

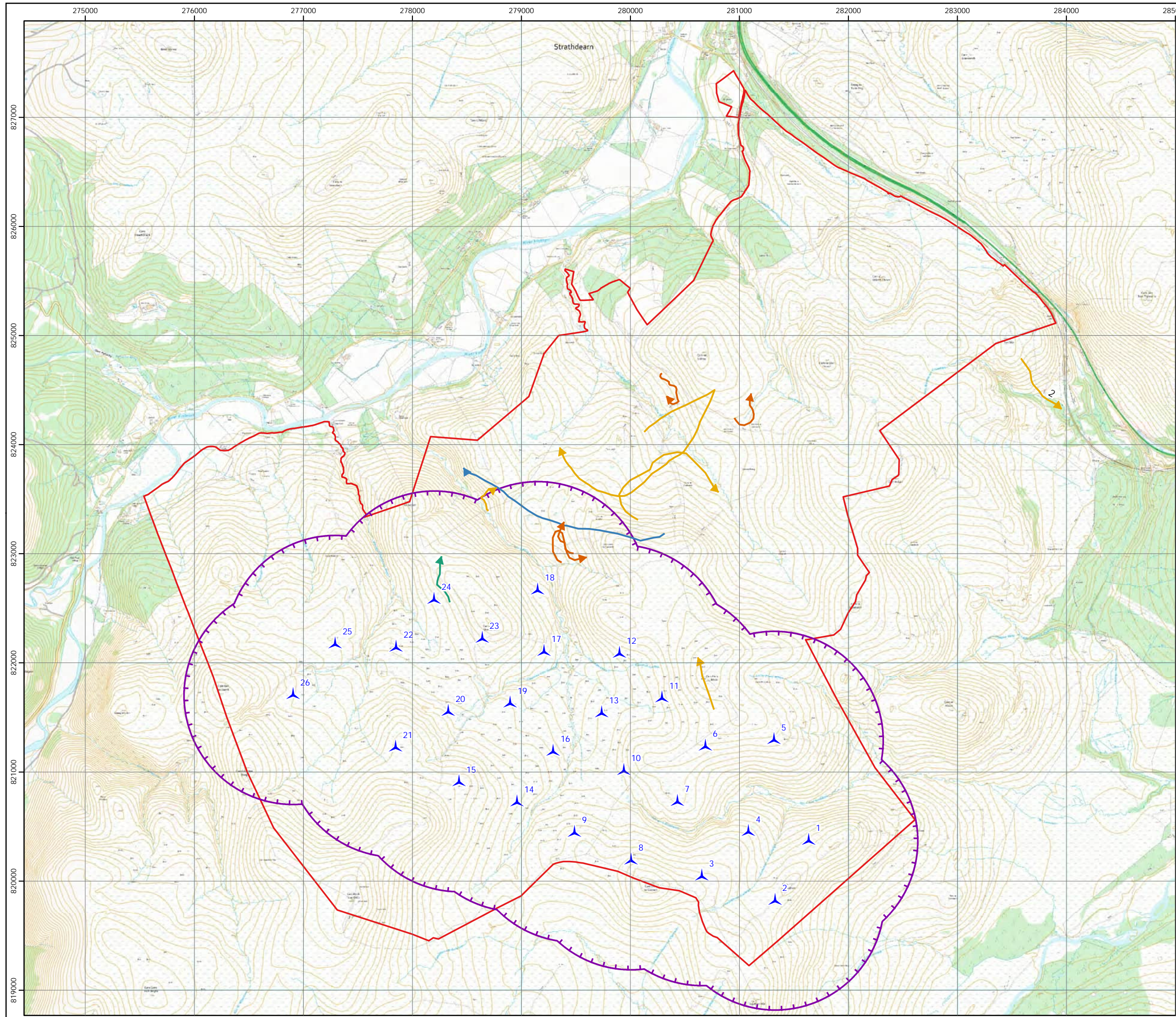
Clune Wind Farm



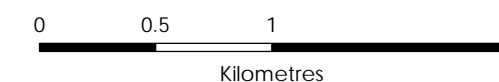
Figure 8.1.16
2021 Breeding Raptor Survey Results
Other Raptors

Key

- ▭ Site boundary
- ▲ Turbines
- ▭ 1km turbine layout buffer
- Raptor flight observation**
- Hen harrier
- Merlin
- Peregrine
- Short-eared owl



Labelled where more than one bird



Scale @ A3:
1:32,500



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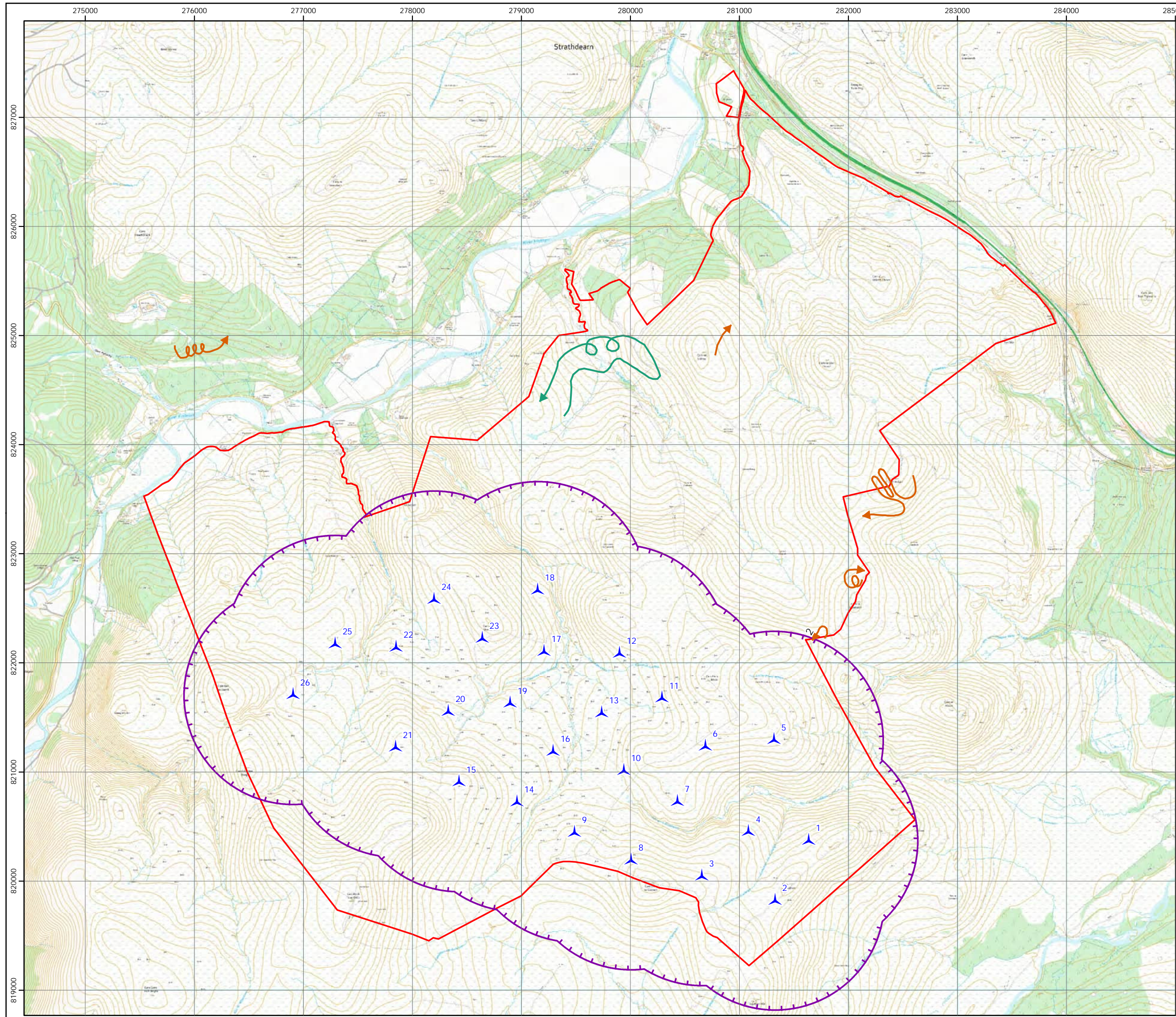
Clune Wind Farm



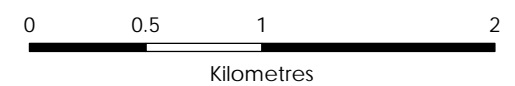
Figure 8.1.17
2022 Breeding Raptor Survey Results
Eagles

Key

- Site boundary
- ▲ Turbines
- 1km turbine layout buffer
- Raptor flight observation**
- ➔ Golden eagle
- ➔ White-tailed eagle



Labelled where more than one bird



Scale @ A3:
1:32,500







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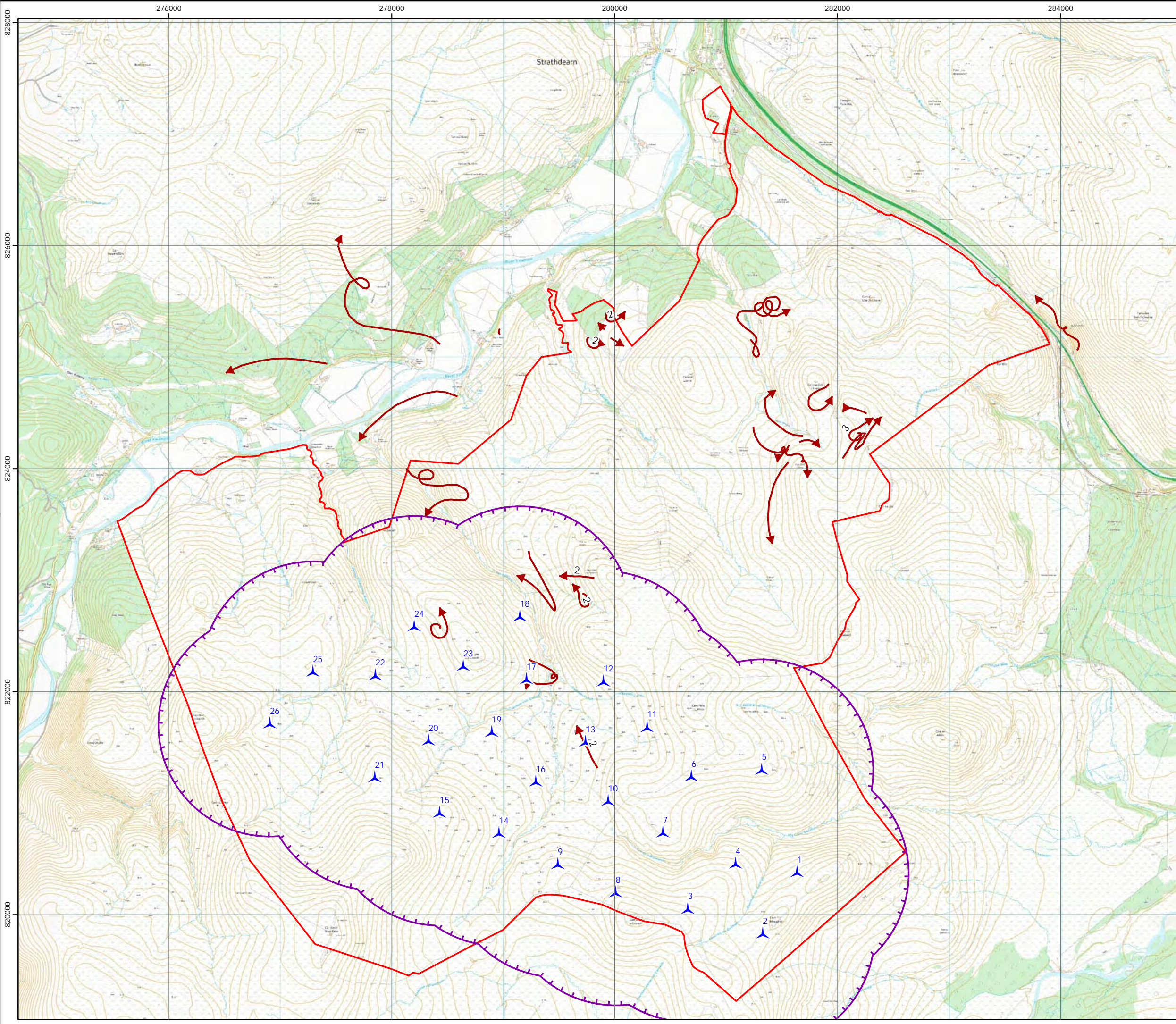
Clune Wind Farm



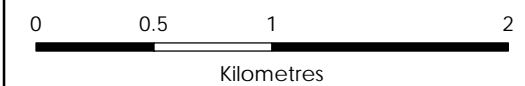
Figure 8.1.18
2022 Breeding Raptor Survey Results
Red Kite

Key

-  Site boundary
-  Turbines
-  1km turbine layout buffer
- Raptor flight observation
-  Red kite



Labelled where more than one bird



Scale @ A3:
1:32,000



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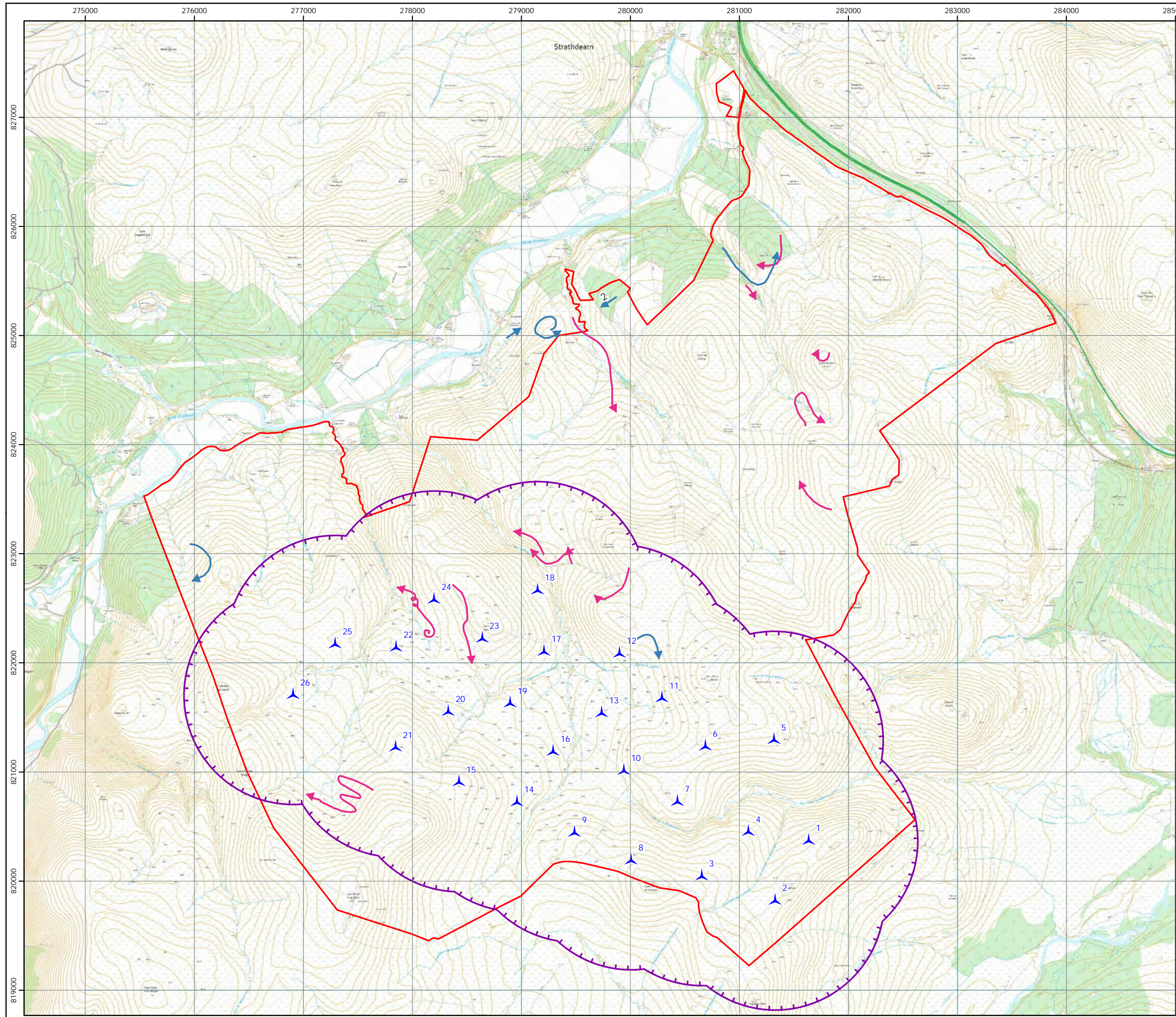
Clune Wind Farm



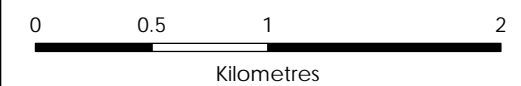
Figure 8.1.19
2022 Breeding Raptor Survey Results
Kestrel and Buzzard

Key

- Site boundary
- Turbines
- 1km turbine layout buffer
- Raptor flight observation
 - Buzzard
 - Kestrel



Labelled where more than one bird



Scale @ A3:
1:32,500



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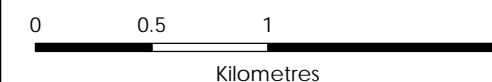
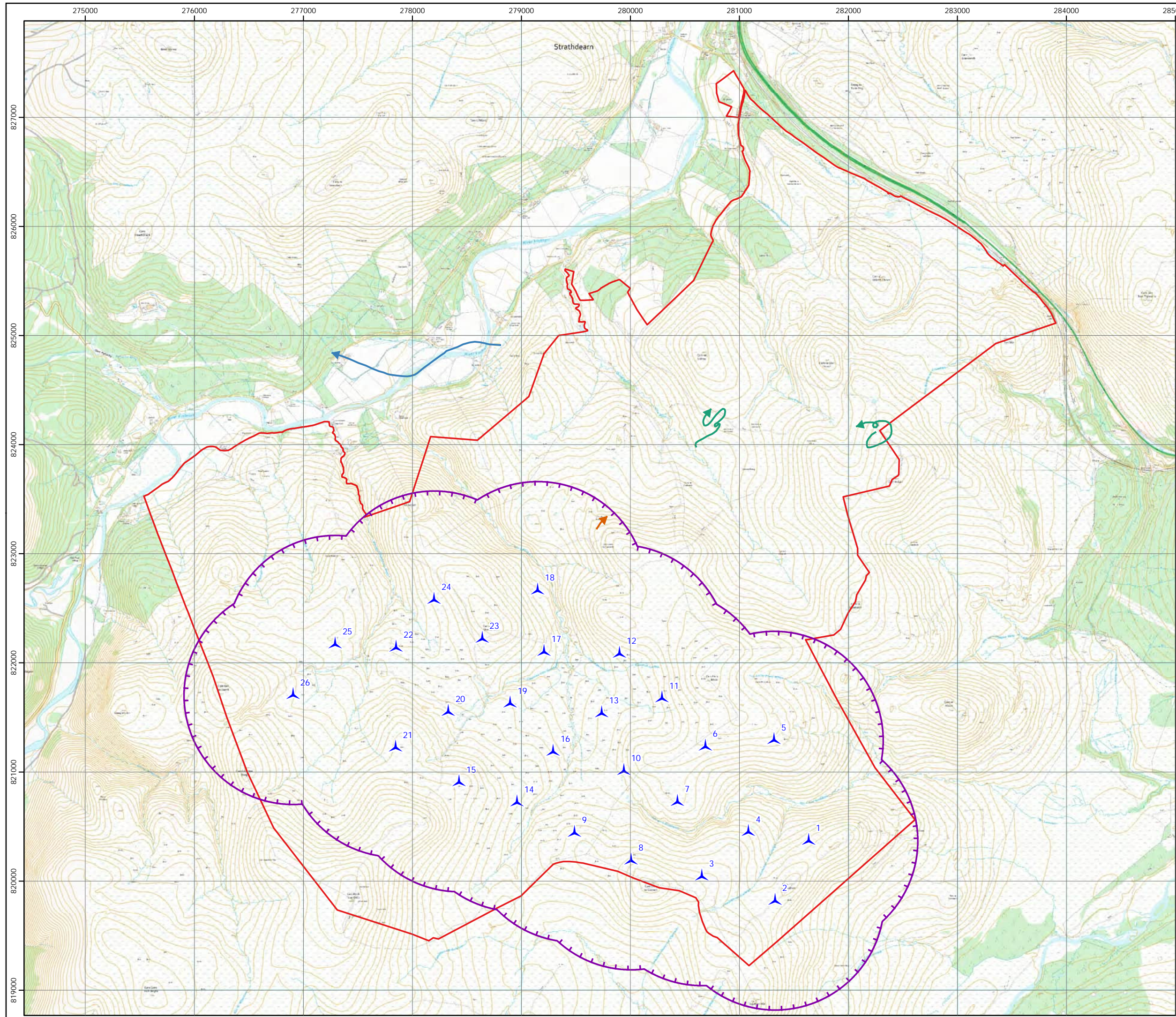
Clune Wind Farm



Figure 18.1.20
2022 Breeding raptor Survey Results
Other Raptors

Key

- Site boundary
- Turbines
- 1km turbine layout buffer
- Raptor flight observation**
- Hen harrier
- Merlin
- Osprey



Scale @ A3:
1:32,500



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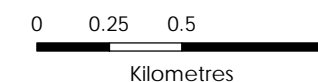
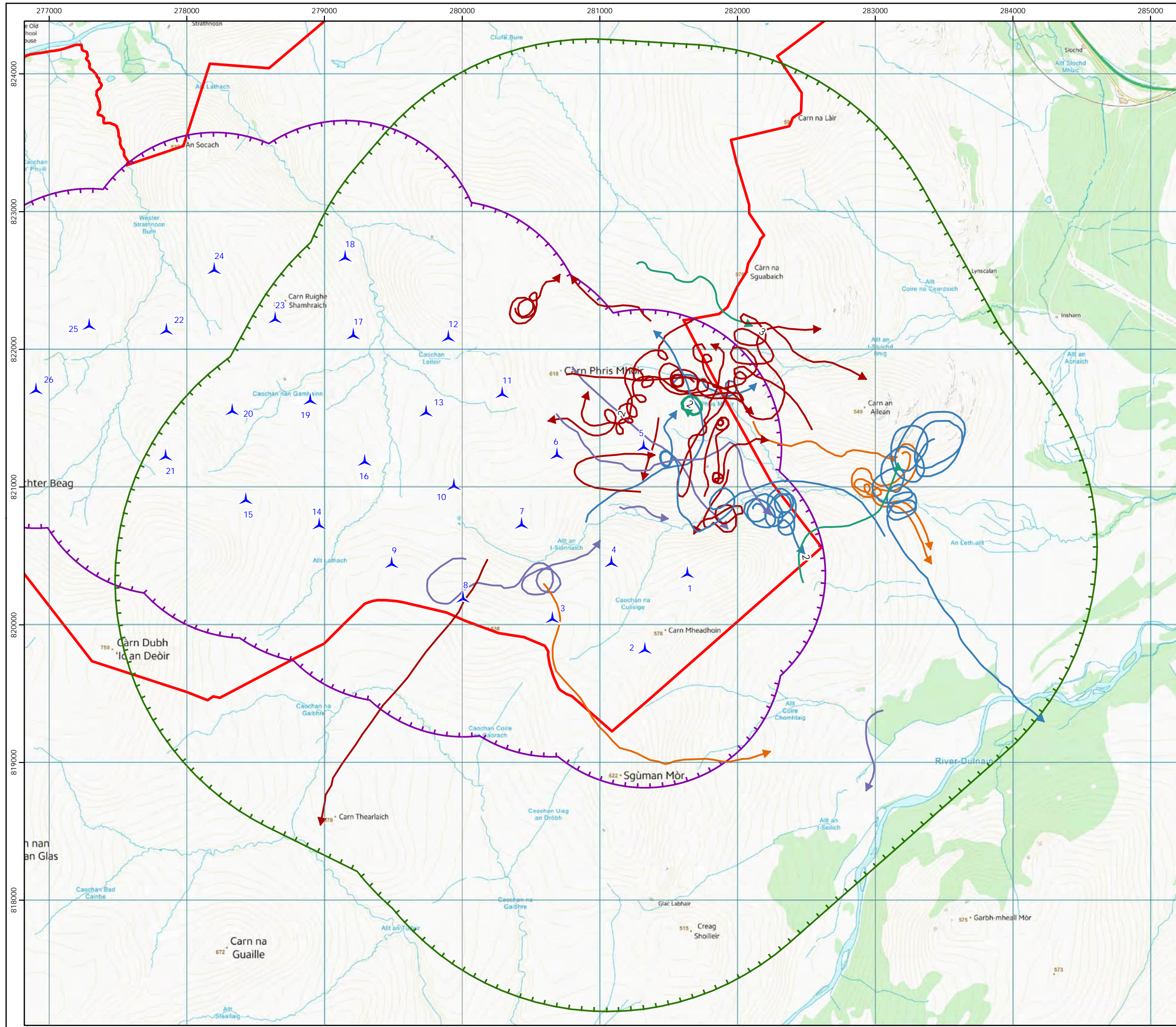
Clune Wind Farm



Figure 8.1.21
2023 Breeding Raptor Survey Results

Key

- Site boundary
 - Survey area
 - 1km turbine layout buffer
- Raptor flight observation**
- Buzzard
 - Golden eagle
 - Kestrel
 - Red kite
 - White-tailed eagle



Scale @ A3:
1:26,000



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Appendix B. Vantage Point Survey Details

Table 30: VP Survey Information – Timing and Duration of Surveys (September 2020 – August 2022)

Survey Date	Start Time	Finish Time	Duration	Surveyor	VP Type	VP Number
24/09/2020	08:45	11:45	03:00:00	SL	Diurnal	9
24/09/2020	12:40	15:40	03:00:00	SL	Diurnal	10
29/09/2020	09:00	12:00	03:00:00	AD	Diurnal	10
29/09/2020	13:00	16:00	03:00:00	AD	Diurnal	9
01/10/2020	09:45	12:45	03:00:00	SL	Diurnal	8
01/10/2020	12:45	15:45	03:00:00	SL	Diurnal	8
13/10/2020	09:45	12:45	03:00:00	SL	Diurnal	8
13/10/2020	12:45	15:45	03:00:00	SL	Diurnal	8
23/10/2020	08:20	11:20	03:00:00	SL	Diurnal	10
23/10/2020	12:00	15:00	03:00:00	SL	Diurnal	9
30/10/2020	08:30	11:30	03:00:00	AD	Diurnal	9
30/10/2020	12:30	15:30	03:00:00	AD	Diurnal	10
12/11/2020	08:30	11:30	03:00:00	AD	Diurnal	10
12/11/2020	12:10	15:10	03:00:00	AD	Diurnal	9
13/11/2020	08:30	11:30	03:00:00	AD	Diurnal	9
13/11/2020	12:15	15:15	03:00:00	AD	Diurnal	10
16/11/2020	08:30	11:30	03:00:00	AD	Diurnal	8
16/11/2020	12:00	15:00	03:00:00	AD	Diurnal	8
10/12/2020	08:30	11:30	03:00:00	SL	Diurnal	9
10/12/2020	12:00	15:00	03:00:00	SL	Diurnal	10
11/12/2020	08:30	11:30	03:00:00	SL	Diurnal	10
11/12/2020	12:15	15:15	03:00:00	SL	Diurnal	9
14/12/2020	09:00	12:00	03:00:00	SL	Diurnal	8
17/12/2020	12:20	15:20	03:00:00	SL	Diurnal	8
02/03/2021	13:00	16:00	03:00:00	CM	Diurnal	8
05/03/2021	08:40	11:40	03:00:00	SL	Diurnal	8
05/03/2021	12:10	15:10	03:00:00	SL	Diurnal	8
09/03/2021	09:00	12:00	03:00:00	CM	Diurnal	8
15/03/2021	08:45	11:45	03:00:00	SL	Diurnal	9
15/03/2021	12:15	15:15	03:00:00	SL	Diurnal	9
16/03/2021	09:00	12:00	03:00:00	AD	Diurnal	10
16/03/2021	12:45	15:45	03:00:00	AD	Diurnal	9
18/03/2021	09:00	12:00	03:00:00	AD	Diurnal	10
18/03/2021	12:30	15:30	03:00:00	AD	Diurnal	10
22/03/2021	09:00	12:00	03:00:00	AD	Diurnal	9
22/03/2021	12:45	15:45	03:00:00	AD	Diurnal	10
24/03/2021	12:00	15:00	03:00:00	CM	Diurnal	8
30/03/2021	09:00	12:00	03:00:00	CM	Diurnal	8
14/04/2021	09:30	12:30	03:00:00	SL	Diurnal	9

Survey Date	Start Time	Finish Time	Duration	Surveyor	VP Type	VP Number
14/04/2021	13:10	16:10	03:00:00	SL	Diurnal	10
15/04/2021	08:45	11:45	03:00:00	SL	Diurnal	10
15/04/2021	09:13	12:13	03:00:00	KT	Diurnal	8
15/04/2021	12:20	15:20	03:00:00	SL	Diurnal	9
16/04/2021	12:45	15:45	03:00:00	KT	Diurnal	8
19/04/2021	09:15	12:15	03:00:00	SL	Diurnal	9
19/04/2021	12:55	15:55	03:00:00	SL	Diurnal	10
28/04/2021	09:05	10:35	01:30:00	SL	Diurnal	10
14/05/2021	09:00	10:30	01:30:00	SL	Diurnal	10
14/05/2021	11:10	14:10	03:00:00	SL	Diurnal	9
31/05/2021	09:30	12:30	03:00:00	SL	Diurnal	9
31/05/2021	13:10	16:10	03:00:00	SL	Diurnal	10
01/06/2021	09:00	12:00	03:00:00	SL	Diurnal	10
01/06/2021	12:35	15:35	03:00:00	SL	Diurnal	9
07/06/2021	09:30	12:30	03:00:00	DB	Diurnal	8
07/06/2021	16:00	19:00	03:00:00	DB	Diurnal	8
23/06/2021	10:28	13:28	03:00:00	KT	Diurnal	9
23/06/2021	14:14	15:44	01:30:00	KT	Diurnal	10
24/06/2021	09:30	12:30	03:00:00	KT	Diurnal	10
24/06/2021	12:30	14:00	01:30:00	KT	Diurnal	10
28/06/2021	14:15	17:15	03:00:00	IM	Diurnal	8
01/07/2021	09:15	12:15	03:00:00	SL	Diurnal	8
16/07/2021	13:01	16:01	03:00:00	KT & KH	Diurnal	9
19/07/2021	10:30	13:30	03:00:00	IM	Diurnal	9
19/07/2021	14:45	17:45	03:00:00	IM	Diurnal	10
20/07/2021	09:50	12:50	03:00:00	IM	Diurnal	10
20/07/2021	13:25	16:25	03:00:00	IM	Diurnal	9
22/07/2021	10:15	13:15	03:00:00	IM	Diurnal	8
22/07/2021	13:20	16:20	03:00:00	IM	Diurnal	8
30/08/2021	10:55	13:55	03:00:00	IM	Diurnal	10
30/08/2021	14:50	17:50	03:00:00	IM	Diurnal	9
31/08/2021	11:55	14:55	03:00:00	IM	Diurnal	9
31/08/2021	15:35	18:35	03:00:00	IM	Diurnal	10
01/09/2021	09:55	12:55	03:00:00	IM	Diurnal	8
01/09/2021	13:05	16:05	03:00:00	IM	Diurnal	8
17/09/2021	08:41	11:41	03:00:00	KH	Diurnal	10
17/09/2021	12:31	15:31	03:00:00	KH	Diurnal	9
23/09/2021	09:20	12:20	03:00:00	AF	Diurnal	9
23/09/2021	13:45	16:45	03:00:00	AF	Diurnal	10
28/09/2021	09:00	12:00	03:00:00	SD	Diurnal	8
28/09/2021	12:00	15:00	03:00:00	SD	Diurnal	8
06/10/2021	09:51	12:51	03:00:00	KT	Diurnal	9
06/10/2021	13:35	16:35	03:00:00	KT	Diurnal	10
07/10/2021	09:00	12:00	03:00:00	SL	Diurnal	10

Survey Date	Start Time	Finish Time	Duration	Surveyor	VP Type	VP Number
07/10/2021	12:30	15:30	03:00:00	SL	Diurnal	9
26/10/2021	12:45	15:45	03:00:00	SL	Diurnal	8
03/11/2021	08:45	11:45	03:00:00	SL	Diurnal	10
03/11/2021	12:15	15:15	03:00:00	SL	Diurnal	9
04/11/2021	13:10	16:10	03:00:00	SL	Diurnal	8
09/11/2021	09:00	12:00	03:00:00	JW	Diurnal	9
09/11/2021	12:40	15:40	03:00:00	JW	Diurnal	10
10/11/2021	09:00	12:00	03:00:00	JW	Diurnal	8
25/11/2021	08:55	11:55	03:00:00	KH	Diurnal	9
25/11/2021	12:00	15:00	03:00:00	KT	Diurnal	8
25/11/2021	12:40	15:40	03:00:00	KH	Diurnal	10
01/12/2021	08:30	11:30	03:00:00	SL	Diurnal	10
01/12/2021	12:10	15:10	03:00:00	SL	Diurnal	9
03/12/2021	08:45	11:45	03:00:00	SL	Diurnal	8
07/12/2021	12:15	13:15	01:00:00	SD	Diurnal	8
09/12/2021	08:45	11:45	03:00:00	SL	Diurnal	5
09/12/2021	12:30	14:30	02:00:00	SL	Diurnal	8
20/12/2021	09:00	12:00	03:00:00	SL	Diurnal	9
20/12/2021	12:30	15:30	03:00:00	SL	Diurnal	10
21/12/2021	08:45	11:45	03:00:00	SL	Diurnal	10
21/12/2021	12:20	15:20	03:00:00	SL	Diurnal	9
22/12/2021	09:45	12:45	03:00:00	CG	Diurnal	8
28/01/2022	12:10	15:10	03:00:00	SL	Diurnal	9
09/02/2022	10:30	13:30	03:00:00	CG	Diurnal	8
25/03/2022	08:30	11:00	02:30:00	SL	Diurnal	9
01/04/2022	16:00	16:30	00:30:00	FT	Diurnal	9
18/03/2022	12:15	15:15	03:00:00	CG	Diurnal	8
25/03/2022	08:30	11:00	02:30:00	SL	Diurnal	9
25/03/2022	13:00	16:00	03:00:00	SL	Diurnal	10
30/03/2022	08:50	11:50	03:00:00	CF SL	Diurnal	8
31/03/2022	10:30	13:30	03:00:00	CF	Diurnal	9
01/04/2022	09:10	12:10	03:00:00	FT	Diurnal	10
01/04/2022	13:00	16:00	03:00:00	FT	Diurnal	9
01/04/2022	16:00	16:30	00:30:00	FT	Diurnal	9
13/04/2022	08:40	11:40	03:00:00	FT	Diurnal	9
13/04/2022	12:15	15:15	03:00:00	FT	Diurnal	10
22/04/2022	08:40	11:40	03:00:00	SL	Diurnal	10
26/04/2022	09:15	12:15	03:00:00	CG	Diurnal	10
26/04/2022	13:00	16:00	03:00:00	CG	Diurnal	9
27/04/2022	09:05	12:05	03:00:00	CG	Diurnal	8
28/04/2022	13:05	16:05	03:00:00	CG	Diurnal	8
03/05/2022	13:05	16:05	03:00:00	FT	Diurnal	8
19/05/2022	09:15	12:15	03:00:00	ADK	Diurnal	10
19/05/2022	10:00	13:00	03:00:00	DMcK	Diurnal	8

Survey Date	Start Time	Finish Time	Duration	Surveyor	VP Type	VP Number
19/05/2022	12:45	15:45	03:00:00	ADK	Diurnal	9
03/06/2022	09:00	12:00	03:00:00	JE	Diurnal	9
03/06/2022	12:45	15:45	03:00:00	JE	Diurnal	10
09/06/2022	09:15	12:15	03:00:00	BW	Diurnal	9
09/06/2022	12:45	15:45	03:00:00	BW	Diurnal	10
05/07/2022	09:10	12:10	03:00:00	JE	Diurnal	10
05/07/2022	13:15	16:15	03:00:00	JE	Diurnal	9
11/07/2022	13:35	16:35	03:00:00	TJC	Diurnal	8
19/07/2022	10:40	13:40	03:00:00	TJC	Diurnal	8
04/08/2022	09:42	12:42	03:00:00	BW	Diurnal	9
04/08/2022	13:12	16:12	03:00:00	BW	Diurnal	10
05/08/2022	09:42	12:42	03:00:00	BW	Diurnal	10
05/08/2022	13:12	16:12	03:00:00	BW	Diurnal	9
09/08/2022	09:15	12:15	03:00:00	ADK	Diurnal	8
11/08/2022	13:00	16:00	03:00:00	JE	Diurnal	8
12/08/2022	13:10	16:10	03:00:00	CB	Diurnal	8
17/08/2022	09:10	12:10	03:00:00	ADK	Diurnal	8
26/08/2022	09:50	12:50	03:00:00	IM	Diurnal	10
26/08/2022	14:30	17:30	03:00:00	IM	Diurnal	9

Table 31: VP Survey Information – Timing and Duration of Surveys (January – December 2023)

Survey Date	Start Time	Finish Time	Duration	Surveyor	VP Type	VP Number
10/01/2023	10:00	13:00	03:00:00	MAO	Diurnal	13
11/01/2023	09:02	12:02	03:00:00	MAO/SS	Diurnal	13
30/01/2023	09:20	12:20	03:00:00	MAO	Diurnal	13
30/01/2023	12:30	15:30	03:00:00	ADK	Diurnal	13
07/02/2023	09:40	12:40	03:00:00	DMcK	Diurnal	12
07/02/2023	13:00	16:00	03:00:00	DMcK	Diurnal	12
15/02/2023	09:00	12:00	03:00:00	ADK/SS	Diurnal	12
15/02/2023	12:00	15:00	03:00:00	ADK/SS	Diurnal	12
21/02/2023	09:58	12:58	03:00:00	BW	Diurnal	13
21/02/2023	13:45	16:45	03:00:00	BW/MAO	Diurnal	12
22/02/2023	09:23	12:23	03:00:00	MAO/ADK	Diurnal	12
22/02/2023	13:20	14:50	01:30:00	MAO/ADK	Diurnal	13
24/02/2023	13:15	14:45	01:30:00	DMcK	Diurnal	13
09/03/2023	10:15	13:15	03:00:00	SS MAO	Diurnal	13
09/03/2023	13:30	16:30	03:00:00	SS MAO	Diurnal	13
30/03/2023	11:20	14:20	03:00:00	SS MAO	Diurnal	12
30/03/2023	14:20	17:20	03:00:00	Ss MAO	Diurnal	12
05/04/2023	09:55	12:55	03:00:00	WG SS FT	Diurnal	13
05/04/2023	13:45	16:45	03:00:00	WG FT SS	Diurnal	12
06/04/2023	09:35	12:35	03:00:00	WG SS	Diurnal	12

Survey Date	Start Time	Finish Time	Duration	Surveyor	VP Type	VP Number
06/04/2023	13:15	16:15	03:00:00	WG SS	Diurnal	13
29/05/2023	09:58	12:58	03:00:00	SS	Diurnal	13
29/05/2023	13:52	16:52	03:00:00	SS	Diurnal	12
30/05/2023	09:53	12:53	03:00:00	SS	Diurnal	12
30/05/2023	14:45	17:45	03:00:00	SS	Diurnal	13
22/06/2023	09:50	12:50	03:00:00	SS + DGW	Diurnal	12
22/06/2023	13:48	16:48	03:00:00	SS + DGW	Diurnal	13
23/06/2023	10:10	13:10	03:00:00	AB, FT + KM	Diurnal	13
23/06/2023	15:50	18:50	03:00:00	AB + KM	Diurnal	12
11/07/2023	10:30	13:30	03:00:00	KC + GB	Diurnal	12
11/07/2023	14:40	17:40	03:00:00	CS	Diurnal	13
12/07/2023	09:30	12:30	03:00:00	GB + KC	Diurnal	13
12/07/2023	13:00	16:00	03:00:00	GB + KC	Diurnal	12
24/08/2023	11:38	14:38	03:00:00	SS	Diurnal	12
24/08/2023	15:39	18:39	03:00:00	SS	Diurnal	13
25/08/2023	10:42	13:42	03:00:00	SS	Diurnal	13
25/08/2023	14:25	17:25	03:00:00	SS	Diurnal	12
06/09/2023	14:30	17:30	03:00:00	WJ	Diurnal	12
08/09/2023	10:30	13:30	03:00:00	WJ	Diurnal	12
08/09/2023	14:15	17:15	03:00:00	WJ	Diurnal	13
14/09/2023	10:50	13:50	03:00:00	FI + JW	Diurnal	13
16/10/2023	12:00	15:00	03:00:00	CS	Diurnal	13
16/10/2023	15:00	18:00	03:00:00	CS	Diurnal	13
17/10/2023	10:15	13:15	03:00:00	CS	Diurnal	12
17/10/2023	13:45	16:45	03:00:00	CS	Diurnal	12
28/11/2023	09:42	12:42	03:00:00	SS	Diurnal	12
28/11/2023	12:42	15:42	03:00:00	SS	Diurnal	12
29/11/2023	09:35	12:35	03:00:00	SS	Diurnal	13
29/11/2023	13:35	16:35	03:00:00	SS	Diurnal	13
18/12/2023	09:45	12:45	03:00:00	SS	Diurnal	13
18/12/2023	12:45	15:45	03:00:00	SS	Diurnal	13
19/12/2023	09:33	12:33	03:00:00	SS	Diurnal	12
19/12/2023	12:33	15:33	03:00:00	SS	Diurnal	12

Appendix C. Vantage Point Summary of Weather Conditions

Table 32: Vantage Point Weather Summary (September 2020 – August 2022)

Survey Date	VP Number	VP Type	Mean Cloud Cover (eights)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction
24/09/2020	9	Diurnal	8	> 2km	None	5	1	SW
	10	Diurnal	8	> 2km	None	6	2	SW
29/09/2020	9	Diurnal	5	> 2km	None	10	2	SW
01/10/2020	8	Diurnal	8	1km - 2km	Light Intermittent	7	0	
			8	> 2km	Light Persistent	6	0	
13/10/2020	8	Diurnal	7	> 2km	Light Intermittent	7	3	S
			7	> 2km	Light Intermittent	7	3	S
23/10/2020	9	Diurnal	4	> 2km	None	7	3	NW
	10	Diurnal	8	> 2km	Light Intermittent	6	2	NW
30/10/2020	10	Diurnal	5	1km - 2km	Light Intermittent	5	4	SW
12/11/2020	9	Diurnal	6	> 2km	None	7	4	SW
	10	Diurnal	6	> 2km	None	7	2	SW
13/11/2020	9	Diurnal	3	> 2km	Light Intermittent	6	3	SW
	10	Diurnal	5	> 2km	Light Intermittent	5	3	SW
16/11/2020	8	Diurnal	3	1km - 2km	None	6	4	W
			4	> 2km	Light Intermittent	5	4	SW
10/12/2020	9	Diurnal	8	> 2km	None	2	4	E
	10	Diurnal	8	1km - 2km	Light Intermittent	3	4	NE
11/12/2020	9	Diurnal	7	> 2km	Light Intermittent	4	1	NE
	10	Diurnal	5	> 2km	None	3	3	NE

Survey Date	VP Number	VP Type	Mean Cloud Cover (eights)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction		
14/12/2020	8	Diurnal	7	> 2km	Light Persistent	5	4	E		
17/12/2020	8	Diurnal	3	> 2km	None	6	4	SE		
02/03/2021	8	Diurnal	0	> 2km	None	4	0	SSW		
05/03/2021	8	Diurnal	3	> 2km	None	2	0			
			4	> 2km	None	3	1	NE		
09/03/2021	8	Diurnal	8	> 2km	None	4	1	NE		
15/03/2021	9	Diurnal	7	> 2km	None	4	2	NE		
			8	> 2km	None	5	2	E		
16/03/2021	9	Diurnal	2	> 2km	None	5	4	NW		
			10	Diurnal	3	> 2km	None	4	5	NW
18/03/2021	10	Diurnal	2	> 2km	None	5	3	NW		
			3	> 2km	None	5	3	NW		
22/03/2021	9	Diurnal	8	> 2km	None	5	3	SW		
			10	Diurnal	8	> 2km	None	5	4	SW
24/03/2021	8	Diurnal	5	> 2km	None	5	4	NE		
30/03/2021	8	Diurnal	7	> 2km	None	9	3	ESE		
14/04/2021	9	Diurnal	6	> 2km	None	6	1	SE		
			10	Diurnal	5	> 2km	None	7	1	S
15/04/2021	8	Diurnal	3	> 2km	None	6	0			
			9	Diurnal	3	> 2km	None	8	1	E
			10	Diurnal	1	> 2km	None	6	1	N
16/04/2021	8	Diurnal	4	> 2km	None	10	3	W		
19/04/2021	9	Diurnal	7	> 2km	None	8	4	NE		
			10	Diurnal	7	> 2km	None	10	4	NE
28/04/2021	10	Diurnal	8	1km - 2km	Light Persistent	5	3	SE		

Survey Date	VP Number	VP Type	Mean Cloud Cover (eights)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction
14/05/2021	9	Diurnal	8	> 2km	Light Intermittent	7	0	SW
	10	Diurnal	8	> 2km	Light Intermittent	7	0	
31/05/2021	9	Diurnal	5	> 2km	None	14	3	N
	10	Diurnal	1	> 2km	None	16	4	N
01/06/2021	9	Diurnal	7	> 2km	None	17	3	E
	10	Diurnal	7	> 2km	None	14	3	N
23/06/2021	9	Diurnal	7	> 2km	None	15	2	NW
	10	Diurnal	8	> 2km	Light Intermittent	16	2	NW
24/06/2021	10	Diurnal	7	> 2km	None	14	3	SW
			8	> 2km	None	14	3	W
28/06/2021	8	Diurnal	2	> 2km	None	16	3	NE
01/07/2021	8	Diurnal	0	> 2km	None	18	2	NW
16/07/2021	9	Diurnal	3	> 2km	None	21	6	W
19/07/2021	9	Diurnal	4	> 2km	None	14	2	E
	10	Diurnal	8	> 2km	None	12	1	E
20/07/2021	9	Diurnal	0	> 2km	None	18	2	SE
	10	Diurnal	3	> 2km	None	17	2	SE
22/07/2021	8	Diurnal	1	> 2km	None	19	1	S
			3	> 2km	None	16	2	S
30/08/2021	9	Diurnal	8	> 2km	None	10	2	SE
	10	Diurnal	7	1km - 2km	Light Intermittent	11	2	SE
31/08/2021	9	Diurnal	8	> 2km	None	11	3	SE
	10	Diurnal	8	> 2km	None	12	3	SE
01/09/2021	8	Diurnal	6	> 2km	None	13	2	SE

Survey Date	VP Number	VP Type	Mean Cloud Cover (eights)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction
17/09/2021	9	Diurnal	8	> 2km	None	14	4	S
	10	Diurnal	7	> 2km	None	13	6	S
23/09/2021	9	Diurnal	7	> 2km	Light Intermittent	16	2	NW
	10	Diurnal	6	> 2km	None	11	2	NW
28/09/2021	8	Diurnal	4	> 2km	None	10	4	NE
			7	> 2km	Light Intermittent	10	4	NE
06/10/2021	9	Diurnal	7	> 2km	None	8	1	NE
			7	> 2km	None	8	1	SE
	10	Diurnal	2	> 2km	None	9	3	S
07/10/2021	9	Diurnal	8	> 2km	Light Persistent	12	4	NE
	10	Diurnal	8	> 2km	None	11	5	NE
26/10/2021	8	Diurnal	8	> 2km	Light Intermittent	8	4	NE
03/11/2021	9	Diurnal	8	1km - 2km	Light Intermittent	4	3	SW
	10	Diurnal	8	> 2km	Light Intermittent	4	3	SW
04/11/2021	8	Diurnal	6	> 2km	None	5	2	SE
09/11/2021	9	Diurnal	4	> 2km	None	5	2	SW
	10	Diurnal	5	> 2km	None	5	4	WSW
10/11/2021	8	Diurnal	4	> 2km	None	4	3	SW
25/11/2021	8	Diurnal	7	> 2km	None	1	3	W
	9	Diurnal	6	> 2km	None	0	5	WNW
	10	Diurnal	7	> 2km	None	0	5	W
01/12/2021	9	Diurnal	7	> 2km	None	-1	3	SE
	10	Diurnal	8	> 2km	None	0	3	S
03/12/2021	8	Diurnal	4	> 2km	Light	2	3	NE

Survey Date	VP Number	VP Type	Mean Cloud Cover (eights)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction
		al			Intermittent			
07/12/2021	8	Diurnal						
09/12/2021	8	Diurnal	4	> 2km	None	3	2	E
20/12/2021	9	Diurnal	0	> 2km	None	0	0	
	10	Diurnal	0	1km - 2km	None	0	0	
21/12/2021	9	Diurnal	0	> 2km	None	-1	0	
	10	Diurnal	0	> 2km	None	-1	0	
22/12/2021	8	Diurnal	7	> 2km	None	-1	1	SE
28/01/2022	9	Diurnal	8	> 2km	Light Intermittent	5	5	W
09/02/2022	8	Diurnal	3	> 2km	None	0	4	WSW
18/03/2022	8	Diurnal	7	> 2km	None	6	3	SSW
25/03/2022	9	Diurnal	4	> 2km	None	10	2	SW
	10	Diurnal	0	> 2km	None	12	2	SW
30/03/2022	8	Diurnal	3	> 2km	None	2	1	N
31/03/2022	9	Diurnal	6	> 2km	Light Intermittent	1	2	NE
01/04/2022	9	Diurnal	8	> 2km	Light Intermittent	0	2	NW
			7	1km - 2km	Heavy Intermittent	0	3	NW
	10	Diurnal	6	> 2km	None	1	1	W
13/04/2022	9	Diurnal	8	200m - 1km	Light Persistent	5	2	SE
	10	Diurnal	8	200m - 1km	Light Intermittent	5	3	ESE
22/04/2022	10	Diurnal	8	1km - 2km	None	5	1	NE
26/04/2022	9	Diurnal	7	> 2km	None	6	1	NE
	10	Diurnal	8	> 2km	None	5	2	NE

Survey Date	VP Number	VP Type	Mean Cloud Cover (eights)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction
27/04/2022	8	Diurnal	4	> 2km	None	7	1	NW
28/04/2022	8	Diurnal	7	> 2km	None	12	0	NW
03/05/2022	8	Diurnal	8	> 2km	Light Intermittent	0	4	NE
19/05/2022	8	Diurnal	3	> 2km	None	13	4	SW
	9	Diurnal	3	> 2km	None	13	4	SW
	10	Diurnal	3	> 2km	None	13	4	SW
03/06/2022	9	Diurnal	3	> 2km	None	9	3	ENE
	10	Diurnal	2	> 2km	None	13	5	ENE
09/06/2022	9	Diurnal	5	> 2km	None	13	3	WSW
	10	Diurnal	7	> 2km	None	12	4	WSW
05/07/2022	9	Diurnal	7	> 2km	None	13	4	NW
	10	Diurnal	8	> 2km	Light Intermittent	10	4	NW
11/07/2022	8	Diurnal	8	> 2km	None	21	5	SW
19/07/2022	8	Diurnal	7	> 2km	Light Intermittent	27	0	WSW
04/08/2022	9	Diurnal	6	> 2km	Light Intermittent	9	3	NW
	10	Diurnal	7	> 2km	None	9	3	NW
05/08/2022	9	Diurnal	5	> 2km	None	8	3	NW
	10	Diurnal	6	> 2km	None	7	3	NW
09/08/2022	8	Diurnal	3	> 2km	None	16	4	W
11/08/2022	8	Diurnal	0	> 2km	None	20	4	WSW
12/08/2022	8	Diurnal	3	> 2km	None	20	1	NW
17/08/2022	8	Diurnal	3	> 2km	None	13	2	SE
26/08/2022	9	Diurnal	5	> 2km	None	14	3	W

Survey Date	VP Number	VP Type	Mean Cloud Cover (eights)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction
		al						
	10	Diurnal	7	> 2km	None	16	2	N

Table 33: Vantage Point Weather Summary (January – December 2023)

Survey Date	VP Number	VP Type	Mean Cloud Cover (eights)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction
10/01/2023	13	Diurnal	8	> 2km	Light Persistent	2	4	SW
11/01/2023	13	Diurnal	4	1km – 2km	Light Intermittent	2	6	NE
30/01/2023	13	Diurnal	3	> 2km	None	4	4	NW
			5	>2km	None	4	4	NW
07/02/2023	12	Diurnal	5	> 2km	Light Intermittent	5	3	NW
			3	> 2km	None	5	5	W
15/02/2023	12	Diurnal	6	> 2km	Light Intermittent	3	3	SW
			6	> 2km	None	3	3	SW
21/02/2023	12	Diurnal	5	> 2km	None	7	6	SSW
	13	Diurnal	7	> 2km	None	9	5	SSW
22/02/2023	12	Diurnal	7	> 2km	None	2	3	NW
	13	Diurnal	7	1km – 2km	Light Intermittent	2	3	NW
24/02/2023	13	Diurnal	7	> 2km	Light Intermittent	6	4	NE
09/03/2023	13	Diurnal	3	> 2km	None	0	2	SW
			5	> 2km	None	0	3	SW
30/03/2023	12	Diurnal	6	> 2km	None	8	2	SW
			5	> 2km	None	8	2	SW
05/04/2023	12	Diurnal	7	> 2km	None	12	4	NE
	13	Diurnal	8	> 2km	None	12	6	NE
06/04/2023	12	Diurnal	7	> 2km	Light Intermittent	6	4	W

Survey Date	VP Number	VP Type	Mean Cloud Cover (eights)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction
	13	Diurnal	6	> 2km	Light Intermittent	6	4	E
29/05/2023	12	Diurnal	1	> 2km	None	13	2	W
	13	Diurnal	1	> 2km	None	12	1	W
30/05/2023	12	Diurnal	0	1km – 2km	None	15	1	N
	13	Diurnal	0	1km – 2km	None	15	1	N
22/06/2023	12	Diurnal	5	> 2km	None	16	2	W
	13	Diurnal	4	> 2km	None	16	2	W
23/06/2023	12	Diurnal	5	> 2km	None	15	4	NW
	13	Diurnal	4	> 2km	None	15	4	NE
11/07/2023	12	Diurnal	7	> 2km	Light Intermittent	13	4	W
	13	Diurnal	8	> 2km	Light Persistent	12	2	W
12/07/2023	12	Diurnal	8	> 2km	Light Intermittent	11	5	W
	13	Diurnal	8	> 2km	Light Intermittent	11	4	SW
24/08/2023	12	Diurnal	6	> 2km	Light Intermittent	15	2	NW
	13	Diurnal	6	> 2km	Light Intermittent	15	3	NW
25/08/2023	12	Diurnal	8	1km – 2km	Light Persistent	15	3	NW
	13	Diurnal	5	> 2km	None	10	1	NW
06/09/2023	12	Diurnal	3	> 2km	None	23	3	N
08/09/2023	12	Diurnal	1	> 2km	None	22	3	W
	13	Diurnal	4	> 2km	None	23	2	N
14/09/2023	13	Diurnal	4	> 2km	None	22	6	NW
16/10/2023		Diurnal	7	> 2km	None	6	3	SW
			7	> 2km	None	6	3	SW

Survey Date	VP Number	VP Type	Mean Cloud Cover (eighths)	Modal Visibility	Modal Precipitation	Mean Temperature (°C)	Mean Wind Speed (Beaufort Scale)	Modal Wind Direction
17/10/2023	12	Diurnal	5	> 2km	None	7	2	SE
			1	> 2km	None	7	1	SE
28/11/2023	12	Diurnal	3	> 2km	None	1	2	SE
			4	> 2km	None	1	3	SE
29/11/2023	13	Diurnal	5	1km – 2km	Light Persistent	-2	3	SE
			7	1km – 2km	None	-1	2	SE
18/12/2023	13	Diurnal	5	> 2km	Light Intermittent	10	3	NE
			4	> 2km	None	10	6	NE
19/12/2023	12	Diurnal	4	> 2km	Light Intermittent	3	4	E
			4	> 2km	None	2	6	E

Appendix D. Vantage Point Survey Target Species Flights

Table 34: VP Flight Line Details (January – December 2023)

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
24/09/2020	Greylag goose	9	11:14	27	C	45	0	300	Standard
24/09/2020	Greylag goose	10	13:49	54	C	74	0	250	Standard
24/09/2020	Red kite	9	09:18	1	B	37	37	20	Standard
24/09/2020	Red kite	9	09:19	1	B	21	21	50	Standard
24/09/2020	Red kite	9	09:21	1	B	7	7	50	Standard
24/09/2020	Red kite	9	10:12	1	B	42	42	65	Standard
24/09/2020	Red kite	9	10:14	1	B	38	38	100	Standard
24/09/2020	Red kite	9	11:15	1	B	110	110	50	Standard
24/09/2020	Red kite	9	11:43	1	B	29	29	20	Standard
24/09/2020	Red kite	10	14:15	1	A	33	0	10	Standard
24/09/2020	Red kite	10	14:15	1	A	85	0	3	Standard
24/09/2020	Red kite	10	14:15	1	B	22	22	25	Standard
24/09/2020	Red kite	10	14:15	1	B	15	15	20	Standard
24/09/2020	Red kite	10	14:16	2	A	85	0	3	Standard
24/09/2020	Red kite	10	14:16	2	B	15	30	20	Standard
24/09/2020	Red kite	10	14:19	2	B	28	56	30	Standard
24/09/2020	Red kite	10	15:00	2	B	60	120	35	Standard
01/10/2020	Red kite	8	11:02	1	B	75	75	80	Standard
01/10/2020	Red kite	8	11:04	1	A	50	0	10	Standard
01/10/2020	Red kite	8	11:04	1	B	91	91	60	Standard
01/10/2020	Red kite	8	11:23	1	B	88	88	40	Standard
01/10/2020	Red kite	8	12:25	1	A	7	0	10	Standard
01/10/2020	Red kite	8	12:25	1	A	60	0	10	Standard
01/10/2020	Red kite	8	12:25	1	B	110	110	40	Standard
01/10/2020	Red kite	8	12:53	1	A	6	0	15	Standard
01/10/2020	Red kite	8	12:53	1	B	72	72	80	Standard
01/10/2020	Red kite	8	14:47	1	B	86	86	40	Standard
01/10/2020	Red kite	8	15:10	1	A	15	0	15	Standard
01/10/2020	Red kite	8	15:10	1	B	83	83	50	Standard
01/10/2020	Red kite	8	15:23	1	B	92	92	35	Standard
01/10/2020	Red kite	8	15:31	2	B	48	96	35	Standard
01/10/2020	Red kite	8	15:32	3	A	10	0	10	Standard
01/10/2020	Red kite	8	15:32	3	B	56	168	20	Standard
01/10/2020	Red kite	8	15:34	1	A	15	0	10	Standard
01/10/2020	Red kite	8	15:40	1	B	45	45	70	Standard
01/10/2020	Red kite	8	15:44	2	B	35	70	50	Standard
13/10/2020	Golden eagle	8	13:37	1	B	30	30	30	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
13/10/2020	Greylag goose	8	10:01	41	B	54	2214	200	Standard
13/10/2020	Greylag goose	8	10:24	67	C	120	0	270	Standard
13/10/2020	Greylag goose	8	14:28	8	B	66	528	70	Standard
13/10/2020	Hen harrier	8	13:00	1	A	24	0	5	Standard
13/10/2020	Hen harrier	8	13:00	1	B	10	10	20	Standard
13/10/2020	Red kite	8	10:16	1	B	20	20	50	Standard
13/10/2020	Red kite	8	10:36	1	B	34	34	30	Standard
13/10/2020	Red kite	8	11:25	1	B	37	37	30	Standard
13/10/2020	Red kite	8	11:30	1	A	20	0	5	Standard
13/10/2020	Red kite	8	11:30	1	B	52	52	40	Standard
13/10/2020	Red kite	8	11:30	1	B	40	40	70	Standard
13/10/2020	Red kite	8	12:02	3	B	21	63	20	Standard
13/10/2020	Red kite	8	12:46	2	A	45	0	10	Standard
13/10/2020	Red kite	8	12:46	2	B	47	94	30	Standard
13/10/2020	Red kite	8	14:51	1	B	42	42	30	Standard
23/10/2020	Golden eagle	9	12:37	1	A	31	0	5	Standard
23/10/2020	Golden eagle	9	14:58	1	A	7	0	5	Incidental
23/10/2020	Golden eagle	9	14:58	1	B	63	63	45	Standard
23/10/2020	Golden eagle	9	14:58	1	B	15	15	45	Incidental
12/11/2020	Hen harrier	9	15:25	1	A	4	0	10	Incidental
13/11/2020	Hen harrier	9	08:00	1	A	8	0	4	Incidental
13/11/2020	Red kite	9	08:36	1	A	24	0	15	Standard
13/11/2020	Red kite	9	08:36	1	B	39	39	35	Standard
13/11/2020	Red kite	9	08:36	1	B	95	95	35	Standard
13/11/2020	Red kite	9	10:19	2	B	397	794	45	Incidental
16/11/2020	Peregrine	8	09:57	1	B	237	237	50	Standard
16/11/2020	Peregrine	8	10:04	1	B	34	34	70	Standard
16/11/2020	Red kite	8	09:45	1	B	20	20	60	Standard
16/11/2020	Red kite	8	12:03	1	A	54	0	18	Standard
10/12/2020	Golden eagle	9	11:30	1	B	40	40	200	Incidental
14/12/2020	White-tailed eagle	8	11:00	1	B	63	63	50	Standard
14/12/2020	White-tailed eagle	8	11:06	1	B	54	54	100	Incidental
17/12/2020	Red kite	8	13:12	1	B	92	92	70	Standard
17/12/2020	Red kite	8	13:17	1	B	33	33	70	Standard
17/12/2020	Red kite	8	13:27	1	A	34	0	2	Standard
17/12/2020	Red kite	8	13:27	1	B	27	27	55	Standard
17/12/2020	Red kite	8	13:45	2	A	6	0	2	Standard
17/12/2020	Red kite	8	13:45	2	B	69	138	100	Standard
17/12/2020	Red kite	8	13:45	2	B	84	168	60	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
17/12/2020	Red kite	8	14:00	3	B	34	102	30	Standard
17/12/2020	Red kite	8	14:20	1	B	41	41	80	Standard
02/03/2021	Red kite	8	14:18	1	B	167	167	100	Standard
02/03/2021	Red kite	8	14:18	1	B	60	60	200	Standard
02/03/2021	Red kite	8	14:32	2	B	185	370	100	Standard
02/03/2021	Red kite	8	14:35	2	B	71	142	80	Standard
05/03/2021	Golden eagle	8	12:17	2	C	138	0	300	Standard
05/03/2021	Golden eagle	8	14:32	1	B	48	48	150	Standard
05/03/2021	Golden plover	8	12:05	2	A	4	0	1	Standard
05/03/2021	Greylag goose	8	11:57	63	C	42	0	300	Standard
05/03/2021	Red kite	8	14:58	1	B	51	51	70	Standard
15/03/2021	Golden eagle	9	12:17	1	A	35	0	10	Incidental
15/03/2021	Golden eagle	9	12:17	1	A	7	0	3	Incidental
15/03/2021	Golden eagle	9	12:17	1	A	11	0	3	Standard
15/03/2021	Pink-footed goose	9	08:58	6	B	9	54	60	Standard
15/03/2021	Red kite	9	10:44	1	A	36	0	5	Standard
15/03/2021	Red kite	9	10:44	1	A	30	0	5	Standard
15/03/2021	Red kite	9	10:44	1	B	22	22	50	Standard
15/03/2021	Red kite	9	10:44	1	B	24	24	40	Standard
15/03/2021	Red kite	9	13:01	1	A	98	0	5	Standard
15/03/2021	Red kite	9	13:03	1	A	62	0	5	Standard
15/03/2021	Red kite	9	13:03	1	B	47	47	50	Standard
15/03/2021	Red kite	9	13:03	1	B	44	44	50	Standard
15/03/2021	Red kite	9	13:03	1	B	20	20	200	Standard
15/03/2021	Red kite	9	13:09	1	B	75	75	60	Standard
18/03/2021	Golden eagle	10	09:55	1	A	13	0	5	Standard
18/03/2021	Golden eagle	10	12:35	1	B	126	126	80	Standard
18/03/2021	Golden eagle	10	15:05	1	B	7	7	30	Incidental
18/03/2021	Golden eagle	10	15:05	1	B	120	120	30	Standard
18/03/2021	Golden plover	10	09:22	2	A	5	0	5	Standard
18/03/2021	Golden plover	10	10:02	3	A	7	0	1	Standard
18/03/2021	Red kite	10	09:16	2	B	115	230	30	Standard
18/03/2021	Red kite	10	12:55	1	B	47	47	30	Standard
18/03/2021	White-tailed eagle	10	10:45	1	B	220	220	180	Standard
18/03/2021	White-tailed eagle	10	10:45	1	B	220	220	180	Standard
18/03/2021	White-tailed eagle	10	10:45	1	B	240	240	180	Incidental
18/03/2021	White-tailed eagle	10	10:45	1	B	40	40	180	Incidental

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
22/03/2021	Golden eagle	9	09:42	1	B	258	258	170	Standard
22/03/2021	Golden eagle	9	10:31	1	B	23	23	50	Standard
22/03/2021	Golden eagle	9	10:37	1	B	233	233	50	Standard
22/03/2021	Golden eagle	9	11:06	1	B	102	102	120	Incidental
22/03/2021	Golden eagle	9	11:27	1	B	100	100	70	Incidental
22/03/2021	Golden eagle	9	11:27	1	C	10	0	250	Incidental
22/03/2021	Golden eagle	9	11:27	1	C	20	0	250	Incidental
22/03/2021	Golden eagle	9	11:27	1	C	20	0	250	Standard
22/03/2021	Golden eagle	9	11:27	1	C	22	0	250	Incidental
22/03/2021	Golden eagle	9	11:27	1	C	35	0	250	Standard
22/03/2021	Golden eagle	9	11:44	1	B	25	25	100	Incidental
22/03/2021	Golden eagle	9	11:44	1	B	25	25	100	Standard
22/03/2021	Golden eagle	9	11:44	1	B	40	40	40	Incidental
22/03/2021	Golden eagle	9	11:44	1	B	91	91	100	Incidental
22/03/2021	Golden eagle	9	11:44	1	B	40	40	100	Standard
22/03/2021	Golden eagle	9	11:44	1	B	93	93	100	Standard
22/03/2021	Golden eagle	9	11:44	1	B	25	25	100	Incidental
22/03/2021	Hen harrier	9	10:26	1	A	37	0	15	Standard
30/03/2021	Curlew	8	09:21	2	A	14	0	6	Standard
30/03/2021	Curlew	8	10:46	1	A	8	0	12	Standard
30/03/2021	Lapwing	8	08:35	6	A	18	0	8	Incidental
30/03/2021	Oystercatcher	8	08:30	1	A	10	0	3	Incidental
14/04/2021	Curlew	10	13:52	2	A	33	0	5	Standard
14/04/2021	Curlew	10	16:05	1	B	21	21	25	Standard
14/04/2021	Golden eagle	9	11:57	1	B	151	151	80	Standard
14/04/2021	Golden eagle	9	11:57	1	B	199	199	200	Standard
14/04/2021	Golden plover	9	10:40	3	B	11	33	50	Incidental
14/04/2021	Golden plover	9	10:40	3	B	24	72	50	Standard
14/04/2021	Greylag goose	9	09:58	42	C	104	0	300	Standard
14/04/2021	Greylag goose	9	10:05	47	B	197	9259	200	Standard
14/04/2021	Greylag goose	9	10:30	33	B	37	1221	170	Standard
14/04/2021	Greylag goose	9	11:03	69	B	218	15042	200	Standard
14/04/2021	Greylag goose	9	11:16	96	C	174	0	250	Standard
14/04/2021	Greylag goose	10	14:46	67	C	93	0	300	Standard
14/04/2021	Greylag goose	10	14:47	255	C	135	0	300	Standard
14/04/2021	Hen harrier	9	11:21	1	B	333	333	200	Standard
14/04/2021	Red kite	10	13:14	1	A	102	0	10	Standard
14/04/2021	Red kite	10	14:07	1	A	24	0	5	Standard
14/04/2021	Red kite	10	15:48	1	A	48	0	5	Standard
14/04/2021	Red kite	10	15:58	1	B	18	18	20	Standard
15/04/2021	Curlew	8	10:17	1	A	20	0	15	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
15/04/2021	Curlew	8	10:17	1	B	60	60	160	Standard
15/04/2021	Curlew	8	10:24	1	B	10	10	50	Standard
15/04/2021	Greylag goose	8	09:13	90	C	30	0	300	Standard
15/04/2021	Greylag goose	8	10:02	40	C	40	0	250	Standard
15/04/2021	Greylag goose	8	10:10	40	C	30	0	320	Standard
15/04/2021	Greylag goose	8	10:11	140	C	45	0	300	Standard
15/04/2021	Greylag goose	8	10:25	100	C	15	0	250	Standard
15/04/2021	Greylag goose	8	10:30	80	C	20	0	300	Incidental
15/04/2021	Greylag goose	8	10:53	100	C	50	0	300	Standard
15/04/2021	Greylag goose	8	11:46	2	B	10	20	40	Standard
15/04/2021	Greylag goose	8	11:57	60	C	10	0	250	Standard
15/04/2021	Greylag goose	9	12:39	56	C	56	0	250	Standard
15/04/2021	Greylag goose	9	14:48	26	B	78	2028	200	Standard
15/04/2021	Greylag goose	10	09:56	78	C	113	0	250	Standard
15/04/2021	Greylag goose	10	10:30	64	B	136	8704	170	Standard
15/04/2021	Greylag goose	10	10:54	166	B	82	13612	150	Incidental
15/04/2021	Greylag goose	10	11:14	114	B	124	14136	200	Standard
15/04/2021	Hen harrier	9	13:37	1	B	83	83	150	Standard
15/04/2021	Lapwing	8	09:58	2	A	70	0	15	Standard
15/04/2021	Red kite	9	14:10	1	A	9	0	15	Standard
15/04/2021	Red kite	9	14:10	1	B	60	60	50	Standard
16/04/2021	Curlew	8	13:01	1	B	45	45	25	Standard
16/04/2021	Golden eagle	8	13:10	1	C	289	0	250	Incidental
16/04/2021	Lapwing	8	14:03	1	A	15	0	10	Standard
16/04/2021	Lapwing	8	14:03	2	B	42	84	120	Standard
16/04/2021	Lapwing	8	14:03	1	B	10	10	40	Standard
16/04/2021	Red kite	8	13:40	1	B	158	158	160	Standard
16/04/2021	Red kite	8	13:40	1	B	140	140	160	Standard
16/04/2021	Red kite	8	13:40	1	B	180	180	210	Standard
19/04/2021	Golden eagle	9	11:21	2	A	62	0	10	Incidental
19/04/2021	Golden eagle	9	11:21	2	B	29	58	25	Incidental
19/04/2021	Golden plover	10	13:45	2	A	8	0	2	Standard
14/05/2021	Golden plover	10	08:54	2	A	9	0	1	Incidental
14/05/2021	Red kite	10	09:24	1	A	35	0	15	Standard
14/05/2021	Red kite	10	09:24	1	B	335	335	150	Standard
31/05/2021	Golden eagle	9	11:42	1	A	102	0	10	Incidental
31/05/2021	Golden eagle	9	11:58	1	B	144	144	150	Incidental
31/05/2021	Golden eagle	9	11:58	1	B	113	113	200	Incidental
31/05/2021	Golden plover	9	12:14	1	A	4	0	5	Standard
31/05/2021	Golden plover	9	12:14	1	B	23	23	30	Standard
31/05/2021	Greylag goose	9	11:06	5	B	52	260	100	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
31/05/2021	White-tailed eagle	10	15:11	1	B	115	115	170	Incidental
01/06/2021	Golden eagle	9	12:15	1	B	15	15	25	Incidental
01/06/2021	Red kite	9	15:12	1	B	34	34	170	Standard
01/06/2021	Red kite	9	15:12	1	B	150	150	200	Standard
07/06/2021	Lapwing	8	10:06	1	B	67	67	100	Standard
07/06/2021	Lapwing	8	10:31	1	B	237	237	80	Standard
07/06/2021	Lapwing	8	16:27	2	A	92	0	18	Standard
07/06/2021	Lapwing	8	16:47	1	B	72	72	120	Standard
23/06/2021	Golden eagle	9	10:06	1	A	126	0	15	Incidental
23/06/2021	Golden eagle	10	14:31	1	A	10	0	10	Standard
23/06/2021	Golden eagle	10	14:31	1	A	5	0	1	Standard
23/06/2021	Golden eagle	10	14:31	1	B	188	188	40	Standard
23/06/2021	Golden eagle	10	14:31	1	B	71	71	60	Incidental
23/06/2021	Golden eagle	10	14:31	1	B	83	83	60	Standard
23/06/2021	Golden eagle	10	14:31	1	C	231	0	300	Incidental
23/06/2021	Hen harrier	9	13:26	1	A	42	0	10	Standard
23/06/2021	Red kite	9	10:52	1	A	16	0	10	Standard
23/06/2021	Red kite	9	10:52	1	B	21	21	40	Standard
23/06/2021	Red kite	9	10:52	1	B	24	24	60	Incidental
23/06/2021	Red kite	9	11:33	1	B	78	78	80	Incidental
23/06/2021	Red kite	9	11:33	1	B	46	46	80	Standard
23/06/2021	Red kite	9	11:33	1	B	70	70	80	Standard
23/06/2021	Red kite	9	11:48	1	B	120	120	150	Standard
23/06/2021	Red kite	9	11:48	1	B	40	40	60	Incidental
23/06/2021	Red kite	9	11:48	1	B	33	33	50	Standard
23/06/2021	Red kite	9	11:48	1	B	275	275	70	Standard
23/06/2021	Red kite	9	11:57	1	A	10	0	4	Standard
23/06/2021	Red kite	10	14:11	1	B	40	40	120	Incidental
23/06/2021	Red kite	10	14:22	1	B	79	79	110	Standard
23/06/2021	Red kite	10	14:22	1	B	59	59	80	Incidental
23/06/2021	Red kite	10	15:03	1	A	25	0	15	Standard
23/06/2021	Red kite	10	15:03	1	B	25	25	30	Standard
23/06/2021	Red kite	10	15:03	1	B	90	90	30	Standard
23/06/2021	Red kite	10	15:30	1	A	13	0	5	Standard
23/06/2021	Red kite	10	15:30	1	A	60	0	10	Standard
23/06/2021	Red kite	10	15:30	1	B	40	40	30	Standard
23/06/2021	Red kite	10	15:30	1	B	10	10	20	Standard
24/06/2021	Red kite	10	09:30	2	B	26	52	20	Incidental
24/06/2021	Red kite	10	09:30	2	B	10	20	20	Standard
24/06/2021	Red kite	10	09:41	1	B	3	3	20	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
24/06/2021	Red kite	10	12:29	1	A	23	0	5	Standard
24/06/2021	Red kite	10	12:29	1	B	33	33	20	Standard
01/07/2021	Lapwing	8	09:43	2	A	17	0	5	Standard
01/07/2021	Red kite	8	09:59	1	B	213	213	150	Standard
01/07/2021	Red kite	8	10:10	1	B	236	236	150	Standard
01/07/2021	Red kite	8	10:23	1	B	180	180	120	Standard
01/07/2021	Red kite	8	10:41	1	B	262	262	100	Standard
20/07/2021	Red kite	10	10:28	1	B	21	21	100	Standard
20/07/2021	Red kite	10	10:28	1	B	28	28	100	Standard
20/07/2021	Red kite	10	10:28	1	B	24	24	180	Standard
20/07/2021	Red kite	10	10:29	1	A	17	0	15	Incidental
22/07/2021	Red kite	8	11:35	1	B	10	10	110	Incidental
22/07/2021	Red kite	8	11:35	1	B	7	7	110	Standard
22/07/2021	Red kite	8	11:35	1	B	173	173	200	Incidental
22/07/2021	Red kite	8	11:49	2	A	13	0	15	Incidental
22/07/2021	Red kite	8	11:49	2	B	38	76	90	Standard
22/07/2021	Red kite	8	11:49	2	B	73	146	190	Standard
22/07/2021	Red kite	8	15:12	2	A	24	0	18	Incidental
22/07/2021	Red kite	8	15:13	2	B	18	36	60	Incidental
22/07/2021	Red kite	8	15:13	2	B	74	148	190	Incidental
22/07/2021	Red kite	8	15:26	1	A	12	0	19	Incidental
22/07/2021	Red kite	8	15:26	1	B	29	29	40	Incidental
22/07/2021	Red kite	8	15:27	2	B	37	74	55	Incidental
22/07/2021	Red kite	8	15:27	2	B	31	62	180	Incidental
22/07/2021	Red kite	8	16:11	3	B	44	132	190	Incidental
31/08/2021	Red kite	9	12:19	1	B	37	37	45	Standard
31/08/2021	Red kite	9	12:54	1	A	11	0	14	Standard
31/08/2021	Red kite	9	12:54	1	B	119	119	25	Standard
31/08/2021	White-tailed eagle	9	13:56	1	B	18	18	45	Standard
31/08/2021	White-tailed eagle	9	13:56	1	B	4	4	180	Incidental
31/08/2021	White-tailed eagle	9	13:56	1	B	50	50	180	Standard
01/09/2021	Hen harrier	8	15:20	1	A	17	0	5	Standard
01/09/2021	Red kite	8	11:01	2	B	22	44	35	Incidental
01/09/2021	Red kite	8	11:01	2	B	310	620	195	Incidental
01/09/2021	Red kite	8	13:27	1	B	2	2	21	Incidental
01/09/2021	Red kite	8	13:27	1	B	2	2	21	Standard
01/09/2021	Red kite	8	13:34	1	B	26	26	55	Incidental
01/09/2021	Red kite	8	13:34	1	B	3	3	55	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
01/09/2021	Red kite	8	13:34	1	B	41	41	190	Incidental
01/09/2021	Red kite	8	13:34	1	B	32	32	190	Standard
01/09/2021	Red kite	8	13:37	1	B	22	22	80	Standard
01/09/2021	Red kite	8	13:37	1	B	15	15	210	Standard
01/09/2021	Red kite	8	13:37	1	B	43	43	210	Incidental
01/09/2021	Red kite	8	14:30	1	B	8	8	140	Incidental
01/09/2021	Red kite	8	14:30	1	B	11	11	140	Standard
01/09/2021	Red kite	8	14:30	1	B	6	6	185	Incidental
01/09/2021	Red kite	8	14:30	1	B	7	7	185	Standard
01/09/2021	Red kite	8	14:36	1	A	15	0	11	Standard
01/09/2021	Red kite	8	14:36	1	B	16	16	75	Standard
01/09/2021	Red kite	8	14:36	1	B	59	59	190	Standard
01/09/2021	Red kite	8	14:39	1	B	17	17	120	Standard
01/09/2021	White-tailed eagle	8	11:03	1	A	38	0	19	Incidental
01/09/2021	White-tailed eagle	8	11:03	1	B	116	116	160	Incidental
01/09/2021	White-tailed eagle	8	11:03	1	B	98	98	185	Incidental
01/09/2021	White-tailed eagle	8	11:15	1	B	23	23	165	Incidental
01/09/2021	White-tailed eagle	8	11:15	1	B	23	23	165	Standard
01/09/2021	White-tailed eagle	8	11:15	1	B	74	74	190	Incidental
17/09/2021	Red kite	9	12:00	1	B	50	50	50	Incidental
23/09/2021	Canada goose	9	10:09	3	A	15	0	15	Standard
23/09/2021	Canada goose	9	10:36	21	A	30	0	5	Standard
23/09/2021	Canada goose	10	15:58	30	B	115	3450	35	Standard
23/09/2021	Greylag goose	10	15:58	1	B	115	115	35	Standard
23/09/2021	Pink-footed goose	9	09:38	20	A	10	0	10	Standard
23/09/2021	Pink-footed goose	9	09:38	20	B	50	1000	30	Standard
23/09/2021	Pink-footed goose	9	09:45	11	A	30	0	10	Incidental
23/09/2021	Pink-footed goose	9	09:45	11	A	30	0	10	Standard
23/09/2021	Pink-footed goose	9	09:50	180	A	20	0	10	Standard
23/09/2021	Pink-footed goose	9	09:50	180	A	20	0	10	Standard
23/09/2021	Pink-footed goose	9	09:50	180	B	50	9000	50	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
23/09/2021	Pink-footed goose	9	10:01	34	B	160	5440	30	Standard
23/09/2021	Pink-footed goose	9	10:01	34	B	25	850	60	Incidental
23/09/2021	Pink-footed goose	9	10:04	120	B	45	5400	50	Standard
23/09/2021	Pink-footed goose	9	10:04	120	B	30	3600	200	Standard
23/09/2021	Pink-footed goose	9	10:20	85	B	45	3825	150	Standard
23/09/2021	Pink-footed goose	9	10:22	105	B	45	4725	120	Standard
23/09/2021	Pink-footed goose	9	10:24	95	B	45	4275	200	Standard
23/09/2021	Pink-footed goose	9	10:35	16	A	15	0	5	Standard
23/09/2021	Pink-footed goose	9	10:35	16	B	65	1040	60	Incidental
23/09/2021	Pink-footed goose	9	10:35	16	B	10	160	60	Standard
23/09/2021	Pink-footed goose	9	11:17	65	B	25	1625	45	Standard
23/09/2021	Pink-footed goose	9	11:20	65	B	30	1950	200	Standard
23/09/2021	Pink-footed goose	9	12:02	120	B	45	5400	150	Standard
23/09/2021	Pink-footed goose	10	15:00	300	B	180	54000	200	Standard
23/09/2021	Pink-footed goose	10	15:18	150	B	180	27000	200	Standard
23/09/2021	Pink-footed goose	10	15:37	450	C	240	0	300	Standard
23/09/2021	Pink-footed goose	10	15:37	450	B	45	20250	200	Incidental
23/09/2021	Pink-footed goose	10	16:15	55	C	90	0	300	Standard
23/09/2021	Pink-footed goose	10	16:32	110	B	75	8250	100	Incidental
23/09/2021	Red kite	9	09:55	2	B	135	270	70	Standard
23/09/2021	Red kite	9	11:25	1	B	105	105	50	Standard
28/09/2021	Red kite	8	10:00	2	B	90	180	100	Standard
28/09/2021	Red kite	8	10:00	2	B	30	60	100	Incidental
06/10/2021	Golden eagle	9	12:13	1	C	360	0	300	Incidental
06/10/2021	Golden eagle	10	14:48	1	B	82	82	100	Standard
06/10/2021	Golden eagle	10	14:48	1	C	420	0	300	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
06/10/2021	Golden eagle	10	14:48	1	C	80	0	400	Incidental
06/10/2021	Red kite	9	10:25	1	B	40	40	30	Standard
06/10/2021	Red kite	9	10:27	5	B	120	600	100	Standard
06/10/2021	White-tailed eagle	9	12:10	1	B	40	40	100	Standard
06/10/2021	White-tailed eagle	9	12:10	1	B	10	10	180	Standard
06/10/2021	White-tailed eagle	9	12:10	1	C	108	0	300	Incidental
06/10/2021	White-tailed eagle	9	12:10	1	B	345	345	200	Incidental
06/10/2021	White-tailed eagle	9	12:10	1	B	90	90	200	Standard
26/10/2021	Golden eagle	8	15:33	1	B	274	274	50	Standard
26/10/2021	Red kite	8	14:31	1	B	34	34	35	Standard
03/11/2021	Golden eagle	10	11:40	1	B	32	32	100	Standard
03/11/2021	Pink-footed goose	10	10:11	6	B	37	222	175	Standard
04/11/2021	Golden eagle	8	15:14	2	B	84	168	50	Standard
04/11/2021	Golden eagle	8	15:22	1	B	164	164	20	Standard
04/11/2021	Golden eagle	8	15:22	1	B	30	30	30	Standard
04/11/2021	Greylag goose	8	14:05	33	C	69	0	250	Standard
04/11/2021	Red kite	8	13:33	1	B	159	159	30	Standard
04/11/2021	Red kite	8	13:50	1	A	111	0	10	Standard
04/11/2021	Red kite	8	13:50	1	B	63	63	50	Standard
04/11/2021	Red kite	8	14:22	1	B	145	145	80	Standard
09/11/2021	White-tailed eagle	9	12:14	1	A	6	0	6	Incidental
25/11/2021	Golden eagle	9	11:59	1	A	7	0	10	Incidental
25/11/2021	Red kite	8	12:55	1	A	16	0	15	Standard
25/11/2021	Red kite	8	13:02	1	B	77	77	80	Standard
25/11/2021	Red kite	8	14:40	2	B	20	40	90	Incidental
25/11/2021	Red kite	8	14:40	2	B	80	160	90	Standard
25/11/2021	White-tailed eagle	8	13:55	1	B	57	57	100	Standard
25/11/2021	White-tailed eagle	8	14:40	1	B	80	80	150	Incidental
25/11/2021	White-tailed eagle	8	14:40	1	B	80	80	150	Standard
25/11/2021	White-tailed eagle	8	14:40	1	B	195	195	150	Standard
25/11/2021	White-tailed eagle	8	14:40	1	B	40	40	150	Incidental
25/11/2021	White-tailed	8	14:40	1	B	60	60	150	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
	eagle								
25/11/2021	White-tailed eagle	8	14:53	1	B	397	397	170	Standard
25/11/2021	Woodcock	8	11:56	1	A	7	0	2	Incidental
01/12/2021	Golden eagle	10	09:37	1	B	23	23	50	Incidental
01/12/2021	Golden eagle	10	10:27	1	A	25	0	5	Standard
01/12/2021	Golden eagle	10	10:27	1	B	73	73	50	Standard
01/12/2021	Peregrine	9	12:42	1	B	84	84	20	Standard
01/12/2021	White-tailed eagle	9	14:51	1	B	13	13	60	Standard
01/12/2021	White-tailed eagle	9	14:51	1	B	117	117	150	Incidental
03/12/2021	Golden eagle	8	10:38	1	B	198	198	70	Standard
03/12/2021	Peregrine	8	09:36	1	A	4	0	4	Incidental
03/12/2021	Peregrine	8	09:36	1	A	7	0	4	Standard
03/12/2021	Red kite	8	09:30	1	B	24	24	30	Standard
07/12/2021	Red kite	8	12:46	2	B	40	80	150	Standard
07/12/2021	White-tailed eagle	8	12:32	1	B	90	90	180	Standard
20/12/2021	Golden eagle	9	09:36	1	B	203	203	20	Standard
20/12/2021	Red kite	10	13:14	1	B	76	76	70	Standard
20/12/2021	White-tailed eagle	9	11:04	1	A	92	0	3	Standard
22/12/2021	Golden eagle	8	12:22	1	B	8	8	120	Incidental
22/12/2021	Golden eagle	8	12:22	1	B	3	3	120	Incidental
22/12/2021	Golden eagle	8	12:22	1	B	39	39	120	Standard
22/12/2021	Golden eagle	8	12:24	1	C	93	0	250	Incidental
22/12/2021	Red kite	8	11:52	1	B	56	56	60	Standard
22/12/2021	Red kite	8	11:52	1	B	10	10	60	Incidental
18/03/2022	Golden eagle	8	12:06	1	B	103	103	95	Incidental
18/03/2022	Golden eagle	8	12:06	1	B	49	49	180	Incidental
18/03/2022	Woodcock	8	12:02	1	A	7	0	8	Incidental
25/03/2022	Greylag goose	9	11:30	14	B	66	924	190	Standard
25/03/2022	Pink-footed goose	9	11:21	73	C	133	0	250	Standard
25/03/2022	Red kite	9	10:26	1	B	21	21	30	Standard
25/03/2022	White-tailed eagle	9	11:02	1	B	186	186	170	Standard
25/03/2022	White-tailed eagle	9	11:02	1	C	167	0	300	Standard
30/03/2022	Curlew	8	10:10	1	B	26	26	50	Standard
30/03/2022	Curlew	8	10:10	1	B	21	21	50	Incidental
30/03/2022	Golden eagle	8	10:55	1	B	346	346	100	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
30/03/2022	Golden eagle	8	10:55	1	B	83	83	100	Incidental
30/03/2022	Golden eagle	8	11:03	1	B	46	46	50	Incidental
30/03/2022	Golden eagle	8	11:53	1	B	157	157	70	Incidental
30/03/2022	Red kite	8	11:45	1	B	25	25	100	Standard
31/03/2022	Golden eagle	9	10:50	1	B	20	20	65	Incidental
31/03/2022	Golden eagle	9	10:50	1	B	95	95	30	Standard
01/04/2022	Golden eagle	9	14:23	1	B	24	24	220	Standard
01/04/2022	Golden eagle	9	14:41	1	B	73	73	140	Standard
01/04/2022	Golden eagle	9	14:41	1	B	9	9	200	Standard
01/04/2022	Golden eagle	9	16:02	1	B	28	28	120	Incidental
26/04/2022	Curlew	10	11:40	1	A	9	0	15	Standard
26/04/2022	Golden eagle	9	13:34	1	B	172	172	40	Standard
26/04/2022	Golden eagle	9	13:34	1	B	37	37	85	Standard
26/04/2022	Golden eagle	9	13:34	1	B	65	65	185	Standard
26/04/2022	Red kite	9	13:19	1	B	64	64	100	Standard
26/04/2022	Red kite	9	13:19	1	B	31	31	165	Standard
26/04/2022	Red kite	9	13:19	1	B	117	117	180	Standard
27/04/2022	Curlew	8	09:04	2	B	4	8	30	Incidental
27/04/2022	Curlew	8	09:04	2	B	8	16	25	Standard
27/04/2022	Curlew	8	09:36	1	B	17	17	25	Standard
27/04/2022	Curlew	8	10:27	2	B	39	78	35	Standard
27/04/2022	Curlew	8	11:27	1	B	12	12	45	Standard
27/04/2022	Curlew	8	11:29	1	B	8	8	20	Standard
27/04/2022	Curlew	8	11:44	1	A	4	0	15	Standard
27/04/2022	Curlew	8	11:44	1	B	12	12	45	Standard
27/04/2022	Curlew	8	11:44	1	B	8	8	60	Standard
27/04/2022	Lapwing	8	08:58	1	A	7	0	12	Incidental
28/04/2022	Curlew	8	14:11	1	A	3	0	8	Standard
28/04/2022	Curlew	8	14:11	1	B	8	8	20	Standard
28/04/2022	Curlew	8	15:17	1	A	3	0	12	Standard
28/04/2022	Curlew	8	15:17	1	B	18	18	40	Standard
28/04/2022	Lapwing	8	12:50	2	A	7	0	8	Incidental
28/04/2022	Lapwing	8	12:50	2	B	6	12	30	Incidental
28/04/2022	Lapwing	8	13:25	1	A	4	0	4	Standard
28/04/2022	Lapwing	8	13:25	1	A	6	0	8	Standard
28/04/2022	Lapwing	8	13:25	1	B	2	2	25	Standard
28/04/2022	Lapwing	8	13:31	1	A	7	0	8	Standard
28/04/2022	Lapwing	8	14:55	1	A	4	0	18	Standard
28/04/2022	Lapwing	8	14:55	1	B	8	8	35	Standard
28/04/2022	Lapwing	8	15:53	2	B	19	38	40	Standard
19/05/2022	Curlew	8	11:14	1	A	8	0	15	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
19/05/2022	Golden plover	10	09:17	1	A	6	0	5	Incidental
19/05/2022	Hen harrier	10	11:46	2	B	34	68	140	Standard
03/06/2022	Curlew	9	11:04	2	A	10	0	15	Standard
03/06/2022	Red kite	10	12:40	1	A	15	0	18	Incidental
03/06/2022	Red kite	10	14:15	1	A	33	0	18	Standard
03/06/2022	Red kite	10	14:35	1	A	33	0	15	Standard
03/06/2022	Red kite	10	14:35	1	B	34	34	35	Standard
03/06/2022	Red kite	10	14:55	1	A	34	0	15	Incidental
03/06/2022	Red kite	10	14:55	1	B	80	80	40	Incidental
09/06/2022	Curlew	9	09:21	2	B	551	1102	50	Standard
09/06/2022	Curlew	9	09:30	1	B	233	233	50	Standard
09/06/2022	Curlew	9	09:30	1	B	47	47	50	Standard
09/06/2022	Golden eagle	9	09:21	2	B	551	1102	50	Standard
09/06/2022	Golden eagle	9	09:30	1	B	47	47	50	Standard
09/06/2022	Golden eagle	9	09:30	1	B	71	71	50	Standard
09/06/2022	Golden eagle	9	09:42	1	B	138	138	50	Standard
09/06/2022	Red kite	9	12:13	1	B	91	91	20	Standard
09/06/2022	Red kite	10	13:07	1	A	48	0	15	Standard
09/06/2022	Red kite	10	13:07	1	B	73	73	25	Standard
05/07/2022	Kestrel	9	14:25	1	A	15	0	5	Standard
05/07/2022	Kestrel	9	14:25	1	B	198	198	50	Standard
05/07/2022	Kestrel	9	14:40	1	A	60	0	10	Standard
05/07/2022	Red kite	9	14:40	1	B	96	96	25	Standard
05/07/2022	Red kite	9	14:50	4	B	226	904	180	Incidental
05/07/2022	Red kite	10	10:40	1	B	60	60	30	Incidental
05/07/2022	Red kite	10	10:40	1	B	75	75	30	Standard
11/07/2022	Curlew	8	15:32	2	A	9	0	8	Standard
11/07/2022	Golden eagle	8	14:57	1	B	28	28	50	Standard
19/07/2022	Golden eagle	8	13:03	1	C	356	0	230	Incidental
19/07/2022	Golden eagle	8	13:03	1	B	422	422	200	Standard
19/07/2022	Golden plover	8	10:55	1	A	12	0	2	Standard
19/07/2022	Red kite	8	12:05	1	B	295	295	50	Standard
19/07/2022	Red kite	8	12:48	1	A	78	0	15	Standard
19/07/2022	Red kite	8	12:48	1	B	182	182	30	Standard
05/08/2022	Red kite	10	11:55	1	B	76	76	50	Standard
09/08/2022	Curlew	8	10:07	1	A	0	0	0	Standard
09/08/2022	Curlew	8	10:07	1	A	4	0	10	Standard
09/08/2022	Curlew	8	10:07	1	B	19	19	40	Standard
09/08/2022	Golden plover	8	09:52	1	H	0	0		Standard
09/08/2022	Red kite	8	09:57	1	A	25	0	15	Incidental
09/08/2022	Red kite	8	09:57	1	A	150	0	15	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
09/08/2022	Red kite	8	09:57	1	B	24	24	30	Incidental
11/08/2022	Red kite	8	15:30	1	B	147	147	150	Standard
11/08/2022	Red kite	8	15:50	1	A	29	0	15	Incidental
11/08/2022	Red kite	8	15:55	1	B	15	15	20	Standard
11/08/2022	Red kite	8	15:55	1	B	35	35	80	Standard
11/08/2022	Red kite	8	15:55	1	B	70	70	200	Standard
11/08/2022	Red kite	8	16:10	1	B	150	150	50	Incidental
12/08/2022	Red kite	8	14:27	1	B	273	273	150	Standard
12/08/2022	Red kite	8	14:27	1	B	203	203	180	Standard
12/08/2022	Red kite	8	14:29	1	B	144	144	150	Standard
12/08/2022	Red kite	8	14:52	1	B	209	209	140	Standard
12/08/2022	Red kite	8	15:34	1	B	259	259	150	Standard
12/08/2022	Red kite	8	15:34	1	B	122	122	140	Standard
12/08/2022	Red kite	8	15:34	1	B	165	165	180	Standard
17/08/2022	Hen harrier	8	09:17	1	A	25	0	10	Standard
17/08/2022	Red kite	8	09:16	1	A	70	0	10	Standard
17/08/2022	Red kite	8	09:16	1	A	48	0	15	Standard
17/08/2022	Red kite	8	09:16	1	B	21	21	25	Standard
17/08/2022	Red kite	8	10:36	5	B	62	310	35	Standard
26/08/2022	Golden plover	10	10:29	1	H	0	0		Standard
26/08/2022	Red kite	9	16:40	1	B	58	58	35	Standard
26/08/2022	Red kite	9	16:41	1	A	97	0	18	Standard
26/08/2022	Red kite	9	16:47	1	B	37	37	31	Standard
26/08/2022	White-tailed eagle	10	11:08	1	A	17	0	18	Standard
26/08/2022	White-tailed eagle	10	11:09	1	B	69	69	140	Standard
26/08/2022	White-tailed eagle	10	11:12	1	B	14	14	100	Standard
26/08/2022	White-tailed eagle	10	11:12	1	B	158	158	185	Standard

* Standard record type means that the bird was observed during the duration of the vantage point watch and was within the viewshed of the VP (formed from a 180° arc centred on a predetermined view bearing out to a distance of 2km).

Incidental record type means that the bird was observed outwith the duration of the vantage point watch and / or was beyond the 2km limit.

Table 35: VP Flight Line Details (January – December 2023)

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
10/01/2023	Golden eagle	13	12:23	1	B	67	67	30	Standard
10/01/2023	Red kite	13	11:25	1	A	27	0	15	Incidental
10/01/2023	Red kite	13	11:25	1	B	52	52	50	Standard
10/01/2023	Red kite	13	11:37	1	B	32	32	65	Standard
30/01/2023	Merlin	13	09:07	1	A	23	0	10	Incidental
15/02/2023	Golden plover	12	15:15	2	A	5	0	5	Incidental
21/02/2023	Golden plover	12	13:37	3	A	9	0	8	Incidental
21/02/2023	White-tailed eagle	13	09:58	1	B	983	983	45	Standard
22/02/2023	Golden plover	12	08:55	2	A	5	0	4	Incidental
09/03/2023	Golden plover	13	13:48	1	B	5	5	32	Standard
09/03/2023	Golden plover	13	13:57	2	A	4	0	6	Standard
09/03/2023	Golden plover	13	13:57	2	B	6	12	52	Standard
09/03/2023	Golden plover	13	13:57	2	B	19	38	96	Standard
09/03/2023	Golden plover	13	13:57	2	B	14	28	193	Standard
09/03/2023	Golden plover	13	16:26	3	A	4	0	6	Standard
30/03/2023	Golden plover	12	11:10	2	A	3	0	3	Incidental
29/05/2023	Golden plover	12	13:41	1	A	11	0	5	Standard
29/05/2023	Red kite	13	11:56	1	A	21	0	19	Standard
29/05/2023	Red kite	13	11:56	1	A	22	0	17	Standard
29/05/2023	Red kite	13	11:56	1	B	31	31	43	Standard
29/05/2023	Red kite	13	11:56	1	B	83	83	93	Standard
30/05/2023	Golden plover	12	09:50	1	A	22	0	11	Incidental
30/05/2023	Golden plover	12	10:21	1	A	4	0	17	Standard
30/05/2023	Golden plover	12	10:21	1	A	2	0	17	Standard
30/05/2023	Golden plover	12	10:21	1	B	21	21	45	Standard
30/05/2023	Golden plover	12	13:03	1	A	10	0	6	Incidental
23/06/2023	Golden eagle	13	11:45	1	B	120	120	120	Standard
23/06/2023	Golden eagle	13	11:45	1	B	60	60	200	Standard
23/06/2023	Goshawk	13	11:10	1	B	140	140	120	Standard
11/07/2023	Red kite	12	12:35	1	A	15	0	15	Standard
11/07/2023	Red kite	12	12:35	1	B	95	95	60	Standard
11/07/2023	Red kite	12	12:38	1	A	3	0	10	Standard
11/07/2023	Red kite	12	12:38	1	B	20	20	80	Standard
11/07/2023	Red kite	12	12:38	1	B	95	95	220	Standard
11/07/2023	Red kite	12	12:50	2	B	110	220	80	Standard
11/07/2023	Red kite	12	12:50	2	C	224	0	250	Standard
11/07/2023	Red kite	12	12:51	1	B	12	12	120	Standard
24/08/2023	Red kite	13	15:11	1	B	70	70	160	Incidental
24/08/2023	White-tailed	13	18:22	1	B	187	187	156	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height	Average Height (m)	Record Type*
	eagle								
24/08/2023	White-tailed eagle	13	18:22	1	C	90	0	223	Standard
06/09/2023	Greenshank	12	15:25	2	A	49	0	16	Standard
14/09/2023	Greylag goose	13	11:26	35	B	123	4305	200	Standard
16/10/2023	Red kite	13	12:50	2	B	120	240	30	Standard
16/10/2023	Red kite	13	15:14	1	B	300	300	30	Standard
16/10/2023	Red kite	13	15:14	1	B	300	300	30	Standard
16/10/2023	White-tailed eagle	13	14:25	1	B	4	4	50	Standard
17/10/2023	Golden eagle	12	11:40	1	B	50	50	75	Standard
17/10/2023	Red kite	12	15:45	1	A	45	0	10	Standard
17/10/2023	Red kite	12	15:45	1	B	45	45	50	Standard
17/10/2023	White-tailed eagle	12	11:02	1	A	4	0	10	Standard

* Standard record type means that the bird was observed during the duration of the vantage point watch and was within the viewshed of the VP (formed from a 180° arc centred on a predetermined view bearing out to a distance of 2km).

Incidental record type means that the bird was observed outwith the duration of the vantage point watch and / or was beyond the 2km limit.

Appendix E. Conservation Status of all Recorded Bird Species

Table 36: Conservation Status of all Recorded Bird Species

Species	Scientific Name	Annex 1	Schedule 1	Scottish Priority Species	Birds of Conservation Concern	Breeding Bird survey	Breeding Raptor survey	Vantage Point survey
Bean goose	<i>Anser fabalis</i>			Yes	Amber			Yes
Black grouse	<i>Lyrurus tetrix</i>			Yes	Red	Yes		

Species	Scientific Name	Annex 1	Schedule 1	Scottish Priority Species	Birds of Conservation Concern	Breeding Bird survey	Breeding Raptor survey	Vantage Point survey
Blackbird	<i>Turdus merula</i>					Yes		
Black-headed gull	<i>Chroicocephalus ridibundus</i>			Yes	Amber	Yes		Yes
Blue tit	<i>Cyanistes caeruleus</i>					Yes		
Brambling	<i>Fringilla montifringilla</i>		Yes	Yes		Yes		
Brent Goose	<i>Branta bernicla</i>				Amber	Yes		
Buzzard	<i>Buteo buteo</i>					Yes	Yes	Yes
Canada goose	<i>Branta canadensis</i>							Yes
Carrion crow	<i>Corvus corone</i>					Yes		
Chaffinch	<i>Fringilla coelebs</i>					Yes		
Chiffchaff	<i>Phylloscopus collybita</i>					Yes		
Coal tit	<i>Periparus ater</i>					Yes		
Collared dove	<i>Streptopelia decaocto</i>					Yes		
Common gull	<i>Larus canus</i>				Amber	Yes		Yes
Common tern	<i>Sterna hirundo</i>	Yes		Yes	Amber			Yes
Cuckoo	<i>Cuculus canorus</i>			Yes	Red	Yes		Yes
Curlew	<i>Numenius arquata</i>			Yes	Red	Yes		Yes
Dipper	<i>Cinclus cinclus</i>				Amber	Yes		
Dunlin	<i>Calidris alpina</i>		Yes	Yes	Red	Yes		
Dunnock	<i>Prunella modularis</i>			Yes	Amber	Yes		
Fulmar	<i>Fulmarus glacialis</i>				Amber			Yes
Garden warbler	<i>Sylvia borin</i>					Yes		
Goldcrest	<i>Regulus regulus</i>					Yes		
Golden eagle	<i>Aquila chrysaetos</i>	Yes	Yes	Yes		Yes	Yes	Yes
Golden plover	<i>Pluvialis apricaria</i>	Yes		Yes		Yes		Yes
Goldfinch	<i>Carduelis carduelis</i>					Yes		
Goosander	<i>Mergus merganser</i>							Yes
Goshawk	<i>Accipiter gentilis</i>		Yes					Yes
Great Black-backed gull	<i>Larus marinus</i>				Amber			Yes
Great tit	<i>Parus major</i>					Yes		
Green sandpiper	<i>Tringa ochropus</i>		Yes	Yes	Amber			Yes
Grey heron	<i>Ardea cinerea</i>					Yes		Yes
Grey wagtail	<i>Motacilla cinerea</i>				Amber	Yes		
Greylag goose	<i>Anser anser</i>				Amber	Yes		Yes
Hen harrier	<i>Circus cyaneus</i>	Yes	Yes	Yes	Red	Yes	Yes	Yes
Herring gull	<i>Larus argentatus</i>			Yes	Red	Yes		Yes
House martin	<i>Delichon urbica</i>				Red	Yes		

Species	Scientific Name	Annex 1	Schedule 1	Scottish Priority Species	Birds of Conservation Concern	Breeding Bird survey	Breeding Raptor survey	Vantage Point survey
Iceland gull	<i>Larus glaucooides</i>				Amber			Yes
Kestrel	<i>Falco tinnunculus</i>			Yes	Amber	Yes	Yes	Yes
Lapwing	<i>Vanellus vanellus</i>			Yes	Red	Yes		Yes
Lesser Black-backed gull	<i>Larus fuscus</i>				Amber			Yes
Lesser redpoll	<i>Acanthis cabaret</i>			Yes		Yes		
Lesser whitethroat	<i>Sylvia curruca</i>					Yes		
Little Ringed plover	<i>Charadrius dubius</i>		Yes					Yes
Mallard	<i>Anas platyrhynchos</i>				Amber	Yes		Yes
Merlin	<i>Falco columbarius</i>	Yes	Yes	Yes	Red		Yes	Yes
Mistle thrush	<i>Turdus viscivorus</i>				Red	Yes		
Mute swan	<i>Cygnus olor</i>							Yes
Osprey	<i>Pandion haliaetus</i>	Yes	Yes	Yes	Amber	Yes	Yes	Yes
Oystercatcher	<i>Haematopus ostralegus</i>				Amber	Yes		Yes
Peregrine	<i>Falco peregrinus</i>	Yes	Yes	Yes		Yes		Yes
Pheasant	<i>Phasianus colchicus</i>					Yes		
Pied wagtail	<i>Motacilla alba</i>					Yes		
Pink-footed goose	<i>Anser brachyrhynchus</i>				Amber			Yes
Ptarmigan	<i>Lagopus mutus</i>	Yes			Red	Yes		
Raven	<i>Corvus corax</i>					Yes		Yes
Red grouse	<i>Lagopus lagopus scoticus</i>			Yes		Yes		Yes
Red kite	<i>Milvus milvus</i>	Yes	Yes	Yes		Yes	Yes	Yes
Red-legged partridge	<i>Alectoris rufa</i>					Yes		
Redshank	<i>Tringa totanus</i>				Amber	Yes		Yes
Ring ouzel	<i>Turdus torquatus</i>			Yes	Red	Yes		
Robin	<i>Erithacus rubecula</i>					Yes		Yes
Rook	<i>Corvus frugilegus</i>				Amber	Yes		
Sand martin	<i>Riparia riparia</i>					Yes		
Short-eared owl	<i>Asio flammeus</i>	Yes		Yes	Amber			Yes
Skylark	<i>Alauda arvensis</i>			Yes	Red	Yes		
Snipe	<i>Gallinago gallinago</i>				Amber	Yes		Yes
Song thrush	<i>Turdus philomelos</i>			Yes	Amber	Yes		
Sparrowhawk	<i>Accipiter nisus</i>				Amber	Yes		Yes
Spotted flycatcher	<i>Muscicapa striata</i>			Yes	Red	Yes		
Stonechat	<i>Saxicola rubicola</i>					Yes		

Species	Scientific Name	Annex 1	Schedule 1	Scottish Priority Species	Birds of Conservation Concern	Breeding Bird survey	Breeding Raptor survey	Vantage Point survey
Swallow	<i>Hirundo rustica</i>					Yes		
Swift	<i>Apus apus</i>				Red	Yes		
Teal	<i>Anas crecca</i>				Amber	Yes		
Treecreeper	<i>Certhia familiaris</i>					Yes		
Tufted duck	<i>Aythya fuligula</i>					Yes		
Unidentified gull	<i>Larus sp.</i>							Yes
Unidentified wader								Yes
Wheatear	<i>Oenanthe oenanthe</i>				Amber	Yes		
Whimbrel	<i>Numenius phaeopus</i>		Yes		Red	Yes		
Whinchat	<i>Saxicola rubetra</i>				Red	Yes		
White-tailed eagle	<i>Haliaeetus albicilla</i>	Yes	Yes	Yes	Amber	Yes	Yes	Yes
Whitethroat	<i>Sylvia communis</i>				Amber	Yes		
Wigeon	<i>Anas penelope</i>				Amber	Yes		
Willow warbler	<i>Phylloscopus trochilus</i>				Amber	Yes		
Woodcock	<i>Scolopax rusticola</i>			Yes	Red	Yes		Yes
Woodpigeon	<i>Columba palumbus</i>				Amber	Yes		
Wren	<i>Troglodytes troglodytes</i>				Amber	Yes		

Appendix F. Vantage Point Survey Ground and Heard-Only Registrations of Target Species

Table 37: Point Registrations from VP Surveys (September 2020 – August 2022)

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	Average Height (m)	Record Type*
01/10/2020	Red kite	8	12:25	1	Ground	Present	-1	Standard
17/12/2020	Red kite	8	13:27	1	Ground	Present	-1	Standard
05/03/2021	Golden plover	8	09:27	1	Heard only	Present	-1	Standard
09/03/2021	Golden plover	8	10:06	1	Heard only	Present	-1	Standard
22/03/2021	Golden plover	10	13:01	1	Heard only	Present	-1	Standard
22/03/2021	Golden plover	10	15:15	1	Heard only	Present	-1	Standard
30/03/2021	Golden plover	8	10:59	1	Heard only	Present	-1	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	Average Height (m)	Record Type*
15/04/2021	Golden plover	9	15:02	1	Heard only	Present	-1	Standard
16/04/2021	Curlew	8	14:21	1	Heard only	Present	-1	Standard
19/04/2021	Golden plover	9	09:17	2	Ground	Present	-1	Standard
28/04/2021	Golden plover	10	09:34	1	Heard only	Present	-1	Standard
14/05/2021	Golden plover	10	09:11	1	Heard only	Present	-1	Standard
07/06/2021	Curlew	8	18:03	1	Heard only	Present	-1	Standard
07/06/2021	Lapwing	8	17:31	1	Ground	Present	-1	Standard
23/06/2021	Golden plover	9	10:57	1	Heard only	Present	-1	Standard
23/06/2021	Golden plover	10	15:20	1	Heard only	Present	-1	Standard
23/06/2021	Red kite	10	15:30	1	Ground	Present	-1	Standard
23/06/2021	Snipe	9	10:41	1	Heard only	Present	-1	Standard
24/06/2021	Golden plover	10	09:50	1	Heard only	Present	-1	Standard
19/07/2021	Golden plover	9	11:32	1	Heard only	Present	-1	Standard
19/07/2021	Golden plover	9	11:41	1	Heard only	Present	-1	Standard
19/07/2021	Golden plover	9	11:56	1	Heard only	Present	-1	Standard
19/07/2021	Golden plover	9	13:05	1	Heard only	Present	-1	Standard
20/07/2021	Golden plover	9	14:41	1	Heard only	Present	-1	Standard
20/07/2021	Golden plover	9	15:16	1	Heard only	Present	-1	Standard
20/07/2021	Golden plover	9	15:37	1	Heard only	Present	-1	Standard
20/07/2021	Golden plover	9	16:01	1	Heard only	Present	-1	Standard
20/07/2021	Golden plover	10	10:45	1	Heard only	Present	-1	Standard
20/07/2021	Golden plover	10	11:24	1	Heard only	Present	-1	Standard
20/07/2021	Golden plover	10	12:28	1	Heard only	Present	-1	Standard
22/07/2021	Golden plover	8	14:45	1	Heard only	Present	-1	Standard
31/08/2021	Golden eagle	9	13:05	1	Heard only	Present	-1	Standard
06/10/2021	Golden plover	9	12:46	1	Heard only	Present	-1	Standard
25/03/2022	Golden plover	9	09:56	1	Heard only	Present	-1	Standard
25/03/2022	Snipe	9	08:30	1	Heard only	Present	-1	Standard
01/04/2022	Golden plover	10	10:04	1	Heard only	Present	-1	Standard
01/04/2022	Golden plover	10	10:26	1	Heard only	Present	-1	Standard
13/04/2022	Lapwing	10	13:08	1	Ground	Present	-1	Standard
22/04/2022	Curlew	10	08:51	1	Heard only	Present	-1	Standard
22/04/2022	Golden plover	10	08:52	1	Heard only	Present	-1	Standard
26/04/2022	Curlew	10	11:40	1	Ground	Present	-1	Standard
27/04/2022	Curlew	8	09:28	1	Heard only	Present	-1	Standard
27/04/2022	Curlew	8	11:19	1	Heard only	Present	-1	Standard
27/04/2022	Lapwing	8	09:27	1	Heard only	Present	-1	Standard
27/04/2022	Lapwing	8	09:28	1	Heard only	Present	-1	Standard
28/04/2022	Curlew	8	13:47	1	Heard only	Present	-1	Standard
28/04/2022	Curlew	8	15:17	1	Ground	Present	-1	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	Average Height (m)	Record Type*
28/04/2022	Lapwing	8	13:25	1	Ground	Present	-1	Standard
03/06/2022	Curlew	9	09:30	1	Heard only	Present	-1	Standard
03/06/2022	Curlew	10	15:42	1	Heard only	Present	-1	Standard
03/06/2022	Golden plover	9	09:15	1	Heard only	Present	-1	Standard
03/06/2022	Golden plover	9	09:43	1	Heard only	Present	-1	Standard
03/06/2022	Golden plover	10	15:04	1	Heard only	Present	-1	Standard
03/06/2022	Golden plover	10	15:31	1	Heard only	Present	-1	Standard
03/06/2022	Snipe	9	09:35	1	Heard only	Present	-1	Standard
09/06/2022	Golden plover	9	09:48	1	Heard only	Present	-1	Standard
09/06/2022	Golden plover	10	12:55	1	Heard only	Present	-1	Standard
09/06/2022	Golden plover	10	14:00	1	Heard only	Present	-1	Standard
09/06/2022	Golden plover	10	15:03	1	Heard only	Present	-1	Standard
05/07/2022	Golden plover	10	09:25	1	Heard only	Present	-1	Standard
05/07/2022	Golden plover	10	11:36	1	Heard only	Present	-1	Standard
05/07/2022	Golden plover	10	12:10	1	Ground	Present	-1	Standard
11/07/2022	Golden plover	8	14:18	1	Heard only	Present	-1	Standard
19/07/2022	Golden plover	8	12:07	1	Heard only	Present	-1	Standard
19/07/2022	Golden plover	8	12:50	1	Ground	Present	-1	Standard
12/08/2022	Curlew	8	13:32	1	Heard only	Present	-1	Standard
12/08/2022	Curlew	8	15:08	1	Heard only	Present	-1	Standard
17/08/2022	Curlew	8	11:30	1	Heard only	Present	-1	Standard

* Standard record type means that the bird was observed during the duration of the vantage point watch and was within the viewshed of the VP (formed from a 180° arc centred on a predetermined view bearing out to a distance of 2km).

Incidental record type means that the bird was observed outwith the duration of the vantage point watch and / or was beyond the 2km limit.

Table 38: Point Registrations from VP Surveys (January – December 2023)

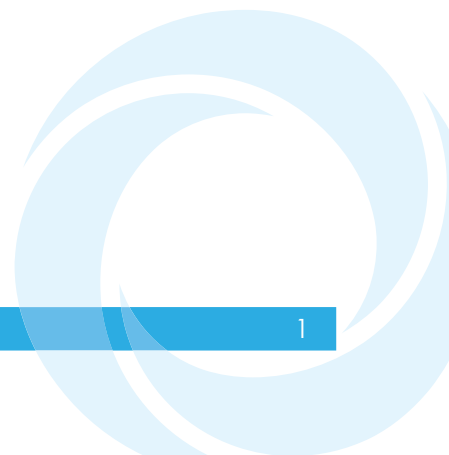
Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	Average Height (m)	Record Type*
22/02/2023	Golden plover	12	09:27	1	Heard only	Present	-1	Standard
22/02/2023	Golden plover	12	11:58	1	Heard only	Present	-1	Standard
09/03/2023	Golden plover	13	10:05	1	Heard only	Present	-1	Incidental
09/03/2023	Golden plover	13	13:48	1	Heard only	Present	-1	Standard
09/03/2023	Golden plover	13	14:01	1	Heard only	Present	-1	Standard
05/04/2023	Ring ouzel	12	14:23	1	Heard only	Present	-1	Standard
06/04/2023	Golden plover	12	10:04	1	Heard only	Present	-1	Standard

Date	Species	VP Number	Time First Observed	Number of Birds	Height Band	Time in Height Band (s)	Average Height (m)	Record Type*
29/05/2023	Cuckoo	13	10:07	1	Heard only	Present	-1	Standard
29/05/2023	Curlew	13	10:25	1	Heard only	Present	-1	Standard
29/05/2023	Golden plover	12	14:26	1	Heard only	Present	-1	Standard
29/05/2023	Red kite	13	11:56	1	Ground	Present	-1	Standard
30/05/2023	Cuckoo	13	14:50	1	Heard only	Present	-1	Standard
30/05/2023	Golden plover	12	10:02	1	Heard only	Present	-1	Standard
30/05/2023	Golden plover	12	10:22	1	Heard only	Present	-1	Standard
22/06/2023	Curlew	13	14:56	1	Heard only	Present	-1	Standard
11/07/2023	Red kite	12	12:38	1	Ground	Present	-1	Standard
18/12/2023	Golden plover	13	09:50	1	Heard only	Present	-1	Standard

* Standard record type means that the bird was observed during the duration of the vantage point watch and was within the viewshed of the VP (formed from a 180° arc centred on a predetermined view bearing out to a distance of 2km).

Incidental record type means that the bird was observed outwith the duration of the vantage point watch and / or was beyond the 2km limit.

Appendix G. Example of CRM Calculations



Collision Risk Model Calculations for Greylag goose (September - May 1900)

Stage 1: Number of birds flying through the rotors per year

Calculate the time the site was observed for and how long birds (as a % area-time activity) were seen in the observation area during this time and bird activity for each vantage point

The survey period for this species is taken as September - May.

VP	Area (Ha)	Time (hours)	Ha hours	Ha seconds (hours x 3600)	Flight time observed in risk window (s)	Bird Activity (flight time/ha-s)
8	440.255	102	44906.01	161661636	34625	2.1418E-04
9	614.825	102	62712.15	225763740	54157	2.3988E-04
10	474.84	99	47009.16	169232976	76421	4.5157E-04
Total	1529.92	303	154627.32	556658352	165203	9.0564E-04

Calculate the average bird observation activity in all areas and the percentage of time birds active within the overall observed area

Mean bird activity = Total bird activity / number of VPs
 Mean bird activity = $0.000905638187569117/3 =$ **3.019E-04**

Overall area covered by VPs (excluding overlap) = 1476.067 ha
 Proportion of time birds active in the area = Overall area (excluding overlaps) in ha x mean bird activity
 Proportion of time birds active in area = $1476.067 \times 0.000301879395856372 =$ **4.4559E-01**

Correct for differences between the recording height band and the actual height swept by the rotors

Corrected bird activity = Proportion of actual height band x Proportion of time birds active in the area

Hub height = 119 m Observed height band max = 220 m
 Rotor radius = 81 m Observed height band min = 20 m

Rotor max height = hub height + rotor radius
 Rotor min height = hub height - rotor radius
 Rotor max height = 200 m
 Rotor min height = 38 m

Proportion of actual height band = $(\text{Rotor max height} - \text{rotor min height}) / (\text{observed height band max} - \text{observed height band min})$
 Proportion of actual height band = $(200 - 38) / (220 - 20)$
 Proportion of actual height band = 0.81

Corrected bird activity = **3.609E-01**

Calculate the number of hours per day the birds are potentially active over a year and the number of hours of bird occupancy in the airspace per year

Hours potentially active are taken as daylight hours only for September - May and then calculated where the day length is a function of latitude and day of the year[1]

Hours potentially active = 2970.80880272825

No. of hours of bird occupancy in the airspace per year = hours potentially active x bird activity
 No. of hours of bird occupancy in the airspace per year = $2970.80880272825 \times 0.360931313504857$
 No. of hours of bird occupancy = 1072.25792

Calculate the flight risk volume

Flight risk volume (Vw) = Overall area (ha) x 10000 x rotor radius (m) x 2
Vw = 1476.067 x 10000 x 81 x 2
Vw = 2391228540 m³

Calculate the combined rotor swept volume

Number of turbines = 18
Maximum chord = 4.6 m
Bird length = 0.82 m

Combined rotor swept volume (Vr) = number of turbines (N) x Pi x r² x (maximum chord + bird length)
Vr = 18 x Pi x 81 x 81 x (4.6 + 0.82)
Vr = 2010905.686 m³

Calculate the bird occupancy in the rotor swept volume

No. of hours of bird occupancy (converted to seconds) x Combined rotor swept volume/Flight risk volume = n x (Vr/Vw)
Bird occupancy in rotor swept volume = 1072.2579233405 x 3600 x 2010905.69/2391228540
Bird occupancy in rotor swept volume = 3246.17839

Calculate the bird transit time through the rotors and the potential number of transits per year

Bird speed = 17.1 m/s

Bird transit time through the rotors = (maximum chord + bird length) /bird speed
Bird transit time through the rotors = (4.6 + 0.82)/17.1
Bird transit time through the rotors = 0.316959064327485 s

No. of transits = bird occupancy in the rotor swept volume/bird transit time
No. of transits = 3246.17839/0.316959064327485
No. of transits = 10241.632929

Stage 2: Collision risk for bird passing through rotor area (assuming no avoidance)

Convert pitch of chord into radians

K: 1D or 3D (0 or 1)	1
No. of blades	3
Maximum chord	4.6 m
Pitch (degrees)	15
Rotor radius	81 m
Rotation Period	4 s

Pitch in radians = pitch (degrees) x Pi/180
Pitch in radians = 15 x Pi/180
Pitch in radians = 0.2618

Calculate the bird aspect ratio

Bird length	0.82 m
Wingspan	1.64 m
Bird speed	17.1 m/s
F:Flapping	1

Bird aspect ratio (b) = bird length/wingspan
Bird aspect ratio (b) = 0.82/1.64
Bird aspect ratio (b) = 0.5

Calculation of alpha and p(collision) as a function of radius

r/R radius	c/C chord	a alpha	Upwind:			Downwind:			check area total
			collide length	p(collision)	contribution from radius r	collide length	p(collision)	contribution from radius r	
0.025	0.575	5.3759	23.2358	1	0.00125	21.867	0.9590635	0.00119883	0.00125
0.075	0.575	1.791967	8.20165	0.3597215	0.00269791	6.8325	0.299671	0.00224753	0.0075
0.125	0.7015	1.07518	5.94976	0.2609542	0.00326193	4.2794	0.1876926	0.00234616	0.0125
0.175	0.8601	0.767986	5.21847	0.2288804	0.00400541	3.1705	0.1390553	0.00243347	0.0175
0.225	0.99435	0.597322	4.80251	0.2106365	0.00473932	2.4348	0.1067908	0.00240279	0.0225
0.275	0.94665	0.488718	4.0027	0.1755571	0.00482782	1.7486	0.076693	0.00210906	0.0275
0.325	0.89895	0.413531	3.54201	0.1553515	0.00504892	1.4015	0.0614689	0.00199774	0.0325
0.375	0.85125	0.358393	3.18903	0.1398698	0.00524512	1.1621	0.0509688	0.00191133	0.0375
0.425	0.80355	0.316229	2.90574	0.1274447	0.0054164	0.9924	0.0435254	0.00184983	0.0425
0.475	0.75585	0.282942	2.67013	0.1171111	0.00556278	0.8704	0.0381734	0.00181324	0.0475
0.525	0.70815	0.255995	2.46859	0.1082714	0.00568425	0.8576	0.0376146	0.00197477	0.0525
0.575	0.66045	0.233735	2.29222	0.1005358	0.00578081	0.9204	0.0403686	0.00232119	0.0575
0.625	0.61275	0.215036	2.13498	0.0936394	0.00585246	0.9641	0.0422834	0.00264271	0.0625
0.675	0.56505	0.199107	1.99262	0.0873957	0.00589921	0.9928	0.0435455	0.00293932	0.0675
0.725	0.51735	0.185376	1.86207	0.0816696	0.00592105	1.0098	0.04429	0.00321103	0.0725
0.775	0.46965	0.173416	1.74103	0.076361	0.00591798	1.0173	0.0446171	0.00345782	0.0775
0.825	0.42195	0.162906	1.62778	0.0713939	0.00589	1.0169	0.0446026	0.00367971	0.0825
0.875	0.37425	0.153597	1.52099	0.0667099	0.00583711	1.0102	0.044305	0.00387669	0.0875
0.925	0.32655	0.145295	1.41959	0.0622629	0.00575932	0.998	0.0437704	0.00404876	0.0925
0.975	0.27885	0.137844	1.32278	0.0580166	0.00565662	0.9812	0.0430351	0.00419593	0.0975
Overall p(collision)			Upwind		0.10025442	Downwind		0.05265791	0.99875

Average probability of collision = (upwind collision total + downwind collision total)/2

Average probability of collision = (0.100254415790051 + 0.0526579116256409)/2

Average probability of collision = 0.076456

Annual collision risk for Greylag goose assuming no avoidance

Annual collision risk = no. of transits per year through the rotors x the average probability of collision

Annual collision risk = 10241.6329291733 x 0.076456

Annual collision risk = 783.035964 birds

Corrected annual collision risk assuming avoidance

Greylag goose avoidance rate = 0.998

Annual collision risk, with avoidance = annual collision risk x (1 - avoidance rate)

Annual collision risk, with avoidance = 783.035963868536 x (1 - 0.998)

Annual collision risk, with avoidance = 1.56607192773707 birds

Corrected for assumed operational downtime of the rotors

Proportion of time wind turbines operational = 0.85

Corrected annual risk = annual risk, with avoidance x proportion of time wind turbines operational

Corrected annual risk = 1.331161 birds

Calculate number of years per collision

Number of years per collision for Greylag goose = 1/corrected annual risk

Number of years per collision for Greylag goose = 1/1.33116113857651

Number of years per collision for Greylag goose = 0.7512

^[1] Forsythe, W. C., Rykiel, E. J., Stahl, R. S., Wu, H. and Schoolfield, R. M., 1995. A model comparison for daylength as a function of latitude and day of year. *Ecological Modelling* Vol 80, Issue 1, 87-95