Appendix 7.2 – Winter 2022/23 Bird Survey Report

Table of Contents

Table of Figures

Table of Tables

A7.2.1 INTRODUCTION

This appendix includes the detailed methods and results for the vantage point surveys carried out in the winter of 2022/23.

A7.2.2 METHODS

Vantage point surveys were carried out between October 2022 and March 2023.

These surveys covered vantage points BM1-BM9 and KN1-KN4. The vantage point locations and viewsheds are shown in Figure A7.2.1 – Figure A7.2.3.

The surveys timed the duration of the flight activity by the target species in the following height bands: 0-20 m, 20-50 m, 50-100 m, 100-180 m, and > 180 m.

The monthly distribution of vantage point survey hours at each vantage point is shown in Table A7.2.1.

Table A7.2.1. Monthly distribution of vantage point survey hours at each vantage point, winter 2022/23.

VP	Oct	Nov	Dec	Jan	Feb	Mar
BM1	6	6	6	6	6	6
BM2	3	9	6	6	6	6
BM3	6	6	6	6	6	6
BM4	6	6	6	6	6	6
BM5	6	6	6	6	6	6
BM6	6	6	6	6	6	6
BM7	6	6	6	6	6	6
BM8	6	3	3	9	6	6
BM9	6.8	6	3	9	6	6
KN1	6	6	6	6	6	6
KN2	6	6	6	6	6	6
KN3	6	6	6	6	6	6
KN4	6	6	6	6	6	6

The data from vantage points BM1, BM7 and KN2 were not used for collision risk modelling (see Appendix 7.3).

The dates, timings and weather conditions of the vantage point watches used for collision risk modelling are shown in Table A7.2.2.

Table A7.2.2. Dates, timings and weather conditions of the vantage point watches used for collision risk modelling, winter 2022/23.

Date	VP	Watch	Start time	Finish time	Wind	Cloud	Visibility	Rain
2022-10-20	BM2	1	10:25	13:25	E4	66-100	4	1

Date	VP	Watch	Start time	Finish time	Wind	Cloud	Visibility	Rain
2022-11-02	BM2	1	14:40	17:40	SW7	66-100	5	3
2022-11-03	BM2	1	14:25	17:25	NA5	66-100	3	2
2022-11-07	BM2	1	09:10	12:10	SSW5	66-100	4	4
2022-12-18	BM2	1	14:00	17:00	S5	66-100	5	3
2022-12-23	BM2	1	08:50	11:50	SW3	66-100	5	3
2023-01-07	BM2	1	12:50	15:50	SW5	66-100	5	3
2023-01-12	BM2	1	08:30	11:30	WSW4	33-66	5	3
2023-02-07	BM2	1	11:55	14:55	SW2	66-100	5	1
2023-02-12	BM2	1	09:30	12:30	SE5	66-100	5	1
2023-03-01	BM2	1	14:25	17:25	NE2	66-100	5	1
2023-03-06	BM2	1	10:00	13:00	W2	66-100	3	5
2022-10-04	BM3	1	09:40	12:40	SW2	66-100	4	2
2022-10-20	BM3	1	14:00	17:00	ESE4	66-100	5	2
2022-11-03	BM3	1	09:30	12:30	NW3	33-66	5	3
2022-11-07	BM3	1	12:40	15:40	S5	66-100	4	4
2022-12-19	BM3	1	09:20	12:20	SSE6	33-66	5	2
2022-12-23	BM3	1	12:15	15:15	SW3	66-100	5	1
2023-01-08	BM3	1	09:40	12:40	SW3	33-66	5	3
2023-01-12	BM3	1	11:55	14:55	WSW4	33-66	5	3
2023-02-08	BM3	1	08:35	11:35	SW2	66-100	5	1
2023-02-12	BM3	1	13:00	16:00	SE5	0-33	5	1
2023-03-02	BM3	1	09:10	12:10	NE3	66-100	5	1
2023-03-06	BM3	1	13:25	16:25	W2	66-100	3	3
2022-10-04	BM4	1	13:05	16:05	SW2	66-100	3	3
2022-10-21	BM4	1	11:30	14:30	S6	66-100	5	4
2022-11-03	BM4	1	13:00	16:00	NW3	66-100	5	3
2022-11-08	BM4	1	10:25	13:25	SW3	66-100	5	4
2022-12-19	BM4	1	13:05	16:05	SW5	66-100	5	3
2022-12-24	BM4	1	08:35	11:35	SSW4	66-100	5	1
2023-01-08	BM4	1	13:10	16:10	W3	33-66	5	3
2023-01-13	BM4	1	09:10	12:10	W2	0-33	5	1
2023-02-08	BM4	1	12:00	15:00	SW3	66-100	5	1
2023-02-14	BM4	1	07:55	10:55	S4	66-100	5	3
2023-03-02	BM4	1	12:35	15:35	NE3	66-100	5	2
2023-03-07	BM4	1	09:15	12:15	N2	66-100	5	1
2022-10-05	BM5	1	09:45	12:45	W2	66-100	5	3
2022-10-21	BM5	1	14:55	17:55	S6	66-100	4	4
2022-11-04	BM5	1	09:10	12:10	W2	0-33	5	1

Date	VP	Watch	Start time	Finish time	Wind	Cloud	Visibility	Rain
2022-11-08	BM5	1	13:30	16:30	SW3	0-33	5	1
2022-12-20	BM5	1	09:35	12:35	SW4	0-33	5	4
2022-12-24	BM5	1	11:50	14:50	SE3	66-100	5	4
2023-01-09	BM5	1	09:15	12:15	WNW3	0-33	5	3
2023-01-13	BM5	1	12:40	15:40	W2	0-33	5	1
2023-02-09	BM5	1	09:25	12:25	W2	0-33	5	1
2023-02-15	BM5	1	12:25	15:25	SW3	66-100	5	1
2023-03-03	BM5	1	08:55	11:55	N2	66-100	5	1
2023-03-07	BM5	1	12:45	15:45	NE3	33-66	5	1
2022-10-05	BM6	1	13:10	16:10	W2	33-66	5	1
2022-10-22	BM6	1	10:50	13:50	S3	66-100	5	3
2022-11-04	BM6	1	12:35	15:35	WSW3	66-100	5	1
2022-11-09	BM6	1	09:35	12:35	WSW2	66-100	5	1
2022-12-20	BM6	1	13:05	16:05	SW4	0-33	5	1
2022-12-27	BM6	1	09:10	12:10	SW6	66-100	5	3
2023-01-09	BM6	1	13:15	16:15	WNW4	33-66	5	3
2023-01-14	BM6	1	09:10	12:10	W2	0-33	5	1
2023-02-09	BM6	1	13:00	16:00	SW3	0-33	5	1
2023-02-15	BM6	1	08:40	11:40	SW2	66-100	5	1
2023-03-03	BM6	1	12:25	15:25	NE3	66-100	5	1
2023-03-08	BM6	1	08:00	11:00	NE4	66-100	5	1
2022-10-06	BM8	1	13:10	16:10	W2	66-100	5	3
2022-10-23	BM8	1	09:20	12:20	S2	66-100	5	1
2022-11-05	BM8	1	14:10	17:10	SW3	0-33	5	1
2022-12-21	BM8	1	13:10	16:10	SW2	0-33	5	3
2023-01-02	BM8	1	08:20	11:20	S2	0-33	5	1
2023-01-10	BM8	1	13:00	16:00	SW5	66-100	3	3
2023-01-15	BM8	1	08:20	11:20	W3	33-66	5	3
2023-02-10	BM8	1	13:05	16:05	SW3	66-100	5	1
2023-02-16	BM8	1	08:35	11:35	W3	33-66	5	1
2023-03-04	BM8	1	13:50	16:50	N1	66-100	5	1
2023-03-09	BM8	1	08:45	11:45	E5	66-100	5	3
2022-10-07	BM9	1	08:50	11:50	WSW3	33-66	5	3
2022-10-07	BM9	2	11:50	12:35				
2022-10-23	BM9	1	12:35	15:35	S3	66-100	5	2
2022-11-06	BM9	1	09:55	12:55	SW4	66-100	5	4
2022-11-10	BM9	1	12:10	15:10	SW7	66-100	5	3
2022-12-22	BM9	1	09:20	12:20	NW2	66-100	3	3

Date	VP	Watch	Start time	Finish time	Wind	Cloud	Visibility	Rain
2023-01-02	BM9	1	11:55	14:55	S2	33-66	5	1
2023-01-11	BM9	1	09:30	12:30	SW4	66-100	4	4
2023-01-15	BM9	1	11:35	14:35	W2	33-66	5	3
2023-02-11	BM9	1	09:30	12:30	S2	66-100	5	1
2023-02-16	BM9	1	11:50	14:50	SW3	33-66	5	1
2023-03-05	BM9	1	10:10	13:10	N2	33-66	5	1
2023-03-09	BM9	1	12:10	15:10	E5	66-100	5	4
2022-10-20	KN1	1	11:56	14:56				
2022-10-20	KN1	2	15:26	18:26	SE3	66-100	5	1
2022-11-03	KN1	1	14:13	17:13	NW3	33-66	5	1
2022-11-14	KN1	1	14:00	17:00	S4	66-100	5	1
2022-12-23	KN1	1	13:23	16:23	SW3	33-66	5	1
2022-12-28	KN1	1	13:32	16:32	W5	66-100	5	3
2023-01-22	KN1	1	13:29	16:29	S3	66-100	4	2
2023-01-29	KN1	1	13:35	16:35	W3	33-66	5	1
2023-02-26	KN1	1	13:35	16:35	NE4	66-100	5	1
2023-02-28	KN1	1	13:33	16:33	N3	66-100	5	1
2023-03-17	KN1	1	13:31	16:31	S4	66-100		1
2023-03-19	KN1	1	11:10	14:10	S4	66-100		2
2022-10-25	KN3	1	12:20	15:20	SE5	66-100	5	3
2022-10-31	KN3	1	11:08	14:08	S4	66-100	4	3
2022-11-05	KN3	1	14:25	17:25	S2	0-33	5	1
2022-11-10	KN3	1	10:15	13:15	S5	66-100	5	2
2022-12-03	KN3	1	13:16	16:16	NE1	66-100	5	1
2022-12-06	KN3	1	09:39	12:39	NE3	33-66	5	1
2023-01-09	KN3	1	09:50	12:50	W5	0-33	5	1
2023-01-12	KN3	1	13:25	16:25	SW4	33-66	5	1
2023-02-09	KN3	1	13:31	16:31	W2	0-33	5	1
2023-02-16	KN3	1	13:58	16:58	SW4	66-100	5	1
2023-03-02	KN3	1	13:36	16:36	NE2	66-100	5	3
2023-03-05	KN3	1	13:37	16:37	NW3	66-100	5	1
2022-10-31	KN4	1	07:38	10:38	S4	66-100	4	3
2022-10-31	KN4	2	14:38	17:38	S4	66-100	4	5
2022-11-10	KN4	1	13:45	16:45	S5	66-100	4	2
2022-11-14	KN4	1	10:30	13:30	S4	33-66	5	1
2022-12-03	KN4	1	09:46	12:46	NE2	66-100	5	1
2022-12-06	KN4	1	13:09	16:09	NE3	66-100	5	1
2023-01-09	KN4	1	13:20	16:20	W4	33-66	5	1

Date	VP	Watch	Start time	Finish time	Wind	Cloud	Visibility	Rain
2023-01-12	KN4	1	09:55	12:55	SW4	66-100	5	1
2023-02-09	KN4	1	10:01	13:01	W2	0-33	5	1
2023-02-16	KN4	1	10:28	13:28	SW5	33-66	5	1
2023-03-02	KN4	1	10:06	13:06	NE2	66-100	5	1
2023-03-05	KN4	1	10:07	13:07	NW3	66-100	5	1

Wind = compass direction and Beaufort scale. Cloud = percentage cloud cover. Visibility: 1 = none; 2 = limited; 3 = poor; 4 = moderate; 5 = good. Rain: 1 = none; 2 = drizzle; 3 = light showers; 4 = heavy showers; 4 = persistent.

A7.2.3 RESULTS

The records of target species from the vantage point watches used for collision risk modelling are shown in Table A7.2.3. Each record includes a map reference that can be used to lookup the flightline in the maps in Appendix 7.3.

Table A7.2.3 Records of target species from the winter 2022/23 vantage point surveys, excluding records from the vantage points that were not used in the collision risk modelling.

BTO	VP	Date	Time	Map ref	Number	Flight duration (secs)				
						Band1	Band2	Band3	Band4	Band5
CF	BM8	23/10/2022	12:16	not mapped	1	0	24	0	0	0
GP	BM2	20/10/2022	12:33	1	125	0	0	24	10	0
GP	BM2	02/11/2022	14:56	2	45	0	0	0	55	0
GP	BM2	02/11/2022	15:50	3	40	0	0	20	65	0
GP	BM2	07/11/2022	09:45	4	35	0	0	0	22	0
GP	BM2	18/12/2022	15:30	5	16	0	0	35	0	0
GP	BM2	07/01/2023	13:56	not mapped	34	0	0	0	25	42
GP	BM2	07/02/2023	13:12	6	4	0	0	0	30	0
GP	BM2	01/03/2023	15:28	7	13	9	0	0	0	0
GP	BM5	05/10/2022	12:41	8	1	0	0	0	20	0
GP	BM5	03/03/2023	11:09	9	15	0	0	0	26	0
GP	BM6	05/10/2022	13:53	10	6	0	0	17	0	0
GP	BM6	04/11/2022	13:04	11	19	0	0	32	15	0
GP	BM6	04/11/2022	14:59	12	6	45	70	0	0	0
GP	BM6	20/12/2022	13:07	13	12	0	0	17	0	0
GP	BM6	27/12/2022	09:26	14	48	0	0	0	20	0
GP	BM6	27/12/2022	10:19	15	6	0	0	16	0	0
GP	BM6	09/02/2023	14:53	16	1	0	0	17	0	0
GP	BM8	16/02/2023	12:50	17	45	0	0	0	0	40
GP	BM9	07/10/2022	10:32	18	140	16	0	0	0	0
GP	BM9	10/11/2022	13:17	19	83	0	0	0	36	0
GP	BM9	02/01/2023	13:26	20	125	0	0	70	40	0
GP	KN1	20/10/2022	13:28	21	12	0	10	0	0	0

BTO	VP	Date	Time	Map ref	Number	Flight duration (secs)				
						Band1	Band2	Band3	Band4	Band5
GP	KN3	05/03/2023	14:23	22	15	0	0	35	10	0
HH	BM2	20/10/2022	11:46	23	1	0	55	0	0	0
HH	BM2	01/03/2023	15:28	24	1	125	0	0	0	0
HH	BM2	01/03/2023	16:01	25	1	50	0	0	0	0
HH	BM3	20/10/2022	15:10	26	1	83	0	0	0	0
HH	BM3	12/02/2023	14:37	27	1	26	0	0	0	0
HH	BM4	08/11/2022	10:26	28	1	9	0	0	0	0
HH	BM8	05/11/2022	15:14	29	1	110	28	0	0	0
HH	BM9	23/10/2022	14:07	30	1	175	25	0	0	0
HH	BM9	11/01/2023	10:57	not mapped	1	42	0	0	0	0
HH	KN1	03/11/2022	16:01	31	1	26	0	0	0	0
HH	KN1	14/11/2022	14:05	32	1	25	0	0	0	0
HH	KN3	25/10/2022	13:41	33	1	24	20	0	0	0
HH	KN3	05/11/2022	16:38	34	1	24	0	0	0	0
HH	KN3	02/03/2023	16:26	35	1	16	0	0	0	0
HH	KN4	16/02/2023	12:24	36	1	86	0	0	0	0
HH	KN4	16/02/2023	13:22	37	1	17	5	0	0	0
K.	BM2	20/10/2022	11:46	38	1	0	90	0	0	0
K.	BM2	20/10/2022	12:07	39	1	130	85	0	0	0
K.	BM2	20/10/2022	13:13	40	1	135	70	0	0	0
K.	BM2	02/11/2022	16:44	41	1	22	95	145	0	0
K.	BM2	07/02/2023	12:16	42	1	12	145	180	0	0
K.	BM3	04/10/2022	12:19	43	1	0	11	0	0	0
K.	BM3	20/10/2022	15:10	44	2	205	0	0	0	0
K.	BM3	20/10/2022	15:10	45	2	205	0	0	0	0
K.	BM3	19/12/2022	09:20	46	1	12	67	0	0	0
K.	BM3	23/12/2022	13:37	not mapped	1	0	0	205	0	0
K.	BM3	23/12/2022	13:46	47	1	0	145	215	0	0
K.	BM3	23/12/2022	13:46	48	1	0	145	215	0	0
K.	BM3	12/01/2023	12:41	49	1	45	35	0	0	0
K.	BM3	08/02/2023	09:57	50	1	0	16	0	0	0
K.	BM3	12/02/2023	13:04	51	1	0	82	0	0	0
K.	BM3	12/02/2023	15:25	52	1	0	13	0	0	0
K.	BM3	02/03/2023	11:03	not mapped	1	20	0	0	0	0
K.	BM3	06/03/2023	14:10	53	1	15	0	0	0	0
K.	BM4	21/10/2022	13:13	54	1	60	5	0	0	0
K.	BM4	08/01/2023	14:57	not mapped	1	33	145	0	0	0
K.	BM5	13/01/2023	13:33	55	1	0	0	80	45	0

BTO	VP	Date	Time	Map ref	Number	Flight duration (secs)				
						Band1	Band2	Band3	Band4	Band5
K.	BM5	09/02/2023	11:15	not mapped	1	9	0	0	0	0
K.	BM6	09/11/2022	11:46	56	1	0	83	0	0	0
K.	BM6	20/12/2022	15:48	57	1	0	0	15	0	0
K.	BM6	09/01/2023	13:21	not mapped	1	0	75	30	0	0
K.	BM8	06/10/2022	13:11	58	1	55	0	0	0	0
K.	BM8	21/12/2022	14:44	59	1	12	130	75	70	0
K.	BM8	02/01/2023	10:11	60	1	25	86	0	0	0
K.	BM8	10/01/2023	15:46	not mapped	1	22	35	0	0	0
K.	BM8	15/01/2023	11:11	not mapped	1	0	38	82	0	0
K.	BM8	10/02/2023	14:11	not mapped	1	8	0	0	0	0
K.	BM8	09/03/2023	09:10	not mapped	1	20	33	0	0	0
K.	BM8	09/03/2023	10:09	61	1	0	67	0	0	0
K.	BM9	07/10/2022	10:15	62	1	120	165	90	10	0
K.	BM9	23/10/2022	12:47	63	1	85	190	60	0	0
K.	BM9	23/10/2022	14:36	64	1	120	20	0	0	0
K.	BM9	23/10/2022	14:40	65	1	240	0	0	35	0
K.	BM9	23/10/2022	15:05	66	1	120	420	30	20	0
K.	BM9	06/11/2022	10:08	67	1	0	82	0	0	0
K.	BM9	16/02/2023	12:40	68	1	12	70	25	0	0
K.	BM9	05/03/2023	10:40	69	1	0	145	20	0	0
K.	BM9	05/03/2023	11:41	70	1	0	60	135	0	0
K.	KN1	20/10/2022	13:43	71	1	0	0	50	64	0
K.	KN1	03/11/2022	14:31	72	1	0	50	0	0	0
K.	KN1	03/11/2022	15:02	73	1	0	90	100	0	0
K.	KN1	14/11/2022	14:47	74	1	0	50	100	0	0
K.	KN1	14/11/2022	15:17	75	1	0	120	0	0	0
K.	KN1	28/12/2022	15:47	76	1	0	0	120	90	0
K.	KN1	29/01/2023	16:00	77	1	0	60	180	0	0
K.	KN1	26/02/2023	14:50	78	1	0	50	30	0	0
K.	KN1	17/03/2023	14:02	79	1	0	20	0	0	0
K.	KN1	17/03/2023	14:08	80	1	10	0	0	0	0
K.	KN3	25/10/2022	15:15	81	1	35	0	0	0	0
K.	KN3	05/11/2022	15:54	82	2	0	50	0	0	0
K.	KN3	03/12/2022	14:59	83	1	0	40	33	0	0
K.	KN3	06/12/2022	10:43	84	1	0	240	0	0	0
K.	KN3	06/12/2022	12:39	85	1	0	45	0	0	0

BTO	VP	Date	Time	Map ref	Number	Flight duration (secs)				
						Band1	Band2	Band3	Band4	Band5
K.	KN4	14/11/2022	11:33	86	1	0	45	0	0	0
K.	KN4	14/11/2022	13:04	87	1	0	12	0	0	0
K.	KN4	03/12/2022	12:38	88	1	18	0	0	0	0
K.	KN4	03/12/2022	12:44	89	1	0	70	0	0	0
K.	KN4	06/12/2022	13:23	90	1	0	40	500	0	0
K.	KN4	12/01/2023	11:34	91	1	0	0	70	0	0
ML	BM5	09/01/2023	12:14	not mapped	1	23	0	0	0	0
ML	KN3	10/11/2022	12:57	93	1	23	10	0	0	0
ML	KN3	09/01/2023	11:41	94	1	8	0	0	0	0
PE	BM2	12/01/2023	10:42	95	1	30	390	80	70	0
PE	BM2	12/01/2023	10:44	96	1	30	390	80	70	0
PE	BM4	14/02/2023	10:42	97	1	0	0	95	45	0
PE	BM5	05/10/2022	11:17	98	1	0	0	45	0	0
PE	BM6	15/02/2023	11:21	99	1	36	95	40	0	0
PE	BM8	10/02/2023	15:28	100	1	0	0	0	36	0
PE	BM9	02/01/2023	12:26	101	1	0	0	0	45	0
PE	BM9	05/03/2023	10:11	102	1	0	0	0	32	0
PE	KN1	26/02/2023	14:20	103	1	0	0	0	120	100
SN	BM2	01/03/2023	16:01	104	1	7	15	0	0	0
SN	BM3	20/10/2022	14:02	105	1	7	0	0	0	0
SN	BM3	03/11/2022	10:50	106	2	0	7	0	0	0
SN	BM3	19/12/2022	11:39	107	1	0	12	0	0	0
SN	BM3	08/02/2023	11:30	108	1	0	0	22	0	0
SN	BM4	03/11/2022	15:14	109	1	0	0	0	16	0
SN	BM4	08/11/2022	10:26	110	1	0	24	0	0	0
SN	BM4	08/01/2023	14:18	not mapped	2	8	0	0	0	0
SN	BM4	13/01/2023	12:02	not mapped	1	7	0	0	0	0
SN	BM6	14/01/2023	11:20	111	1	0	12	0	0	0
SN	BM8	23/10/2022	09:28	112	1	0	12	0	0	0
SN	BM8	23/10/2022	10:41	113	1	0	13	0	0	0
SN	BM9	23/10/2022	14:09	114	2	11	12	0	0	0
SN	BM9	23/10/2022	14:09	115	2	11	12	0	0	0
SN	KN1	03/11/2022	14:19	116	1	3	0	0	0	0
SN	KN1	26/02/2023	14:14	117	1	5	0	0	0	0
SN	KN1	28/02/2023	16:17	118	1	8	0	0	0	0
SN	KN4	16/02/2023	12:24	119	1	2	0	0	0	0

BTO codes: CF = Chough, GP = Golden Plover, HH = Hen Harrier, K. = Kestrel, ML = Merlin, PE = Peregrine, and SN = Snipe. The map refs can be used to look up flightlines on the flightline maps in Appendix 7.3. The height bands used for recording flight durations were: 0-20 m (Band1), 20-50 m (Band2), 50-100 m (Band3), 100-180 m (Band4), and > 180 m (Band5).

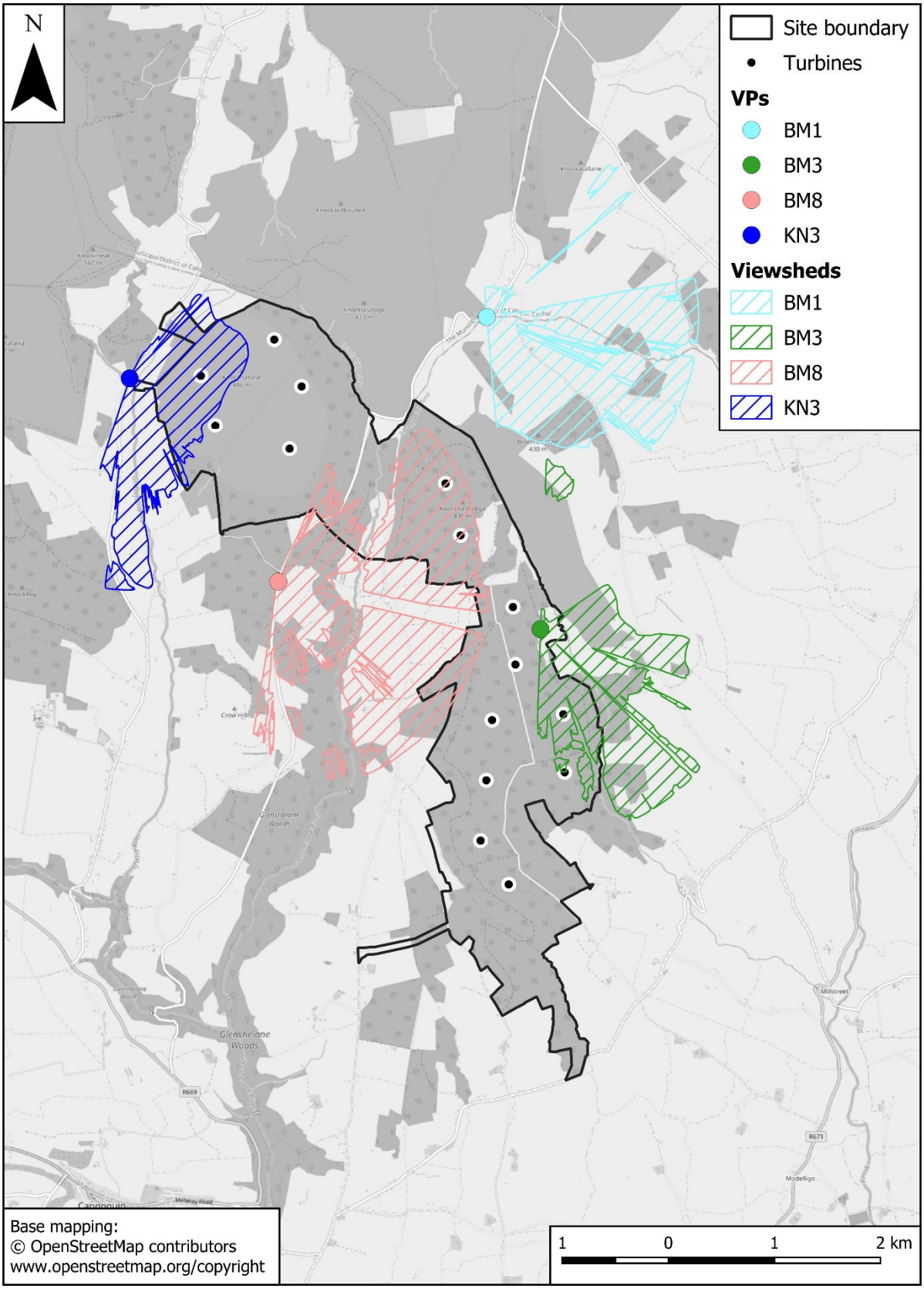

Figure A7.2.1. Viewsheds at 20 m above ground level of VPs BM1, BM3, BM8 and KN3.

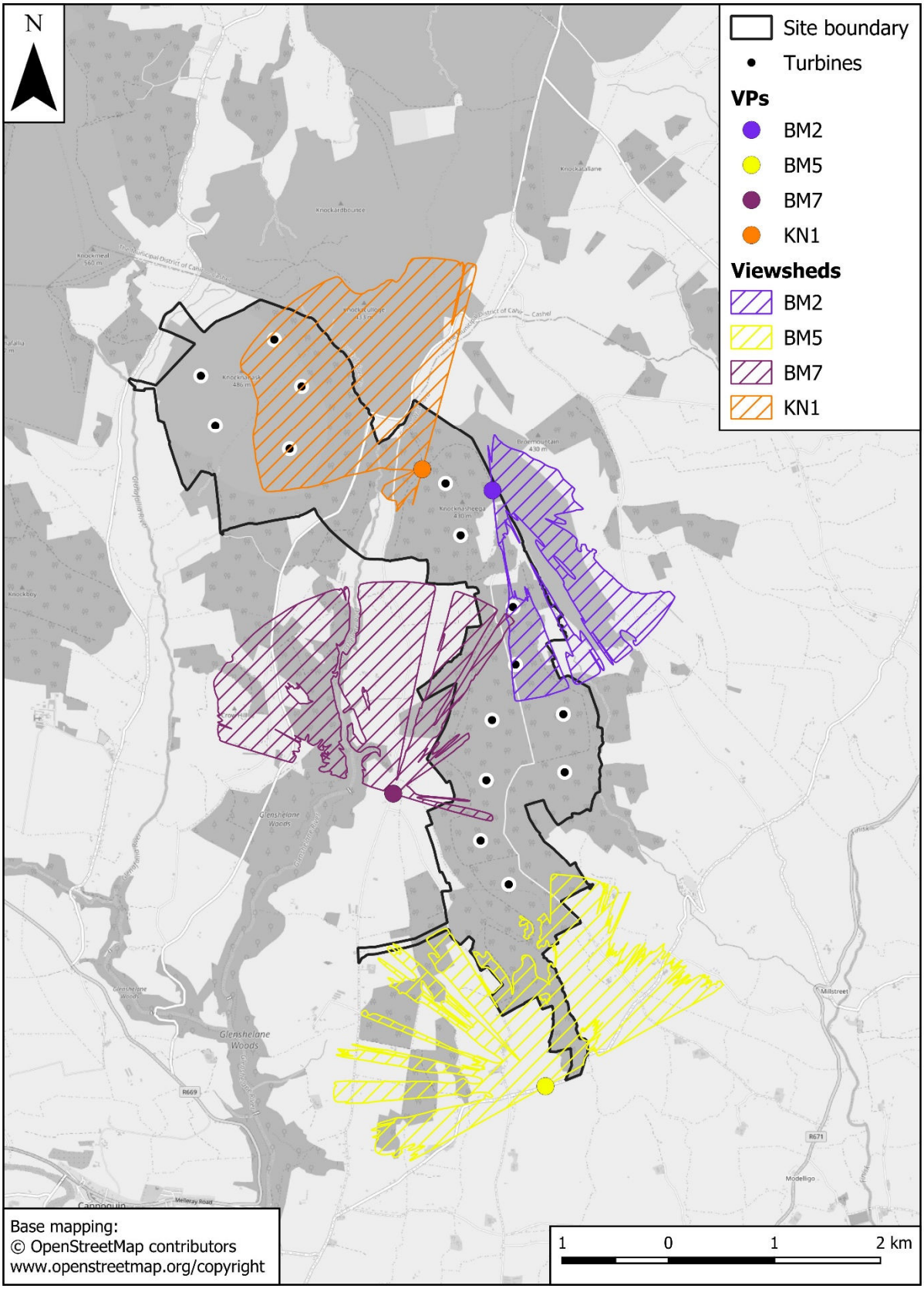

Figure A7.2.2. Viewsheds at 20 m above ground level of VPs BM2, BM5, BM7 and KN1.

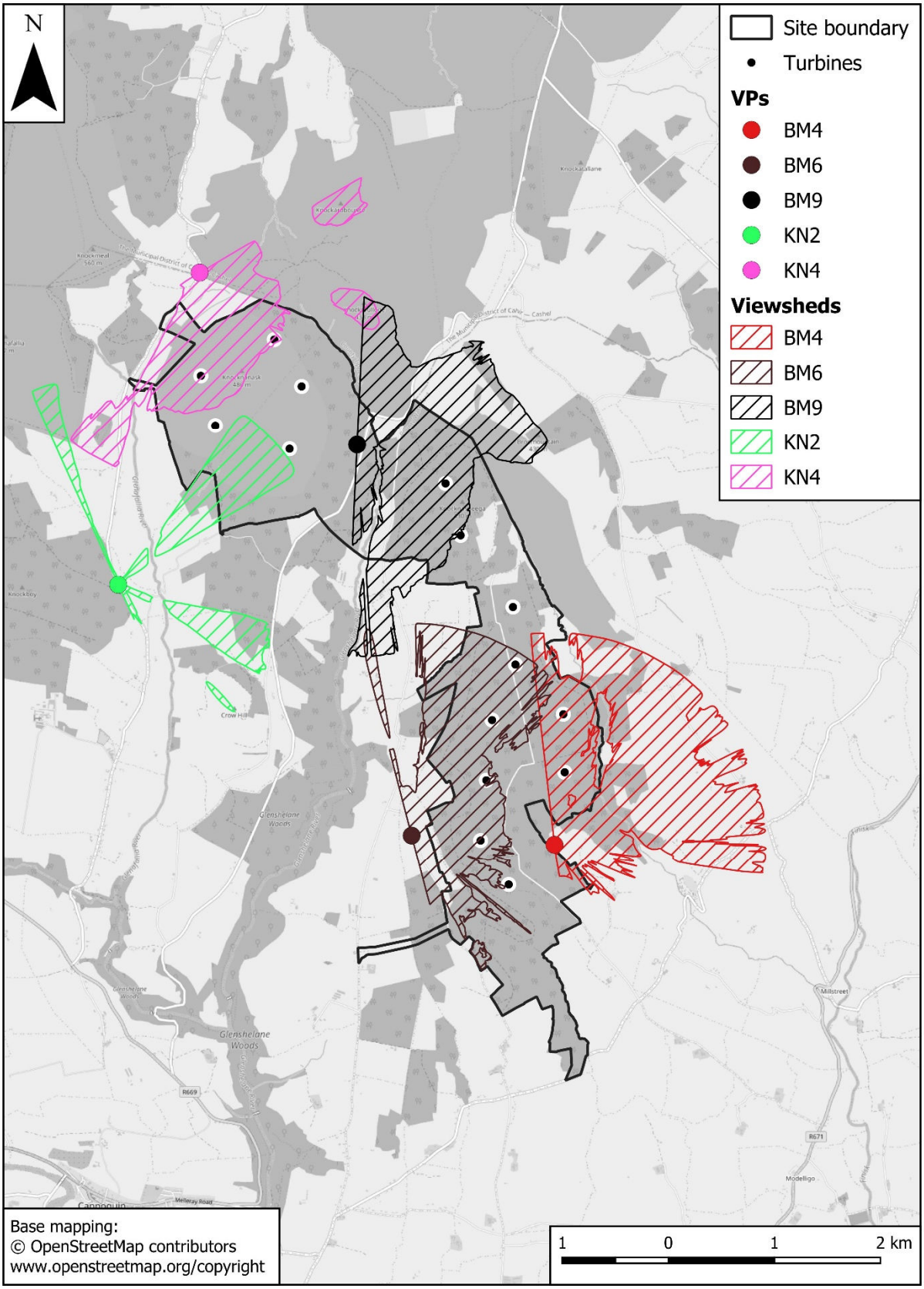

Figure A7.2.3. Viewsheds at 20 m above ground level of VPs BM4, BM6, BM9 and KN4.