
Appendix 15.2
Wintering Birds Surveys

Season: 2019/20, 2020/21 and 2021/2022

Methodology

Vantage Point Survey

In the absence of 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 waterfowl during the 2019/20, 2020/21 and 2021/2022 winter seasons were conducted from two vantage points (as illustrated on **Figure 3**) overlooking the proposed crossing point:

- Hill of Slane [Grid ref: IN961751]
- Slane Valley [Grid ref: IN975728]

The protocol followed during surveys was a systematic 180° scan (including overhead) for birds in flight.

The primary target species were geese, swans, waders and Annex 1 raptors, with secondary target species being ducks, cormorants, herons and all other and birds of prey.

Surveys were not undertaken in unfavourable weather conditions. Data collected for each observation included:

- Time of observation
- Species
- Flock size
- Flight height, using bands (1 = 0-20 m, 2 = 20-100 m, 3 = 100-300 m)
- Flight direction
- Flight-lines drawn onto maps, which were later digitised in GIS (primary target species only)

During the 2019/20 survey period, a total of 22 vantage point surveys were undertaken between November 2019 and March 2020, 11 at VP1 – Hill of Slane and 11 at VP2 – Slane Valley. During the 2020/21 survey period, a total of 24 vantage point surveys were undertaken between November 2020 and March 2021, 12 at VP1 – Hill of Slane and 12 at VP2 – Slane Valley. For the 2021/2022 survey period, surveys did not begin until late December 2021 due to timing of appointment. During the 2021/2022 survey period, a total of 16 vantage point surveys were undertaken between December 2021 and March 2022, eight at VP1 – Hill of Slane and eight at VP2 – Slane Valley.



Figure 3. Vantage point survey locations.

Wintering Farmland Bird Survey

Wintering bird surveys along the preferred route were conducted across the winter season 2019-2020, 2020-2021 and 2021-2022.

The methodology employed was based on the BTO's CBC technique (Bibby *et al.*, 2000 & Gilbert *et al.*, 1998), which aims to capture overwintering bird activity within a site.

This required a competent ornithologist to slowly walk transects through a site, or along a route, recording all birds seen or heard. Species encountered were mapped and recorded using standard BTO species codes. Transects chosen ensured the observer passed all parts of the proposed corridor.

Overwintering Wildfowl Survey

In addition to conducting wintering bird surveys, surveys specific for overwintering wildfowl were conducted across the winter season 2019-2020, 2020-2021 and 2021-2022.

The methodology employed was based on the BTO's wetland bird survey (WeBS) and BirdWatch Ireland's I-WeBS Core Counts which use the so-called 'look-see' method (Bibby *et al.*, 2000 and BirdWatch Ireland), whereby the observer, familiar with the species involved, surveys the whole of a predefined area. The survey area, for the purposes of this study, included lands within a 2 km buffer of the proposed by-pass route (**Figure 4**).

Counts were made at all wetland habitats within the surveys area including lakes, ponds, rivers and streams. Numbers of all waterbird species, as defined by Wetlands International (Rose and Scott, 1997), were recorded. Target species for the purposes of this survey includes divers, grebes, cormorants, herons, swans, geese, ducks, rails, cranes, waders and Kingfisher. Gulls, which are optional in WeBS counts, and cormorants were also noted but are not presented in the results.

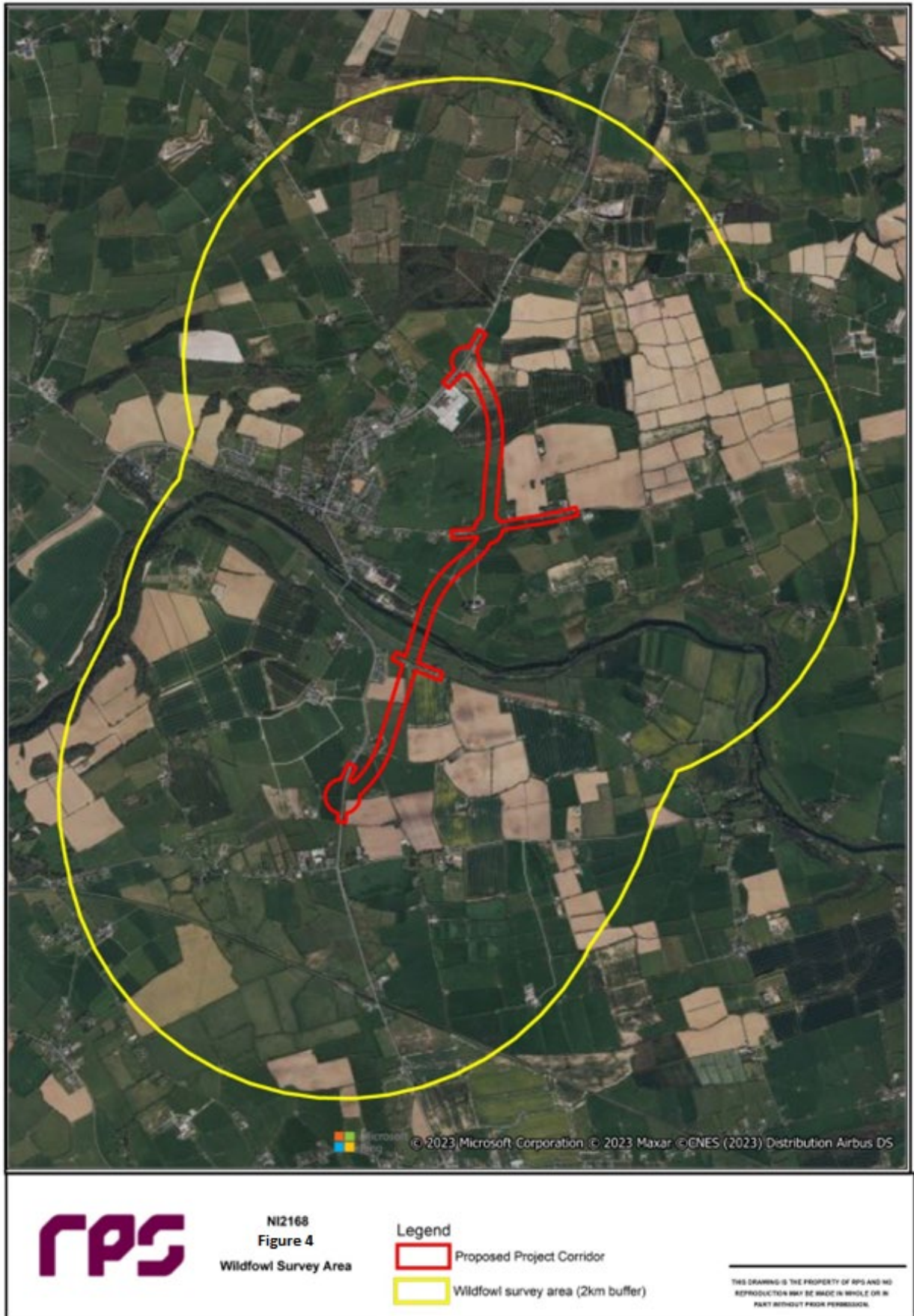


Figure 4: Wildfowl survey area (2km buffer)

Results

Vantage Point Survey Results

A total of 66 survey hours were conducted between late-November 2019 and mid-March 2020 (see **Table 14**), with 13 target species' flights recorded. A total of 72 survey hours were conducted between November 2020 and March 2021 (see **Table 15**), with 40 target species' observations recorded. A total of 48 survey hours were conducted between December 2021 and March 2022 (see **Table 16**), with six target species' observations recorded.

Table 14. VP survey dates and weather conditions (2019/2020)

Date	VP	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
26.11.2019	VP2	09:30	12:30	E5	Light showers	8	<150m	Moderate (1-2km)	None	9°C
26.11.2019	VP1	13:00	16:00	SE4	Light showers	8	150m-500m	Good (>2km)	None	12°C
27.11.2019	VP1	08:10	11:10	NE2	Light showers	8	<150m	Moderate (1-2km)	None	10°C
27.11.2019	VP1	11:40	14:40	NE2	Light showers	7	150m-500m	Good (>2km)	None	10°C
27.11.2019	VP2	08:10	11:10	NE2	Light showers	8	<150m	Moderate (1-2km)	None	10°C
27.11.2019	VP2	11:40	14:40	NE2	Light showers	7	150m-500m	Good (>2km)	None	10°C
09.12.2019	VP1	09:05	12:05	NW4-NW3	None	3	>500m	Good (>2km)	None	6°C
09.12.2019	VP1	12:35	15:35	NW3-NW2	None	3	>500m	Good (>2km)	None	6°C
13.12.2019	VP2	08:05	11:05	W4-W5	None	5	>500m	Good (>2km)	None	2/3°C
13.12.2019	VP2	11:35	14:35	W4-W3	Light showers	5	>500m	Good (>2km)	None	3°C
08.01.2020	VP1	09:00	12:00	WSW3	Light showers	8	>500m	Good (>2km)	None	7°C
08.01.2020	VP2	12:30	15:30	WSW3	None	8	>500m	Good (>2km)	None	7°C
30.01.2020	VP2	08:25	11:25	SW4	None	5	>500m	Good (>2km)	None	11°C
30.01.2020	VP1	12:00	15:00	SW3	None	6	>500m	Good (>2km)	None	10°C
03.02.2020	VP1	13:00	16:00	W3	None	7	150m-500m	Good (>2km)	None	7°C
03.02.2020	VP2	09:30	12:30	WSW3	None	7	150m-500m	Good (>2km)	None	6°C
13.02.2020	VP1	12:00	15:00	W3	None	5	150m-500m	Good (>2km)	None	4°C
13.02.2020	VP2	08:30	11:30	NW4	None	5	150m-500m	Good (>2km)	None	4°C
03.03.2020	VP1	13:00	16:00	E3	Light showers	8	150m-500m	Good (>2km)	None	5°C - 2°C
03.03.2020	VP2	08:20	11:20	SSW2	Light showers	8	150m-500m	Good (>2km)	None	7°C
16.03.2020	VP1	09:15	12:15	SW4	Light showers	8	150m-500m	Good (>2km)	None	8°C
16.03.2020	VP2	13:00	16:00	WSW4	Light showers	8	150m-500m	Good (>2km)	None	8°C

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Table 15. VP survey dates and weather conditions (2020/2021)

Date	VP	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
03.11.2020	VP2	08h25	11h25	WSW3	None	7	150-500m	>2km	None	6°C
03.11.2020	VP1	12h05	15h05	WSW3	None	6	150-500m	>2km	None	9°C
06.11.2020	VP1	07h10	10h10	SE1-SE2	None	8 - 1	>500m	>15km	None	8°C
06.11.2020	VP2	10h40	13h40	SE2	None	1	>500m	>15km	None	11°C
20.11.2020	VP2	07h33	10h33	SW3	Drizzle for first half of survey	8	<500m	1km	None	9°C
20.11.2020	VP2	11h03	14h03	SW3	Light rain shower	8	<500m	1-3km	None	11°C
24.11.2020	VP1	09h30	12h30	SSW2	None	7	150-500m	>2km	None	11°C
24.11.2020	VP1	13h00	16h00	S2	None	6	150-500m	>2km	None	11°C
15.12.2020	VP1	10h00	13h00	SE2-3	None	7	>500m	>10km	None	5°C
15.12.2020	VP2	13h30	16h30	SW3	None	7	>500m	>10km	None	8°C
18.12.2020	VP2	08h50	11h50	SE2	None	5	150-500m	>2km	None	7°C
18.12.2020	VP1	12h35	15h35	SSE3	None	6	150-500m	>2km	None	10°C
20.01.2021	VP2	09h30	12h30	W2	None	8	150-500m	>5km	None	4°C
20.01.2021	VP1	13h00	16h00	NNW2	None	8	150-500m	>5km	None	2°C
30.01.2021	VP2	08h35	11h35	ENE3	None	8	150-500m	>2km	None	3°C
30.01.2021	VP1	12h15	15h15	ENE4	Light showers	7	150-500m	>2km	None	4°C
03.02.2021	VP2	07h40	10h40	3	Light rain shower	8	150-500m	>5km	None	6°C
03.02.2021	VP2	11h10	14h10	3	None	7	150-500m	>5km	None	6°C
17.02.2021	VP1	09h15	12h15	SW4	Light showers	3	150-500m	>2km	None	6°C
17.02.2021	VP1	12h45	15h45	S4	Light showers	4	150-500m	>2km	None	7°C
05.03.2021	VP2	06h40	09h40	ESE3	None	8	>500m	>10km	None	4°C
05.03.2021	VP1	10h10	13h10	ESE3	None	8	>500m	>10km	None	4°C
20.03.2021	VP1	06h05	09h05	W2	None	3	>500m	>2km	None	9°C
20.03.2021	VP2	09h35	12h35	WNW3	None	2	>500m	>2km	None	12°C

Table 16. VP survey dates and weather conditions (2021/2022)

Date	VP	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
23.12.2021	VP1	08h45	11h45	S1-3	Light showers	8	Unknown	>2km	None	8°C
23.12.2021	VP2	12h15	15h15	SSE2	None	8	Unknown	>2km	None	8°C
27.12.2021	VP2	08h40	11h40	NE2	None	8	Unknown	>2km	None	
27.12.2021	VP1	13h35	16h35	NE2	None	8	Unknown	>2km	None	
04.01.2022	VP2	13h45	16h45	NW3	None	2	Unknown	>2km	None	4°C
05.01.2022	VP1	11h15	14h15	W3	Light showers	8	Unknown	1-2km	None	
18.01.2022	VP2	09h00	12h00	SW2	None	2	Unknown	>2km	None	5°C
19.01.2022	VP1	09h40	12h40	W3	None	8	Unknown	>2km	None	7°C
08.02.2022	VP1	12h05	15h05	SW3	Drizzle at start	4	Unknown	>2km	None	

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Date	VP	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
10.02.2022	VP2	08h00	11h00	NW4	None	6	Unknown	>2km	Ground frost at start	4°C
21.02.2022	VP1	08h15	11h15	W5	None	6	Unknown	>2km	None	8°C
27.02.2022	VP2	15h00	16h00	S4	None	3	Unknown	>2km	None	10°C
04.03.2022	VP2	08h40	11h40	W4	None	4	Unknown	>2km	None	
08.03.2022	VP1	09h45	12h45	SE5	Light showers	5	Unknown	1-2km	None	
24.03.2022	VP1	16h00	19h00	N3	None	0	Unknown	>2km	None	
25.03.2022	VP2	16h00	19h00	E4	None	0	Unknown	>2km	None	

13 flights of five target species were recorded during the 2019/20 vantage point surveys (see **Table 17**). Forty records of seven target species were observed during the 2020/21 vantage point surveys (see **Table 18**). Four records of one target species were observed during the 2021/2022 vantage point surveys (see **Table 19**).

Table 17. Target species recorded during Vantage Point Surveys (2019/2020)

Date	VP	Species	Flock size	Time first recorded	Height	Direction of flight	Note
26.11.2019	VP2	Peregrine	1	10:04	20-100m	W	Flew west between VP and river
26.11.2019	VP2	Curlew	1	11:56	20-100m	E	Flew downstream
26.11.2019	VP1	Curlew	1	14:43	>100m	SW	Flew SW high over VP
27.11.2019	VP2	Lapwing	8	13:45	20-100m	S	Flew south, AGL 40m
08.01.2020	VP1	Lapwing	26	10:24	20-100m	WSW	Flock flew WSW over Boyne and beyond
08.01.2020	VP2	Mute swan	2	14:02	0-20m	E	Flew down river, appeared to be landing on Boyne
30.01.2020	VP2	Mute swan	2	10:09	0-20m	WNW	Flew west, 15m AGL over bridge and low over weir, appeared to be landing on Boyne
13.02.2020	VP1	Mute swan	5	13:17	<20m	W	2AD, 3 IMM, flew west from Knowth area, upstream towards bridge
13.02.2020	VP1	Golden plover	12	14:36	20-100m	NNE	Flew NNE over valley and Norris Hill 80-150m AGL
03.03.2020	VP1	Lapwing	22	14:42	20-100m	NNW	40m AGL
03.03.2020	VP1	Mute swan	2	15:01	<20m	ESE	Up valley, appeared to land near tow path
16.03.2020	VP1	Curlew	2	09:35	<20m	NNE	Over Boyne Valley and Norris Hill, calling
16.03.2020	VP1	Golden plover	8	11:41	20-100m	NNE	40-60m AGL



Figure 5: Wader Flights recorded during 2019/2020 VP Surveys

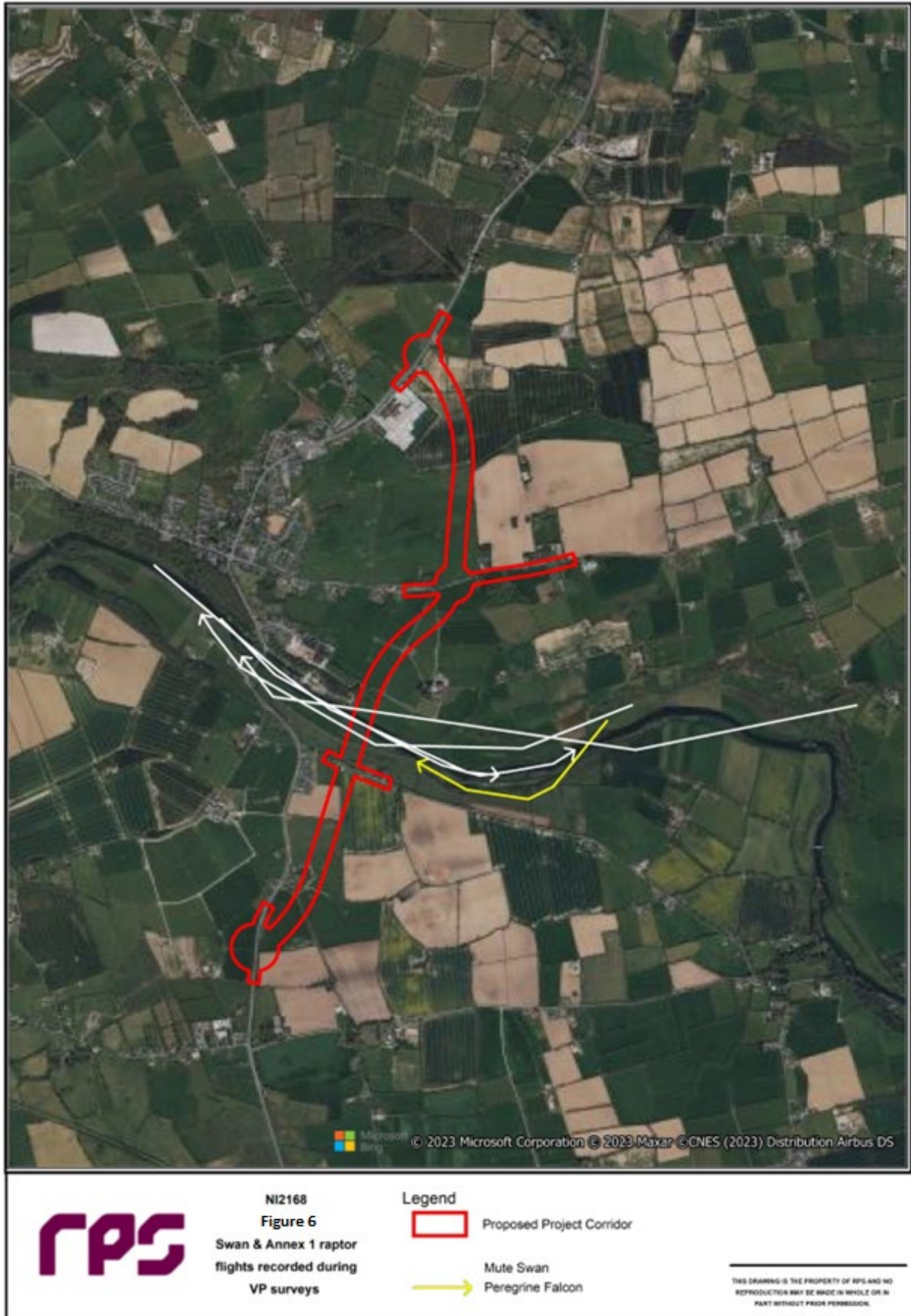


Figure 6: Swan & Annex 1 raptor flights recorded during 2019/2020 VP surveys.

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Table 18. Target species recorded during Vantage Point Surveys (2020/2021)

Date	VP	Species	Flock size	Time first recorded	Height	Direction of flight	Note
03.11.2020	VP1	Lapwing	8	12h12	20-100m	SSE	Flew SSE from south of river towards McGrudgers Cross
20.11.2020	VP2	Mute swan	4	08h07	20-100m	West	2 A / 2 J, landed on river at approx. proposed crossing point
20.11.2020	VP2	Mute swan	4	09h08			Bird seen at 0807, now feeding in field
20.11.2020	VP2	Curlew	9	09h19	20-100m	West	Turned between new crossing and current bridge and headed south
20.11.2020	VP2	Lapwing	8	09h27	>100m	West	
20.11.2020	VP2	Whooper swan	4	09h29	>100m	West	
20.11.2020	VP2	Greenshank	1	10h17	>100m	East, over VP	
20.11.2020	VP2	Curlew	3	12h09	>100m	East	
24.11.2020	VP1	Mute swan	2	13h41	<20m	West	2 Ad upstream
24.11.2020	VP1	Curlew	12	14h26	20-100m	East	Flock heading SSW over Norris Hill, heading towards McGrudgers Cross
24.11.2020	VP1	Lapwing	6	14h26	20-100m	East	
15.12.2020	VP2	Curlew	82				Roosting in field on northern bank at proposed crossing point
15.12.2020	VP2	Lapwing	1				
15.12.2020	VP2	Curlew	13	14h22	20-100m	West	Turned between new crossing and current bridge and headed south
15.12.2020	VP2	Curlew	119	15h13	20-100m	East	
15.12.2020	VP2	Curlew	5	15h41	>100m	East	
18.12.2020	VP1	Lapwing	12	13h12	20-100m	SE	Towards McGrudgers Cross
18.12.2020	VP1	Curlew	9	13h12	20-100m	SE	
18.12.2020	VP1	Mute swan	4	14h24	<20m	East	Downstream
18.12.2020	VP2	Curlew	4	09h07	<20m	SW	Towards McGrudgers Cross
18.12.2020	VP2	Mute swan	5	10h35	<20m	East	
20.01.2021	VP2	Mute swan	4	09h33			2A/2J on field opposite VP
20.01.2021	VP2	Mute swan	4	10h31	<20m	West	
20.01.2021	VP1	Snipe	1	13h03	20-100m	West, over VP	
30.01.2021	VP1	Mute swan	2	13h46	<20m	East	
30.01.2021	VP1	Lapwing	17	14h23	<20m	SSE	approx. 2km south of VP
30.01.2021	VP2	Curlew	6	09h21	20-100m	SSW	Feeding north of river, lifted and flew west of VP calling
03.02.2021	VP2	Mute swan	4	07h40			Feeding on riverbank at proposed crossing
03.02.2021	VP2	Peregrine	1	07h58	>100m	North	c.250 east of VP
03.02.2021	VP2	Whooper swan	18	08h07	<20m	North	Took off from river c1.3km downstream from VP, flew downstream before turning north over Newgrange
03.02.2021	VP2	Whooper swan	29	08h10	<20m	North	
03.02.2021	VP2	Whooper swan	5	08h14	<20m	North	
03.02.2021	VP2	Mute swan	4	08h50			Feeding family moving downstream

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Date	VP	Species	Flock size	Time first recorded	Height	Direction of flight	Note
03.02.2021	VP2	Mute swan	4	09h05	20-100m	East	Turned back and landed on river c.1km down from VP
03.02.2021	VP2	Mute swan	3	10h37	20-100m	West	Turned between VP and proposed crossing and headed back down river >100m
17.02.2021	VP1	Curlew	9	12h53	<20m	SE	South of VP, flew SE Navan direction
17.02.2021	VP1	Mute swan	1	10h06	<20m	ENE	Over Boyne Bridge
17.02.2021	VP1	Peregrine	1	14h12	20-100m	NNW	Tercel
05.03.2021	VP2	Whooper swan	31	07h19		North	Lifted from river valley c.1km downstream of VP & headed north
05.03.2021	VP2	Mute swan	4	09h42			Feeding in field at proposed crossing (2A/2J)



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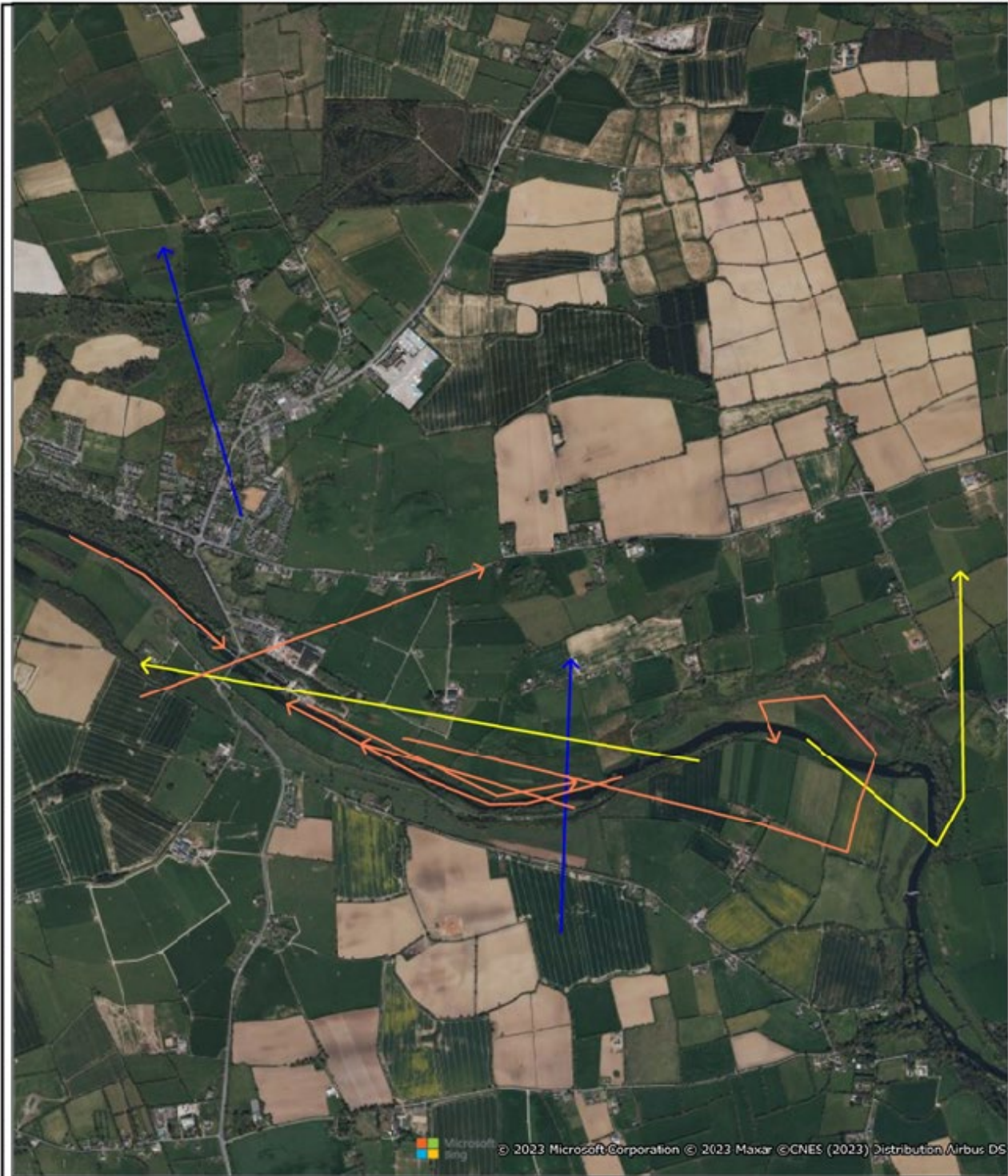
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Figure 7
Wader flights recorded during VP surveys

Legend

- Blue arrow: Lapwing
- Green arrow: Greenshank
- Red arrow: Curlew
- Yellow arrow: Snipe

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Figure 7: Wader Flights recorded during 2020/2021 VP Surveys



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Figure 8
Swan and Annex 1 raptor
flights recorded during
VP surveys

Legend
—> Peregrine Falcon
—> Whooper Swan
—> Mute Swan

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Figure 8: Swan & Annex 1 raptor flights recorded during 2020/2021 VP surveys

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Table 19. Target species recorded during Vantage Point Surveys (2021/2022)

Date	VP	Species	Flock size	Time first recorded	Height	Direction of flight	Note
27.12.2021	VP2	Mute swan	2	09h01	<20m	ESE	
27.12.2021	VP1	Mute swan	2	16h03	<20m	West	
10.02.2022	VP2	Mute swan	5	08h55	<20m	Upstream	
25.03.2022	VP2	Mute swan	2	18h15	<20m	Downstream	



Figure 9: Swan Flights recorded during 2021/2022 VP Surveys

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A total of 65 flights of seven secondary species were recorded during the 2019/2020 vantage point surveys (see **Table 20**). A total of 103 flights of eight secondary species were recorded during the 2020/2021 vantage point surveys (see **Table 21**). A total of 61 flights of six secondary species were recorded during the 2021/2022 vantage point surveys (see **Table 22**).

Table 20. Secondary species recorded during Vantage Point Surveys (2019/2020)

Secondary species	Number of flights recorded	Number of individuals recorded
Buzzard	16	20
Cormorant	20	30
Grey heron	6	7
Kestrel	6	6
Little egret	10	10
Mallard	6	17
Sparrowhawk	1	1
TOTAL	65	91

Table 21. Secondary species recorded during Vantage Point Surveys (2020/2021)

Secondary species	Number of flights recorded	Number of individuals recorded
Buzzard	23	30
Cormorant	33	35
Grey heron	7	7
Kestrel	5	5
Little egret	11	12
Mallard	14	46
Moorhen	1	1
Sparrowhawk	9	10
TOTAL	103	146

Table 22. Secondary species recorded during Vantage Point Surveys (2021/2022)

Secondary species	Number of flights recorded	Number of individuals recorded
Buzzard	27	31
Cormorant	16	25
Grey heron	3	4
Kestrel	7	7
Mallard	5	13
Sparrowhawk	3	3
TOTAL	61	83

Wintering Farmland Bird Survey Results

Five visits were carried out across the 2019/2020 winter season, four visits across the 2020/2021 winter season, and four visits were carried out across the 2021/2022 winter season for the purposes of surveying wintering farmland birds. Survey dates ranged from early December to mid-March for the 2019/2020 surveys (see **Table 23**), November to February for the 2020/2021 surveys (see **Table 24**) and December to March for the 2021/2022 surveys (see **Table 25**).

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Table 23. Wintering farmland bird survey dates and weather conditions (2019/2020)

Date	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
05.12.2019	08:50	13:25	SE4	Light showers	6	>500m	Good (>2km)	None	7°C
18.12.2019	08:40	13:20	SE4	Light showers	8	>500m	Good (>2km)	None	8°C
07.01.2020	08:50	14:50	SW3	Light showers	7	>500m	Good (>2km)	None	10°C
18.02.2020	07:20	12:50	W3-WSW4	Light showers	8	150m-500m - >500m	Good (>2km)	None	2°C
17.03.2020	06:15	10:40	W2-WSW4	None	3	>500m	Good (>2km)	Ground	0°C - 4°C

Table 24. Wintering farmland bird survey dates and weather conditions (2020/2021)

Date	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
10.11.2020	08h20	13h00	SE2	None	6/8	150-500m	>2km	None	12°C
22.12.2020	08h45	13h10	W2	None	1/8	>500m	>2km	Ground	0°C - 5°C
28.01.2021	09h00	13h10	WSW2	Light showers at end	7/8	150-500m	>2km	None	11°C
18.02.2021	08h10	12h15	E2	None	4/8	150-500m	1-3km - 3-5km	Ground	Fog patches in valley

Table 25. Wintering farmland bird survey dates and weather conditions (2021/2022)

Date	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
22.12.2021	08h20	13h00	E2	Light rain	8/8	Unknown	>2km	None	6°C
31.01.2022	08h45	13h10	W2	None	1/8	Unknown	>2km	Ground	0°C - 5°C
24.02.2022	09h00	13h10	WSW2	Light showers at end	7/8	Unknown	>2km	None	11°C
07.03.2022	07h15	11h00	S4	None	8/8	unknown	>2km	None	

A total of 52, 51 and 39 species were recorded within or in flight over the site during wintering bird surveys across the 2019/2020, 2020/21 and 2021/2022 winter season, respectively (see **Table 26**, **Table 27** and **Table 28**).

Table 26. Wintering farmland bird survey results (2019/2020)

Species	Visit 1 05-Dec-19	Visit 2 18-Dec-19	Visit 3 07-Dec-20	Visit 4 18-Feb-20	Visit 5 17-Mar-20	Conservation status
Blackbird	19	21	17	18	14	
Blackcap	0	0	1	1	1	
Black-headed gull	0	15	5	14	2	Amber (B)
Blue tit	9	16	12	6	9	
Bullfinch	0	2	2	2	2	
Buzzard	2	1	1	2	3	WA
Chaffinch	15	33	27	28	17	
Coal tit	1	0	0	2	1	
Collared dove	2	6	2	4	4	

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Species	Visit 1 05-Dec-19	Visit 2 18-Dec-19	Visit 3 07-Dec-20	Visit 4 18-Feb-20	Visit 5 17-Mar-20	Conservation status
Common gull	0	2	0	5	0	Amber (B)
Coot	0	0	0	0	1	Amber (B/W)
Cormorant	1	2	0	2	1	Amber (B/W)
Dunnock	8	8	6	5	7	
Feral pigeon	34	0	0	0	0	
Fieldfare	7	7	0	4	0	
Goldcrest	1	1	0	2	2	Amber (B)
Golden plover	22	0	0	0	0	Red (B/W)
Goldfinch	75	25	4	8	4	
Great tit	6	8	7	8	6	
Greenfinch	0	2	2	4	2	Amber (B)
Grey heron	2	1	1	3	3	
Grey wagtail	0	3	1	0	0	Red (B)
Herring gull	3	0	4	3	0	Amber (B)
Hooded crow	7	7	5	5	1	
House sparrow	10	20	19	11	19	Amber (B)
Jackdaw	153	12	14	24	8	
Kestrel	0	1	0	0	1	WA; Red (B)
Kingfisher	0	0	0	1	1	Amber (B)
Linnet	0	13	11	9	3	Amber (B)
Little egret	1	2	0	0	0	Annex 1
Long-tailed tit	0	6	0	0	0	
Magpie	15	7	4	4	7	
Mallard	4	3	8	4	2	Amber [B/W]
Meadow pipit	0	2	4	3	2	Red (B)
Mistle thrush	1	3	1	2	2	
Moorhen	2	0	2	0	0	
Mute swan	7	2	5	6	6	Amber (B/W)
Pied wagtail	15	14	11	11	7	
Redwing	45	23	14	15	0	
Robin	10	13	10	9	8	Amber (B)
Rook	221	35	17	21	16	
Snipe	6	5	7	5	0	Amber (B/W)
Song thrush	2	5	4	4	2	
Sparrowhawk	1	1	0	0	1	WA
Starling	113	46	71	12	10	Amber (B)
Teal	0	0	2	2	0	Amber (B/W)
Treecreeper	2	1	1	3	1	
Water rail	1	1	0	0	0	Amber (B)
Woodcock	1	0	0	0	0	Red (B)
Woodpigeon	117	42	29	25	25	
Wren	10	8	9	10	9	
Yellowhammer	0	0	0	1	3	Red (B)

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Species	Visit 1 05-Dec-19	Visit 2 18-Dec-19	Visit 3 07-Dec-20	Visit 4 18-Feb-20	Visit 5 17-Mar-20	Conservation status
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Key to Table 26

Annex 1 – Listed on Annex 1 of the EU Birds Directive

WA – Listed on Part 1 of the Fourth Schedule of the Wildlife Act, 1976

Red – Red listed BoCCI species

Amber – Amber listed BoCCI species

B – BoCCI listed due to breeding population

W – BoCCI listed due to wintering population

Table 27. Wintering farmland bird survey results (2020/2021)

Species	Visit 1 10-Nov-20	Visit 2 22-Dec-20	Visit 3 28-Jan-21	Visit 4 18-Feb-21	Conservation status
Blackbird	19	19	29	18	
Blackcap	1	0	0	0	
Black-headed gull	0	10	0	0	Amber (B)
Blue tit	12	18	14	13	
Bullfinch	2	2	0	0	
Buzzard	2	0	1	2	WA
Chaffinch	17	40	27	28	
Coal tit	1	1	2	0	
Collared dove	1	4	0	4	
Common gull	0	0	4	6	Amber (B)
Cormorant	1	1	1	1	Amber (B/W)
Curlew	0	0	2	11	Red (B/W)
Dunnock	5	6	8	5	
Fieldfare	5	3	11	0	
Goldcrest	0	0	0	2	Amber (B)
Goldfinch	15	34	25	24	
Great tit	4	10	8	11	
Greenfinch	2	2	7	3	Amber (B)
Grey heron	1	2	0	1	
Grey wagtail	0	2	0	0	Red (B)
Herring gull	0	0	3	0	Amber (B)
Hooded crow	2	3	10	3	
House sparrow	27	28	17	30	Amber (B)
Jackdaw	2	16	56	8	
Kestrel	0	1	0	0	WA; Red (B)
Kingfisher	0	0	0	1	Amber (B)
Lapwing	9	0	30	4	Red (B/W)
Linnet	14	18	13	16	Amber (B)
Little egret	0	0	0	2	Annex 1
Long-tailed tit	6	11	5	7	
Magpie	3	5	2	2	
Mallard	5	0	4	2	Amber [B/W]
Mistle thrush	2	2	7	2	
Moorhen	1	1	1	1	
Mute swan	6	5	6	6	Amber (B/W)
Pied wagtail	8	6	14	5	
Redwing	9	13	14	3	

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Species	Visit 1 10-Nov-20	Visit 2 22-Dec-20	Visit 3 28-Jan-21	Visit 4 18-Feb-21	Conservation status
Reed bunting	2	8	3	0	
Robin	8	14	15	10	Amber (B)
Rook	19	24	42	17	
Siskin	0	0	4	0	
Snipe	0	2	0	2	Amber (B/W)
Song thrush	4	4	6	3	
Sparrowhawk	0	1	0	0	WA
Starling	12	30	61	16	Amber (B)
Teal	0	0	0	2	Amber (B/W)
Treecreeper	1	2	1	4	
Water rail	0	1	1	1	
Woodpigeon	47	24	67	15	
Wren	8	11	8	9	
Yellowhammer	0	4	6	1	Red (B)

Key to Table 27

Annex 1 – Listed on Annex 1 of the EU Birds Directive
 WA – Listed on Part 1 of the Fourth Schedule of the
 Wildlife Act, 1976

Red – Red listed BoCCI species
 B – Breeding
 W - Wintering

Table 28. Wintering farmland bird survey results (2021/2022)

Species	Visit 1 22-Dec-22	Visit 2 31-Jan-22	Visit 3 24-Feb-22	Visit 4 07-Mar-22	Conservation status
Blackbird	2	22	8	9	
Black-headed gull	0	26	0	0	Amber (B)
Blue tit	0	11	0	5	
Bullfinch	0	4	2	2	
Buzzard	0	3	0	0	WA
Chaffinch	18	5	12	13	
Coal tit	0	1	3	1	
Collared dove	2	0	0	2	
Duncock	0	3	4	2	
Feral pigeon	0	15	6	4	
Fieldfare	35	138	75	0	
Goldcrest	0	2	2	4	Amber (B)
Goldfinch	0	4	12	18	
Great tit	0	1	0	0	
Greenfinch	0	0	0	1	Amber (B)
Grey heron	1	0	1	1	
Hooded crow	2	9	6	0	
House sparrow	8	9	0	18	Amber (B)
Jackdaw	0	179	10	40	
Lesser redpoll	0	0	8	0	
Linnet	0	10	8	10	Amber (B)
Long-tailed tit	0	0	14	0	
Magpie	0	3	4	4	

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Species	Visit 1 22-Dec-22	Visit 2 31-Jan-22	Visit 3 24-Feb-22	Visit 4 07-Mar-22	Conservation status
Mallard	0	7	3	0	Amber [B/W]
Meadow pipit	0	6	4	0	Red (B)
Mistle thrush	2	0	0	2	
Mute swan	0	8	0	0	Amber (B/W)
Pheasant	0	1	0	2	
Pied wagtail	0	1	1	2	
Redwing	22	52	70	0	
Robin	2	21	11	9	Amber (B)
Rook	0	100	40	80	
Skylark	0	19	8	0	Amber (B)
Snipe	0	1	0	0	Amber (B/W)
Song thrush	0	0	0	2	
Starling	30	55	35	36	Amber (B)
Woodpigeon	2	35	20	16	
Wren	5	5	10	12	
Yellowhammer	0	2	6	4	Red (B)

Key to Table 28
Annex 1 – Listed on Annex 1 of the EU Birds Directive
WA – Listed on Part 1 of the Fourth Schedule of the Wildlife Act, 1976
Red – Red listed BoCCI species
B – Breeding
W - Wintering

Overwintering Wildfowl Survey Results

Ten visits were carried out across the 2019/2020 winter season (see **Table 29**), nine visits were carried out across the 2020/2021 winter season (see **Table 30**), and four visits were carried out across the 2021/2022 winter season (see **Table 31**) for the purposes of surveying overwintering wildfowl. Survey dates ranged from November to March.

Table 29. Overwintering wildfowl survey dates and weather conditions (2019/2020)

Date	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
21.11.2019	08:35	14:35	SE2	Light shower first thing	8	>500m	Good (>2km)	None	9°C
28.11.2019	08:15	15:15	NW2	Light showers	7	>500m	Good (>2km)	None	7°C
03.12.2019	08:15	14:15	W1	None	0	>500m	Good (>2km)	Ground	-1°C - 2°C
16.12.2019	09:00	14:45	SW1-SW2	None	1	>500m	Good (>2km)	Ground	1°C - 4°C
09.01.2020	08:50	14:50	NW2	None	5	>500m	Good (>2km)	Ground	0°C - 2°C
29.01.2020	09:15	15:15	SW3	None	1	>500m	Good (>2km)	Ground	2°C
06.02.2020	09:30	15:00	0	None	2-5	>500m	Good (>2km)	Ground	-2°C - 3°C
25.02.2020	10:30	16:00	WSW3-W4	Light showers	8	150m- 500m	Good (>2km)	Ground	2°C
05.03.2020	09:30	15:30	SW4	None	3-1	>500m	Good (>2km)	None	4°C - 9°C
10.03.2020	13:30	18:00	W4	None	4	>500m	Good (>2km)	None	4°C

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Table 30. Overwintering wildfowl survey dates and weather conditions (2020/2021)

Date	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
09.11.2020	07h45	12h45	SE3	Drizzle for 10 mins	6/8	150-500m	>5km	None	12°C
27.11.2020	08h05	13h00	NW1	None	1/8	>500m	>5km	Ground	-1°C - 4°C
03.12.2020	08h20	13h45	SW2-NW3	None	7/8	150-500m	>5km	None	
09.12.2020	10h00	15h00	SW2	Light shower at end	7/8	150-500m	>5km	None	4°C - 0°C
04.01.2021	08h45	13h45	SW2	Light drizzle	8/8	150-500m	>5km	None	7°C
11.01.2021	09h15	15h00	SW3	Light shower at end	8/8	150-500m	>5km	None	4°C - 8°C
04.02.2021	07h35	12h35	SW3	Light showers	8/8	150-500m	>2km	None	8°C
19.02.2021	08h05	13h25	SW3	None	2/8	>500m	>2km	None	8°C
18.03.2021	07h05	12h40	NW3	None	6/8	150-500m	>2km	None	9°C

Table 31. Overwintering wildfowl survey dates and weather conditions (2021/2022)

Date	Start	End	Wind (Beaufort)	Precipitation	Cloud (Oktas)	Cloud height	Visibility	Frost	Temp. (°C)
28.12.2021	13h50	16h40	S1	Light showers	8	Unknown	>2km	None	7°C
06.01.2022	08:30	11:45	SSE4		8	Unknown	>2km	None	5°C
09.02.2022	08:00	11:30	W4	Light rain showers	8	Unknown	>2km	None	7°C
08.03.2022	14:00	17:45	SE4	Showers	8	Unknown	>2km	None	8°C

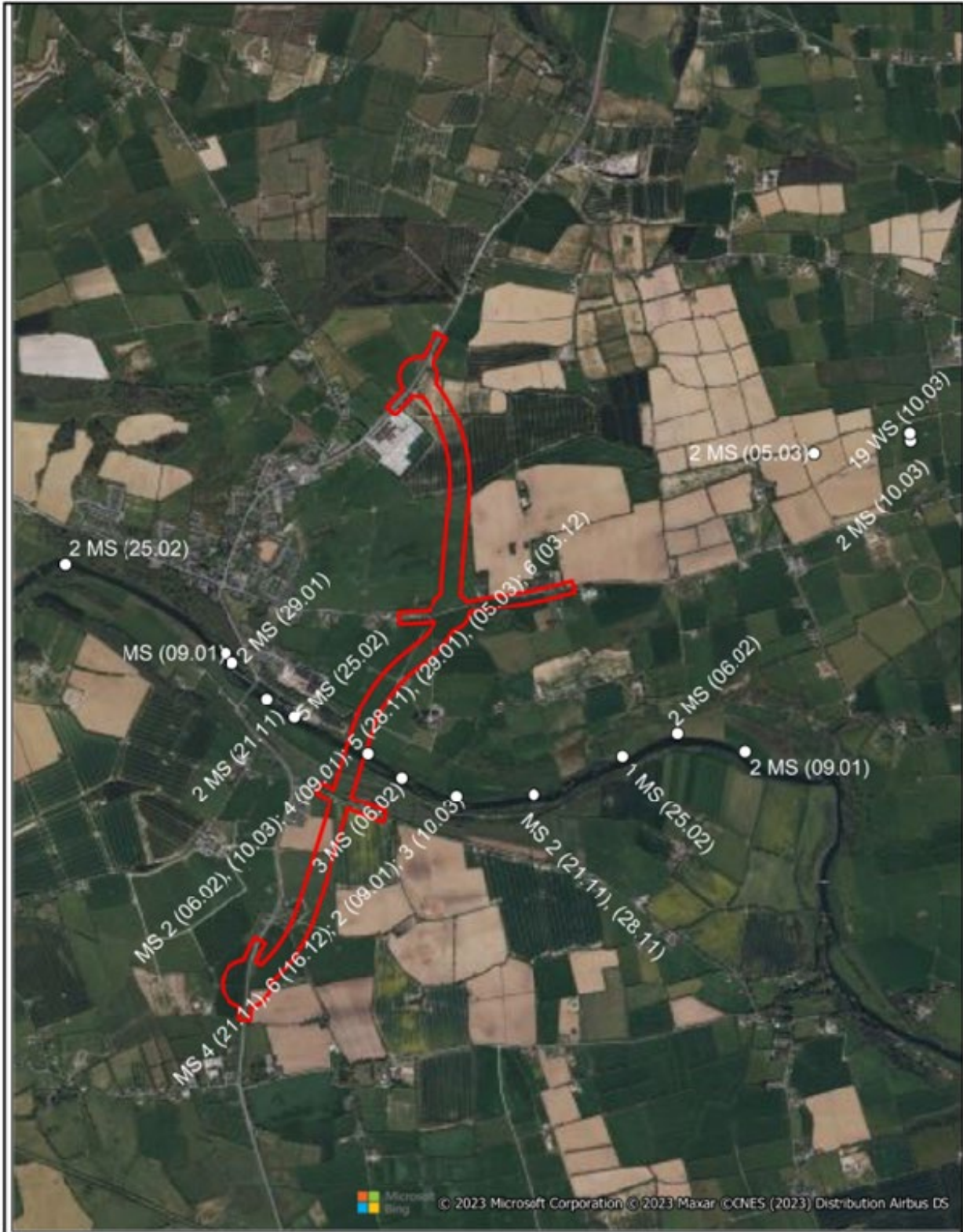
A total of 14 species were recorded within the survey area during overwintering wildfowl surveys across the 2020/2021 winter season (see **Table 32**), compared to 10 species in the 2019/2020 season (see **Table 33**). There were no target species recorded within the survey area during the overwintering wildfowl surveys across the 2021/2022 winter season.


Table 32. Overwintering wildfowl survey results (2019/2020)

Date	Species	Number present	Location
21.11.2019	Mute swan	8	Boyne
21.11.2019	Lapwing	29	McGruder's Cross
21.11.2019	Snipe	2	McGruder's Cross
28.11.2019	Curlew	2	McGruder's Cross
28.11.2019	Snipe	3	McGruder's Cross
28.11.2019	Mute swan	7	Boyne
03.12.2019	Curlew	5	McGruder's Cross
03.12.2019	Snipe	6	McGruder's Cross
03.12.2019	Mute swan	6	Boyne
03.12.2019	Little egret	1	Boyne
16.12.2019	Golden plover	6	McGruder's Cross
16.12.2019	Lapwing	19	McGruder's Cross
16.12.2019	Curlew	2	McGruder's Cross
16.12.2019	Snipe	6	McGruder's Cross

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Date	Species	Number present	Location
16.12.2019	Mute swan	6	Boyne
09.01.2020	Mute swan	9	Boyne
09.01.2020	Lapwing	38	McGruder's Cross
29.01.2020	Grey heron	2	McGruder's Cross
29.01.2020	Golden plover	19	McGruder's Cross
29.01.2020	Curlew	5	McGruder's Cross
29.01.2020	Snipe	2	McGruder's Cross
06.02.2020	Grey heron	3	Boyne
06.02.2020	Mute swan	7	Boyne
06.02.2020	Grey heron	2	McGruder's Cross
25.02.2020	Grey heron	1	McGruder's Cross
25.02.2020	Little egret	2	McGruder's Cross
25.02.2020	Curlew	2	McGruder's Cross
25.02.2020	Snipe	2	McGruder's Cross
25.02.2020	Mute swan	8	Boyne
25.02.2020	Grey heron	2	Boyne
05.03.2020	Grey heron	1	McGruder's Cross
05.03.2020	Grey heron	3	Boyne
05.03.2020	Little egret	1	Boyne
05.03.2020	Mallard	4	Boyne
05.03.2020	Mute swan	5	Boyne
05.03.2020	Mute swan	2	Taylor's Lane
10.03.2020	Grey heron	1	McGruder's Cross
10.03.2020	Grey heron	4	Boyne
10.03.2020	Mute swan	5	Boyne
10.03.2020	Mallard	4	Boyne
10.03.2020	Little grebe	2	Boyne
10.03.2020	Mute swan	2	Taylor's Lane
10.03.2020	Whooper swan	19	Taylor's Lane
21.11.2019	Mute swan	8	Boyne





NI2168
Figure 10
Swan records from
wildfowl surveys

Legend

Proposed Project Corridor

MS Mute Swan

WS Whooper Swan

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Figure 10: Swan records from 2019/2020 wildfowl surveys



Figure 11: Heron records from 2019/2020 wildfowl surveys



Figure 12: 2019/2020 Wildfowl Survey Records of Waders, Duck & Grebe

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Table 33. Overwintering wildfowl survey results (2020/2021)

Date	Species	Number present	Location
09.11.2020	Grey heron	3	Boyne
09.11.2020	Little egret	1	Boyne
09.11.2020	Mute swan	6	Boyne
09.11.2020	Cormorant	2	Boyne
09.11.2020	Grey heron	1	McGruder's Cross
09.11.2020	Curlew	3	McGruder's Cross
27.11.2020	Snipe	2	Mooretown
27.11.2020	Kingfisher	1	Boyne
27.11.2020	Mute swan	6	Boyne
27.11.2020	Water rail	1	Boyne
27.11.2020	Grey heron	1	Boyne
27.11.2020	Cormorant	3	Boyne
27.11.2020	Lapwing	18	Rossnaree
27.11.2020	Grey heron	1	McGruder's Cross
09.12.2020	Golden plover	12	Crewbane
09.12.2020	Lapwing	32	Crewbane
09.12.2020	Mute swan	6	Boyne
09.12.2020	Lapwing	11	McGruder's Cross
09.12.2020	Grey heron	1	McGruder's Cross
09.12.2020	Curlew	8	McGruder's Cross
03.12.2020	Whooper swan	16	East of Taylor's Lane
03.12.2020	Lapwing	23	McGruder's Cross
03.12.2020	Curlew	16	McGruder's Cross
03.12.2020	Snipe	2	McGruder's Cross
03.12.2020	Grey heron	2	McGruder's Cross
03.12.2020	Little egret	2	McGruder's Cross
03.12.2020	Cormorant	2	Boyne
03.12.2020	Grey heron	1	Boyne
03.12.2020	Little egret	1	Boyne
03.12.2020	Mute swan	6	Boyne
03.12.2020	Moorhen	1	Boyne
03.12.2020	Water rail	1	Boyne
03.12.2020	Curlew	8	Field north of Boyne at crossing
04.01.2021	Grey heron	3	McGruder's Cross
04.01.2021	Little egret	2	McGruder's Cross
04.01.2021	Curlew	31	McGruder's Cross
04.01.2021	Lapwing	27	McGruder's Cross
04.01.2021	Snipe	4	McGruder's Cross
04.01.2021	Teal	2	Boyne
04.01.2021	Mallard	10	Boyne
04.01.2021	Moorhen	3	Boyne
04.01.2021	Grey heron	4	Boyne
04.01.2021	Mute swan	6	Boyne
04.01.2021	Snipe	2	Boyne

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Date	Species	Number present	Location
04.01.2021	Little egret	1	Boyne
04.01.2021	Cormorant	2	Boyne
04.01.2021	Kingfisher	1	Boyne
04.01.2021	Lapwing	40	Higginstown
04.01.2021	Lapwing	26	Taylor's Lane
04.01.2021	Whooper swan	6	Taylor's Lane
11.01.2021	Little egret	3	McGruder's Cross
11.01.2021	Lapwing	26	Thurstianstown
11.01.2021	Grey heron	3	Boyne
11.01.2021	Little egret	2	Boyne
11.01.2021	Mute swan	6	Boyne
11.01.2021	Curlew	2	Boyne
11.01.2021	Cormorant	2	Boyne
11.01.2021	Lapwing	25	Taylor's Lane
04.02.2021	Whooper swan	19	East of Taylor's Lane
04.02.2021	Curlew	12	McGruder's Cross
04.02.2021	Lapwing	7	McGruder's Cross
04.02.2021	Little egret	2	McGruder's Cross
04.02.2021	Grey heron	3	Boyne
04.02.2021	Cormorant	3	Boyne
04.02.2021	Little egret	2	Boyne
04.02.2021	Mute swan	5	Boyne
19.02.2021	Whooper swan	27	West of Taylor's Lane
19.02.2021	Whooper swan	22	East of Taylor's Lane
19.02.2021	Curlew	2	Thurstianstown
19.02.2021	Grey heron	1	Cullen
19.02.2021	Lapwing	8	Mooretown
19.02.2021	Kingfisher	1	Boyne
19.02.2021	Mute swan	5	Boyne
19.02.2021	Cormorant	1	Boyne
19.02.2021	Mallard	6	Boyne
19.02.2021	Grey heron	1	Boyne
19.02.2021	Mallard	4	Boyne
18.03.2021	Mallard	6	Boyne
18.03.2021	Kingfisher	2	Boyne
18.03.2021	Grey heron	2	Boyne
18.03.2021	Little egret	1	Boyne
18.03.2021	Cormorant	1	Boyne
18.03.2021	Snipe	2	Boyne
18.03.2021	Moorhen	1	Boyne
18.03.2021	Water rail	1	Boyne



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Figure 13
Swan records from
wildfowl surveys

Legend
● Mute Swan
● Whooper Swan

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Figure 13: Swan records from 2020/2021 wildfowl surveys

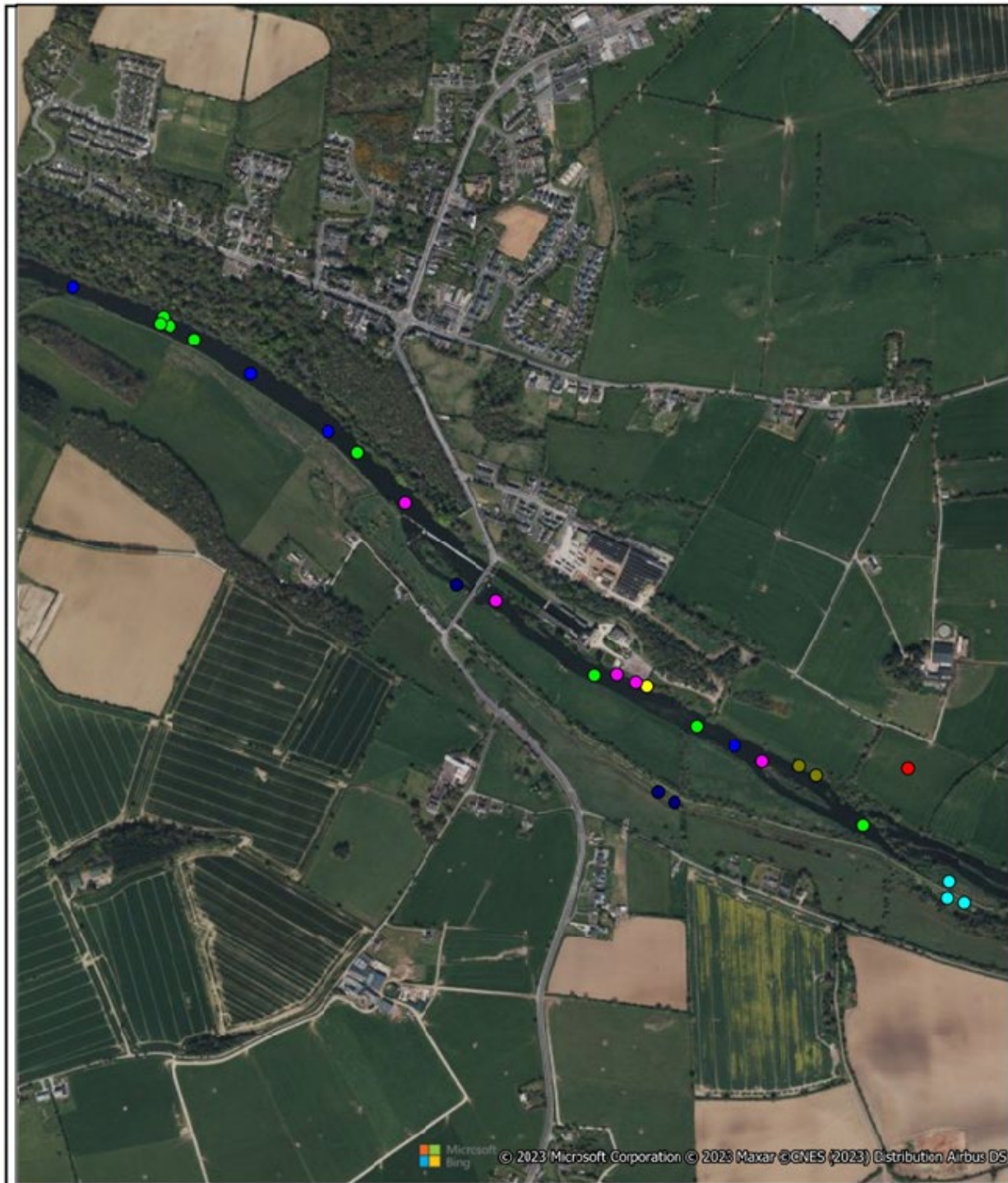


N12168
Figure 14
Heron records from
wildfowl surveys

- Legend
- Little Egret
 - Grey Heron

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Figure 14: Heron records from 2019/2020 wildfowl surveys



rps NI2158
Figure 15
Kingfisher, duck, wader,
rail and cormorant
records from wildfowl
surveys

Legend

	Cormorant		Mallard
	Water rail		Curlew
	Snipe		Moorhen
	Teal		Kingfisher

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Figure 15: 2020/2021 Wildfowl Survey Records of Waders, Duck & Grebe