



SP Energy Networks

Kennoxhead to Coalburn OHL

Wintering bird survey report

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RSK GENERAL NOTES

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CONTENTS

1.0 INTRODUCTION	1
1.1 Purpose of this report	1
1.2 Landscape context	1
1.3 Development proposals.....	1
2.0 METHODS.....	2
2.1 Desk-based study.....	2
2.2 Vantage point survey.....	2
2.3 Wintering bird walkover survey	3
2.4 Constraints and limitations	3
3.0 RESULTS – DESK-BASED STUDY.....	4
3.1 Overview.....	4
3.2 Statutory Sites	4
3.3 Non-Statutory sites.....	6
3.4 Other notable sites	6
3.5 Notable bird species.....	6
4.0 RESULTS – VANTAGE POINT SURVEY	8
4.1 Overview.....	8
4.2 Vantage point 1b	8
Target Species.....	8
Raptors	8
Geese and Ducks	8
Waders.....	9
Secondary species	9
4.3 Vantage point 2a	9
Target Species.....	9
Raptors	9
Geese and Ducks	9
Waders.....	10
Gulls.....	10
Secondary species	10
5.0 RESULTS – WINTERING BIRD WALKOVER SURVEY	11
5.1 Overview.....	11
5.2 Target species.....	11
5.3 Secondary species	11
6.0 CONCLUSION.....	13
REFERENCES.....	14
FIGURES	15
APPENDIX A – VANTAGE POINT SURVEY DETAILS	16
APPENDIX B – WINTERING BIRD WALKOVER DETAILS	18
APPENDIX C – LIST OF TARGET SPECIES.....	19
APPENDIX D – NOTEWORTHY SPECIES RECORDS	21
APPENDIX E – ABBREVIATIONS	23

TABLES

Table 1: Vantage point locations.....2

Table 2: Statutory sites within 2 km of the site boundary4

Table 3: Protected bird species records within 2 km of the site boundary6

Table 4: Target species recorded at vantage point 1b, total number of flights and flights at collision risk height during survey period8

Table 5: Target species recorded at vantage point 2a and total number of flights and flights at collision risk during survey period.....9

Table 6: Total numbers of target species observed during winter walkover surveys11

Table 7: Survey dates and weather16

Table 8: Survey dates and weather conditions.....18

Table 9: List of bird species targeted for survey19

Table 10: Noteworthy species records within 2km of the site boundary.....21

Table 11: Glossary of abbreviations used in this report:.....23

1.0 INTRODUCTION

1.1 Purpose of this report

1.1.1 This report presents the results of vantage point (VP) surveys and wintering bird walkover surveys undertaken at locations along the route of a proposed overhead power line (OHL) connecting Kennoxhead windfarm and Coalburn electricity substation ('the site' as shown in **Figure 1**). RSK Biocensus undertook these surveys between September 2019 and December 2020.

1.2 Landscape context

1.2.1 The site is located in west Lanarkshire, close to the town of Douglas. The proposed overhead line route stretches from Kennoxhead farm in the south to Coalburn substation in the north. A large portion of the proposed route passes through varied habitats including two disused quarries, peat bog, grazed fields and plantation woodland, and it crosses numerous water courses including Douglas Water.

1.2.2 The proposed overhead line route is shown in **Figure 1**.

1.3 Development proposals

1.3.1 The proposed development is a 132kV overhead line grid connection between Kennoxhead wind farm (Grid ref: 277165E 624386N) and Coalburn substation (Grid ref: 282510E 637337N) in South Lanarkshire.

1.3.2 The OHL will be constructed using a twin wooden pole structure in an H style formation. The overhead line will be c.16 km in length and constructed using wooden poles with lines c.13 m in height.

1.3.3 A temporary site compound will be set up which will include cabins, a carpark, welfare facilities and stores. The preparation of the land for temporary areas will include some site clearance, minor earthworks to level the site, drainage works for the carpark and installation of services.

1.3.4 To allow access to the site, temporary roads will be required. This will comprise trackway/terrafirma panels or stone roads laid on top of geomembranes. Bog mats and temporary track mats will be used to cross areas of soft-ground where existing access tracks are not available

2.0 METHODS

2.1 Desk-based study

2.1.1 A desk-based assessment was carried out to collate existing ornithological information pertaining to the proposed development and its surroundings. This included a search for statutory and non-statutory designated sites with ornithological qualifying interest features, as listed below:

- Internationally designated sites - Special Protection Areas (SPAs) and Ramsar sites, within 10 km of the proposed development.
- Nationally designated sites - Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs), within 2 km of the proposed development.
- Non-statutory designated sites within 1 km of the proposed development.

2.1.2 Searches for statutory designated sites were undertaken using the Multi-Agency Geographic Information for the Countryside (MAGIC) website (Ref.2 and NatureScot SiteLink (Ref.3). Non-statutory designated site information was obtained from Glasgow Museums Biological Records Centre.

2.1.3 Records of priority species within 1 km of the proposed development were also requested from Glasgow Museums Biological Records Centre.

2.2 Vantage point survey

2.2.1 VP surveys were initially undertaken from four locations along the proposed route. This was later narrowed to two locations following revision of the potential route options. The locations of these two points are given in **Table 1**.

2.2.2 Survey locations were agreed following consultation with NatureScot. A year of monitoring was considered appropriate, according to current guidance (NatureScot, 2009, NatureScot 2016), and taking into consideration the amount of data already available on the species assemblage in the vicinity due to previous survey work carried out for neighbouring developments.

Table 1: Vantage point locations

Vantage point	Grid reference	Habitat description
1b	NS 78379 24762	Located on Kennox Hill in an area of upland peat habitat. Overlooking a gully formed by the Kennox water, a water-filled quarry pit and mature and felled forestry.
2a	NS 80611 33669	Located on an area of disused opencast workings near Coalburn, the tracks in the area are now used by residents for leisure. Overlooking a water-filled quarry pit, grassland, scrub and coniferous woodland.

- 2.2.3 The VP surveys took place between September 2019 and February 2020.
- 2.2.4 A total of 36 hours of survey effort took place at each VP, consisting of two, three-hour watches, monthly between September and February. Details of survey dates and weather are shown in **Table 7, Appendix A**.
- 2.2.5 All VP surveys were three hours in duration with a minimum resting period of 30 minutes between surveys, in line with NatureScot guidance (NatureScot, 2009).
- 2.2.6 Surveyors remained at one location and used binoculars (and telescope if required) to scan the viewshed. When target species were sighted, details of their flight direction, height and amount of time spent in each height band were noted.
- 2.2.7 Target species were selected based on NatureScot guidance for overhead lines (NatureScot, 2016). Species of conservation concern that are susceptible to OHL collision were targeted, including waterfowl, waders, raptors and game birds. A list of target species is shown in **Appendix C**. Secondary species were also noted, these were species at risk of collision due to their size and behaviour but of lower conservation concern.

2.3 Wintering bird walkover survey

- 2.3.1 The wintering bird surveys comprised two survey visits, one in February 2020 and one in December 2020. A transect along the whole OHL route was surveyed to identify areas of bird activity. Dates and weather conditions for these surveys are shown in **Appendix B**.
- 2.3.2 The approximate locations of priority species (including: species listed under Schedule 1 of the Wildlife and Countryside Act, bird species cited as interest features of nearby SPAs, or Red and Amber listed by the Birds of Conservation Concern) were plotted on a site map using standard symbols and British Trust for Ornithology (BTO) species codes. Counts of secondary species (i.e. Green listed species of Conservation Concern) were also recorded.

2.4 Constraints and limitations

- 2.4.1 Adverse weather conditions including fog, snow and high winds caused some surveys to be cut short. In these cases, the remaining time required for the VP surveys was made up on a separate day.
- 2.4.2 Surveyors were unable to access VP 2a in September 2019. Additional survey time was carried out in October and November 2019 to make up for the missed survey effort in September.

3.0 RESULTS – DESK-BASED STUDY

3.1 Overview

3.1.1 There are several statutory sites within 2km of the site boundary which include birds as part of their designations. 18 protected bird species have previously been recorded within 2km of the site boundary.

3.2 Statutory Sites

3.2.1 There are 14 statutory designated sites within 2 km of the study area boundary, comprising one Special Protection Area (SPA), two Special Areas of Conservation (SAC), nine Sites of Special Scientific Interest (SSSI) with cited avian interest features, two Important Bird Areas (IBA). These sites are listed in **Table 2** in order of proximity to the site; short descriptions are given for the sites.

Table 2: Statutory sites within 2 km of the site boundary

Site Name	Designation	Approximate Distance (m)
Muirkirk and North Lowther Uplands	SPA	0
The Muirkirk and North Lowther Uplands SPA comprises three adjacent upland areas, together with Airds Moss, a low-lying blanket bog. The predominant habitats include semi-natural areas of blanket bog, acid grassland and heath. The boundaries of the SPA are coincident with those of North Lowther Uplands SSSI, Blood Moss and Slot Burn SSSI, Garpel Water SSSI, Ree Burn and Glenbuck Loch SSSI and coincident with those of Muirkirk Uplands SSSI, except for the exclusion of the Upper Heilar and Tarmac forestry plantations on Airds Moss and the exclusion of Blood Moss, south of Dalblair. This SPA qualifies by regularly supporting populations of Golden Plover (<i>Pluvialis apricaria</i>), Hen Harrier (<i>Circus cyaneus</i>), Merlin (<i>Falco columbarius</i>), Peregrine (<i>Falco peregrinus</i>) and Short-eared Owl (<i>Asio flammeus</i>)		
North Lowther Hills	IBA	0
The North Lowther Hills IBA is an upland block to the east of Airds Moss, comprising moorland and areas of active blanket bog. The IBA supports a range of breeding upland species.		
North Lowther Uplands	SSSI	0
The North Lowther Uplands SSSI contains the Bail Hill Geological Conservation Review (GCR) site which displays a section through the “throat” of a volcano. This was active 480 million years ago at a time when the Southern Uplands were being laid down as sediments on the floor of an ancient ocean, the Iapetus Ocean. The area around Bught Craig shows a wide variety of rock types erupted by the volcano and a number of different rock types that collapsed into the volcano before it became extinct. The SSSI supports a range of upland habitats and associated species showing good examples of the characteristic plant communities of the Southern Uplands. The		

Site Name	Designation	Approximate Distance (m)
<p>dominant habitats include blanket bog, wet and dry heaths and acid grassland. On flatter areas the vegetation largely comprises a range of blanket bog and wet heath communities. The North Lowther Uplands SSSI also has a mosaic of upland grassland habitats. The range of habitats, many of them heather dominated, provide a mosaic of breeding and foraging habitats for the diverse upland bird community which is of national importance. Amongst the species present are Curlew (<i>Numenius arquata</i>), Dunlin (<i>Calidris alpina</i>), Golden Plover (<i>Pluvialis apricaria</i>), Hen Harrier (<i>Circus cyaneus</i>), Merlin (<i>Falco columbarius</i>), Peregrine (<i>Falco peregrinus</i>), Raven (<i>Corvus corax</i>), Red Grouse (<i>Lagopus lagopus</i>), Redshank (<i>Tringa 5arina5</i>), Short-eared Owl (<i>Asio flammeus</i>), Snipe (<i>Gallinago gallinago</i>), Teal (<i>Anas crecca</i>), Wheatear (<i>Oenanthe 5arina5e</i>) and Whinchat (<i>Saxicola rubetra</i>). The breeding population of hen harriers is of both national and European importance.</p>		
Airds Moss and Muirkirk Uplands	IBA	0
<p>The Airds Moss and Muirkirk Uplands IBA includes the largest remaining continuous block of unforested moorland in South West Scotland. The main habitats include heather and grass moorland and blanket bog.</p>		
Muirkirk Uplands	SSSI	0
<p>The Muirkirk Uplands SSSI includes two upland areas situated to the north and south of the town of Muirkirk and Airds Moss, a low-lying blanket bog. The protected natural features include localised exposures of fossiliferous rock, upland habitats and blanket bog, an associated assemblage of breeding birds, a breeding population of Short-eared Owl (<i>Asio flammeus</i>), plus breeding and non-breeding (wintering) populations of Hen Harrier (<i>Circus cyaneus</i>). There are extensive areas of intact wet heath and blanket bog typified by <i>Erica tetralix</i> (Cross-leaved Heath) and <i>Sphagnum</i> sp. (Bog Mosses). Where modification of blanket bog has taken place through drainage, grazing and burning the vegetation is dominated by <i>Eriophorum vaginatum</i> (Hare's-tail Cotton-grass). Fine examples of drier heathland vegetation are found on steeper, more well-drained ground. A mosaic of upland grassland habitats is also present. The blanket bog of Airds Moss displays features typical of this habitat but is unusual in that these have developed at a relatively low altitude. Fen and acid grassland habitats are found around the periphery of the moss. The mosaic of habitats within the Muirkirk Uplands supports a diverse upland breeding bird community which is of national importance. The upland moorland bird assemblage includes Buzzard (<i>Buteo buteo</i>), Curlew (<i>Numenius arquata</i>), Dunlin (<i>Calidris alpina</i>), Golden Plover (<i>Pluvialis apricaria</i>), Hen Harrier (<i>Circus cyaneus</i>), Merlin (<i>Falco columbarius</i>), Peregrine (<i>Falco peregrinus</i>), Red Grouse (<i>Lagopus lagopus</i>), Redshank (<i>Tringa 5arina5</i>), Ring Ouzel (<i>Turdus torquatus</i>), Short-eared Owl (<i>Asio flammeus</i>), Snipe (<i>Gallinago gallinago</i>), Stonechat (<i>Saxicola rubicola</i>), Teal (<i>Anas crecca</i>), Wheatear (<i>Oenanthe 5arina5e</i>) and Whinchat (<i>Saxicola rubetra</i>). The site is of particular importance, both nationally and internationally, for breeding Hen Harrier and Short-eared Owl. Hen harriers also winter within the site in nationally important numbers.</p>		

3.3 Non-Statutory sites

3.3.1 There are no non-statutory designated sites within 2 km of the site boundary.

3.4 Other notable sites

3.4.1 There are 42 areas of ancient woodland within 2 km of the site boundary, with 26 of these falling within the site boundary itself. These areas of woodland are likely to support a diverse breeding and wintering bird assemblage.

3.5 Notable bird species

3.5.1 At least 45 noteworthy bird species have been recorded from places within 2 km of the site boundary. Species that are protected by law under The Wildlife and Countryside Act 1981 as amended by The Wildlife and Natural Environment (Scotland) Act 2011 and have been recorded in the search area are listed in the table below (excluding species protected only against collection for sale); a full list of noteworthy bird species is given in **Appendix D**. Some of these species are summer visitors and do not winter in Scotland, such as little ringed plover (*Charadrius dubius*), marsh harrier (*Circus aeruginosus*), osprey (*Pandion haliaetus*), and spotted crane (*Porzana porzana*).

Table 3: Protected bird species records within 2 km of the site boundary

Latin Name	Common Name	Designation	Most Recent	No of Records	Within 100m	Within 1 km	Within 2km
Birds						P	
<i>Accipiter gentilis</i>	Goshawk	WCA1	2018	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Alcedo atthis</i>	Kingfisher	WCA1	2003	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Anser anser</i>	Greylag Goose	WCA1	2018	182	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Bucephala clangula</i>	Goldeneye	WCA1	2018	9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Charadrius dubius</i>	Little Ringed Plover	WCA1	2018	9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Circus aeruginosus</i>	Marsh Harrier	WCA1	2016	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Circus cyaneus</i>	Hen Harrier	WCA1	2015	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Cygnus cygnus</i>	Whooper Swan	WCA1	2018	52	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Falco columbarius</i>	Merlin	WCA1	2003	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Fringilla montifringilla</i>	Brambling	WCA1	2018	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Limosa limosa</i>	Black-tailed Godwit	WCA1	2018	62	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Loxia curvirostra</i>	Common Crossbill	WCA1	2018	57	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Pandion haliaetus</i>	Osprey	WCA1	2004	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Porzana porzana</i>	Spotted Crane	WCA1	2014	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Latin Name	Common Name	Designation	Most Recent	No of Records	Within 100m	Within 1km	Within 2km
<i>Tringa glareola</i>	Wood Sandpiper	WCA1	2015	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Tringa nebularia</i>	Greenshank	WCA1	2016	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Tringa ochropus</i>	Green Sandpiper	WCA1	2018	20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>Turdus pilaris</i>	Fieldfare	WCA1	2018	434	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Note – P relates to records with 4 figure or tetrad grid references that could potentially be anywhere within a 1 km or 2 km square.

4.0 RESULTS – VANTAGE POINT SURVEY

4.1 Overview

4.1.1 A total of 13 target species were observed during the vantage point surveys. Of these, seven species were observed flying at potential OHL collision risk height (0-20m). Bird activity was concentrated around the waterbodies close to the VPs.

4.2 Vantage point 1b

Target Species

4.2.1 Five target species were observed at vantage point 1b (VP 1b) of which four were observed flying at potential collision risk height (0-20m). 120 flights of target species were observed overall. Three secondary species were also observed flying at potential collision risk height. Bird flight activity was concentrated along the Kennox Water and around the water-filled quarry pit south of Chapel Hill. Maps of flight paths are shown in **Figures 1 to 3** and survey details in **Appendix A**.

Table 4: Target species recorded at vantage point 1b, total number of flights and flights at collision risk height during survey period

Species	Total number of flights	Number of flights at collision risk height
Pink-footed goose (<i>Anser brachyrhynchus</i>)	20	0
Greylag goose (<i>Anser anser</i>)	1	1
Canada goose (<i>Branta canadensis</i>)	71	71
Lapwing (<i>Vanellus vanellus</i>)	24	24
Hen Harrier (<i>Circus cyaneus</i>)	4	3

Raptors

4.2.2 The only target raptor species observed at VP 1b was hen harrier. Both male and female birds were seen, hunting along the Kennox Water, and on Chapel Hill. One hen harrier was observed flying high overhead.

Geese and Ducks

4.2.3 The species with the most flights at VP 1b was Canada goose. A peak count of 66 Canada goose was observed in January, on the water-filled quarry pit south of Chapel Hill. Canada goose were regularly observed in this area, along with graylag goose, and all of the flights associated with these species were to or from the flooded quarry pit, either along the eastern flank of Chapel Hill or over Chapel Hill towards the north.

4.2.4 Pink-footed geese were observed flying high above the site in September 2019. No pink-footed geese were observed flying at potential collision risk height.

Waders

4.2.5 Small numbers of lapwing were observed around the edges of the flooded quarry pit and on Chapel Hill, and were flushed short distances by the movements of geese.

Secondary species

4.2.6 Raven (*Corvus corax*), Buzzard (*Buteo buteo*), Kestrel (*Falco tinnunculus*) and Cormorant (*Phalacrocorax carbo*) were also observed from VP 1b.

4.3 Vantage point 2a

Target Species

4.3.1 Eleven target species were observed at vantage point 2a (VP 2a). Of the target species, 177 flights at potential collision risk height were observed on site, most of these were Golden Plover during the October survey. Activity from the target species, including flights at potential collision risk height, was concentrated around the water-filled disused gravel pit, and the woodland to the north of the vantage point. Maps of flight paths are shown in **Figures 4 to 8**, and survey details in **Appendix A**.

Table 5: Target species recorded at vantage point 2a and total number of flights and flights at collision risk during survey period

Species	Total number of flights	Number of flights at collision risk height
Pink-footed goose	1037	0
Greylag goose	2	1
Bewick's swan (<i>Cygnus columbianus</i>)	3	0
Mute swan (<i>Cygnus olor</i>)	0	0
Wigeon (<i>Anas penelope</i>)	24	24
Pochard (<i>Aythya farina</i>)	0	0
Teal (<i>Anas crecca</i>)	2	2
Goldeneye (<i>Bucephala clangula</i>)	0	0
Golden plover (<i>Pluvialis apricaria</i>)	220	150
Herring gull (<i>Larus argentatus</i>)	1	0

Raptors

4.3.2 No target raptor species were observed at VP2a.

Geese and Ducks

4.3.3 Of the four goose and swan species observed from VP 2a, only a single graylag goose was observed flying at potential collision risk height, however mute swan were observed foraging and roosting on the flooded quarry pit, indicating that they would have flown in and out potentially at collision risk height. Similarly, of the four target duck species, only

wigeon and teal were observed flying, however pochard and wigeon were also observed on the flooded quarry pit and therefore would have flown in and out at potential collision risk height.

Waders

4.3.4 Golden plover were only observed on one survey visit in October 2019 and were repeatedly flushed from the ground by dog-walkers.

Gulls

4.3.5 A single herring gull was observed flying high over the site.

Secondary species

4.3.6 Secondary species observed at VP2a were Raven, Buzzard, Kestrel and Mallard (*Anas platyrhynchos*).

5.0 RESULTS – WINTERING BIRD WALKOVER SURVEY

5.1 Overview

5.1.1 Seven target species and four secondary species were observed on the two wintering bird walkover surveys. Waterfowl activity was concentrated around the flooded quarry pits at Kennoxhead and Coalburn.

5.2 Target species

5.2.1 Seven target species were observed during the two winter walkover surveys carried out in February 2020 and December 2020

Table 6: Total numbers of target species observed during winter walkover surveys

Species	Total count per visit	
	Visit 1 13/02/2020-14/02/2020	Visit 2 01/12/2020-07/12/2020
Canada goose	0	3
Wigeon	8	0
Goldeneye	0	1
Goosander (<i>Mergus merganser</i>)	1	0
Woodcock (<i>Scolopax rustica</i>)	1	2
Merlin (<i>Falco columbarius</i>)	1	0
Herring Gull	1	0

5.2.2 A single merlin was observed foraging around the south end of the route, between Kennoxhead and Carmacoup.

5.2.3 Wigeon and goldeneye were observed on the flooded quarry pits at Coalburn, and Canada goose on the flooded quarry pit at Kennoxhead. The goosander was observed flying south of Coalburn.

5.2.4 The woodcock were observed in areas of blanket bog in the north of the route, close to the planned substation; and in the central part of the route, between Douglas and Coalburn.

5.2.5 The herring gull was observed flying over the dismantled railway south of Douglas.

5.3 Secondary species

5.3.1 Secondary species observed during the winter walkover surveys were buzzard, raven, kestrel and mallard.

5.3.2 Buzzard and raven were observed in several locations along the whole route, whereas kestrel was only observed in the northern part of the route, north of Coalburn.

5.3.3 Mallard were observed on the flooded quarry pits at Coalburn.

6.0 CONCLUSION

- 6.1.1 A total of 28 bird species were recorded during the wintering bird surveys. Overall, the 2019/20 wintering bird surveys show that the habitats within the proposed development provide foraging and roosting opportunities for overwintering birds.
- 6.1.2 Particular areas of interest for wintering birds are the water-filled quarry pits at Kennoxhead and Coalburn, as well as the upland bog habitats found at Kennoxhead; along the dismantled railway near Douglas; and north of Coalburn. These areas are frequented by several species which are at particular risk of collision with OHL.
- 6.1.3 Target species observed along the OHL which are at particular risk of collision with powerlines include Canada goose, pink-footed goose, graylag goose, Bewick's swan, mute swan, wigeon, pochard, teal, goldeneye, goosander, golden plover, lapwing, woodcock, merlin, hen harrier and herring gull.
- 6.1.4 The implication of these survey results and the potential impacts on the OHL proposal are discussed in the ornithology chapter of the associated environmental impact assessment report which will be produced for the project.

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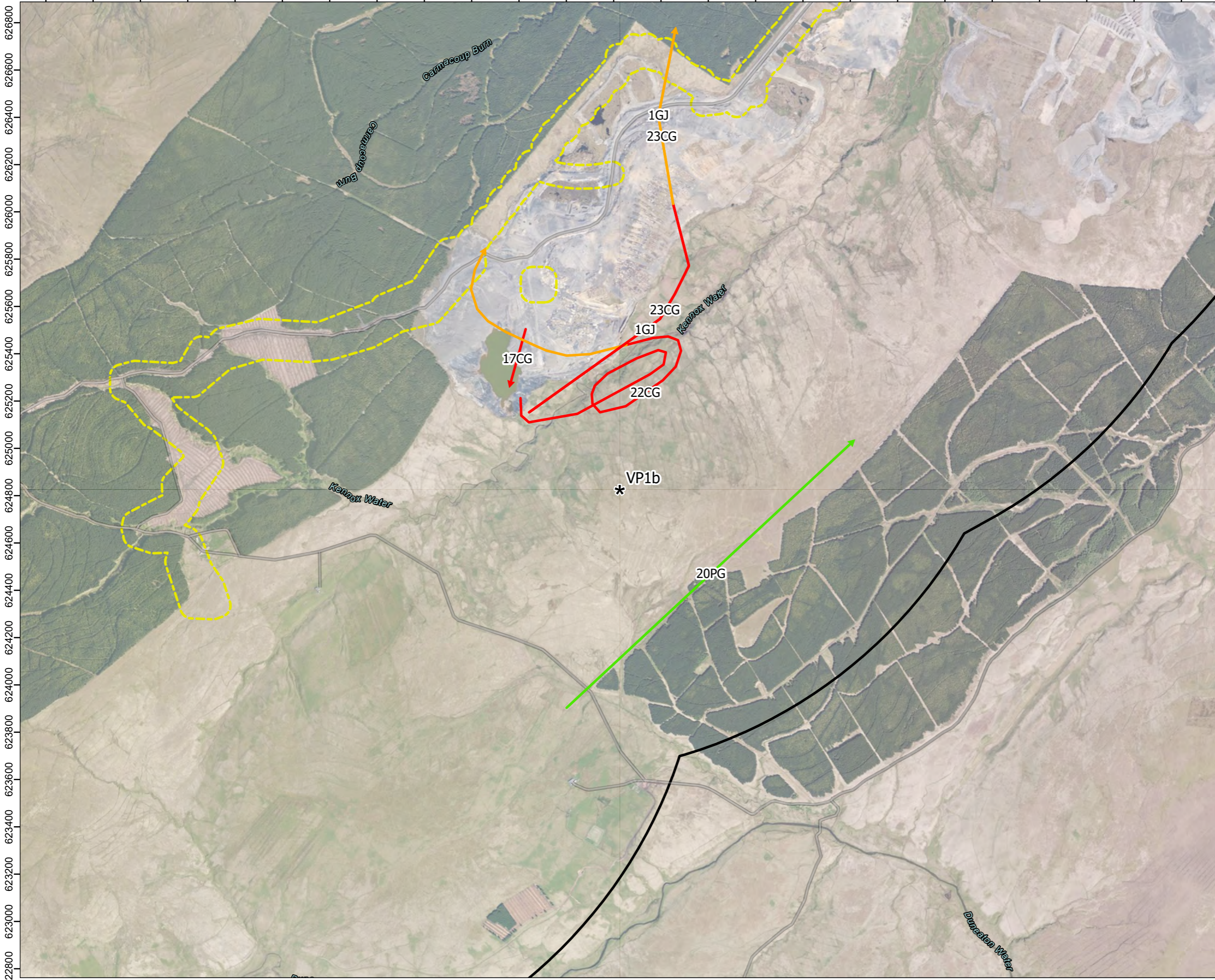
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FIGURES

276000 276200 276400 276600 276800 277000 277200 277400 277600 277800 278000 278200 278400 278600 278800 279000 279200 279400 279600 279800 280000 280200 280400 280600 280800



Legend:

- 50m Working area buffer
- 2km Buffer
- ★ Vantage point location

Flight Altitude

- <20m
- 20 - 50m
- 50 - 100m
- >100m

BTO Code	Common Name
CG	Canada Goose
GJ	Greylag Goose
PG	Pink-footed Goose



Rev	Date	Description	Drn	Chk	App
00	05/10/2022	2480371	SP	SW	RM

Kennoxhead

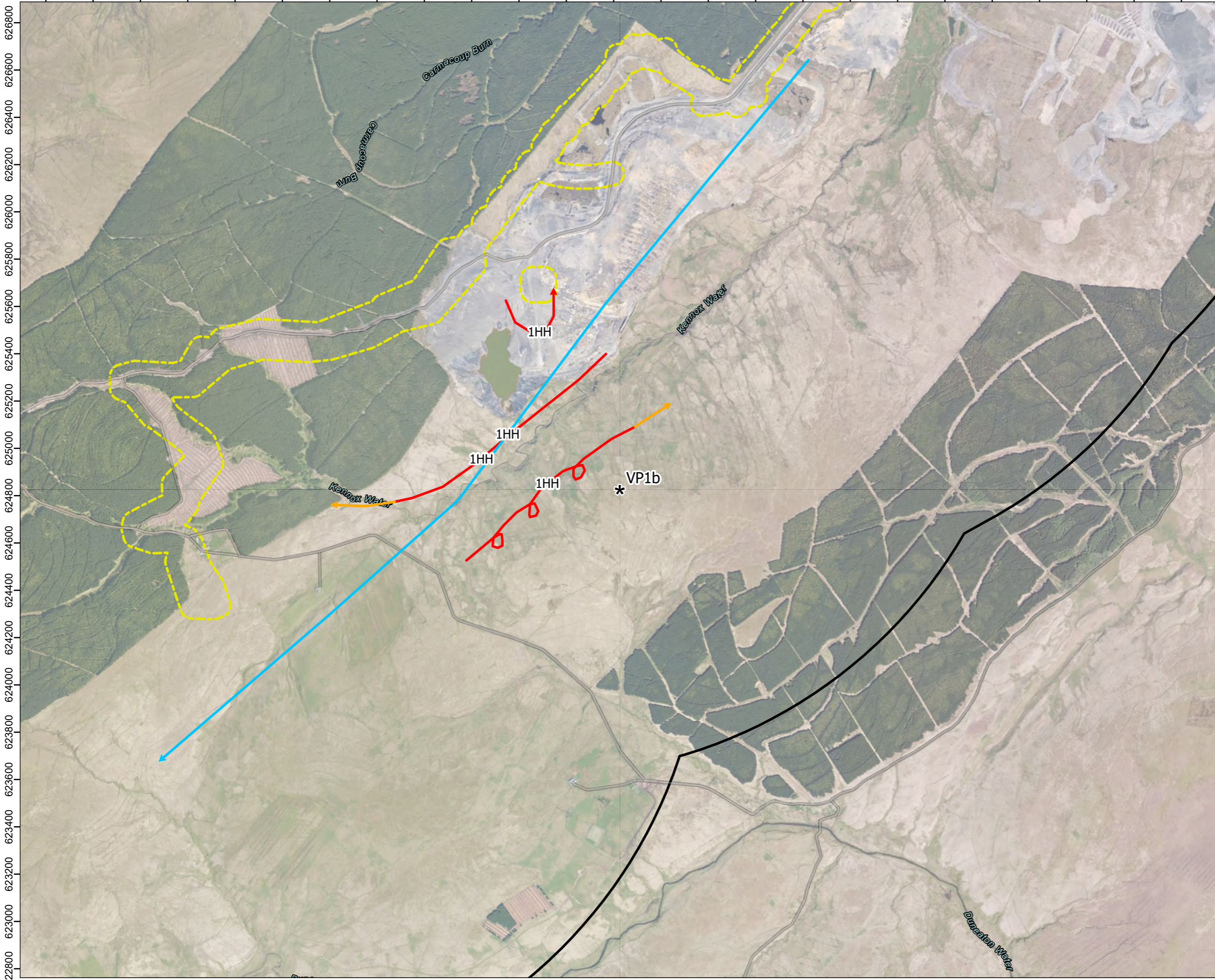
TITLE: Figure 1:
Summer Vantage Point Surveys
Geese
VP1b

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REV 00

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- Legend:**
- 50m Working area buffer
 - 2km Buffer
 - * Vantage point location
- Flight Altitude**
- <20m
 - 20 - 50m
 - 50 - 100m
 - >100m

BTO Code	Common Name
HH	Hen Harrier

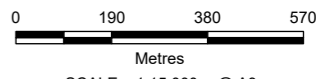


Rev	Date	Description	Drn	Chk	App
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Kennoxhead



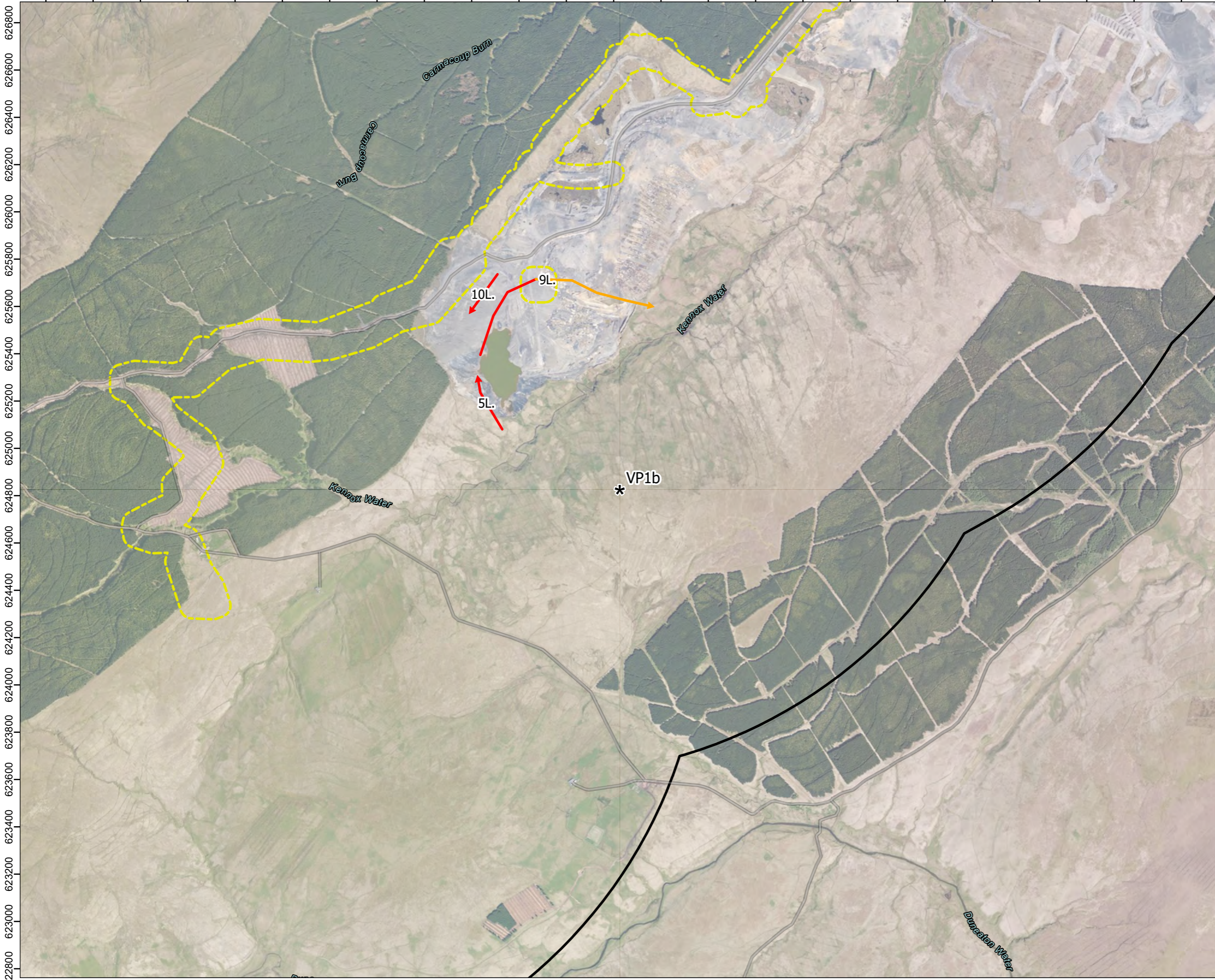
TITLE: Figure 2:
Summer Vantage Point Surveys
Raptors
VP1b



REV 00

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276000 276200 276400 276600 276800 277000 277200 277400 277600 277800 278000 278200 278400 278600 278800 279000 279200 279400 279600 279800 280000 280200 280400 280600 280800



- Legend:**
- 50m Working area buffer
 - 2km Buffer
 - * Vantage point location
- Flight Altitude**
- <20m
 - 20 - 50m
 - 50 - 100m
 - >100m

BTO Code	Common Name
GP	Golden Plover
L.	Lapwing



Rev	Date	Description	Drn	Chk	App
00	05/10/2022	2480371	SP	SW	RM

Kennoxhead

TITLE: Figure 3:
Summer Vantage Point Surveys
Waders
VP1b

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Metres

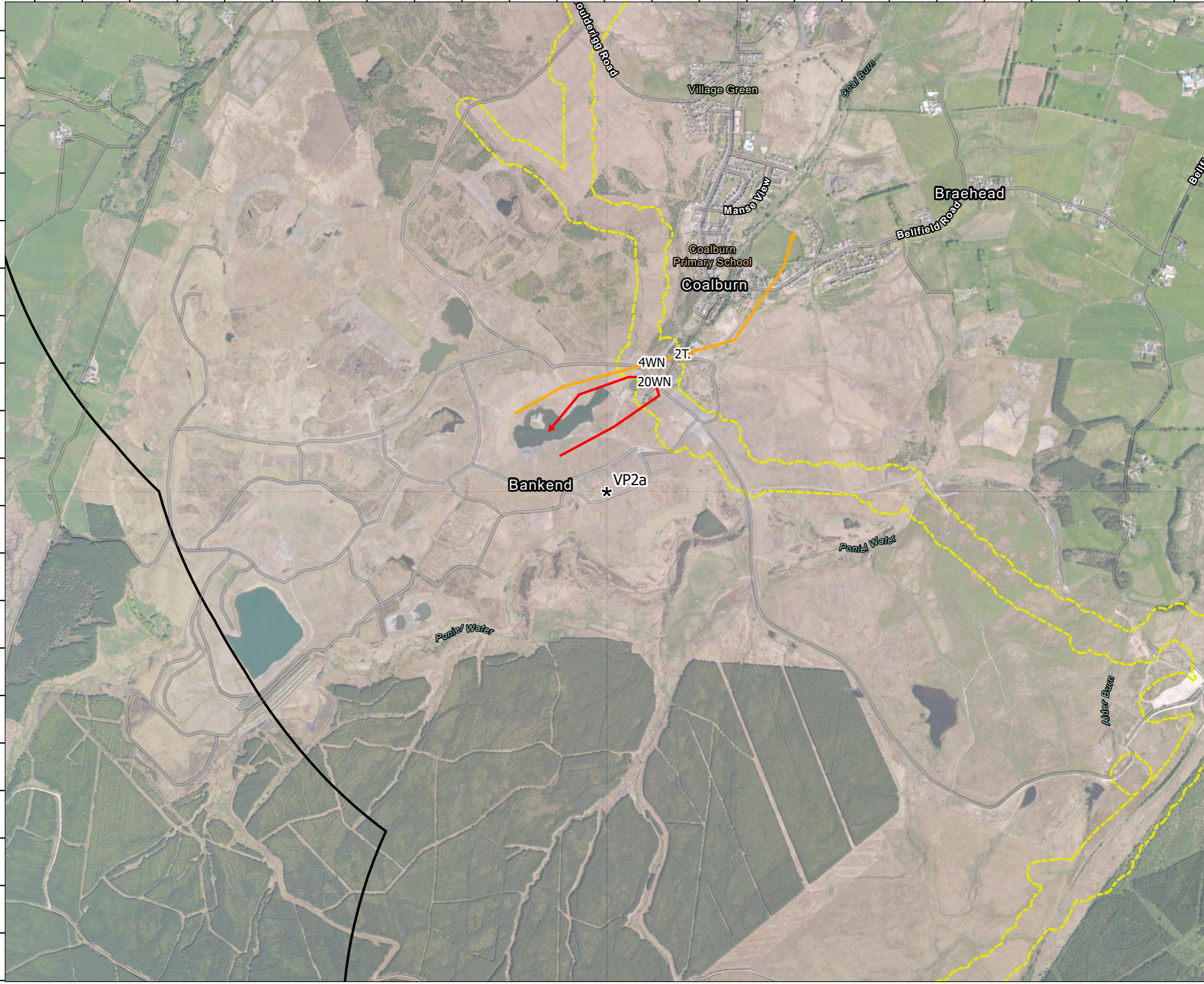
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REV 00

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631600 631800 632000 632200 632400 632600 632800 633000 633200 633400 633600 633800 634000 634200 634400 634600 634800 635000 635200 635400 635600



Legend:

- 50m Working area buffer
- 2km Buffer
- * Vantage point location

Flight Altitude

- <20m
- 20 - 50m
- 50 - 100m
- >100m

BTO Code	Common Name
T.	Teal
WN	Wigeon

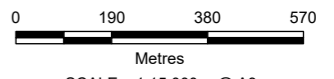


Rev	Date	Description	Drn	Chk	App
00	05/10/2022	2480371	SP	SW	RM

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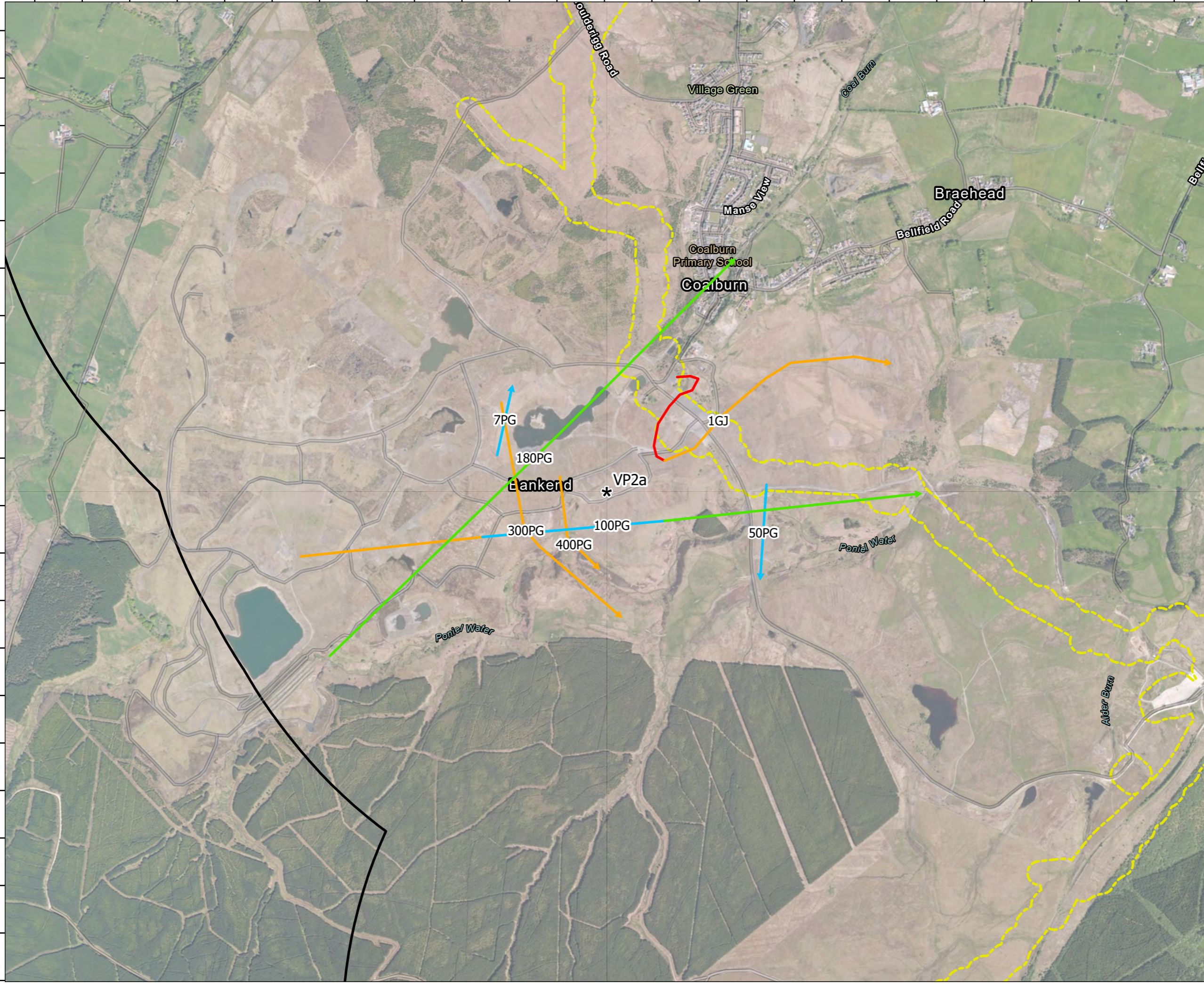
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Summer Vantage Point Surveys
Ducks
VP2a



REV 00

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631600 631800 632000 632200 632400 632600 632800 633000 633200 633400 633600 633800 634000 634200 634400 634600 634800 635000 635200 635400 635600



- Legend:**
- 50m Working area buffer
 - 2km Buffer
 - * Vantage point location
- Flight Altitude**
- <20m
 - 20 - 50m
 - 50 - 100m
 - >100m

BTO Code	Common Name
CG	Canada Goose
GJ	Greylag Goose
PG	Pink-footed Goose

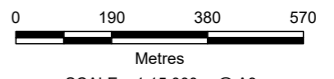


Rev	Date	Description	Drn	Chk	App
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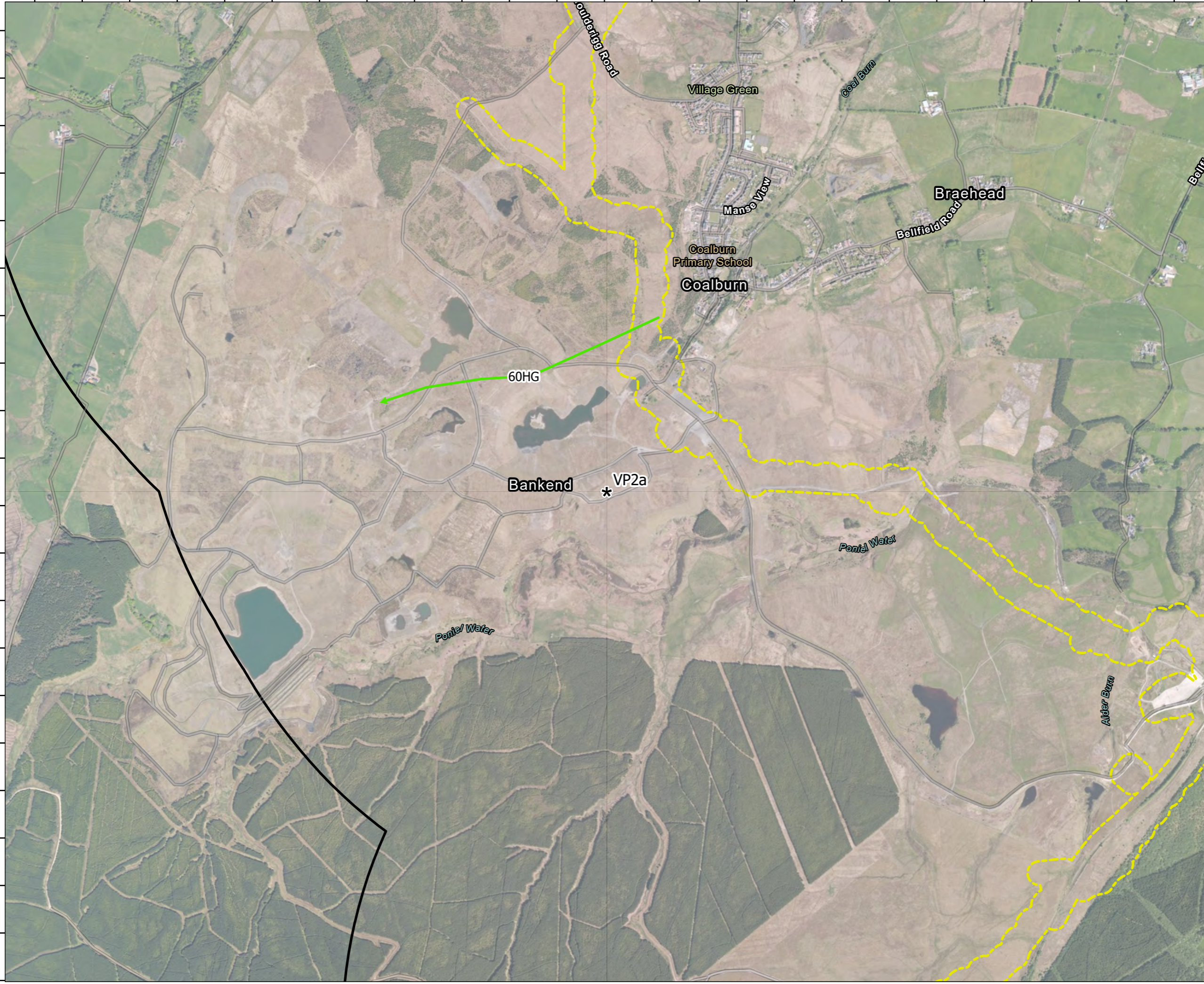
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Summer Vantage Point Surveys
Geese
VP2a



REV 00

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631600 631800 632000 632200 632400 632600 632800 633000 633200 633400 633600 633800 634000 634200 634400 634600 634800 635000 635200 635400 635600



- Legend:**
- 50m Working area buffer
 - 2km Buffer
 - * Vantage point location
- Flight Altitude**
- <20m
 - 20 - 50m
 - 50 - 100m
 - >100m

BTO Code	Common Name
HG	Herring Gull



Rev	Date	Description	Drn	Chk	App
00	05/10/2022	2480371	SP	SW	RM

Kennoxhead

TITLE: Figure 6:
Summer Vantage Point Surveys
Gulls
VP2a

Metres
SCALE: 1:15,000 @ A3

REV 00

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631600 631800 632000 632200 632400 632600 632800 633000 633200 633400 633600 633800 634000 634200 634400 634600 634800 635000 635200 635400 635600



- Legend:**
- 50m Working area buffer
 - 2km Buffer
 - Vantage point location
- Flight Altitude**
- <20m
 - 20 - 50m
 - 50 - 100m
 - >100m

BTO Code	Common Name
BS	Berwick's Swan



Rev	Date	Description	Drn	Chk	App
00	05/10/2022	2480371	SP	SW	RM

Kennoxhead

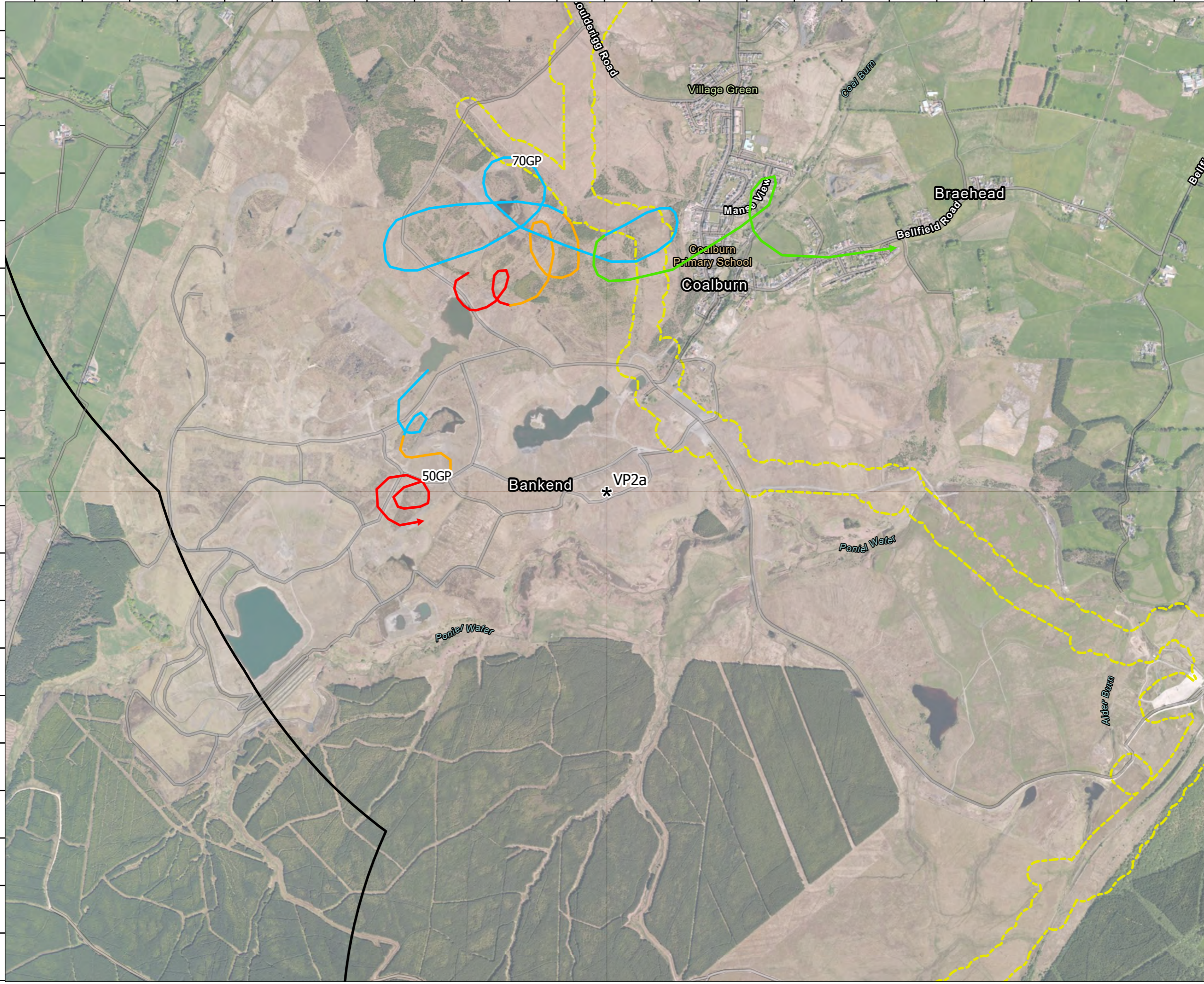
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Summer Vantage Point Surveys
Swans
VP2a

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Metres
SCALE: 1:15,000 @ A3

REV 00

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631600 631800 632000 632200 632400 632600 632800 633000 633200 633400 633600 633800 634000 634200 634400 634600 634800 635000 635200 635400 635600



Legend:

- 50m Working area buffer
- 2km Buffer
- ★ Vantage point location

Flight Altitude

- <20m
- 20 - 50m
- 50 - 100m
- >100m

BTO Code	Common Name
GP	Golden Plover
L.	Lapwing



Rev	Date	Description	Drn	Chk	App
00	05/10/2022	2480371	SP	SW	RM

Kennoxhead

TITLE: Figure 8:
Summer Vantage Point Surveys
Waders
VP2a

0 190 380 570
Metres
SCALE: 1:15,000 @ A3

REV 00

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APPENDIX A – VANTAGE POINT SURVEY DETAILS

Table 7: Survey dates and weather

Date	Vantage point	Weather conditions
16/9/2019	1b	Cloud 8/7, >500m height, gentle breeze from the W, good visibility, 10°C – 14°C
15/10/2019	1b	Initial fog and poor visibility, fog lifted with light breeze from S, then cloud 4/8, height >500m, good visibility.
15/10/2019	2a	Initial fog and poor visibility, fog lifted with light breeze from S, then cloud 4/8, height >500m, good visibility.
5/11/2019	2a	Cloud 7/8 to 1/8, height >500m. Gentle breeze from the E, no rain, good visibility.
6/11/2019	1b	Cloud 8/8, height >500m. Light air from E to light breeze from SE. Heavy showers in final hour, good visibility, 5°C
11/11/2019	2a	Cloud 8/8 to 7/8, height >500m. Strong breeze to fresh breeze from the W, squally showers, good visibility, 5°C
5/12/2019	2a	Cloud 8/8, initial height >500m, then down to 150-500m. Moderate breeze to strong breeze from SW, drizzle and heavy showers. Good to moderate visibility, 7°C
6/12/2019	2a	Cloud 8/8, height 150-500m. Strong breeze from the W, squally showers. Good to moderate visibility, 9°C
17/12/2019	1b	Cloud 4/8 to 8/8, height >500m to 150-500m. Moderate breeze from SW, heavy rain in second hour. Visibility good to moderate, snow on high ground, 3°C
20/12/2019	1b	Cloud 8/8, height 150-500m. Light air from S, drizzle. Moderate visibility, 4°C
15/1/2020	2a	Cloud 5/8 to 4/8, height >500m. Fresh breeze from SW, no rain. Good visibility, snow on high ground, 4°C
16/1/2020	2a	Cloud 8/8, height >500m. Strong breeze from SW to moderate breeze from SSW, light showers in first hour. Good visibility, 6°C
27/1/2020	1b	Cloud 7/8 to 2/8, height >500m. Gentle to moderate breeze from S, snow/sleet showers in the second hour. Good visibility, frost and snow on site, 1°C
28/1/2020	1b	Cloud 8/8, height 150-500m to <150m. Gentle breeze from S, snow showers. Moderate visibility, down to poor visibility

Date	Vantage point	Weather conditions
		during snow showers. Frost and 3-4 inches snow cover on site, 1°C
13/2/2020	1b	Cloud 8/8, height 150-500m. Light air to light breeze from NE, snow showers. Moderate visibility, frost and snow on site, 1°C
13/2/2020	2a	Cloud 8/8, height >500m. Light air to light breeze from NE, drizzle in second hour. Snow on high ground, 3°C
20/2/2020	1b	Cloud 8/8 to 6/8, height 150-500m to >500m. Gentle breeze from W, snow and sleet showers. Visibility moderate to good, patches of snow on site, 1°C
20/2/2020	2a	Cloud 4/8, height >500m. Moderate breeze from W, snow and sleet showers. Good visibility, snow on high ground, 2°C

APPENDIX B – WINTERING BIRD WALKOVER DETAILS

Table 8: Survey dates and weather conditions

Date	Weather conditions
11/2/2020 – 13/2/2020	Moderate breeze, snow showers and snow lying on site at high levels. Good visibility, -2°C-5°C.
1/12/2020 – 7/12/2020	1/12/2020-3/12/2020: light showers with sunny intervals, moderate breeze. Good visibility, 3°C-5°C. 4/12/2020-7/12/2020: snow on site, snow showers and overcast, light breeze. Moderate visibility, -1°C-3°C.

APPENDIX C – LIST OF TARGET SPECIES

Table 9: List of bird species targeted for survey

Target / Secondary species	Latin name	Common name
Target	<i>Gavia arctica</i>	Black-throated diver
Target	<i>Gavia stellata</i>	Red-throated diver
Target	<i>Cygnus cygnus</i>	Whooper swan
Target	<i>Cygnus colombianus</i>	Bewick's swan
Target	<i>Cygnus olor</i>	Mute swan
Target	<i>Anser albifrons</i>	White-fronted goose
Target	<i>Anser fabialis</i>	Bean goose (Greenland or European)
Target	<i>Anser anser</i>	Greylag goose
Target	<i>Anser brachyrhynchus</i>	Pink-footed goose
Target	<i>Branta canadensis</i>	Canada goose
Target	<i>Anas penelope</i>	Wigeon
Target	<i>Anas strepera</i>	Gadwall
Target	<i>Anas crecca</i>	Teal
Target	<i>Anas acuta</i>	Pintail
Target	<i>Anas clypeata</i>	Shoveler
Target	<i>Aythya farina</i>	Pochard
Target	<i>Mergus merganser</i>	Goosander
Target	<i>Mergus serrator</i>	Red-breasted merganser
Target	<i>Circus cyaneus</i>	Hen harrier
Target	<i>Haliaeetus albicilla</i>	White-tailed eagle
Target	<i>Milvus milvus</i>	Red kite
Target	<i>Falco peregrinus</i>	Peregrine
Target	<i>Aquila chrysaetos</i>	Golden eagle
Target	<i>Accipiter gentilis</i>	Goshawk
Target	<i>Pandion haliaetus</i>	Osprey
Target	<i>Falco columbarius</i>	Merlin
Target	<i>Tyto alba</i>	Barn owl
Target	<i>Asio flammeus</i>	Short eared owl
Target	<i>Pluvialis apricaria</i>	Golden plover
Target	<i>Charadrius hiaticula</i>	Ringed plover
Target	<i>Haematopus ostralegus</i>	Oystercatcher
Target	<i>Numenius arquata</i>	Curlew

Target / Secondary species	Latin name	Common name
Target	<i>Vanellus vanellus</i>	Lapwing
Target	<i>Calidris alpina</i>	Dunlin
Target	<i>Limosa limosa</i>	Black-tailed godwit
Target	<i>Gallinago gallinago</i>	Snipe
Target	<i>Tringa totanus</i>	Redshank
Target	<i>Tringa nebularia</i>	Greenshank
Target	<i>Phalaropus lobatus</i>	Red-necked phalarope
Target	<i>Tetrao tetrix</i>	Black grouse
Target	<i>Tetrao urogallus</i>	Capercaillie
Target	<i>Caprimulgus europaeus</i>	Nightjar
Target	<i>Streptopelia turtur</i>	Turtle dove
Target	<i>Lagopus lagopus</i>	Red grouse
Target	<i>Larus argentatus</i>	Herring gull
Target	<i>Sterna dougallii</i>	Roseate tern
Target	<i>Chroicocephalus ridibundus</i>	Black-headed gull
Target	<i>Botaurus stellaris</i>	Bittern
Secondary	<i>Accipiter nisus</i>	Sparrowhawk
Secondary	<i>Falco tinnunculus</i>	Kestrel
Secondary	<i>Buteo buteo</i>	Buzzard
Secondary	<i>Corvus corax</i>	Raven
Secondary	<i>Phalacrocorax carbo</i>	Cormorant
Secondary	<i>Ardea cinerea</i>	Grey heron
Secondary	<i>Anas platyrhynchos</i>	Mallard
Secondary	<i>Larus marinus</i>	Great black-backed gull
Secondary	<i>Larus fuscus</i>	Lesser black-backed gull
Secondary	<i>Larus canus</i>	Common gull

APPENDIX D – NOTEWORTHY SPECIES RECORDS

Table 10 displays noteworthy bird species records that are located within 2 km of the site boundary. These species records were obtained from Glasgow Museums Biological Records Centre. The Latin and common names for species are given as well as their level of designation. A glossary defining abbreviations used in the table is given in **Appendix E**. If a species is not included in the table below it does not necessarily mean the species is absent from the search area, but rather that data-holding organizations do not have records of it in these locations.

Table 10: Noteworthy species records within 2km of the site boundary

Latin Name	Common Name	Designation
<i>Accipiter gentilis</i>	Goshawk	WCA1
<i>Actitis hypoleucos</i>	Common Sandpiper	Amber
<i>Alauda arvensis</i>	Skylark	SBL, Red
<i>Alcedo atthis</i>	Kingfisher	WCA1, SBL, Amber
<i>Anas crecca</i>	Teal	Amber
<i>Anas penelope</i>	Wigeon	Amber
<i>Anser anser</i>	Greylag Goose	WCA1, Amber
<i>Anser brachyrhynchus</i>	Pink-footed Goose	Amber
<i>Anthus pratensis</i>	Meadow Pipit	Amber
<i>Anthus trivialis</i>	Tree Pipit	SBL, Red
<i>Asio flammeus</i>	Short-eared Owl	SBL, Amber
<i>Branta leucopsis</i>	Barnacle Goose	SBL, Amber
<i>Bucephala clangula</i>	Goldeneye	WCA1, Amber
<i>Calidris alpina</i>	Dunlin	SBL, Amber
<i>Calidris ferruginea</i>	Curlew Sandpiper	Amber
<i>Charadrius dubius</i>	Little Ringed Plover	WCA1
<i>Charadrius hiaticula</i>	Ringed Plover	Red
<i>Circus aeruginosus</i>	Marsh Harrier	WCA1, SBL, Amber
<i>Circus cyaneus</i>	Hen Harrier	WCA1, SBL, Red
<i>Cygnus cygnus</i>	Whooper Swan	WCA1, SBL, Amber
<i>Egretta garzetta</i>	Little Egret	Amber
<i>Emberiza schoeniclus</i>	Reed Bunting	SBL, Amber
<i>Falco columbarius</i>	Merlin	WCA1, SBL, Red
<i>Falco tinnunculus</i>	Kestrel	SBL, Amber
<i>Fringilla montifringilla</i>	Brambling	WCA1, SBL

Latin Name	Common Name	Designation
<i>Hirundo rustica</i>	Swallow	Amber
<i>Lagopus lagopus subsp. scotica</i>	Red Grouse (scotica)	SBL, Amber
<i>Limosa limosa</i>	Black-tailed Godwit	WCA1, SBL, Red
<i>Linaria cannabina</i>	Linnet	SBL, Red
<i>Loxia curvirostra</i>	Common Crossbill	WCA1
<i>Muscicapa striata</i>	Spotted Flycatcher	SBL, Red
<i>Numenius arquata</i>	Curlew	SBL, Red
<i>Pandion haliaetus</i>	Osprey	WCA1, SBL, Amber
<i>Phoenicurus phoenicurus</i>	Redstart	Amber
<i>Picus viridis</i>	Green Woodpecker	Amber
<i>Porzana porzana</i>	Spotted Crake	WCA1, SBL, Amber
<i>Pyrrhula pyrrhula</i>	Bullfinch	SBL, Amber
<i>Riparia riparia</i>	Sand Martin	Amber
<i>Tachybaptus ruficollis</i>	Little Grebe	Amber
<i>Tringa glareola</i>	Wood Sandpiper	WCA1, SBL, Amber
<i>Tringa nebularia</i>	Greenshank	WCA1, Amber
<i>Tringa ochropus</i>	Green Sandpiper	WCA1, SBL, Amber
<i>Turdus philomelos</i>	Song Thrush	SBL, Red
<i>Turdus pilaris</i>	Fieldfare	WCA1, Red
<i>Vanellus vanellus</i>	Lapwing	SBL, Red

APPENDIX E – ABBREVIATIONS

Table 11 displays abbreviations of protected species legislation.

Table 11: Glossary of abbreviations used in this report:

Code	Full Title	Explanation
Amber	Amber list	Amber listed species have a population status in the UK of medium conservation concern.
BA	The Protection of Badgers Act 1992	Legislation making it an offence to kill, injure or take a Badger, or to damage or interfere with a sett unless a licence is obtained from a statutory authority.
BAP	Biodiversity Action Plan	A plan that identifies threats to significantly important species and habitats, and sets out targets and actions to enhance or maintain biodiversity.
DA	The Deer Act 1991	All wild deer with the exception of Muntjac (<i>Muntiacus reevesi</i>) and Chinese Water deer (<i>Hydropotes inermis</i>) are protected by a closed season.
GB RDB	Red Data Book Species	Species identified in one of the UK Red Data 2001.
GB RDB(CR)	Critically Endangered	An IUCN Red List designation for species at an extremely high risk of extinction.
GB RDB(EN)	Endangered	An IUCN Red List designation for species at a very high risk of extinction.
GB RDB(VU)	Vulnerable	An IUCN Red List designation for species at high risk of extinction.
HAP	Habitat Action Plan	A plan that identifies threats to a priority habitat and sets out targets and actions to enhance or maintain that habitat.
HR-1994(Sch 2)	European Protected Species (Schedule 2)	Animals protected on <i>Schedule 2 of the Conservation (Natural Habitats &c.) Regulations 1994</i> as amended in Scotland)
HR-1994(Sch 4)	European Protected Species (Schedule 4)	Plants protected on <i>Schedule 4 of the Conservation (Natural Habitats &c.) Regulations 1994</i> as amended in Scotland)
IUCN	International Union for Conservation of Nature and Natural Resources (also known as The World Conservation Union)	A worldwide partnership and conservation network to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.

Code	Full Title	Explanation
LBAP	Local Biodiversity Action Plan	A plan that identifies threats to locally important species and habitats, and sets out targets and actions in Species Action Plans and Habitat Action Plans to enhance or maintain biodiversity at the county or regional level.
LHAP	Local Habitat Action Plan	A plan that identifies threats to a locally important priority habitat and sets out targets and actions to enhance or maintain that habitat.
LSAP	Local Species Action Plan	A plan that identifies threats to locally important species, and sets out targets and actions to prevent losing that species from the local area.
Notable	Scarce and threatened invertebrates	Invertebrate species which are estimated to occur within the range of 16 to 100 10km squares but subdivision into Notable A and Notable B categories is not possible as there is insufficient information available).
Notable:A	Scarce and threatened invertebrates	Taxa which do not fall within Red Data Book categories but which are none-the-less uncommon in Great Britain and thought to occur in 30 or fewer 10km squares of the National Grid or, for less well-recorded groups, within seven or fewer vice-counties.
Notable: B	Scarce and threatened invertebrates	Taxa which do not fall within Red Data Book categories but which are none-the-less uncommon in Great Britain and thought to occur in between 31 and 100 10km squares of the National Grid or, for less-well recorded groups between eight and twenty vice-counties.
NN	Nationally Notable	Designation for invertebrate taxa that are thought to be notably important in the UK.
NR	Nationally Rare	Species in 15 or fewer hectads in Great Britain.
NS	National Scarce	Species in 16-100 hectads in Great Britain.
OSPAR	OSPAR	Species listed on <i>The Convention for the Protection of the Marine Environment of the North-East Atlantic</i>
Red	Red List	Red listed species have a population status in the UK with high conservation concern.
SAP	Species Action Plan	A plan that identifies threats to significantly important species, and sets out targets and actions to prevent losing that species to extinction.
SBL	Scottish Biodiversity List	A list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland.

Code	Full Title	Explanation
WCA	The <i>Wildlife & Countryside Act 1981</i> as amended by <i>The Wildlife and Natural Environment (Scotland) Act 2011</i>	Containing 4 Parts and 17 Schedules, the Act covers protection of wildlife (birds, and some animals and plants), the countryside, National Parks, and the designation of protected areas, and public rights of way. All wild plants in Britain are protected from intentional uprooting by an unauthorized person, but land owners, land occupiers, persons authorized by either of these or persons authorized in writing by the Local Authority for the area are exempt. Protection for some species may be limited to certain Sections of the Act (e.g. S13(2)).
WCA1	Schedule 1 of The <i>Wildlife & Countryside Act 1981</i> as amended by <i>The Wildlife and Natural Environment (Scotland) Act 2011</i>	<p>This Schedule lists birds protected by special penalties at all times, but virtually all wild birds have some protection in law.</p> <p>Acts which are prohibited for all wild birds (except derogated 'pest' species) include intentional killing, injuring or taking; taking, damaging or destroying nests in use or being built; taking or destroying eggs; possessing or having control of (with certain exceptions but including live for dead birds, parts or derivative); setting or permitting certain traps, weapons, decoys or poisons. Selling, offering or exposing for sale, possessing or transporting for sale any live wild bird, egg or part of an egg or advertising any of these for sale, or dead wild bird including parts or derivatives are also prohibited. Many birds must be formally registered and ringed if kept in captivity.</p> <p>Schedule I WCA birds are additionally protected from intentional or reckless disturbance while building a nest, or when such a bird is in, on or near a nest containing eggs or young, or intentional or reckless disturbance of dependent young.</p>
WCA5	Schedule 5 of The <i>Wildlife & Countryside Act 1981</i> as amended by <i>The Wildlife and Natural Environment (Scotland) Act 2011</i>	Schedule 5 animals are protected from intentional killing, injuring or taking; possessing (including parts or derivatives); intentional or reckless damage, destruction or obstruction of any structure or place used for shelter or protection; selling, offering or exposing for sale, possessing or transporting for the purpose of sale (alive or dead, including parts or derivatives). Protection of some species is limited to certain Sections of the Act (e.g. S9(1), S9(4a), S9(4b), S9(5)).

Code	Full Title	Explanation
WCA8	Schedule 8 of The <i>Wildlife & Countryside Act 1981</i> as amended by <i>The Wildlife and Natural Environment (Scotland) Act 2011</i>	Plants and fungi protected from intentional picking, uprooting, destroying, trading (including parts or derivatives), etc.