Appendix 11-3 Migratory Geese Survey Report







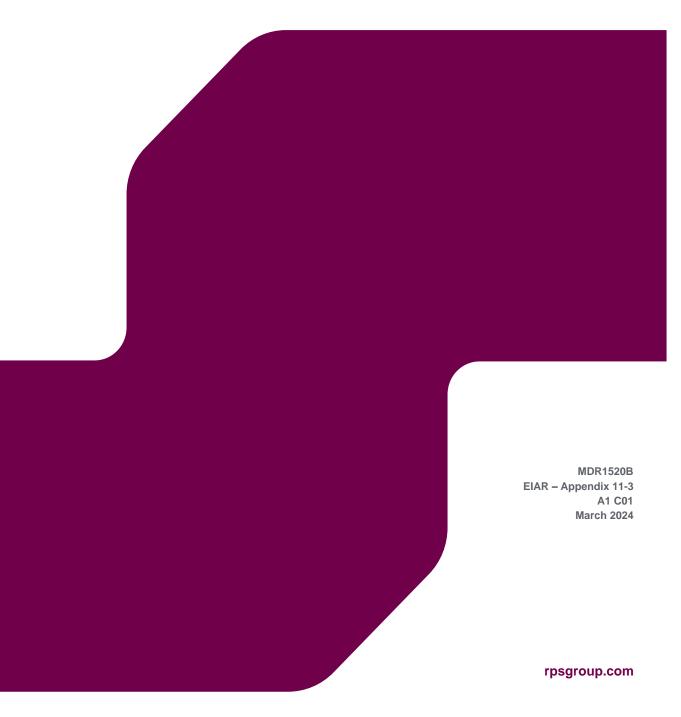






ORIEL WIND FARM PROJECT

Environmental Impact Assessment Report Appendix 11-3: Migratory Geese Survey Report



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1 INTRODUCTION

RPS was commissioned by Oriel Windfarm Limited (OWL) to undertake an Ecological Survey for Birds at Cooley Point, County Louth for the Oriel Wind Farm Project (hereafter referred to as "the Project"). The proposed Project involves the construction of an offshore wind farm in the Irish Sea east of Dundalk Bay.

The target species for these surveys were light bellied brent geese *Branta bernicla hrota*, a fully migratory species that typically arrives at its wintering grounds in Ireland from mid-September, remaining until mid-March or early April. The surveys were commissioned in response to information provided by consultees which suggested that there may be some movement of this species across Dundalk Bay, particularly during the autumn.

This report includes data collected from the site-specific migratory geese vantage point (VP) surveys undertaken between November 2019 and December 2019 and in April 2020.

It is recommended that this appendix is read in-conjunction with volume 2A, chapter 11: Offshore Ornithology and appendix 11-1: Offshore Ornithology Technical Report.

1.1 **Project location**

The Project is located in the Irish Sea, off the coast of County Louth (approximately 22 km east of Dundalk town centre and 18 km east of Blackrock). The closest wind turbine will be approximately 6 km from the closest shore on the Cooley Peninsula. The offshore cable corridor extends approximately 11 km southwest from the wind farm area to the landfall south of Dunany Point.

1.2 Aim and structure

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

The aim of the report is to provide a description of the bird survey methods used and the results of bird surveys. The purpose of this report is to investigate the potential for interaction between migratory light-bellied brent geese and the Project turbines.

This report is structured as follows:

- 1. Introduction;
- 2. Methodology; and
- 3. Results.

2 METHODOLOGY

2.1 Statement of authority

The ornithological surveys were undertaken by Nick Veale (between November and December 2019) and Breffni Martin (April 2020) for and on behalf of RPS.

Nick Veale is a self-employed environmental consultant and holds a BSc (Hons) in Environmental Science and an MSc in Environmental Management. Nick has over 19 years' experience in the field of ecology and environmental consultancy. Nick has a wealth of experience in ornithology and extensive expertise in upland bird surveys, breeding bird surveys, vantage point surveys, wetland bird surveys and wintering bird surveys. Nick is also trained and accredited by the Field Studies Council (FSC) as a European Seabirds at Sea (ESAS) surveyor and has over 8 years' professional experience on offshore energy projects.

Breffni Martin is a local ornithologist who provided local information and has observed and photographed light-bellied brent geese on migration in the area over a period of 15 years, as well as participating in organised bird census surveys such as Irish Wetland Bird Survey (IWeBS). He holds a BSc in Biology from University College Dublin and is chairman and founder of the Louth Nature Trust.

The report author, Adam McClure, is a Senior Ecologist with RPS and holds a BSc (Hons) in Palaeoecology and Archaeology with over 10 years of experience in field of ornithology. Adam has extensive expertise in breeding bird surveys, vantage point surveys, wetland bird surveys, wintering bird surveys and is a licensed bird ringer. He is the County Antrim Regional Representative for the British Trust for Ornithology (BTO). Adam is also a Full member of CIEEM and is currently a member of the CIEEM Irish Section Committee.

The report has been reviewed Sam O'Hara, a Senior Ecologist with RPS who holds a BSc (Hons) in Ecology and has over five years of experience in the field of ecology. Sam has experience of ecological field survey including habitat, mammal and bird survey and is a protected species licence holder. Sam is an Associate member of CIEEM.

The information prepared and provided is true and accurate at the time of issue of this report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM, 2019). We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists.

2.2 Vantage point survey

Since there is no guidance on vantage point (VP) survey protocols for the Republic of Ireland, guidance developed by Scottish Natural Heritage (SNH) for onshore wind farm ornithology surveys was followed (SNH, 2017).

Surveys to record movements of migratory waterfowl during the autumn migration (November and December 2019) and spring migration (April 2020) were conducted from a single coastal VP at Cooley Point, County Louth (OS Grid Reference IJ 220 050).

The main objective is to record movements of primary target species, between the VP location across Dundalk Bay to the offshore wind farm area, 6-12 km offshore.

The protocol followed during coastal migration 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.

Surveys were not undertaken in weather conditions which were likely to preclude migration.

Data collected for each observation included:

• Time of observation;

- Species;
- Flock size;
- Flight height band(s) (1 = 0-20 m, 2 = 20-250 m, 3 = 250-300 m, 4 = >300 m);
- Flight direction;
- Distance from observer (to the nearest 100 m); and
- Flight lines drawn onto maps, which were later digitised via geographic information system (GIS) mapping.

During the autumn migration period, seven surveys totalling 42 hours of observation were undertaken between November and December 2019. Spring migration surveys totalling 40 hours of observation were undertaken in April 2020.

The timings of surveys are based on data provided in Fox *et al.* (2017), but these timings are also considered suitable for recording migrating brent geese which were the primary target species.

3 **RESULTS**

3.1 Vantage point survey

A total of 42 survey hours for migratory species were conducted in November and December 2019, with 186 flights recorded. In April 2020, a total of 40 survey hours were undertaken, with 15 flights recorded. The survey date start and end times and weather conditions are provided for each of the VP surveys in Table 3-1 below. Full details of the species recorded during the surveys are provided in annex 1.

Table 3-1: Survey dates and weather conditions recorded for completed surveys: November /	
December 2019 and April 2020.	

Date	Start Time		Cloud (Oktas)	Visibility (km)	Wind (Beaufort) / Direction	Temp (°C)	Precipitation	Sunset / Sunrise	Sea State at 5 km
12/11/19	08:00	15:00	6	Good (> 3-5)	3-4 / W-NW	3	None	07:47	3-4
25/11/19	09:00	15:30	8	Good (> 3-5)	2-3 / SE	9	Drizzle at times	08:05	2-3
26/11/19	08:15	14:45	8	Good (> 3-5)	3-4 / SE	9	Light showers	08:05	3
30/11/19	07:50	14:20	6	Good (> 3-5)	3-4 / ESE	6	None	08:20	3-4
02/12/19	09:00	15:30	4	Good (> 3-5)	1-2 / W	1	None	08:23	1-2
12/12/19	08:40	15:40	8	Good (> 3-5)	2 / SW	7	None	08:36 / 16:04	2
20/12/19	10:05	16:35	7	Good (> 3-5)	2-3 / WSW-W	5	Light drizzle at start	08:43 / 16:05	2-3
10/04/20	17:30	20:30	7	Good (> 3-5)	2 / SW	10	None	20:18	2-3
11/04/20	06:20	09:30	3	Good (> 3-5)	Nil	10	None	06:33	0-1
11/04/20	17:30	20:30	4	Good (> 3-5)	Nil	12	None	20:20	0-1
12/04/20	11:00	14:00	4	Good (> 3-5)	3 / NE	9	None	06:30	3-4
12/04/20	18:30	21:30	2	Good (> 3-5)	3 / NE	11	None	20:22	3-4
13/04/20	18:00	21:30	4	Good (> 3-5)	3 / NE	11	None	20:24	3-4
14/04/20	18:00	21:00	8	Good (> 3-5)	Nil	13	None	20:26	0-1
15/04/20	16:00	19:00	8	Good (> 3-5)	Nil	12	None	20:28	0-1
16/04/20	06:00	09:00	8	Good (> 3-5)	2 / NE	10	None	06:21	0-1
16/04/20	18:00	21:00	8	Good (> 3-5)	2 / NE	12	None	20:30	2-3
20/04/20	18:00	21:00	8	Good (> 3-5)	2 / E	12	None	20:37	2-3
23/04/20	18:30	21:30	5	Good (> 3-5)	1 / NE	13	None	20:43	1-2
24/04/20	14:00	17:00	8	Good (> 3-5)	1 / NE	12	None	20:45	1-2

3.1.1 Target species

Light-bellied brent goose was the only target species observed, with 45 individual bird flights recorded across the 17 survey dates. Flocks were also observed feeding on the shoreline and sitting on the sea surface (Table 3-2). All records were within height-band 1 (i.e. 0-20 m).

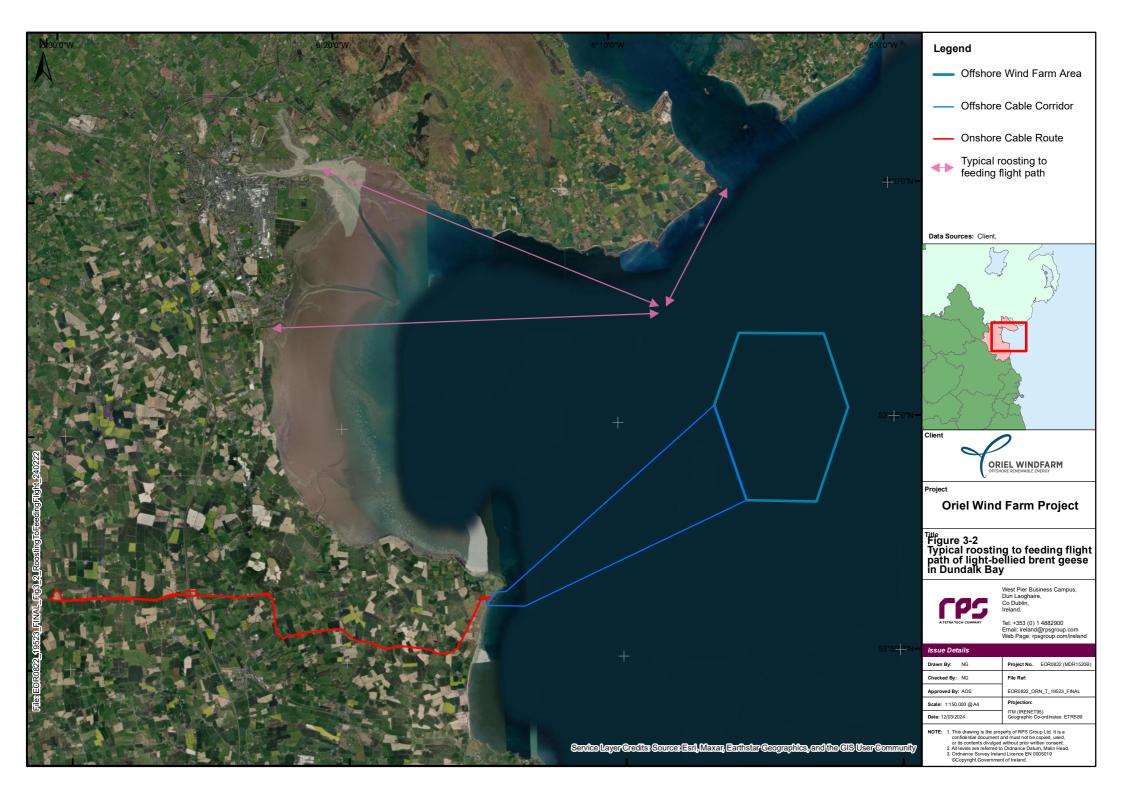
Date	No. of bird flights	No. birds observed on sea surface / shoreline	Total no. of birds		
12/11/19	6	0	66		
25/11/19	4	0	56		
26/11/19	3	0	40		
30/11/19	3	0	47		
02/12/19	8	0	106		
12/12/19	5	62	100		
20/12/19	3	32	62		
10/04/20	2	0	437		
11/04/20	2	0	287		
12/04/20	2	0	567		
13/04/20	1	0	218		
14/04/20	3	0	1,635		
15/04/20	0	0	0		
16/04/20	2	0	55		
20/04/20	1	5	50		
23/04/20	0	1	1		
24/04/20	0	0	0		
Total	45	100	3727		

Table 3-2: Light-bellied brent goose flights recorded during the surveys.

Between November and December 2019, the majority of light-bellied brent geese were observed flying east to west past the survey location. The majority of individual bird flights were observed between 100 m and 500 m offshore, with the exception of one flock of 22 individuals which were observed approximately 1.5 km offshore in November 2019. Flights of target species are shown in annex 2.

In April 2020, regular commuting of light-bellied brent geese was observed with birds flying low east to west past Cooley Point. These numbers increased until 14 April, following which numbers significantly dropped off, suggesting that a significant migratory move was made in the night or morning of 14/15 April. No geese were seen flying across Dundalk Bay from Dunany Point towards the mouth of Carlingford Lough; instead individuals were observed flying close to the shore, using the traditional roosting areas at Lurgangreen, Ballymascanlon Bay and Rockmarshal as bases for migration. These are shown in Figure 3-1 and Figure 3-2 below.





3.1.2 Secondary species

A total of 154 flights, representing 23 secondary species were recorded (Table 3-3 below), of which 150 were in height-band 1 (i.e. 0-20 m) and four were within height-band 2 (i.e. 20-250 m).

The most commonly recorded species was common scoter *Melanitta nigra* with 37 flights and 1,448 individual birds observed over the survey period.

Table 3-3: Secondary species recorded during the surveys.

Secondary Species	Total No. of Flights	Total No. of Birds
Bar-tailed godwit Limosa lapponica	2	5
Black-tailed godwit Limosa limosa	2	34
Curlew Numenius arquata	16	33
Common scoter Melanitta nigra	37	1,448
Dunlin <i>Calidris alpina</i>	7	129
Eider Somateria mollissima	1	5
Great crested grebe Podiceps cristatus	7	12
Greenshank <i>Tringa nebularia</i>	1	2
Golden plover <i>Pluvialis apricaria</i>	1	28
Grey plover Pluvialis squatarola	1	3
Knot Calidris canutus	1	18
Lapwing Vanellus vanellus	1	21
Great northern diver Gavia immer	11	11
Oystercatcher Haematopus ostralegus	17	46
Peregrine Falco peregrinus	1	1
Red-throated diver Gavia stellata	21	33
Redshank Tringa totanus	1	2
Red-breasted merganser Mergus serrator	12	40
Ringed plover Charadrius hiaticula	4	24
Sanderling Calidris alba	2	34
Shelduck Tadorna tadorna	4	12
Turnstone Arenaria interpres	2	13
Whimbrel Numenius phaeopus	2	4

4 **REFERENCES**

CIEEM (2017) *Guidelines for Ecological Report*. Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (2019) *Code of Professional Conduct.* Chartered Institute of Ecology and Environmental Management, Winchester.

Fox, T., Francis, I., Norriss, D. & Walsh, A. (2017) *Report of the 2016/17 international census of Greenland White-fronted Geese*. Greenland White-fronted Goose Study, Rønde, Denmark and Wexford, Ireland.

SNH (2017) *Recommended bird survey methods to inform impact assessment of onshore wind farms*. SNH Guidance. SNH, Battleby.

Annex 1: Raw data

Site	Oriel Migration	W-Speed		W-Direction	Rain	Rain		Cloud Cover		ght	Visibility	
Site	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	12/11/2019	Light air	1	Compass	Drizzle/Mist	1	<i>e.g.</i>	3/8	150-500m	1	Moderate (1-3km)	1
Date	12/11/2019	Light breeze	2	Ν	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	N VEALE	Gentle breeze	3	NNE	Heavy showers	3						
Observer		Mod. breeze	4	NE	Heavy rain	4				VD	Locations	ļ
Location	VP Cooley Point	Fresh breeze	5	ENE						V I	Locations	ļ
Location	vr cooley rollit	Strong breeze	6	Е	Snow		Frost					ļ
Start Time	08:00	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	ļ
Start mile	08.00	Fresh gale	8		On site	1	Ground	1			•	ļ
Finish Time	15:00	Strong gale	9		High ground	2	All day	2				ļ
	13.00	Whole gale	10									ļ
Sunrise/ sunset	07:47	Storm	11						1			ļ
Sumse/ Sunset	07.47	Hurricane	12						1			ļ

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate	Notes:
		speed	direction		cover	height			at 5km	
Hr 1	08:00	4	W	0	5/8	2	2	0	4	TEMP 3oc
Hr 2	09:00	4	W	0	7/8	2	2	0	4	
Hr 3	10:00	4	W	0	6/8	2	2	0	4	TEMP 4oc
Hr 4	12:00	3	WNW	0	6/8	2	2	0	4	
Hr 5	13:00	3	WNW	0	6/8	2	2	0	3	ТЕМР бос
Hr 6	14:00	3	WNW	0	6/8	2	2	0	3	

6 TARGET FLIGHTS

26 BRENT FEEDING ON THE INTERTIDAL SHORELINE AT THE POINT

Vant	age Point	Watch I	Recording	g Shee	et							Sheet number /	
Site: Coole	y Point						Vantage Po	pint Location:		Observer: NICK VEALE			
For primar For second	y target species rec lary target species c	ord details on t	this sheet plus dra ails on this sheet	aw flightlines (no flightline	s on map es)					Start T	ime: 08:00		
	, , ,	,		、 5						Finish	Time: 15:00		
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:		= <20m, 2 = 20 – 250m, 3 = 250 - 300m, 4 = >30 TICK AS APPROPRIATE			Notes		
			(to 100m)	Time	uncetion	1	2	3	2	4			
1	RH	2	400	08:12	S		2					SEASTATE 4	
2	СХ	90	2000	08:39	SW	1					LANDED WITH RAFT OF APROXIMATLY 900 cx		
3	СХ	29	800	09:27	SSW	1							
4	РВ	15	300	09:49	SW	1							
5	DN	6	100	09:55	SW	1							
6	РВ	23	800	10:23	NE	1							
7	ND	1	500	10:50	W	1							
8	CU	1	100	12:02	S	1							
9	СХ	39	2500	12:24	SSW	1							
10	CU	2	100	12:26	SW	1							
11	ТТ	1	600	12:29	SW	1							
12	RH	1	500	12:42	SW	1							
13	РВ	11	200	12:50	SW	1					LAND	ED IN POOL INFRONT OF VP 4AD 7JUV	
14	OC	4	100	13:19	NNW	1							
15	RH	1	800	13:20	SW	1							
16	PB	6	100	13:28	SW							6 ADULTS	
17	DN	16	100	13:49	SW	1							
18	ND	1	1000	14:04	NE	1							

	age Point	Watch I	Recording	g Shee	t							Sheet number /		
Site: Cooley	y Point						Vantage Po	int Location:		Observer: NICK VEALE				
For primar For second	y target species rec lary target species c	ord details on only record det	this sheet plus dra ails on this sheet	aw flightlines (no flightline	s on map es)					Start T	ime: 08:00			
	, , ,	,			,					Finish	Time: 15:00			
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:	TICK AS A	<20m, 2 = 20 – 250m, 3 = 250 - 300m, 4 = >300m. TICK AS APPROPRIATE Notes						
			(to 100m)			1	2	3	4	1				
19	PB	5	300	14:28	SW	1						2 AD 3 JUV		
20	PE	1	100	14:50	SW	1					JUV PERIGRINE HUNTING ALONG SHORE LANDE SOUTH OF VP ON SEAWALL OF CARPARK			
21	РВ	6	100	14:50	SW	1					2 ADULTS 4 JUV			
22	RH	1	600	14:50	NE		2							
23	СХ	36	1200	14:52	SSW	1								

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Co	ver	Cloud Heig	ght	Visibility	
Site	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	25/11/2019	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	23/11/2019	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	N VEALE	Gentle breeze	3	NNE	Heavy showers	3						
Observer		Mod. breeze	4	NE	Heavy rain	4				VD	Locations	ļ
Location	ocation VP Cooley Point		5	ENE						V I	Locations	ļ
Location	vr cooley rollit	Strong breeze	6	Е	Snow		Frost					ļ
Start Time	09:00	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start mile	09.00	Fresh gale	8		On site	1	Ground	1			•	ļ
Finish Time	15:30	Strong gale	9		High ground	2	All day	2				ļ
	13.30	Whole gale	10									ļ
Sunrise/ sunset	08:05	Storm	11						1			
Junise/ Junset	00.00	Hurricane	12						1			

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate	Notes:
		speed	direction		cover	height			at 5km	
Hr 1	09:00	3	ESE	1	8/8	2	2	0	3	TEMP 9oc
Hr 2	10:00	3	ESE	1	8/8	2	2	0	3	
Hr 3	11:00	3	SE	0	8/8	2	2	0	3	TEMP 10oc
Hr 4	12:30	2	SE	1	7/8	2	2	0	3	
Hr 5	13:30	2	SE	1	8/8	2	2	0	2	TEMP 9oc
Hr 6	14:30	2	SE	0	8/8	2	2	0	2	

4 TARGET FLIGHTS

Vant	age Point	Watch	Recording	g Shee	t							Sheet number 1 / 2
Site: Coole							Vantage Po	int Location:		Date: 25/11	/2019	Observer: NICK VEALE
For primar For second	y target species rec dary target species c	ord details on only record det	this sheet plus dra ails on this sheet	aw flightlines (no flightline	s on map es)					Start T	ime: 09:00	
	-	-								Finish	Time: 15:30	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	300m.	Notes	
			(to 100m)			1	2	3	4	4		
1	13RP / 9TT / 3RK	14	>100	09:00	SW	1					ON SHORI	E JUST NORTH OF VP FLUSHED AND FLEW NE
2	OC	6	100	09:16	SW	1						
3	сх	54	1000	09:22	S	1						
4	PB	19	100	09:46	SW	1						
5	PB 2AD/ 4 JUV	6	100	09:59	SW	1						FAMILY GROUP
6	BA	2	100	10:15	SW	1						
7	PB	14	300	10:37	SW	1						
8	RH	2	300	10:46	SW	1						
9	сх	85	100	11:01	SW	1						
10	DN	12	100	11:14	SW	1						
11	CU	3	100	11:24	SW	1						
12	CX 10M/5F	15	500	11:26	NE	1						
13	CU	2	100	11:47	SW	1						
14	RH	1	400	13:03	NE	1						
15	РВ	17	400	13:29	NE	1						
16	СХ	7	100	13:50	SW	1						
17	сх	26	500	14:06	N	1						
18	BA	3	100	14:23	SW	1						

	age Point '	Watch I	Recording	g Shee	t							Sheet number 2 / 2
Site: Cooley	y Point						Vantage Po	int Location:		Date: 25/11	/2019	Observer: NICK VEALE
For primar For second	y target species reco dary target species c	ord details on to only record det	this sheet plus dra ails on this sheet (aw flightlines (no flightline	s on map es)					Start T	ïme: 09:00	
	1		1							Finish	Time: 15:30	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands: 1		– 250m, 3 = 250 - 30 APPROPRIATE I	00m, 4 = >	•300m.	Notes	
			(to 100m)			1	2	3	4	4		
19	CU	3	100	14:28	SW	1						
20	RH	1	500	14:30	SW	1						
21	CX	72	700	14:31	NNE	1						
22	WM	2	100	14:32	SW	1						
23	DN	24	>100	14:38	NE	1						
24	CU	3	100	14:39	SW	1						
25	СХ	63	1500	14:42	S	1						
26	СХ	32	1500	14:48	S	1						
27	ND	1	500	15:02	SSW	1						
28	E	5	300	15:12	NE	1						
29	СХ	9	1000	15:21	N	1						

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cov	ver	Cloud Hei	ght	Visibility	
Site	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	26/11/2019	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	20/11/2019	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	NICK VEALE	Gentle breeze	3	NNE	Heavy showers	3						
Observer		Mod. breeze	4	NE	Heavy rain	4				VD	Locations	ļ
Location	VP Cooley Point	Fresh breeze	5	ENE						VГ	Locations	ļ
Location	vr cooley rollit	Strong breeze	6	Е	Snow		Frost					ļ
Start Time	08:15	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	ļ
Start mile	08.15	Fresh gale	8		On site	1	Ground	1			-	ļ
Finish Time	14:45	Strong gale	9		High ground	2	All day	2				ļ
	14.45	Whole gale	10									ļ
Sunrise/ sunset	08:05	Storm	11						1			ļ
Sumse/	08.05	Hurricane	12									

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate	Notes:
		speed	direction		cover	height			at 5km	
Hr 1	08:15	3	E	2	8/8	2	2	0	3	TEMP 9oc LIGHT RAIN
Hr 2	09:15	3	SE	2	8/8	2	2	0	3	LIGHT RAIN
Hr 3	10:15	4	ESE	2	8/8	2	2	0	3	TEMP 10oc LIGHT RAIN
Hr 4	11:45	4	ESE	1	7/8	2	2	0	3	DRIZZLE
Hr 5	12:45	4	SE	0	8/8	2	2	0	3	TEMP 9oc
Hr 6	13:45	3	SSE	0	8/8	2	2	0	3	

3 TARGET FLIGHTS

Vant	age Point '	Watch	Recording	g Shee	et							Sheet number 1 / 2
Site: Coole	y Point						Vantage Po	oint Location:		Date: 26/11	/2019	Observer: NICK VEALE
For primar For second	y target species rec dary target species c	ord details on only record det	this sheet plus dra ails on this sheet	aw flightline: (no flightline	s on map es)		·			Start T	ime: 08:15	·
		,								Finish	Time: 14:45	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:	•	– 250m, 3 = 250 - APPROPRIATE	300m, 4 = >	300m.	. Notes	
			(to 100m)			1	2	3	2	4		
1	RH	2	100	08:15	N	1						
2	DN	31	100	08:17	SW	1						
3	РВ	4	100	08:21	SW	1						1 ADULT 3 JUV
4	RH	2	300	08:44	SW	1						
5	GG	1	300	09:01	SW	1						
6	CU	1	100	09:26	SW	1						
7	СХ	58	1000	09:32	S	1						
8	OC	2	100	09:38	SW	1						
9	ND	1	400	10:13	NW	1						
10	PB	22	1500	10:41	SW	1						FLIGHT PICKED UP IN SCOPE
11	ND	1	500	11:12	S	1						
12	РВ	14	200	11:57	SW	1						4 AD / 10 JUV
13	RP	5	0	12:15	SW	1					ON SH	ORELINE NEAR VP WITH FLOCK OF TT
14	ТТ	12	0	12:16	SW	1						LANDED WITH RP
15	RK	2	100	12:34	SW	1						
16	СХ	38	1000	12:53	SW	1						
17	RH	2	700	13:09	SW	1						
18	RM	4	300	13:20	SW	1						

Vanta	age Point '	Watch I	Recording	g Shee	et							Sheet number 2 / 2
Site: Coole	y Point						Vantage Po	int Location:		Date: 26/1	1/2019	Observer: NICK VEALE
For primar For second	y target species reco dary target species c	ord details on only record det	this sheet plus dra ails on this sheet	w flightlines (no flightline	s on map es)					Start 1	Time: 08:15	
										Finish	Time: 14:45	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	300m.	Notes	
			(to 100m)			1	2	3	2	4		
19	CX	5	300	13:24	NNE	1						
20	CU	2	100	13:28	SW	1						
21	CX/ 1M/2F	3	200	13:32	SW	1						
22	GG	1	600	13:34	SW	1						
23	CX	18	400	13:56	N	1						
24	WM	2	100	14:07	SW	1						
25	СХ	39	800	14:10	NNW	1						
26	RH	1	300	14:13	NE	1						
27	KN	18	100	14:20	SW	1						
28	OC	1	100	14:23	N	1						
29	СХ	9	1000	14:25	NE	1						
30	СХ	23	800	14:39	N	1						
31	GG	2	400	14:41	SW	1						
32	GP	28	200	14:43	SW	1						

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Co	ver	Cloud Hei	ght	Visibility	
Site	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	30/11/2019	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	50/11/2013	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	NICK VEALE	Gentle breeze	3	NNE	Heavy showers	3					·	
Observer		Mod. breeze	4	NE	Heavy rain	4			VP Locations			
Location	VP Cooley Point	Fresh breeze	5	ENE						vг	Locations	
LUCATION	VP CODIEV POINT	Strong breeze	6	Е	Snow		Frost					
Start Time	07:50	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start mile	07.50	Fresh gale	8		On site	1	Ground	1			-	
Finish Time	14:20	Strong gale	9		High ground	2	All day	2				
	14.20	Whole gale	10									
Sunrise/ sunset	/sunset 08:20	Storm	11						1			
Sumse/ sunset	08.20	Hurricane	12									

Weather	Start time	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Seastate at 5km	Notes:
Hr 1	07:50	3	ESE	0	6/8	2	2	0	3	ТЕМР бос
Hr 2	08:50	3	ESE	0	78	2	2	0	3	
Hr 3	09:50	4	ESE	0	6/8	2	2	0	3	TEMP 7oc
Hr 4	11:20	4	ESE	0	7/8	2	2	0	4	
Hr 5	12:20	4	ESE	0	5/8	2	2	0	4	TEMP 6oc
Hr 6	13:20	3	E	0	4/8	2	2	0	4	

3 TARGET FLIGHTS

QUIET

Vanta	age Point '	Watch I	Recording	g Shee	et							Sheet number 1 / 1
Site: Coole	y Point						Vantage Po	pint Location:		Date: 30/11/	/2019	Observer: NICK VEALE
For primar For second	y target species rec dary target species o	ord details on only record det	this sheet plus dra ails on this sheet	aw flightline: (no flightline	s on map es)					Start Ti	me: 07:50	
		,								Finish T	ime: 14:20	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:		– 250m, 3 = 250 - APPROPRIATE	300m, 4 = >	•300m.	Notes	
			(to 100m)			1	2	3	4	4		
1	RM	1	100	08:02	NE	1						
2	СХ	67	800	08:08	SW	1						
3	СХ	125	1000	08:15	SW	1						
4	OC	4	100	09:27	SW	1						
5	RM	2	100	09:39	SW	1						
6	PB	32	300	10:07	SW	1						
7	PB	10	200	10:28	SW	1						4 ADULT 6 JUV
8	RM	2	200	11:07	SW	1						
9	CU	3	100	11:20	SW	1						
10	PB	5	100	11:23	SW	1					LANDED AT	FRESH WATER ON TEMPELTOWN BEACHW
11	СХ	16	600	12:48	SW	1						
12	OC	2	100	12:54	SW	1						
13	RM	20	200	13:20	SW	1						
14	RH	2	100	13:53	SW	1						
15	SS	22	100	14:01	SW	1						
16	ос	3	100	14:03	SW	1						
17	RH	1	300	14:16	SW	1						
18												

Site	Oriel Migration		W-Speed		W-Direction	Rain		Cloud Co	ver	Cloud Heig	ght	Visibility	
Site	Onerwigration		Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	02/12/2019		Light air	1	Compass	Drizzle/Mist	1	<i>e.g.</i>	3/8	150-500m	1	Moderate (1-3km)	1
Date	02/12/2019		Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	NICK VEALE		Gentle breeze	3	NNE	Heavy showers	3						
Observer	NICK VLALL		Mod. breeze	4	NE	Heavy rain	4				VD	Locations	ļ
Location	ocation VP Cooley Point		Fresh breeze	5	ENE						VГ	Locations	ļ
Location	vr cooley rollit		Strong breeze	6	Е	Snow		Frost					ľ
Start Time	09:00		Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start mile	09.00		Fresh gale	8		On site	1	Ground	1			-	ļ
Finish Time	15:30		Strong gale	9		High ground	2	All day	2				ļ
	15.50		Whole gale	10									ļ
Sunrise/ sunset	08:23		Storm	11						1			
Juinise/ Juinset	08.23		Hurricane	12						1			

Weather	Start time	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Seastate at 5km	Notes:
Hr 1	09:00	1	W	0	2/8	2	2	1	1	TEMP 0oc GROUNDFROST
Hr 2	10:00	1	WNW	0	2/8	2	2	0	1	
Hr 3	11:00	2	WNW	0	4/8	2	2	0	1	TEMP 2oc
Hr 4	12:30	2	W	0	4/8	2	2	0	2	
Hr 5	13:30	2	W	0	5/8	2	2	0	2	TEMP 2oc
Hr 6	14:30	2	WSW	0	5/8	2	2	0	2	

8 TARGET FLIGHTS

Vant	age Point	Watch I	Recording	g Shee	et							Sheet number 1 / 2
Site: Coole	y Point						Vantage Po	oint Location:		Date: 02/12	2/2019	Observer: NICK VEALE
For primar For second	y target species rec lary target species c	ord details on tonly record det	this sheet plus dra ails on this sheet	aw flightlines (no flightline	s on map es)					Start T	ime: 09:00	
		-			-					Finish	Time: 15:30	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands: 2		– 250m, 3 = 250 - APPROPRIATE	300m, 4 = >	300m.	Notes	
			(to 100m)			1	2	3	2	1		
1	CU	5	100	09:04	SW	1						
2	СХ	9	500	09:07	NE	1						3M/7F
3	PB	26	500	09:15	SW	1						
4	СХ	75	1000	09:16	NE	1						
5	OC	1	100	09:19	SW	1						
6	GG	3	300	09:34	SW	1						
7	RM	1	100	09:54	SW	1						
8	СХ	45	800	09:55	SW	1						
9	РВ	11	100	09:57	NE	1					FLUSH	ED FROM SHORE BY DOG AND WALKER
10	RH	2	100	10:25	SW	1						
11	OC	2	100	10:48	SW	1						
12	PB	13	100	11:02	SW	1					(6 ADULTS 7 JUV HEADING SOUTH
13	SU	2	200	11:38	SW	1						
14	RH	2	100	11:56	SW	1						
15	ND	1	600	12:39	SW	1						
16	BW	18	200	12:56	NE	1						
17	PB	4	200	13:20	SW	1						ADULTS
18	RH	1	100	13:46	N	1						

Vanta	age Point '	Watch I	Recording	g Shee	et							Sheet number 2 / 2
Site: Cooley	y Point						Vantage Po	oint Location:		Date: 02/12	2/2019	
For primar For second	y target species reco lary target species c	ord details on t only record det	this sheet plus dra ails on this sheet	aw flightlines (no flightline	s on map es)					Start T	ïme: 09:00	-
	, , ,									Finish	Time: 15:30	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:		– 250m, 3 = 250 - 30 APPROPRIATE	00m, 4 = >	300m.	Notes	
			(to 100m)			1	2	3	4	1		
19	RP	5	0	14:13	NE	1						IN FRONT OF VP
20	PB	5	100	14:19	SW	1						
21	CU	1	100	14:27	NE	1						
22	RP	5	100	14:29	SW	1						
23	ND	1	400	14:46	NE		2					
24	РВ	17	300	15:05	SW	1						
25	CU	1	100	15:13	SW	1						
26	РВ	21	600	15:20	SW	1						
27	CU	2	100	15:22	SW	1						
28	PB	9	100	15:23	W	1					LANDED A	AT FRESH WATER ON TEMPELTOWN BEACH
29	SU	2	200	15:23	SW	1						

Site	Oriel Migration		W-Speed		W-Direction	Rain		Cloud Cov	ver	Cloud Heig	ght	Visibility	
Site	Onerwigration		Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	12/12/2019		Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	12/12/2019		Light breeze	2	Ν	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	NICK VEALE		Gentle breeze	3	NNE	Heavy showers	3						
Observer				4	NE	Heavy rain	4				VD	Locations	ļ
Location	VP		Fresh breeze	5	ENE						VГ	Locations	ļ
Location	VF		Strong breeze	6	E	Snow		Frost					ľ
Start Time	08:40		Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start mile	08.40		Fresh gale	8		On site	1	Ground	1			-	
Finish Time	15.40		Strong gale	9		High ground	2	All day	2				ļ
		Whole gale	10									ļ	
Sunrise/sunset	08:36/16:04		Storm	11									
Junise/Sunset	08.30/10.04		Hurricane	12						1			

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate	Notes:
		speed	direction		cover	height			at 5km	
Hr 1	08:40	3	SW	0	8/8	2	2	0	2	ТЕМР бос
Hr 2	09:40	2	SW	0	8/8	2	2	0	2	
Hr 3	10:40	2	WSW	0	8/8	2	2	0	2	TEMP 7oc
Hr 4	12:40	2	WSW	0	8/8	2	2	0	2	
Hr 5	13:40	2	WSW	0	8/8	2	2	0	2	TEMP 7oc
Hr 6	14:40	2	WSW	0	8/8	2	2	0	2	

5 TARGET FLIGHTS 62 BRENT FEEDING ON THE SHORELINE BETWEEN COOLEY AND BALLAGAN. OBSERVED DURING 1 HOUR BREAK.

Vant	age Point	Watch I	Recording	g Shee	et							Sheet number 1 / 2
Site: Coole	y Point						Vantage Po	int Location:		Date: 12/12	2/2019	Observer: NICK VEALE
For primar For second	ry target species rec dary target species c	ord details on on only record det	this sheet plus dra ails on this sheet	aw flightlines (no flightline	s on map es)		L.			Start T	ïme: 08:40	
	, , ,				,					Finish	Time: 15:40	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:		– 250m, 3 = 250 - APPROPRIATE	300m, 4 = >	300m.	Notes	
			(to 100m)			1	2	3	2	4		
1	сх	31	1000	08:41	SW	1						
2	SU	4	200	08:44	SW	1						
3	ND	1	500	08:52	SSW		2					
4	L	21	100	08:56	SW	1						
5	BW	16	200	08:59	SW	1						
6	GG	2	400	09:05	NE	1						
7	RH	2	300	09:11	SW	1						
8	DN	14	100	09:28	SW	1						
9	РВ	3	400	10:06	SW	1						
10	СХ	53	1200	10:28	SW	1						
11	OC	2	100	11:18	SW	1						
12	GG	2	400	11:35	SW	1						
13	РВ	8	200	13:04	SW	1						3 ADULTS 5 YOUNG
14	РВ	11	400	13:08	SW	1					LOOP	ED LIKE 2 FAMILY GROUPS 4 ADULTS
15	РВ	3	100	13:31	SW	1						ADULTS
16	RH	1	500	13:54	SW	1						
17	GV	3	100	14:06	SW	1						
18	PB	13	700	14:23	NE	1						

	age Point '	Watch I	Recording	g Shee	t							Sheet number 2 / 2
Site: Cooley							Vantage Po	int Location:		Date: 12/12	/2019	
For primar For second	y target species reco lary target species c	ord details on tool only record det	this sheet plus dra ails on this sheet	aw flightlines (no flightline	s on map es)					Start T	ime: 08:40	
		•			•					Finish ⁻	Time: 15:40	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands: 1		– 250m, 3 = 250 - 30 APPROPRIATE	00m, 4 = >	300m.	Notes	
			(to 100m)			1	2	3	4	1		
19	RM	1	300	14:46	NNE	1						
20	CX	8	600	14:59	SW	1						
21	CU	1	100	15:08	SW	1						
22	RH	1	300	15:11	SW	1						
23	CX	28	800	15:15	NE	1						
24	CX	65	800	15:16	NE	1						
25	RM	4	200	15:23	NE	1						2M,2F
26	GK	2	100	15:19	SW	1						
27	CU	2	100	15:27	NE	1						
28	DN	26	100	15:32	SW	1						
29	SS	12	100	15:32	SW	1						
30	RH	3	500	15:34	SW	1						

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Co	ver	Cloud Heig	ght	Visibility	$\neg \neg$
Site	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	20/12/2019	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	20/12/2019	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	NICK VEALE	Gentle breeze	3	NNE	Heavy showers	3						
Observer		Mod. breeze	4	NE	Heavy rain	4				VD	Locations	ļ
Location	VP	Fresh breeze	5	ENE						۷ſ	Locations	
Location	VF	Strong breeze	6	Е	Snow		Frost					
Start Time	10:05	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	ļ
Start mile	10.05	Fresh gale	8		On site	1	Ground	1			•	ļ
Finish Time	16:35	Strong gale	9		High ground	2	All day	2				ļ
FILISITIIIIE	10.55	Whole gale	10									ļ
Sunrise/sunset	unrise/sunset 08.43/16:05	Storm	11						1			
Sumse/sunsel	00.43/10.03	Hurricane	12									

Weather	Start time		Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate	Notes:
		speed	direction		cover	height			at 5km	
Hr 1	10:05	3	WSW	1	8/8	2	2	0	2	TEMP 4oc Light drizzle
Hr 2	11:05	3	WSW	1	8/8	2	2	0	3	Light drizzle
Hr 3	12:05	3	W	0	7/8	2	2	0	3	TEMP 5oc
Hr 4	13:35	2	W	0	7/8	2	2	0	2	
Hr 5	14:35	2	W	0	6/8	2	2	0	2	TEMP 7oc
Hr 6	15:35	2	WSW	0	6/8	2	2	0	2	

3 TARGET FLIGHTS

32 BRENT FEEDING ON THE SHORELINE NORTH OF COOLEY POINT OBSERVED DURING BREAK

Vant	age Point '	Watch I	Recording	g Shee	t							Sheet number 1 / 2
Site: Coole							Vantage Po	oint Location:		Date: 20/12/	2019	Observer: NICK VEALE
For primar For second	y target species rec dary target species c	ord details on tool of the second det	this sheet plus dra ails on this sheet	aw flightlines (no flightline	s on map es)					Start Tir	me: 10:05	
	, , ,	,		. 5	,					Finish T	ime: 16:35	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands: 2		– 250m, 3 = 250 - : APPROPRIATE	300m, 4 = >	≻300m.	Notes	
			(to 100m)			1	2	3	4	4		
1	RH	1	200	10:07	NE	1						
2	ND	1	400	10:11	SW	1						
3	OC	2	100	10:12	SW	1						
4	СХ	80	700	10:14	NE	1						
5	OC	2	100	10:37	SW	1						
6	OC	2	100	11:02	SW	1						
7	СХ	48	800	11:24	NNE	1						
8	ND	1	500	11:46	S	1						
9	PB	14	200	13:09	SW	1						
10	CU	1	100	13:34	SW	1						
11	RM	2	300	13:53	SW	1						
12	RP	9	100	14:09	SW	1						
13	CX	16	1000	14:22	SW	1						4M,2F
14	OC	8	100	14:23	NE	1						
15	PB	6	100	14:47	SW	1						
16	РВ	10	200	15:02	SW	1						
17	OC	3	100	15:06	NNE	1						
18	RM	2	300	15:09	NE	1						1M1F

Vanta	age Point '	Watch I	Recording	g Shee	t						SI	heet number 2 / 2
Site: Cooley	y Point						Vantage Po	int Location:		Date: 20/12	2/2019	
For primar For second	y target species reco dary target species c	ord details on to only record det	this sheet plus dra ails on this sheet (aw flightlines (no flightline	s on map es)					Start T	ïme: 10:05	
		-	1		-					Finish	Time: 16:35	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands: 2		– 250m, 3 = 250 - 30 APPROPRIATE	00m, 4 = >	300m.	Notes	
			(to 100m)			1	2	3	4	4		
19	OC	1	100	15:25	NE	1						
20	OC	1	100	15:37	NE	1						
21	RH	2	300	15:40	SSW	1						
22	сх	9	1500	15:52	S	1						
23	SU	4	200	16:04	SW	1						
24	GG	1	400	16:11	SW	1						
25	сх	23	1000	16:29	NE	1						
26	ND	1	400	16:34	SSW	1						
ļ												
ļ												
ļ												

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cov	er	Cloud Heig	ht	Visibility	
Sile	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	10/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	10/04/20	Light breeze	2	Ν	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3						
Observer	BIEIIIII Martin	Mod. breeze	4	NE	Heavy rain	4						
Location	Cooley Point	Fresh breeze	5	ENE						٧P	Locations	
LOCATION	Cooley Point	Strong breeze	6	E	Snow		Frost					
Start Time	1730	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start Time	1730	Fresh gale	8		On site	1	Ground	1		00	oney i onne	
Einich Timo	ne 2030	Strong gale	9		High ground	2	All day	2				
Finish Time	2030	Whole gale	10									
Sunrise/sunset	2020	Storm	11									
Junnse /Sunset	2020	Hurricane	12									

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate at	Notes:
		speed	direction		cover	height			5km	
Hr 1	1730	2	SW	0	7/8	2	2	0	2-3	Temp: 10°C
Hr 2										
Hr 3										
Hr 4										
Hr 5										
Hr 6										

Field Notes (summaries of target and secondary species recorded, details of any disturbance, etc.)

Two flocks passed westwards at dusk

Vanta	age Point Wa	atch Reco	ording Shee	t								Sheet number 1 / 1	
Site: Cooley	Point					Vantage Poi	nt Location:		Observer: Breffni Martin				
	ry target species recor dary target species onl				ар					Start Ti	me: 1730		
TOT SECOND		ly record details	son this sheet (no i	ngintimes)				Finish T	ïme: 2030				
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands: 1 = <20m, 2 = 20 – 250m, 3 = 250 - 300m, 4 = >3 TICK AS APPROPRIATE				300m.	– Notes		
			flock (to 100m)	Time	direction	1	2	3	4	Ļ			
1	РВ	242	100	2012	w	1							
2	РВ	195	100	2019	w	1							

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cover		Cloud Height		Visibility	
		Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	11/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	11/04/20	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3				i		
Observer		Mod. breeze	4	NE	Heavy rain	4						
Location	Cooley Point	Fresh breeze	5	ENE					VP Locations			
Location		Strong breeze	6	E	Snow		Frost					
Start Time	0620 / 1730	Mod. gale	7	Etc	None	0	None	0	Cooley Point		olev Point	
Start Time	002071730	Fresh gale	8		On site	1	Ground	1		cooley i onite		
Finish Time	0930 / 2030	Strong gale	9		High ground	2	All day	2				
Fillisti fillie	093072030	Whole gale	10									
Sunrise/sunset	0633 / 2020	Storm	11						1			
Sumse/Sunset	0055/2020	Hurricane	12			1	1	1	1			

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate at	Notes:
		speed	direction		cover	height			5km	
Hr 1	0620	0	N/A	0	3/8	2	2	0	0-1	Temp: 10°C
Hr 2										
Hr 3										
Hr 4	1730	0	N/A	0	4/8	2	2	0	0-1	Temp: 12°C
Hr 5										
Hr 6										

Field Notes (summaries of target and secondary species recorded, details of any disturbance, etc.)

One flock passed eastwards at dawn One small flock passed westwards at dusk

Vanta	ge Point Wa	itch Reco	rding Shee	t								Sheet number 1 / 2
Site: Cooley	Point						Vantage Poi	nt Location: Cooley	point	Date: 1	1/04/20	Observer: Breffni Martin
For primar For second	y target species record ary target species onl	d details on this v record details	sheet plus draw fli	ghtlines on m ightlines)	ар					Start Ti	me: 0620	
		,								Finish 1	īme: 0930	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands:	1 = <20m, 2 = 20 TICK AS /	– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	300m.	Notes	
			flock (to 100m)	Time	direction	1	2	3	4	1		
1	РВ	265	50m	2012	e	1						

Vanta	age Point Wa	atch Reco	ording Shee	t								Sheet number 2 / 2
Site: Cooley	Point						Vantage Po	int Location: Cooley	Point	Date: 2	11/04/20	
	ry target species recor target species only re				ap For		I			Start Ti	ime: 1730	
										Finish	Гіте: 2030	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	800m, 4 = >	•300m.	Notes	
			(to 100m)	Time	uncetion	1	2	3		4		
1	РВ	22	50m	2019	w	1						

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cov	er	Cloud Heig	ht	Visibility	
Site	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	12/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Dale	12/04/20	Light breeze	2	Ν	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3					•	
Observer	BIEITII Martin	Mod. breeze	4	NE	Heavy rain	4						
Location	Cooley Point	Fresh breeze	5	ENE						٧P	Locations	
Location	Cooley Point	Strong breeze	6	E	Snow		Frost					
Start Time	1100 / 1830	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start Time	1100 / 1830	Fresh gale	8		On site	1	Ground	1		00	oncynonne	
Finish Time	1400 / 2130	Strong gale	9		High ground	2	All day	2				
	140072130	Whole gale	10									
Sunrise/sunset	0633 / 2020	Storm	11						1			
Sumse/sunset	0033 / 2020	Hurricane	12									

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate at	Notes:
		speed	direction		cover	height			5km	
Hr 1	1100	3	NE	0	4/8	2	2	0	3-4	Temp: 9°C
Hr 2										
Hr 3										
Hr 4	1830	3	NE	0	2/8	2	2	0	3-4	Temp: 11°C
Hr 5										
Hr 6										

One flock passed eastwards at dawn One small flock passed westwards at dusk

Vanta	ge Point Wa	itch Reco	rding Shee	t								Sheet number 1 / 2
Site: Cooley	Point						Vantage Poi	nt Location: Cooley	Point	Date: 1	12/04/20	Observer: Breffni Martin
For primar secondary	y target species recor target species only re	d details on this cord details on	sheet plus draw fli this sheet (no flight	ghtlines on m clines)	ap For					Start Ti	me: 1100	·
										Finish 1	Time: 1400	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	•300m.	Notes	
			flock (to 100m)	Time	direction	1	2	3	4	1		
1	РВ	456	50m	1230	e	1						

Vanta	ge Point Wa	atch Reco	ording Shee	t								Sheet number 2 / 2
Site: Cooley	Point						Vantage Poi	int Location: Cooley	Point	Date: 2	12/04/20	
	y target species recor ary target species on				ар					Start T	ime: 1830	
		<u> </u>		<u> </u>						Finish ⁻	Гіте: 2130	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	•300m.	Notes	
			(to 100m)	Time	unection	1	2	3	4	4		
1	РВ	111	50m	1852	w	1						
				1								

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cov	er	Cloud Heig	ht	Visibility	
Site	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	13/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	13/04/20	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3					•	
Observer		Mod. breeze	4	NE	Heavy rain	4						
Location	Cooley Point	Fresh breeze	5	ENE						V٢	Locations	
Location	Cooley Point	Strong breeze	6	E	Snow		Frost					
Start Time	1800	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start Time	1800	Fresh gale	8		On site	1	Ground	1		00	oncynonne	
Einich Timo	2130	Strong gale	9		High ground	2	All day	2				
inish Time	2130	Whole gale	10									
Sunrise/sunset	2024	Storm	11									
Jumse /Sunset	2024	Hurricane	12									

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate at	Notes:
		speed	direction		cover	height			5km	
Hr 1	1800	3	NE	0	4/8	2	2	0	3-4	Temp: 11°C
Hr 2										
Hr 3										
Hr 4										
Hr 5										
Hr 6										

One flock passed eastwards in the evening

Vanta	ge Point Wa	itch Reco	ording Shee	t								Sheet number 1 / 1
Site: Cooley	Point						Vantage Po	int Location: Cooley	point	Date: 1	.3/04/20	Observer: Breffni Martin
For primar	y target species recor ary target species onl	d details on this v record details	s sheet plus draw fli s on this sheet (no f	ghtlines on m lightlines)	ар					Start Ti	me: 1800	
		, , , , , , , , , , , , , , , , , , ,								Finish T	ïme: 2130	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	300m.	Notes	
Ū			flock (to 100m)	Time	direction	1	2	3	4	Ļ		
1	РВ	218	50m	1821	e	1						

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cov	er	Cloud Heig	ht	Visibility	
Sile	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	14/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Dale	14/04/20	Light breeze	2	Ν	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3						
Observer	BIEIIIII Martin	Mod. breeze	4	NE	Heavy rain	4						
Location	Cooley Point	Fresh breeze	5	ENE						٧P	Locations	
Location	Cooley Point	Strong breeze	6	E	Snow		Frost					
Start Time	1800	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start Time	1800	Fresh gale	8		On site	1	Ground	1		00	oney i onne	
inish Time	2100	Strong gale	9		High ground	2	All day	2				
	2100	Whole gale	10									
Sunrise/sunset	2040	Storm	11			1			1			
Jumse /Sunset	2040	Hurricane	12									

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate at	Notes:
		speed	direction		cover	height			5km	
Hr 1	1800	0	N/A	0	8/8	2	2	0	0-1	Temp: 13°C
Hr 2	1900	0	N/A	0	8/8	2	2	0	0-1	
Hr 3	2000	0	N/A	0	8/8	2	2	0	0-1	
Hr 4										
Hr 5										
Hr 6										

Three flocks passed westwards in the evening

Vanta	ge Point Wa	itch Reco	ording Shee	t								Sheet number 1 / 1
Site: Cooley							Vantage Po	int Location: Cooley	Point	Date: 1	14/04/20	Observer: Breffni Martin
	y target species recor ary target species onl				ар					Start Ti	ime: 1800	
TOT SECON	ary target species on		on this sheet (no i	iightiines)						Finish 1	Гіте: 2100	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	300m.	Notes	
Ū			flock (to 100m)	Time	direction	1	2	3	4	1		
1	РВ	781	50m	1850	W	1						
2	РВ	542	50m	1956	W							
3	РВ	312	100m	2010	w							

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cov	er	Cloud Heig	ht	Visibility	
Site	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	15/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Dale	13/04/20	Light breeze	2	Ν	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3						
Observer		Mod. breeze	4	NE	Heavy rain	4						
ocation	Cooley Point	Fresh breeze	5	ENE						٧P	Locations	
LUCATION	Cooley Point	Strong breeze	6	E	Snow		Frost					
Start Time	1600	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start Time	1000	Fresh gale	8		On site	1	Ground	1		00	oney i onne	
Finish Time	1900	Strong gale	9		High ground	2	All day	2				
	1900	Whole gale	10									
Sunrise/sunset	2028	Storm	11									
Jumise /Sunsel	2020	Hurricane	12									

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate at	Notes:
		speed	direction		cover	height			5km	
Hr 1	1600	0	N/A	0	8/8	2	2	0	0-1	Temp: 12°C
Hr 2										
Hr 3										
Hr 4										
Hr 5										
Hr 6										

No birds observed

Vanta	ge Point Wa	tch Reco	rding Shee	t								Sheet number 1 / 1
Site: Cooley							Vantage Poi	nt Location: Cooley	Point	Date: 2	15/04/20	Observer: Breffni Martin
For primar For second	y target species record ary target species only	d details on this y record details	sheet plus draw flig on this sheet (no fli	ghtlines on m ghtlines)	ар					Start Ti	me: 1600	
	, , , , ,	,	,							Finish 1	īme: 1900	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	300m.	Notes	
			flock (to 100m)	Time	direction	1	2	3	2	1		

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cov	/er	Cloud Heig	ht	Visibility	
Sile	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	16/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Dale	10/04/20	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3					•	
Observer	BIEITII Martin	Mod. breeze	4	NE	Heavy rain	4						
Location	Cooley Point	Fresh breeze	5	ENE						٧P	Locations	
LUCATION	Cooley Point	Strong breeze	6	E	Snow		Frost					
Start Time	0600 / 1800	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start mile	000071800	Fresh gale	8		On site	1	Ground	1		00	oncynonne	
Finish Time	0900 / 2100	Strong gale	9		High ground	2	All day	2				
	0300/2100	Whole gale	10									
Sunrise/sunset	0621 / 2030	Storm	11						1			
Sumse/sunset	0021/2030	Hurricane	12						1			

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate at	Notes:
		speed	direction		cover	height			5km	
Hr 1	0600	2	NE	0	8/8	2	2	0	0-1	Temp: 10°C
Hr 2										
Hr 3										
Hr 4	1800	2	NE	0	8/8	2	2	0	2-3	Temp: 12°C
Hr 5										
Hr 6										

One small flock passed east in morning and another west in evening

Vanta	ge Point Wa	tch Reco	rding Shee	t								Sheet number 1 / 2
Site: Cooley	Point						Vantage Poi	nt Location: Cooley	Point	Date: 1	6/04/20	Observer: Breffni Martin
For primar For second	y target species record ary target species onl	d details on this y record details	sheet plus draw flig on this sheet (no fl	ghtlines on m ightlines)	ар		·			Start Tir	me: 0600	-
	, , ,		·							Finish Ti	ime: 0900	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	300m.	Notes	
0			flock (to 100m)	Time	direction	1	2	3	4	ļ		
1	РВ	32		0825		1						

Vanta	age Point Wa	atch Reco	rding Shee	t								Sheet number 2 / 2
Site: Cooley	Point						Vantage Poi	int Location: Cooley	Point	Date: 2	16/04/20	
For primar For second	ry target species recor dary target species onl	d details on this ly record details	sheet plus draw fli on this sheet (no fl	ghtlines on m ightlines)	ар					Start Ti	me: 1800	
										Finish	Гіте: 2100	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to flock	Start Time	Flight direction	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	•300m.	Notes	
			(to 100m)			1	2	3	4	4		
1	РВ	23		2012		1						

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cov	/er	Cloud Heig	ht	Visibility	
Site	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	20/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	20/04/20	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3					•	
Observer	BIEIIIII Martin	Mod. breeze	4	NE	Heavy rain	4						
Location	Cooley Point	Fresh breeze	5	ENE						٧P	Locations	
LUCATION	Cooley Point	Strong breeze	6	E	Snow		Frost					
Start Time	1800	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start Time	1800	Fresh gale	8		On site	1	Ground	1		00	oncynonne	
Finish Time	2100	Strong gale	9		High ground	2	All day	2				
Fillisii fillie	2100	Whole gale	10									
Sunrise/sunset	2037	Storm	11						1			
Junnse /Sunset	2037	Hurricane	12						1			

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate at	Notes:
		speed	direction		cover	height			5km	
Hr 1	1800	2	E	0	8/8	2	2	0	2-3	Temp: 12°C
Hr 2										
Hr 3										
Hr 4										
Hr 5										
Hr 6										

One small flock passed west in late evening; a party of five birds were feeding on the rocks and remained on the water after dusk

Vanta	ge Point Wa	itch Reco	rding Shee	t								Sheet number 1 / 1
Site: Cooley	Point						Vantage Poi	nt Location: Cooley	Point	Date: 2	20/04/20	Observer: Breffni Martin
For primar For second	y target species recor ary target species onl	d details on this v record details	sheet plus draw fli on this sheet (no fl	ghtlines on m lightlines)	ар					Start Ti	me: 1730	
	,	,		0,						Finish 1	Гіте: 2030	
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands:		– 250m, 3 = 250 - 3 APPROPRIATE	00m, 4 = >	300m.	Notes	
0			flock (to 100m)	Time	direction	1	2	3	4	1		
1	РВ	45		2048	w	1						
		ļ										

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cov	er	Cloud Heig	ht	Visibility	
Sile	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	23/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	23/04/20	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3					•	
Observer	BIEITII Martin	Mod. breeze	4	NE	Heavy rain	4						
ocation	Cooley Point	Fresh breeze	5	ENE						٧P	Locations	
LUCATION	Cooley Point	Strong breeze	6	E	Snow		Frost					
Start Time	1830	Mod. gale	7	Etc	None	0	None	0		Co	oley Point	
Start Time	1830	Fresh gale	8		On site	1	Ground	1		00	oncynonne	
Finish Time	2130	Strong gale	9		High ground	2	All day	2				
Finish fine	2130	Whole gale	10									
Sunrise/sunset	2043	Storm	11						1			
sunnse /sunset	2045	Hurricane	12									

Weather	Start time	Wind	Wind	Rain	Cloud	Cloud	Visibility	Frost	Seastate at	Notes:
		speed	direction		cover	height			5km	
Hr 1	1830	1	NE	0	5/8	2	2	0	1-2	Temp: 13°C
Hr 2										
Hr 3										
Hr 4										
Hr 5										
Hr 6										

A single bird remained on the water throughout the watch, occasionally calling as though waiting for a flock.

Vanta	ge Point Wa	tch Reco	rding Shee	t								Sheet number 1 / 1	
Site: Cooley							Vantage Poi	nt Location: Cooley	Point	Date: 2	23/04/20	Observer: Breffni Martin	
For primar For second	y target species record ary target species only	d details on this y record details	sheet plus draw flig on this sheet (no fli	ghtlines on m ghtlines)	ар		·			Start Ti	me: 1830		
	, , , , ,	,	,	о ,						Finish T	ïme: 2130		
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands: 1 = <20m, 2 = 20 – 250m, 3 = 250 - 300m, 4 = >3 TICK AS APPROPRIATE					Notes		
5			flock (to 100m)	Time	direction	1	2	3	4	Ļ			

Site	Oriel Migration	W-Speed		W-Direction	Rain		Cloud Cover		Cloud Height		Visibility	
Sile	Onerwigration	Calm	0	Use 16 point	None	0	In eighths		<150m	0	Poor (<1km)	0
Date	24/04/20	Light air	1	Compass	Drizzle/Mist	1	e.g.	3/8	150-500m	1	Moderate (1-3km)	1
Date	24/04/20	Light breeze	2	N	Light showers	2			>500m	2	Good (>3-5km)	2
Observer	Breffni Martin	Gentle breeze	3	NNE	Heavy showers	3			VP Locations			
Observer		Mod. breeze	4	NE	Heavy rain	4						
Location	Cooley Point	Fresh breeze	5	ENE								
Location	Cooley Point	Strong breeze	6	E	Snow		Frost					
Start Time	1400	Mod. gale	7	Etc	None	0	None	0	Cooley Point		olev Point	
Start Time	1400	Fresh gale	8		On site	1	Ground	1		00	oncy i onite	
Finish Time	1700	Strong gale	9		High ground	2	All day	2				
Finish fine	1700	Whole gale	10									
Sunrise/sunset	2042	Storm	11						1			
Jumse /Sunset	2042	Hurricane	12									

Weather	Start time	Wind speed	Wind direction	Rain	Cloud cover	Cloud heigh	Visibility	Frost	Seastate at 5km	Notes:
		эреси	uncetion		0000	t			JKIII	
Hr 1	1400	1	NE	0	8/8	2	2	0	1-2	Temp: 12°C
Hr 2										
Hr 3										
Hr 4										
Hr 5										
Hr 6										

No birds observed

Vanta	ge Point Wa	tch Reco	rding Shee	t								Sheet number 1 / 1	
Site: Cooley							Vantage Poi	nt Location: Cooley	Point	Date: 2	24/04/20	Observer: Breffni Martin	
For primar For second	y target species record ary target species only	d details on this y record details	sheet plus draw flig on this sheet (no fli	ghtlines on m ghtlines)	ар					Start Ti	me: 1400		
	, , , , ,		·							Finish 1	īme: 1700		
Flight no.	Sp code/sex/age	Flock size	Nearest distance to	Start	Flight	Height bands: 1 = <20m, 2 = 20 – 250m, 3 = 250 - 300m, 4 = >3 TICK AS APPROPRIATE					Notes		
			flock (to 100m)	Time	direction	1	2	3	2	1			

Annex 2: Flight Paths November - December 2019

