration surveys (2018–2020). The survey approach aligns with appropriate Irish guidance[4].

Surveys were undertaken across the CWP Array site, plus a 4 km buffer, using the chartered vessel AMS Panther as the survey platform.

[4] Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Projects - PART II. Available at: f957f02d-guidance-on-marine-baseline-ecological-assessments-monitoring-activities-for-.pdf

Weather Assessment and Mobilisation Procedures

AMS Panther mobilised from Wicklow Harbour. Prior to each mobilisation, a minimum of three independent weather forecasts were reviewed from reliable meteorological sources such as:

- www.xcweather.co.uk;
- www.windguru.com;
- www.windfinder.com; and
- www.windy.com.

Forecasts were used to confirm that conditions met the safety and data-quality thresholds defined in the 2025 RAMS. Surveys were only undertaken when:

- Sea state: ≤ 4 (Beaufort)
- Visibility: ≥ 300 m
- Precipitation: No sustained heavy rain or fog
- Wind: Within safe operating limits for the vessel and surveyors

Local marine traffic information and port notices were reviewed to support voyage planning. Where forecasted or developing conditions exceeded thresholds, surveys were postponed or curtailed in accordance with Natural Power's safety and quality protocols.

Survey Area

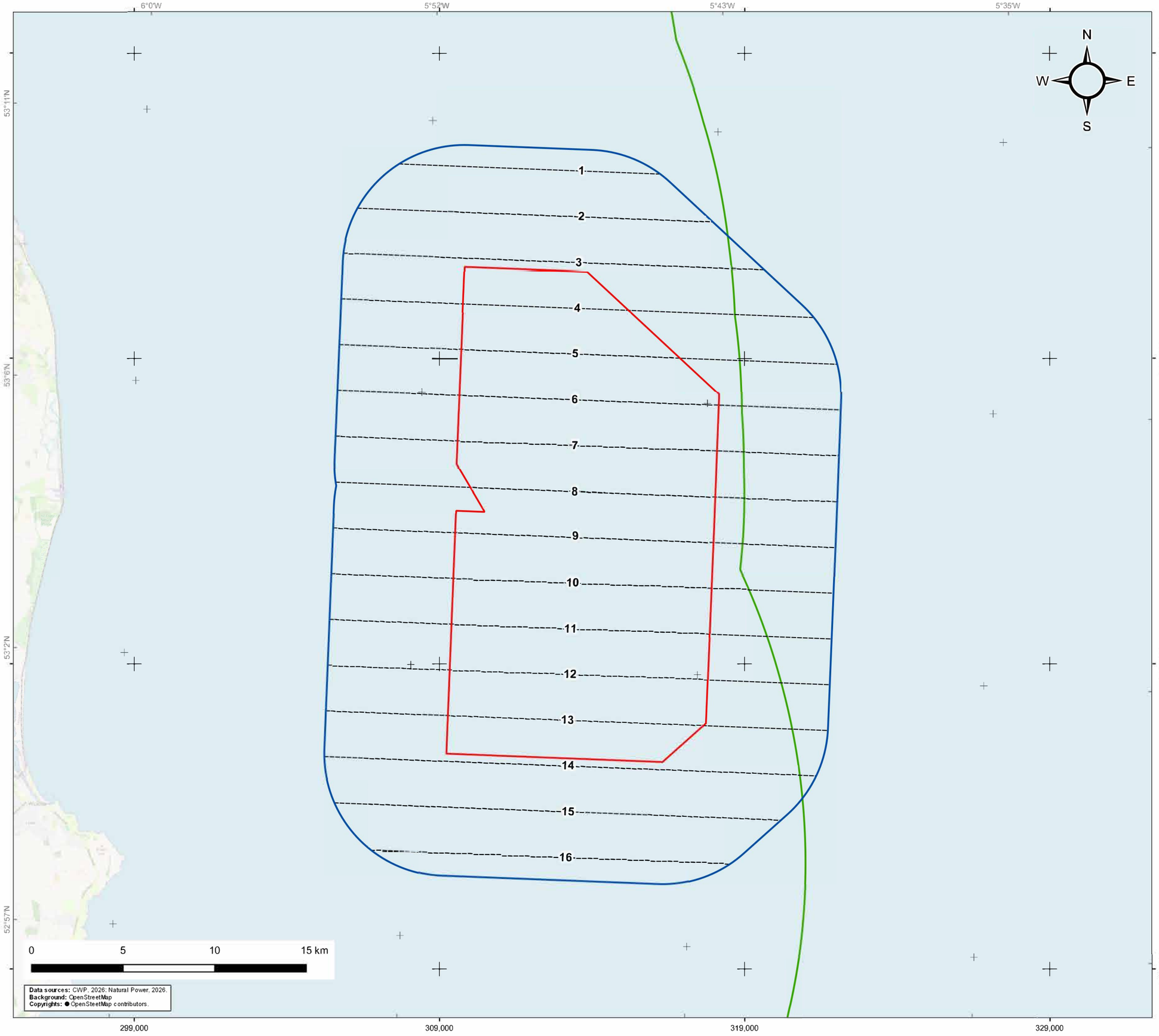
The survey area encompassed:

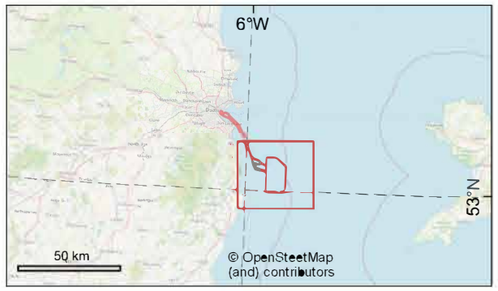
- CWP array area
- 4 km buffer extending beyond the project boundary

Survey coverage followed sixteen east–west transect lines, completed in full during each survey. To ensure balanced temporal coverage:

- The start and end points of transects were alternated for each survey.
- Surveys were conducted across different times of day and varying environmental conditions.

The transect layout followed the configuration provided in **Figure 2** below.





Legend

- Array site
- Survey area (4 km buffer of development area)
- Survey transects (1.5 km spacing)
- 12 nautical mile (NM) limit

codling wind park

Project: Codling Wind Park

Contractor: natural power www.naturalpower.com

Figure 2
Area covered and transects used during contemporary boat-based ornithology surveys

CWP doc. number: CWP-NPC-ENG-08-01-MAP-0673

Internal descriptive code: WF - WFRLB..BUFF.4km..S.TRANSECTS - SEA.LIMs - (EIAR.Vol.04.Ch.10.Ap.05.FIG.01.02)

Size: A3

Scale: 1:120,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
01	For FIR submission	2026/04/17	AC	FM/EA	CM

Survey Methodology

Each survey was undertaken by two dedicated observers, each accompanied by a scribe, enabling simultaneous coverage of both sides of the vessel. The port observer recorded observations within a 180° arc to port, while the starboard observer recorded within an equivalent 180° arc to starboard.

The survey methodology followed that employed during the baseline boat-based surveys undertaken between 2018 and 2020, replicating the approach used by the Dedicated Migration Observer.

Observers systematically scanned the surrounding sea and airspace for the duration of each transect, recording all migratory bird species detected. The following groups were targeted:

- Geese;
- Swans;
- Ducks;
- Divers;
- Grebes;
- Waders;
- Raptors;
- Passerines; and
- All other non-seabird species.

In addition, scarce seabird species observed on migration were also recorded.

For each observation, the following information was recorded on the EHR115 form:

- Time of observation;
- Transect line number;
- Species (BTO two-letter code);
- Number of individuals observed;
- Estimated flight height (to the nearest metre);
- Flight direction (using an eight-point compass reference); and
- Estimated distance from the vessel at the time of first detection (to the nearest 100 m up to 1 km, or to the nearest 500 m for birds beyond 1 km).

This methodology ensured consistency with previous monitoring efforts and facilitated integration of results into ongoing ornithological baseline assessments.

Survey Schedule, Effort and Weather Conditions

A total of seven offshore migratory bird surveys were undertaken between April and October 2025, covering both the spring and autumn migration periods. This distribution ensured that temporal variation in migration intensity, species composition, and flight directions could be captured across early-, mid-, and late-season movement windows. The seasonal spread of surveys also supports comparability with long-term monitoring datasets and provides a representative baseline covering peak migratory periods.

All surveys were undertaken only when conditions met the operational thresholds to ensure data were collected under suitable marine and visibility conditions. These thresholds included: sea state ≤4, visibility ≥300 m, and an absence of prolonged precipitation, fog or heavy glare that could impede detectability. Should forecast or in-situ

conditions deteriorate beyond these limits, surveys were curtailed or postponed in line with Natural Power's safety and quality assurance procedures.

Prior to mobilisation, the Lead Surveyor reviewed multiple independent weather forecasts alongside real-time observations at Wicklow Harbour to confirm the feasibility of proceeding. This assessment considered wind speed and direction, expected swell regime, and any unresolved warnings issued for the Irish Sea. Only when the Lead Surveyor, in consultation with the Skipper, deemed the forecast consistent with safe and valid survey operation was the vessel cleared to depart.

Following each completed survey, a detailed record of survey effort was produced, including:

- total hours of active observation;
- the number of transects completed;
- interruptions or deviations from planned effort; and
- environmental conditions recorded at the start of each transect or when notable changes occurred.

These data provide the basis for standardising effort across the seven survey periods and support data interpretation in relation to environmental variability.

Table 4.1 below provides a summary of the survey effort, including the baseline data characterisation during 2018 and 2019, as well as the 2025 supplementary surveys.

Table 4.1: Migratory birds vessel based survey effort to date

Year	Season	Effort
2018	Autumn	2 days
2019	Spring	5 days
	Autumn	4 days
2025	Spring	6 days
	Autumn	8 days

Source: Natural Power

Table 4.2 and **Table 4.3** provide detailed summaries of the prevailing weather and sea conditions recorded during the 2025 spring and autumn surveys, respectively.

Table 4.2: Spring 2025 survey details and weather conditions

Details	April	May
Survey dates & times	29/04/25: 09:10/16:03 30/04/25: 09:59/17:00 01/05/25: 08:23/10:11	07/05/2025: 08:59/16:45 08/05/2025: 08:37/15:20 09/05/2025: 08:33/09:58
Wind direction	SE/N	NE/N/E
Wind force	1-2	1-4
Sea state (Beaufort)	0-2	1-4
Swell (m)	0	1-2
Visibility (1-5)	5	5
Cloud cover	6-1/8	7-1/8

Source: Natural Power

Table 4.3: Autumn 2025 survey details and weather condtions

Details	August	September	October
Survey dates & times	20/08/2025: 08:44/13:49 21/08/2025: 05:54/13:29 22/08/2025: 08:19/09:50	24/09/2025: 07:33/16:14 25/09/2025: 06:56/12:26	08/10/2025: 07:56/13:07 09/10/2025: 08:43/16:14 10/10/2025: 07:50/09:20
Wind direction	NE/SE	SW/S	W/NW/SW
Wind force	1-2	1-2	1-3
Sea state (beaufort)	1-3	1-2	2
Swell (m)	1-2	1-2	1-2
Visibility (1-5)	5	4-5	5
Cloud cover	7-1/8	3-0/8	8-1/8

Source: Natural Power

Each survey was also accompanied by a written narrative summary, prepared by the Lead Surveyor, describing qualitative factors that influence detectability, such as glare intensity and direction, intermittent precipitation, wave reflectance, or visibility fluctuations.

Completion of all seven surveys to the prescribed survey effort and environmental parameters ensured that the resulting dataset provides robust spatial and temporal coverage of migratory bird activity within and around the proposed CWP Array site.

The 2025 survey approach maintains consistency with the 2013 ecological survey protocols, which originally defined the structure and purpose of boat-based migration surveys undertaken, alongside ESAS surveys which took place using the same platform.

Survey timing and validation of contemporary data

Seasonal Timing

The 2013 protocols recommended that migration surveys be undertaken within:

- March to May for spring migration; and

- September to November for autumn migration.

The 2025 survey programme aligns with these windows by conducting seven surveys spread across April to October. This appears later than the upper limits identified in the 2013 autumn recommendation, but aligns with the refined, evidence-based timing developed from the 2018–2020 baseline surveys, which demonstrated that peak autumn passage at this location is centred on late August to mid-October.

Observer Deployment and 360° Coverage

The 2013 protocol prescribed systematic 360° scanning, including overhead, by the dedicated migration observer.

In the 2025 approach, this has been modernised into a two-observer, two-scribe system, with observers positioned to monitor opposing 180° arcs (port and starboard). Overhead scanning is incorporated into each observer's routine sweep. This dual-observer configuration significantly improves detection rates and reduces observer fatigue, addressing limitations of the single-observer approach used in 2013.

Target Groups

The 2013 guidance identified a consistent suite of target species groups—geese, swans, ducks, divers, grebes, waders, terns, raptors and passerines—which continue to form the basis of the 2025 methodology. In addition, the updated methodology explicitly includes scarce seabird species observed on active migration, reflecting modern analytical needs and expanding the dataset's relevance to marine ornithological assessments.

Data Collected

The core data fields identified in the 2013 protocols remain integral to the 2025 approach but have been enhanced for precision. The original data requirements were:

- Time of observation, used for linking sightings to GPS position;
- Species identification;
- Flock size;
- Flight height, using defined height bands;
- Flight direction; and
- Distance from vessel, to the nearest 500 m.

The 2025 survey improve upon these by incorporating:

- flight height estimates to the nearest metre (below 5 m) or refined bands for greater heights;
- distance estimates to the nearest 100 m up to 1 km, increasing spatial resolution;
- more detailed behaviour notes;
- updates to standardised recording via Form EHR115; and
- synchronisation with GPS logs and digital track records.

These enhancements preserve compatibility with historic datasets while enabling more sophisticated analyses, including flight height modelling and migration pathway reconstruction.

Results

The results from the migratory vessel surveys conducted in 2018, 2019 and 2025 are presented for spring in **Table 4.4**, below and autumn in **Table 4.5**, below.

Table 4.4: Spring vessel-based migration survey results: 2019 and 2025

Species		Year	Count	Flight direction
Meadow pipit	*Anthus pratensis*	2019	5	W
			5	N
			30	NE
		2025	0	N/A
Sanderling	*Calidris alba*	2019	1	NW
		2025	0	N/A
Blackcap	*Sylvia atricapilla*	2019	3	W
		2025	0	N/A
Swallow	*Hirundo rustica*	2019	20	NW
			21	N
			1	W
			2	WNW
		2025	1	NE
			1	SE
			10	W
White wagtail	*Motacilla alba alba*	2019	5	SE
			10	NW
		2025	0	N/A
			0	N/A
Willow warbler	*Phylloscopus trochilus*	2019	10	NW

Species		Year	Count	Flight direction
		2025	0	N/A
Whimbrel	*Numenius phaeopus*	2019	0	N/A
		2025	1	SE
Hooded crow	*Corvus cornix*	2019	0	N/A
		2025	1	W
Dunlin	*Calidris alpina*	2019	0	N/A
		2025	1	N
Great northern diver	*Gavia immer*	2019	0	N/A
		2025	2	N

Source: Natural Power

Table 4.5: Autumn vessel-based migration survey results: 2018, 2019 and 2025

Species		Year	Count	Flight direction
Great northern diver	*Gavia immer*	2018	10	S
			50	SW
			20	W
		2019	1	S
			2	W
		2025	0	N/A
Woodpigeon	*Columba palumbus*	2018	120	W
		2019	0	N/A
		2025	**0**	N/A
Starling	*Sturnus vulgaris*	2018	5	N

Species		Year	Count	Flight direction
			5	NNE
		2019	3	NW
			6	W
		2025	0	N/A
			0	N/A
Red-throated diver	*Gavia stellata*	2018	30	SW
		2019	1	S
		2025	1	NW
			3	SW
			1	W
Swallow	*Hirundo rustica*	2018	0	N/A
		2019	1	SW
		2025	1	SW
			1	W
			1	NW
Coot	*Fulica atra*	2018	1	SW
		2019	0	N/A
		2025	0	N/A
Knot	*Calidris canutus*	2018	1	SW
		2019	0	N/A
		2025	0	N/A
Common scoter	*Melanitta nigra*	2018	0	N/A

Species		Year	Count	Flight direction
		2019	0	N/A
		2025	1	N
			1	SSE
House martin	*Delichon urbicum*	2018	0	N/A
		2019	0	N/A
		2025	1	E
Long-tailed tit	*Aegithalos caudatus*	2018	0	N/A
		2019	0	N/A
		2025	1	N
Meadow pipit	*Anthus pratensis*	2018	0	N/A
		2019	0	N/A
		2025	1	SW
Unidentified passerine	*Passeriformes*	2018	0	N/A
		2019	0	N/A
		2025	2	SE
Ringed plover	*Charadrius hiaticula*	2018	0	N/A
		2019	0	N/A
		2025	8	SW

Source: Natural Power

Discussion

Across the years of survey effort, it is noted that low levels of passage of migratory bird species were observed. This aligns with the expected understanding of the patterns of migratory species movement in the Irish sea (Wernham *et al*, 2002)[5] and the results of the coastal VP surveys during which all migratory species flew parallel to the coast (see **Graph 1** and **Graph 2**). Additionally, it was noted that these birds were not vocalising during the surveys.

Of the 219 flights recorded, the majority (78.5%) of flights were at heights of 5m or less. Of those, the majority (53.4%) were recorded at 1m. Only 2.28% of flights were recorded to be at collision heights of 30 m or greater.

5. Conclusion

The survey results from the coastal VP, acoustic and vessel based efforts presented in this report, consistently show that migratory birds, especially geese and swans, predominantly travel parallel to the Irish coastline and rarely pass through the CWP Array site. Both acoustic and vessel-based surveys detected very low levels of migratory passage, with no significant changes in flight patterns or behaviour compared to previous years.

The 2025 data supplements, and validates, the existing baseline characterisation data and supports the information presented in the EIAR, and provides evidence to support the FIR from ACP. While some methodological limitations exist, the overall evidence confirms that significant migratory bird passage through the site is unlikely.

[5] Wernham, C., Toms, C.V., Marchant, J.H., Clark, J.A., Siriwardena, G.M., Baillie, S.R., 2002. The Migration Atlas: Movements of the Birds of Britain and Ireland. T. & A. D. Poyser, London

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