

Appendix 5.6

Winter Birds (Part 1 of 3)





C.GEN Killingholme Limited

NORTH KILLINGHOLME POWER PROJECT

Winter Bird Survey Report





C.GEN Killingholme Limited

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Winter Bird Survey Report

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EXECUTIVE SUMMARY

WSP UK Ltd (hereafter to be referred to as 'WSP') was commissioned by C.Gen Killingholme Ltd to carry out wintering bird transect surveys and vantage point surveys of the C.Ro Ports site (hereafter to be known as the 'Site') to support amendments to the previously granted Development Consent Order (DCO) for the North Killingholme Power Project.

The objectives of the surveys were to:

- Provide an up to date baseline of wintering bird activity within and around the Site;
- Identify how bird movements between the Humber Estuary Special Protection Area (SPA) and inland habitats interact with and how bird species utilise the Site;
- Produce a list of bird species encountered and an estimate of the numbers of each bird species utilising the Site and the surrounding area;
- A comparison of the results with those of previous surveys for the Site.

A wintering bird transect was designed using public footpaths around the Site to permit survey of habitats within and surrounding the Site. The transect was walked twice a month from October 2019 to March 2020 and all birds encountered were recorded on field maps.

The vantage point survey made use of two locations, permitting visual coverage of the Site and adjacent habitats. This allowed the identification of interactions and functional links between the Site and Humber Estuary SPA. Vantage point surveys were carried out over two days, twice a month.

A total of 88 species were recorded on or over the Site and surrounding areas during the wintering bird survey. Of these species, 21 were listed on the Humber Estuary SPA citation, 21 were Species of Principal Importance (SPI) under the Natural Environment and Rural Communities (NERC) Act 2006, 15 were Birds of Conservation Concern (BoCC) red list species and 32 were BoCC amber list species.

The results of the surveys highlight the value of habitats adjacent to the Site for wintering bird species and assemblages listed on the SPA citation, as was recorded during surveys to inform the DCO application in 2013. The mud banks at Killingholme Haven and along the foreshore adjacent to the Site are valuable for a range of qualifying wader and waterfowl species including dunlin, lapwing, redshank and shelduck. The adjacent wetlands of Halton Marshes and Killingholme Haven Pits are also valuable for species such as wintering avocet and marsh harrier. The Site itself has little value for wintering bird species.

There is no evidence that the conclusions of previous surveys and assessments of the Site should be altered by the findings of these surveys. Although some changes in species composition and distribution have been identified, there has been no material change since surveys that were completed to accompany the DCO application.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1. WSP UK Limited (hereafter referred to as 'WSP') was commissioned by C.GEN Killingholme Limited (hereafter referred to as C.GEN) to update ecological baseline data in relation to a proposed amendment to the Development Consent Order (DCO) granted for the North Killingholme Power Project in 2014. The project proposals include the construction and operation of a new 470 megawatt electrical (MWe) thermal generating station and associated development (hereafter referred to as the Proposed Scheme).
- 1.1.2. The proposed amendments to the DCO include a non-material change application to extend the lifetime of the DCO, initially granted in 2014. The Order limits, proposed plant and generation equipment, remains the same as described in the Environmental Statement (referred to as the Principal Project Area). The Principal Project Area is centred at National Grid Reference: TA 157 198); and hereafter referred to as the 'Site' (displayed on Figure 1).
- 1.1.3. This Site is located at the north western extent of Grimsby/ Killingholme residential and industrial locality of the Humber estuary and borders the Humber Estuary Special Protection Area (SPA). To the southeast; port, industrial and residential developments dominate the Lincolnshire side of the Humber, with agricultural land the dominant land use to the south and east.

1.2 ECOLOGICAL BACKGROUND

- 1.2.1. This Site has been subject to a number of protected species surveys and assessment work since 2006. As part of the Environmental Impact Assessment for the North Killingholme Power Project produced in 2013 (**Parsons Brinkerhoff 2013**), Parsons Brinckerhoff drew together survey results from a number of previous winter bird surveys for the Site itself and for the wider Humber Estuary area (see **References** for details of previous survey reports).
- 1.2.2. The survey results were used to inform the Ecology and Biodiversity Chapter of the North Killingholme Power Project Environmental Statement and were undertaken between 2007 and 2013.
- 1.2.3. Subsequently, in 2019, WSP was commissioned by C.GEN to carry out an updated Preliminary Ecological Appraisal (PEA) (**WSP, 2020**) of the Site and surrounding areas to provide an up to date baseline of the Site and identify the need for further protected and notable species surveys.
- 1.2.4. The PEA identified the proximity of the Site to the Humber Estuary Special Protection Area (SPA), Ramsar Site and Special Area of Conservation (SAC) which is located immediately adjacent to the south and east of the Site boundary. In order to maintain an up to date baseline for interactions and functional links between the SPA and the Site, WSP recommended additional breeding, passage and winter bird surveys.

1.2.5. The Humber Estuary SPA qualifies under article 4.1 of the Birds Directive (79/409/EEC)¹ as it is used regularly by 1% or more of the populations in Great Britain of the following species listed in Annex I during the winter periods:

- Avocet *Recurvirostra avosetta*, 59 individuals wintering representing 1.7% of the Great British population;
- Bittern *Botaurus stellaris*, 4 individuals wintering representing 4.0% of the Great British population;
- Hen harrier *Circus cyaneus*, 8 individuals wintering representing 1.1% of the Great British population;
- Golden plover *Pluvialis apricaria*, 30,709 individuals wintering representing 12.3% of the Great British population;
- Bar-tailed godwit *Limosa lapponica*, 2,752 individuals wintering representing 4.4% of the Great British population;
- Ruff *Philomachus pugnax*, 128 individuals on passage representing 1.4% of the Great British population;
- Bittern, 2 booming males, breeding representing 10.5% of the Great British population;
- Marsh harrier *Circus aeruginosus*, 10 breeding females representing 6.3% of the Great British population;
- Avocet, 64 breeding pairs representing 8.6% of the Great British population;
- Little tern *Sterna albifrons*, 51 breeding pairs representing 2.1% of the Great British population.

1.2.6. The site qualifies under article 4.2 of the Directive (79/409/EEC)² as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) over winter:

- Shelduck *Tadorna tadorna*, 4,464 individuals wintering representing 1.5% of the Northwestern European breeding population;
- Knot *Calidris canutus*, 28,165 individuals wintering representing 6.3% of the *islandica* subspecies;
- Dunlin *Calidris alpina*, 22,222 individuals wintering representing 1.7% of the *alpina* subspecies Western European, non-breeding population;
- Black-tailed godwit *Limosa limosa*, 1,113 individuals wintering representing 3.2% of the *islandica* subspecies;
- Redshank *Tringa totanus*, 4,632 individuals wintering representing 3.6% of the *britannica* subspecies;
- Knot, 18,500 individuals on passage representing 4.1% of the *islandica* subspecies;
- Dunlin, 20,269 individuals on passage representing 1.5% of the *alpina* subspecies, Western European, non-breeding population;
- Black-tailed godwit, 915 individuals on passage representing 2.6% of the *islandica* subspecies;

¹ Population estimates are derived from the original JNCC citation.

² Population estimates are derived from the original JNCC citation.

- Redshank, 7,462 individuals on passage representing 5.7% of the *britannica* subspecies.

- 1.2.7. Assemblage qualification: The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season: In the non-breeding season, the area regularly supports 153,934 individual waterbirds (five year peak mean 1996/97 – 2000/01), including dark-bellied brent goose *Branta bernicla bernicla*, shelduck, wigeon *Anas penelope*, teal, mallard *Anas platyrhynchos*, pochard *Aythya ferina*, scaup *Aythya marila*, goldeneye *Bucephala clangula*, bittern, oystercatcher *Haematopus ostralegus*, avocet, ringed plover *Charadrius hiaticula*, golden plover, grey plover *Pluvialis squatarola*, lapwing *Vanellus vanellus*, knot, sanderling *C. alba*, dunlin, ruff *Philomachus pugnax*, black-tailed godwit, bar-tailed godwit, whimbrel *Numenius phaeopus*, curlew *N. arquata*, redshank, greenshank *T. nebularia* and turnstone *Arenaria interpres*.
- 1.2.8. Non-qualifying species of interest: The SPA is used by non-breeding merlin *Falco columbarius*, peregrine *F. peregrinus* and short-eared owl *Asio flammeus*, breeding common tern *Sterna hirundo* and kingfisher *Alcedo atthis* (all species listed in Annex I to the EC Birds Directive) in numbers of less than European importance (less than 1% of the GB population).
- 1.2.9. In addition to the Humber estuary SPA/ Ramsar the PEA also identified the presence of two Sites of Special Scientific Interest (SSSI) which include wintering/passage birds as interest features, within 2km of the Site:
- **Humber Estuary SSSI:** The Humber Estuary is a nationally important site with a series of nationally important habitats. These are the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The estuary supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins.
 - **North Killingholme Haven Pits SSSI:** The main reasons for notification of these pits are their importance as large saline lagoons with an exceptionally rich fauna, and their significance as roosting and feeding grounds for waterfowl, which occur in internationally important numbers in the Humber Estuary in winter.

1.3 BRIEF AND OBJECTIVES

- 1.3.1. To provide current baseline data regarding the wintering bird community within and around the Site WSP UK Ltd was commissioned to complete a wintering bird survey with vantage point surveys to provide:
- An up to date baseline of wintering bird activity around the Site;
 - How bird movements between the Humber Estuary SPA and inland habitats interact and how bird species utilise the Site and adjacent areas;
 - A list of bird species encountered and an estimate of the numbers of each bird species utilising the Site and surrounding area;
 - A comparison of results with those of previous winter bird surveys and desktop data gathered for the 2013 DCO application for the Proposed Scheme, to identify any significant changes to the Site status.
- 1.3.2. The results of the above surveys are contained within this report.

2 METHODS

2.1 DESK STUDY

2.1.1. In order to provide an updated background to the survey effort for the Proposed Scheme a request for British Trust for Ornithology (BTO) Wetland Bird Survey (WeBS) data was requested for three WeBS compartments within the Humber Estuary SPA. Data was requested for the following compartments:

- Halton Marshes (Sector I);
- Killingholme Marshes (Sector J); and
- North Killingholme Pits (Sector JJ).

2.1.2. These were requested as they are the closest WeBS compartments to the Site, and therefore provided the most representative desktop data available.

2.2 WINTERING BIRD SURVEY

2.2.1. To inform an evaluation of use of the Site and adjacent areas (hereafter collectively referred to as 'the Survey Area') by wintering birds, twelve wintering bird survey visits were completed between 31 October 2019 and 31 March 2020. The survey methodology followed a standard method based on the British Trust for Ornithology's (BTO's) Common Bird Census (CBC), as summarised by Bibby et al. (2000). As the Survey Area includes waterbodies the walked winter bird surveys also incorporated a 'Wetland Bird Survey' (WeBS) or 'Core Count' methodology. This involved surveyors counting the birds present at Killingholme Haven Pits (south of the Site) and the pits at Halton Marshes (north of the Site). The results of the wetland bird surveys were incorporated into the 2019/2020 wintering bird survey data.

2.2.2. Start and end times of the surveys were planned to include dawn and dusk periods and to cover high and low tides where day length, weather and light conditions allowed.

2.2.3. During each survey visit a Transect around the Site and surrounding areas was walked slowly, scanning and listening for birds (see **Figure 1**). In accordance with good practice guidance (Bibby et al, 2000) the start point and direction of the route walked were varied on each survey visit; this serves to minimise bias, as birds may be active at different times of day in different areas. The locations of birds seen and heard were mapped using standard BTO two letter codes and activity symbols.

2.2.4. The transect used encompassed the external boundary of the Site and an area in excess of 500m, (the 'Survey Area'). The extent of the Survey Area permitted almost complete visual access to the external boundary of the Site and permitted good visual coverage of the surrounding agricultural landscape. The transect was designed to compensate for the fact that, due to access restrictions, the route had to follow public footpaths.

DATES OF SURVEY AND PERSONNEL

2.2.5. Surveys were carried out by pairs of surveyors. At least one of the surveyors for each survey visit was an experienced ornithologist with in excess of ten years professional ornithological experience including wintering and breeding bird surveys and vantage point surveys.

2.2.6. Dates of survey and weather conditions are given in **Table 2-1** below.

Table 2-1 – Wintering Bird Survey Dates, Timings and Weather Conditions

Survey Visit	Date	Start time	End Time	Sunrise	Sunset	High Tide	Low Tide	Weather Conditions
1	30.10.19	9:00	11:30	06:56	16:33	06:56	13:29	10°C, Cloud 4/8, Wind 1:E, Rain:0, Snow:0, Frost:0,
2	31.10.19	09:00	11:30	06:58	16:31	07:39	14:06	9°C, Cloud 5/8, Wind 3:E, Rain:0, Snow:0, Frost:0,
3	08.11.19	07:15	11:15	07:13	16:16	09:21	15:36	5°C, Cloud 2/8, Wind 3:NNW, Rain:0, Snow:0, Frost:0
4	21.11.19	09:35	15:20	07:38	15:56	13:17	19:07	6°C, Cloud 8/8, Wind 5:SE, Rain:0, Snow:0, Frost:0
5	12.12.19	10:25	13:40	08:09	15:41	12:01	18:01	6°C, Cloud 8/8, Wind 3:S, Rain:0, Snow:0, Frost:0
6	19.12.19	09:08	13:50	08:15	15:42	11:26	17:20	9°C, Cloud 4/8, Wind 4:SW, Rain:0, Snow:0, Frost:0
7	03.01.20	08:30	12:30	08:18	15:53	11:25	17:13	6°C, Cloud 8/8, Wind 3:NW, Rain:0, Snow:0, Frost:0
8	15.01.20	11:45	16:00	08:10	16:11	09:08	15:14	8°C, Cloud 7/8, Wind 5:SW, Rain:0, Snow:0, Frost:0
9	13.02.20	08:00	12:40	07:25	17:06	08:51	15:00	4°C, Cloud 8/8, Wind 4:SE, Rain:0, Snow:0, Frost:0
10	28.02.20	08:30	12:15	06:53	17:36	08:33	14:43	3°C, Cloud 8/8, Wind 2:S, Rain:0, Snow:0, Frost:0
11	12.03.20	08:15	12:30	06:44	17:43	07:48	14:03	6°C, Cloud 0/8, Wind 4:SW, Rain:0, Snow:0, Frost:0
12	30.03.20	15:30	19:30	06:40	19:31	10:00	22:19	9°C, Cloud 8/8, Wind 5:N, Rain:0, Snow:0, Frost:0

2.3 VANTAGE POINT SURVEY METHODOLOGY

- 2.3.1. Methods were adapted from **SNH (2017)**. This guidance pertains to the assessment of effects of wind farms on birds, although many aspects of the survey methodology are also applicable to assessing the effects of powerlines on birds (**SNH, 2016**). Many aspects of the methodology are considered applicable to other development projects such as the Proposed C.Gen Development, given that it generates data on the presence and relative behaviours of birds within an area. Two Vantage Point (VP) locations (North and South) were selected to achieve coverage of the Survey Area, with particular focus on the monitoring of bird movements between the Humber Estuary SPA, the Site itself and the surrounding habitats.
- 2.3.2. Target species for the vantage point surveys were those species listed as qualifying features on the SPA, Ramsar, and SSSI citations for the Humber Estuary and associated SSSIs (see **1.2.6** and **1.2.7** above). As well as those qualifying species listed on the citations, non-qualifying species of wader, waterfowl and raptor were included as target species. Regular flights lines and movements of large numbers of other species were also recorded as these could represent habitual movements of birds between the SPA and surrounding habitat which could be disrupted by changes to activity and development on the Site.
- 2.3.3. For target species each flight line recorded was entered on a recording form detailing the number of birds, direction of flight and further notes on behaviour. A flight line with details corresponding to those on the survey form was drawn on a survey map, the height of the flight recorded in 10m height bands and the duration of the flight was also recorded.
- 2.3.4. A total of 66 hours of vantage point survey was carried out from each of the two vantage points between October 2019 and March 2020. Each vantage point session lasted for two hours with each day of surveys being split into three sessions conducted from alternating North and South Vantage Point locations. Survey effort was distributed throughout available daylight hours from sunrise to sunset which also facilitated coverage of tidal variations on the estuary.

TIMINGS OF SURVEY AND WEATHER CONDITIONS

- 2.3.5. Details of the timings, weather conditions and tide times during the vantage point surveys are presented in **Appendix B**. A synopsis of the flight data recorded during the surveys is included in **Appendix C**.

2.4 NOTES AND LIMITATIONS

- 2.4.1. The transect used for winter bird surveys followed much of the outer boundary of the Site. There was therefore potential for bird species only using habitats within the Site boundary to be missed. As the majority of habitats within the Site boundary were of very poor quality for wintering birds (being primarily hard-standing and buildings, with regular disturbance from ongoing port operations across the Site), this is not considered to be a significant constraint to the assessment of target species. More suitable habitats around the periphery of the Site (for example waterbodies and reedbeds at the northern and southern boundaries of the Site) did receive coverage during the transect surveys.
- 2.4.2. The most recent pre-existing wintering bird data for the Proposed Scheme was from 2011. This has been used as a reference to assess if any significant changes have occurred to use of the Site and surrounding area by wintering birds. As the age of the data means it is likely to be of reduced



relevance when assessing Site value, it has not been used to inform the baseline and therefore does not represent a significant constraint to the value of data gathered in 2019/2020.

- 2.4.3. No further site specific limitations were applicable to this survey. Whilst every effort has been made to detect all species present some bird species are more difficult to detect due to their shy or secretive nature and therefore may have gone undetected by this survey. As a constraint applicable to all bird surveys this is not considered to place significant constraints upon interpretation of the results for this Site, particularly given the majority of the Site comprises hard-standing and is an operational site with regular disturbance from human activity.

3 RESULTS AND EVALUATION

3.1 OVERVIEW

SITE CONDITIONS, HUMAN ACTIVITY AND DISTURBANCE

- 3.1.1. At the time of survey, the Site itself comprised an active port terminal, car storage yards and an area characteristic of a brownfield site. The Site is subject to consistent levels of disturbance as a result of regular movements of vehicles and people across the majority of the Site. This would involve movements of large numbers of cars and commercial vehicles as well as goods and haulage vehicles either arriving or leaving on ships docked at the landing stages.
- 3.1.2. The north of the Site saw a majority of small vehicle movements as well as human movements as the vehicles were driven onto the asphalt car park and drivers got out and moved around. This area also saw the loading of vehicles onto car transporters, ready for leaving the Site, which involved regular human activity. The north of the Site was raised above the surrounding agricultural fields and partially screened by a vegetated bund which had recently been cleared of scrub and bramble, with willow *Salix* sp. trees heavily pruned.
- 3.1.3. The south of the Site was more built up with a warehouse building dominating the south east corner and the port terminal; associated buildings and vehicle parking areas dominating the central area. These areas also saw a consistent level of vehicle and human activity as both passengers and staff moved around the Site and it is believed that these levels of activity likely carried on through the evening and night based on discussions with site personnel.
- 3.1.4. Semi-natural habitats were located in the east of the Site with scrub, hedgerows and two reed-lined *Phragmites australis* waterbodies located near to the northern/southern boundary. These habitats were not extensive within the Site boundary and as a result were judged to be of low value for wintering SPA bird species. These natural habitats could be viewed from the exterior of the Site along the marked transect routes (see **Figure 1**).
- 3.1.5. Human disturbance of the habitats surrounding the Site; the wetlands and agricultural fields included within the remainder of the Survey Area, was low. The public footpaths used for the transect were not well used by walkers or dog walkers and there was no evidence of shooting in the area during surveys. The road along the Humber estuary flood defence wall, was used a little more regularly by walkers, dog walkers, cyclists and anglers. In the case of anglers, most activity was at high tide when less mud was exposed on the foreshore; wader and other bird activity in those areas adjacent to the wall road was reduced at high tide, most likely due to the lack of exposed foreshore. During low tides, human activity on the wall road reduced; use by dog walkers, cyclists and other users did not have a noticeable effect on foraging birds on the foreshore.

3.2 DESK STUDY

- 3.2.1. Data were provided by WeBS, a Partnership jointly funded by the British Trust for Ornithology, Royal Society for the Protection of Birds and Joint Nature Conservation Committee, in association with The Wildfowl & Wetlands Trust, with fieldwork conducted by volunteers. Data was requested for three sectors covering the areas immediately adjacent to the Site and including stretches of the Humber Estuary to the north and south of the Site.

- 3.2.2. Sector I, Halton Marshes is adjacent to the Site boundary to the east, along the estuary and foreshore, and covering agricultural land, two waterbodies, reedbed, areas of scrub and rough grassland as well as an extensive area of wet grassland to the north of the Site as far as East Halton Skitter which is managed for waders and waterfowl.
- 3.2.3. Sector J, Killingholme Marshes is adjacent to the southern boundary of the Site and is dominated by the estuary foreshore, agricultural land, salt marsh and reed bed. It is bordered by an extensive area of hardstanding for the storage of imported cars, port infrastructure and buildings, some associated with the Site.
- 3.2.4. Sector JJ, North Killingholme Pits lies immediately to the south of the Site boundary and includes the North Killingholme Haven Pits SSSI and Yorkshire Wildlife Trust nature reserve. This sector is dominated by four lagoons and ponds bordered with common reed *Phragmites australis* and sea club-rush *Bolboschoenus maritimus*. It is bordered to the east, south and west by Sector J, Killingholme Marshes and Sector I, Halton Marshes, to the north.
- 3.2.5. Data provided for each of the WeBS sector was in the five-year summary format with average numbers for recorded species over the preceding five years 2013/14 – 2017/18 as well as monthly peaks over those five years.
- 3.2.6. Summary tables of five-year average monthly counts and peak counts are presented below in **Tables 3-1, 3-2 and 3-3**.

Table 3-1 - Summary of Halton Marshes (Sector I) WeBS Data for 2013/14 – 2017/18: Peak Monthly Count (over five years) and Five Year Monthly Average

Month	Oct		Nov		Dec		Jan		Feb		Mar	
	Average	Peak	Average	Peak	Average	Peak	Average	Peak	Average	Peak	Average	Peak
Greylag Goose (British/Irish)	0	0	6	19	0	0	3	10	20	39	1	2
Mute Swan	0	0	0	0	0	0	0	0	3	6	1	4
Shelduck	0	0	0	0	0	0	0	0	1	2	4	12
Shoveler	0	0	0	0	0	0	0	0	0	0	1	2
Gadwall	0	0	0	0	0	0	0	0	0	0	9	26
Wigeon	0	0	0	0	0	0	0	0	0	0	3	8
Mallard	4	7	12	24	20	38	33	42	17	28	7	13
Pintail	0	0	0	0	0	0	0	0	0	0	1	2
Teal	2	3	4	12	21	40	21	36	58	82	37	82
Pochard	0	0	0	0	0	0	3	8	2	4	2	6
Tufted Duck	0	0	3	8	0	0	0	0	3	3	12	35
Little Grebe	0	0	0	0	0	0	0	0	1	1	0	1
Great Crested Grebe	2	3	1	4	0	0	1	3	1	2	1	2
Little Egret	0	0	0	0	0	0	0	0	1	1	0	0
Cormorant	3	3	7	11	2	3	2	3	1	1	1	3
Moorhen	0	0	0	0	0	1	1	2	1	1	0	1
Coot	0	0	5	9	0	0	6	16	4	7	4	10
Lapwing	0	0	783	2350	57	135	478	945	153	215	0	0
Curlew	2	4	1	2	1	2	3	9	12	23	1	2
Black-tailed Godwit	16	28	2	5	0	0	0	0	0	0	0	0
Turnstone	1	1	8	25	2	6	0	1	0	0	0	0
Dunlin	123	245	37	90	118	320	40	120	23	45	0	0
Redshank	33	41	32	41	9	15	4	11	1	1	3	6



Table 3-2 - Summary of Killingholme Marshes (Sector J) WeBS Data for 2013/14 – 2017/18: Peak Monthly Count (over five years) and Five Year Monthly Average

Month	Oct		Nov		Dec		Jan		Feb		Mar	
Species	Average	Peak	Average	Peak	Average	Peak	Average	Peak	Average	Peak	Average	Peak
Greylag Goose (British/Irish)	0	0	0	0	0	0	1	1	3	5	9	28
Mute Swan	0	0	0	0	0	0	0	0	0	0	1	2
Shelduck	18	18	46	105	13	32	18	28	62	110	64	102
Shoveler	0	0	0	0	0	0	39	78	34	47	23	58
Gadwall	0	0	0	0	1	4	9	17	3	6	5	16
Wigeon	0	0	0	0	0	0	0	0	0	0	0	1
Mallard	2	3	0	0	3	6	21	41	21	23	9	16
Pintail	0	0	0	0	0	0	0	0	1	2	0	0
Teal	57	57	55	72	71	108	188	376	245	273	86	150
Tufted Duck	0	0	0	0	1	2	0	0	0	0	0	0
Grey Heron	0	0	0	0	0	1	0	0	1	1	0	0
Little Egret	1	1	0	0	0	0	0	0	1	2	1	2
Cormorant	0	0	0	1	0	0	1	1	0	0	0	0
Water Rail	0	0	0	0	0	0	0	0	1	1	0	0
Moorhen	0	0	0	0	0	0	0	0	4	8	1	2
Coot	10	20	1	2	29	51	13	31	32	53	12	17
Oystercatcher	0	0	0	0	0	0	0	0	3	6	3	5
Avocet	0	0	1	2	0	0	0	0	6	11	16	24
Lapwing	0	0	247	445	232	335	974	1550	238	335	0	0
Ringed Plover	0	0	0	0	0	0	1	1	1	1	3	5
Curlew	28	28	58	97	14	26	29	34	37	66	28	56
Bar-tailed Godwit	0	0	0	0	2	6	1	1	0	0	0	0
Black-tailed Godwit	0	0	0	1	6	12	1	2	26	52	2	7
Dunlin	70	70	102	167	85	210	175	245	62	124	33	51
Snipe	0	0	0	0	0	1	0	0	0	0	1	3
Redshank	34	34	151	203	131	180	131	166	105	154	19	34

Table 3-3 - Summary of Killingholme Pits (Sector JJ) WeBS Data for 2013/14 – 2017/18: Peak Monthly Count (over five years) and Five Year Monthly Average

Month	Oct		Nov		Dec		Jan		Feb		Mar	
	Average	Peak	Average	Peak	Average	Peak	Average	Peak	Average	Peak	Average	Peak
Greylag Goose (British/Irish)	30	91	0	0	0	0	14	48	2	4	8	23
Mute Swan	0	0	0	1	0	0	1	2	1	2	1	2
Shelduck	0	0	0	1	0	0	1	2	0	0	7	14
Shoveler	11	34	0	0	0	0	0	0	0	0	0	0
Mallard	0	0	1	4	0	1	6	16	6	7	10	15
Teal	5	10	4	10	1	4	33	133	1	2	30	67
Grey Heron	1	2	0	1	0	1	1	1	0	0	0	0
Little Egret	1	4	1	3	1	2	0	0	1	1	0	0
Cormorant	0	0	0	0	0	0	0	0	1	1	0	1
Moorhen	0	0	0	1	0	0	0	0	0	0	0	0
Coot	0	0	0	0	0	0	0	1	0	0	0	0
Oystercatcher	0	0	0	0	0	0	0	0	1	1	1	2
Avocet	4	12	0	0	0	0	0	0	0	0	3	9
Lapwing	77	135	26	58	153	611	0	1	0	0	0	0
Ringed Plover	0	1	0	0	0	0	0	0	0	0	0	0
Curlew	0	1	1	2	1	4	0	0	0	0	0	1
Black-tailed Godwit	2020	3810	0	0	0	0	0	0	0	0	0	0
Ruff	2	7	0	0	0	0	0	0	0	0	0	0
Dunlin	66	180	0	1	35	138	1	2	0	0	0	0
Snipe	0	0	4	14	1	3	3	10	26	52	5	15
Redshank	66	157	20	49	20	43	10	23	0	0	11	33
Kingfisher	0	0	0	1	0	0	0	0	0	0	0	0

3.3 FIELD SURVEY RESULTS

- 3.3.1. A total of 88 species were recorded on or over the Survey Area during the winter bird and vantage point surveys.
- 3.3.2. The numbers of birds recorded within each category are listed below, it should be noted categories are not exclusive and a species can be listed in more than one conservation category (for example listed as both a Species of Principal Importance (SPI) in accordance with the Natural Environment and Rural Communities (NERC) Act 2006 and a UK Biodiversity Action Plan (BAP) species and as either a red or amber list Bird of Conservation Concern (BoCC)).
- Twenty-two species listed as qualifying species, included in the qualifying assemblage of the SPA or listed as non-qualifying species of interest; avocet, bittern, golden plover, marsh harrier, shelduck, knot, dunlin, black-tailed godwit, redshank, dark-bellied brent goose³, wigeon³, teal³, mallard³, pochard³, greenshank³ oystercatcher³, lapwing³, curlew³, turnstone³, merlin⁴ and kingfisher⁴ were recorded using the Survey Area.
 - Eleven species listed as SPI in accordance with Section 41 of the NERC Act 2006 (also UKBAP species); black-tailed godwit, bittern, curlew, dunnock *Prunella vulgaris*, herring gull *Larus argentatus*, lapwing, grey partridge *Perdix perdix*, reed bunting *Emberiza schoeniclus*, song thrush *Turdus philomelos*, starling *Sturnus vulgaris* and yellowhammer *Emberiza citrinella* were recorded in the Survey Area;
 - Fifteen Birds of Conservation Concern (BoCC) red list species; black-tailed godwit, curlew, merlin, grey partridge, herring gull *Larus argentatus*, lapwing, linnet *Carduelis canabina*, pochard, redwing *Turdus iliacus*, skylark *Alauda arvensis*, woodcock *Scolopax rusticola*, starling, song thrush, yellowhammer, fieldfare; and
 - Thirty-three BoCC amber list species; avocet, bullfinch *Pyrrhula pyrrhula*, black-headed gull *Chroicocephalus ridibundus*, bittern, brent goose, barnacle goose *Brant leucopsis*, common gull *Larus canus*, common sandpiper *Actitis hypoleucos*, dunnock; dunlin, gadwall *Anas strepera*, greylag goose *Anser anser*, great black-backed gull *Larus marinus*, greenshank kestrel *Falco tinnunculus*, knot, kingfisher, mute swan *Cygnus olor*, meadow pipit *Anthus pratensis*, mallard, marsh harrier, oystercatcher, pink-footed goose *Anser brachyrhynchus*, redshank, snipe *Gallinago gallinago*, shelduck, shoveler *Anas clypeata*, stock dove *Columba oenas*, reed bunting, lesser black-backed gull, teal, turnstone *Arenaria interpres*, and wigeon.

3.4 RESULTS OF WINTER BIRD SURVEY – TRANSECT VISITS

- 3.4.1. **Table 3-4** lists all bird species recorded; records from all survey visits of species which are of conservation concern are mapped on **Figures 2 to 13**. SPA qualifying species are mapped individually by species. These include species included in the SPA assemblage (rather than being individual qualifying interests).

³ As part of the bird assemblage

⁴ Non-qualifying species of interest

Table 3-4 – SPA Species and Species of Conservation Concern Recorded on Wintering Bird Surveys

Species Common Name	Scientific Name	SPA	Annex I	BoCC List	NERC s41	LBAP	Peak count
Avocet	Recurvirostra avosetta	X	X	Amber	-	-	88
Barnacle Goose	Branta leucopsis	-	X	Amber	-	-	1
Black-headed Gull	Larus ridibundus	-	-	Amber	-	-	127
Black-tailed Godwit	Limosa limosa	X	-	Red	X	-	208
Brambling	Fringilla montifringilla	-	-	-	-	-	4
Bullfinch	Pyrrhula pyrrhula	-	-	Amber	-	X	11
Common Gull	Larus canus	-	-	Amber	-	-	32
Common Sandpiper	Actitis hypoleucos	-	-	Amber	-	-	2
Curlew	Numenius arquata	X*	-	Red	X	X	84
Dunlin	Calidris alpina	X	-	Amber	-	-	455
Dunnock	Prunella modularis	-	-	Amber	X	-	5
Fieldfare	Turdus pilaris	-	-	Red	-	-	5
Gadwall	Anas strepera	-	-	Amber	-	-	27
Golden Plover	Pluvialis apricaria	X	X	-	-	-	36
Great Black-backed Gull	Larus marinus	-	-	Amber	-	-	2

Species Common Name	Scientific Name	SPA	Annex I	BoCC List	NERC s41	LBAP	Peak count
Greenshank	Tringa nebularia	X*	-	Amber	-	-	2
Grey Heron	Ardea cinerea	-	-	-	-	-	1
Greylag Goose	Anser anser	-	-	Amber	-	-	233
Herring Gull	Larus argentatus	-	-	Red	X	-	7
Kestrel	Falco tinnunculus	-	-	Amber	-	-	3
Kingfisher	Alcedo atthis	X^	X	Amber	-	-	2
Knot	Calidris canutus	X	-	Amber	-	-	298
Lapwing	Vanellus vanellus	X*	-	Red	X	X	542
Lesser Black-backed Gull	Larus fuscus	-	-	Amber	-	-	3
Linnet	Carduelis cannabina	-	-	Red	-	X	15
Little Egret	Egretta garzetta	-	X	-	-	-	5
Mallard	Anas platyrhynchos	X*	-	Amber	-	-	130
Marsh Harrier	Circus aeruginosus	X	X	Amber	-	-	3
Meadow Pipit	Anthus pratensis	-	-	Amber	-	-	6
Merlin	Falco columbarius	X^	X	Red	-	-	1
Oystercatcher	Haematopus ostralegus	X*	-	Amber	-	-	5

Species Common Name	Scientific Name	SPA	Annex I	BoCC List	NERC s41	LBAP	Peak count
Partridge	Perdix perdix	-	-	Red	X	X	7
Pink-footed Goose	Anser brachyrhynchus	-	-	Amber	-	-	40

3.4.2. A full list of species recorded during the wintering bird transect surveys is located in **Appendix A**.

3.5 RESULTS OF VANTAGE POINT SURVEYS

3.5.1. Species listed on the SPA citation, and those considered to be of conservation concern recorded on or over the Site during the vantage point surveys are listed in Table 3-5. This included birds flying over the Site or loafing or foraging on the Site.

Table 3-5 – Target Species Recorded During Vantage Point Surveys

Common Name	Scientific name	SPA	Annex I	BoCC List	NERC 41	LBAP	No. of flights	No. of flights over Site
Avocet	Recurvirostra avosetta	X	X	Amber	-	-	12	0
Barn owl	Tyto alba	-	-	-	-	X	2	0
Barnacle goose	Branta leucopsis	-	X	Amber	-	-	1	0
Bittern	Botaurus stellaris	X	X	Amber	X	X	2	2
Black-tailed godwit	Limosa limosa	X	-	Red	X	-	34	13
Brent goose	Branta bernicla	X*	-	Amber	-	-	2	0
Buzzard	Buteo buteo	-	-	-	-	-	1	0

Common Name	Scientific name	SPA	Annex I	BoCC List	NERC 41	LBAP	No. of flights	No. of flights over Site
Canada goose	<i>Branta canadensis</i>	-	-	-	-	-	3	1
Cormorant	<i>Phalacrocorax carbo</i>	-	-	-	-	-	59	19
Curlew	<i>Numenius arquata</i>	X*	-	Red	-	X	82	21
Dunlin	<i>Calidris alpina</i>	X	-	Amber	-	-	62	8
Golden plover	<i>Pluvialis apricaria</i>	X	X	-	-	-	2	2
Grey heron	<i>Ardea cinerea</i>	-	-	-	-	-	3	1
Greylag goose	<i>Anser anser</i>	-	-	Amber	-	-	70	34
Kestrel	<i>Falco tinnunculus</i>	-	-	Amber	-	-	21	7
Knot	<i>Calidris canutus</i>	X	-	Amber	-	-	9	0
Lapwing	<i>Vanellus vanellus</i>	X*	-	Red	X	X	105	51
Little egret	<i>Egretta garzetta</i>	-	X	-	-	-	17	7
Mallard	<i>Anas platyrhynchos</i>	X*	-	Amber	-	-	61	10
Marsh harrier	<i>Circus aeruginosus</i>	X	X	Amber	-	-	22	4
Mute swan	<i>Cygnus olor</i>	-	-	Amber	-	-	8	5

Common Name	Scientific name	SPA	Annex I	BoCC List	NERC 41	LBAP	No. of flights	No. of flights over Site
Oystercatcher	Haematopus ostralegus	X*	-	Amber	-	-	12	4
Pink-footed goose	Anser brachyrhynchus	-	-	Amber	-	-	3	3
Pochard	Aythya ferina	X*	-	Red	-	-	1	0
Redshank	Tringa totanus	X	-	Amber	-	X	194	31
Shelduck	Tadorna tadorna	X	-	Amber	-	-	16	4
Shoveler	Anas clypeata	-	-	Amber	-	-	1	0
Snipe	Gallinago gallinago	-	-	Amber	-	X	27	9
Sparrowhawk	Accipiter nisus	-	-	-	-	-	7	1
Teal	Anas crecca	X*	-	Amber	-	-	145	15
Tufted Duck	Aythya fuligula	-	-	-	-	-	1	0
Turnstone	Arenaria interpres	X*	-	Amber	-	-	8	0

Key to Conservation Categories: BoCC4-Birds of Conservation Concern 4. UK BAP-UK Biodiversity Action Plan Priority Species. LBAP-Local Biodiversity Action Plan Priority Species. Annex 1-EC Birds Directive. Schedule 1-Wildlife and Countryside Act. SPA-Humber Estuary Special Protected Area. NERC s41-Natural Environment and Rural Communities Act, species of principle importance England.

3.6 DISCUSSION

SPA QUALIFYING SPECIES

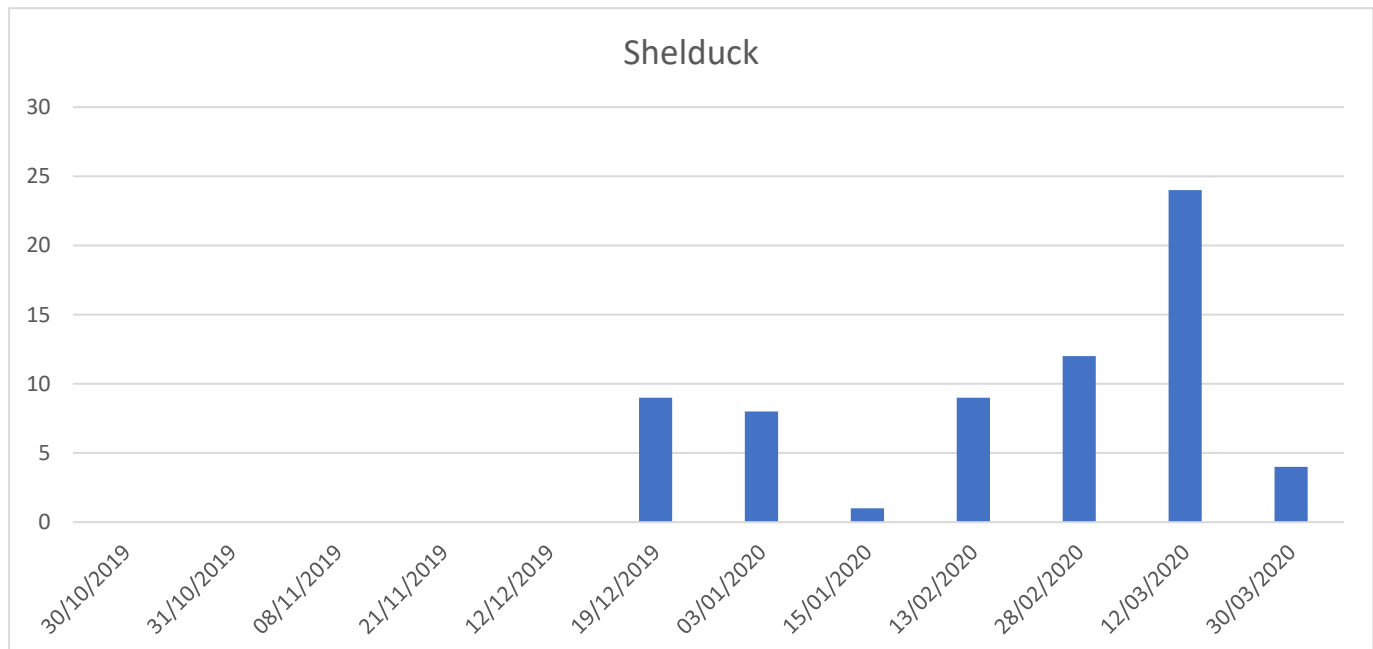
Brent Goose

- 3.6.1. Previous surveys used to inform the DCO application recorded only two Brent Geese, in flight over the Humber at Pyewipe near Grimsby in February 2011.
- 3.6.2. Brent geese were recorded during a vantage point survey at the northern vantage point on 31 October 2019. Two flocks of 310 and 75 birds respectively were recorded flying inland from the estuary, heading west, to the north of the Site boundary. Brent goose movements during the survey are presented in **Figure 14**.
- 3.6.3. The flocks did not cross the Site and were not seen to land in the surrounding area.
- 3.6.4. WeBS data contained no records of Brent geese from any of the survey sectors.
- 3.6.5. No further records of Brent geese were made during vantage point or winter bird surveys during the 2019/2020 winter season.

Shelduck

- 3.6.6. Shelduck was not recorded during either vantage point or winter bird surveys in the early part of the season with the exception of a single flight record made by two birds from the northern vantage point on 28 November 2019 (see **Chart 3-1**, below).
- 3.6.7. The distribution of shelduck recorded during the winter bird surveys is presented in **Figures 2 to 13** and flight activity is presented in **Figure 15**.

Chart 3-1 - Shelduck Counts for Winter 2019/2020

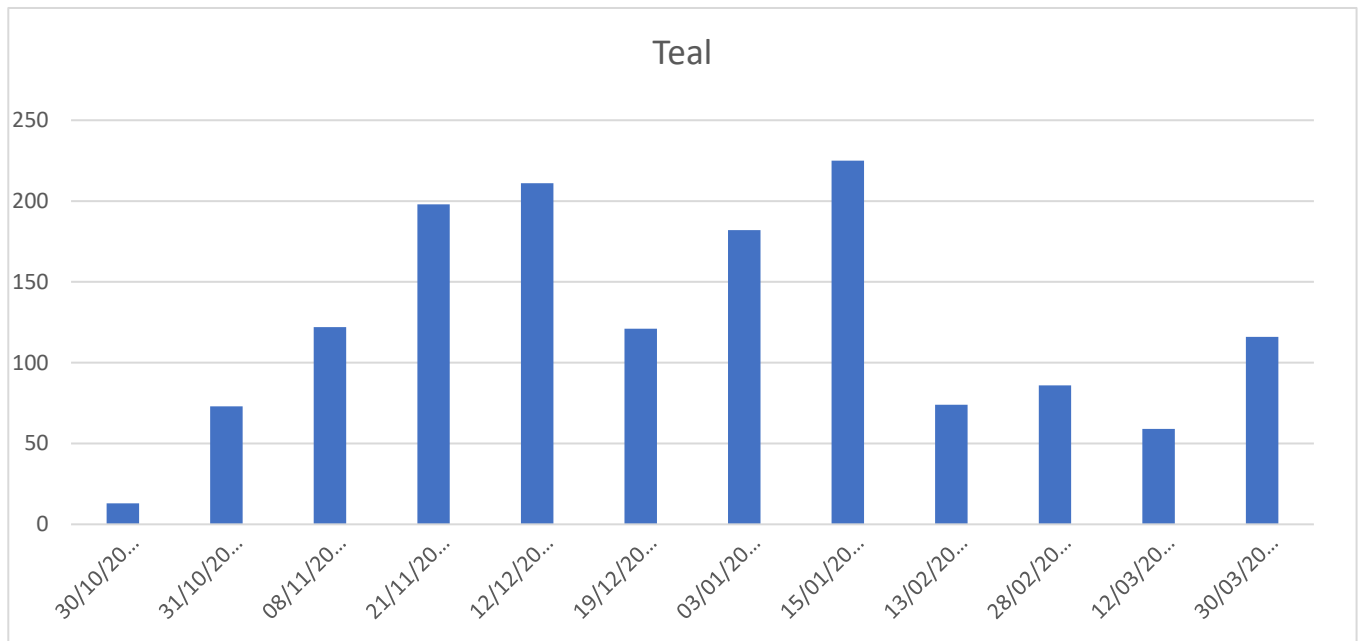


- 3.6.8. From December 2019 onwards, however, they were a regular feature of the mudflats on the foreshore adjacent to the Site and further north and south. Shelduck were also recorded regularly on East Halton Marshes and at Killingholme Haven Pits.
- 3.6.9. Records of shelduck from vantage point and winter bird surveys were focussed around the waterbodies and the foreshore. A total of 15 flights were recorded during vantage point surveys with four crossing the Site. Only one of these flights crossed the middle of the Site with the others restricted to the northern and southern ends of the Site.
- 3.6.10. The primary flight lines used by shelduck were along the foreshore and over the estuary, towards the northern vantage point and between the foreshore and Halton Marshes area.
- 3.6.11. WeBS data for Shelduck show that Killingholme Marshes has the highest recorded population of wintering shelduck. WeBS data for the sector has counts over the five years from February showing an average count of 62 birds with a peak count of 110 birds. March has an average count of 64 birds and a peak of 102.
- 3.6.12. The average and peak counts for Halton Marshes sector are one bird and four birds for March. Killingholme Haven Pits records show March as the month with highest average and peak counts, being 7 birds and 14 birds respectively.
- 3.6.13. Previous surveys used to inform the 2013 DCO application recorded shelduck at Halton and Killingholme peaking at 20 birds and 17 birds in March 2011. In 2006/2007 shelduck were recorded in low numbers on the foreshore, throughout the season, peaking with 19 birds in February 2007.
- 3.6.14. Surveys in 2007/2008 recorded numbers less than 10 birds at Halton Marshes in February and March 2008.

Teal

- 3.6.15. Teal was present on the estuary, the foreshore and at the waterbodies at Killingholme Haven Pits and Halton Marshes in good numbers throughout the winter survey period (See **Figure 16**).
- 3.6.16. The highest daily count of Teal was on 15 January 2020 with 225 recorded across the Survey Area (See **Chart 3-2** below). 12 December 2019 saw the second highest count of teal with 211 birds recorded. Numbers in the early and late season were lower and a slight drop in numbers was observed on 19 December.

Chart 3-2 - Teal Counts for Winter 2019/2020



- 3.6.17. On the foreshore, parallel with East Halton Skitter, teal were distributed in small flocks except at the mudbank close to the sea terminal landing stage where larger numbers accumulated on the mud and at the water's edge.
- 3.6.18. The majority of recorded teal flights were over the estuary, moving upstream or downstream with flights between the water bodies at Halton Marshes and Killingholme Haven Pits also common. There were occasional flights across the Site, but the majority of flights did not cross the Site boundary. Regular low-level flights were made by teal between Killingholme Haven Pits and the outflow to the north of the reserve, south of the Site boundary.
- 3.6.19. Previous surveys of the Halton and Killingholme Marshes areas show teal present in similar numbers and similar distribution.
- 3.6.20. WeBS data show teal present in highest numbers at Killingholme Marshes in February with the highest average count for the five years of 245 birds (peak count 273). Killingholme Marshes also have the highest peak count for the Survey Area being 376 in January 2020.

Bittern

- 3.6.21. A single bittern was recorded during the northern vantage point survey on 28 November 2019 (see **Figure 17**). The survey was undertaken in windy conditions and the bird was seen in the reedbed at Halton Marshes before taking off and almost flying into the surveyor and leaving to the south west over the Site.
- 3.6.22. It was evident that the bird's behaviour and movements were influenced by the weather conditions.
- 3.6.23. The WeBS data shows no previous records for bittern from the three sectors.
- 3.6.24. In comparison with previous surveys, which occasionally recorded low numbers of bittern outside the 2020 field Survey Area, this record of bittern is not unexpected.

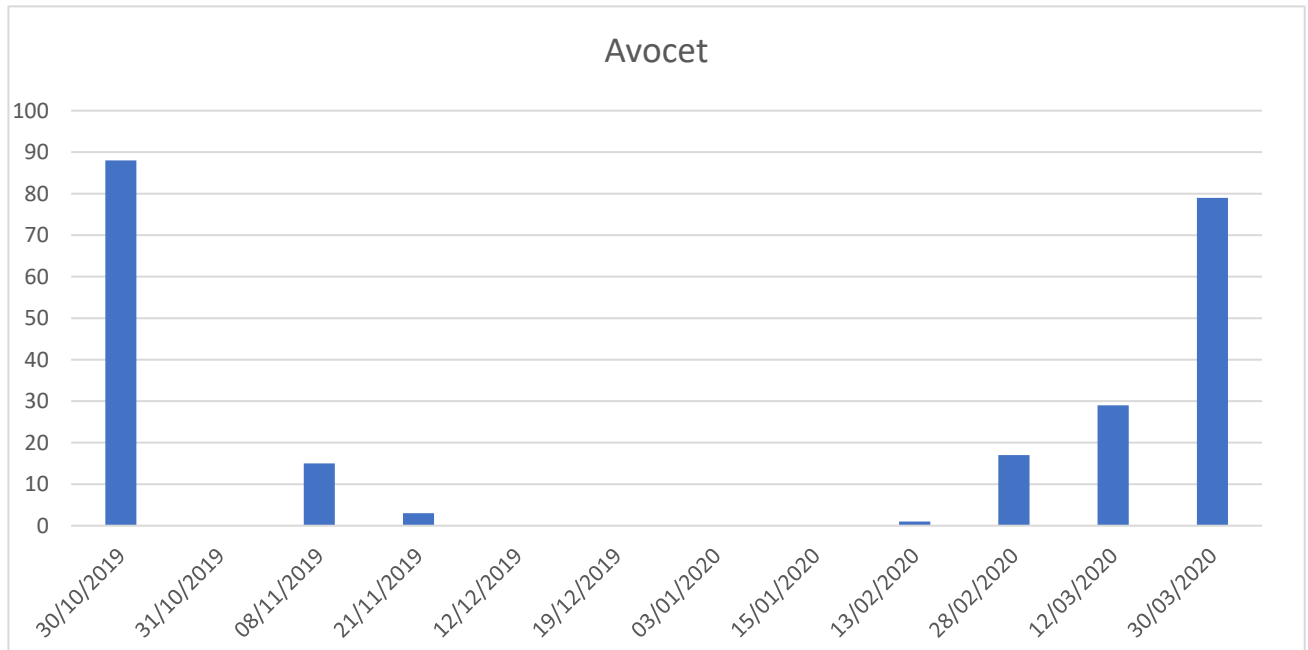
Marsh Harrier

- 3.6.25. Marsh Harrier was recorded using reed dominated, wetland habitats at Killingholme Haven Pits, south of the Site boundary and Halton Marshes, north of the Site boundary. The recorded activity during vantage point and winter bird surveys was primarily low hunting over reedbeds (see **Figures 5, 9, 10,12,13** and **Figure 18**).
- 3.6.26. Flights recorded during vantage point surveys also included a total of three flights over the site, one at 20m and the others between 40m and 60m. The three flights over the Site left from Killingholme Haven Pits, two to the north west and one the north east. Flights recorded from the northern VP included birds arriving from over the estuary with individual birds arriving from the Humber and making their way west.
- 3.6.27. It is thought that a total of three individuals were recorded in the early and late winter season, with birds absent from the Survey Area during the middle of the season, returning in February. A pair of birds, possibly exhibiting courtship display were observed in late March over Halton Marshes.
- 3.6.28. Previous surveys detail wintering marsh harriers across the wider survey areas employed for those studies. Young and juvenile birds are recorded as being present at Killingholme Haven Pits in 2007 and at Halton Marshes in November 2010. Activity in both these locations had increased slightly in winter 2019/2020 relative to those previous surveys.

Avocet

- 3.6.29. Avocet was primarily recorded feeding, loafing or in flight in and around Killingholme Haven Pits nature reserve (see **Figures 2,4,5,10 to 13**) in the early and late winter season with birds absent in December and January, returning in February.
- 3.6.30. The largest survey count was recorded on 30 October 2019 with a total of 88 birds observed during the winter bird survey. On 30 March avocet had returned to Killingholme Haven Pits with a peak count of 79 on 30 March (see **Chart 3-3** below).

Chart 3-3 - Avocet Counts for Winter 2019/2020

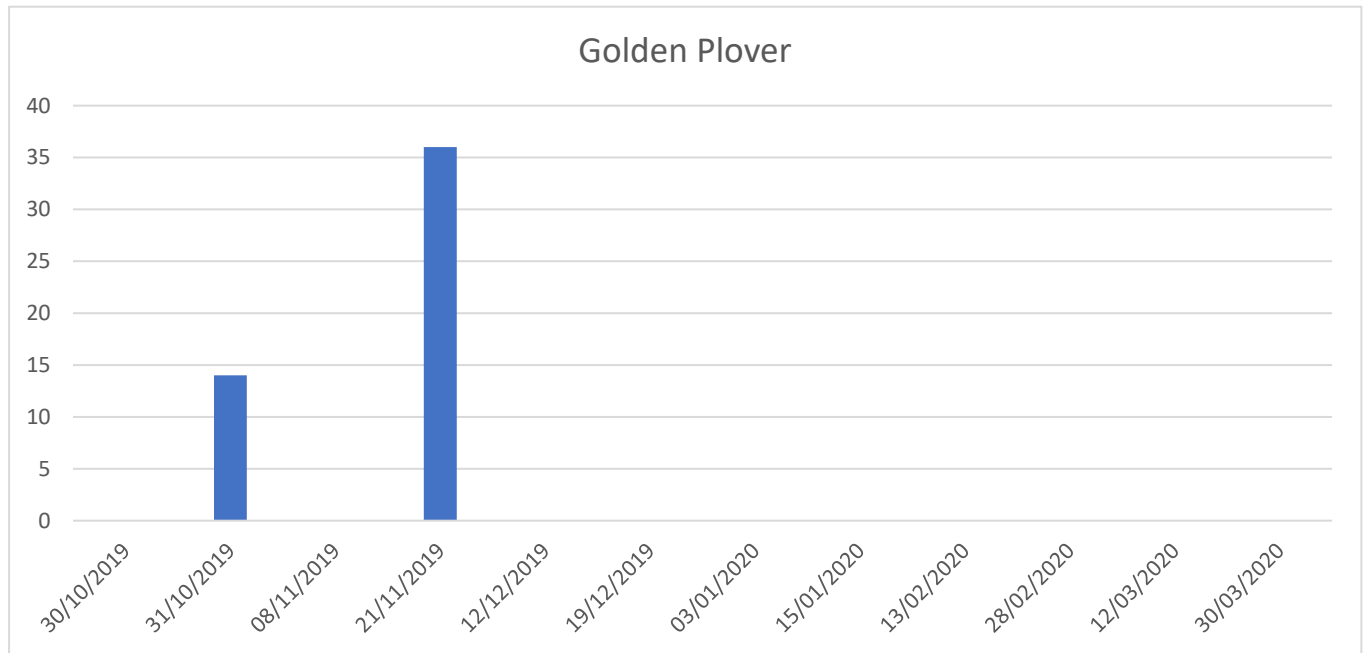


- 3.6.31. The October 2019 count represents 1.01% of the total wintering UK population as described in Woodward *et al.* (**British Birds, 2020**) and is in excess of the number of wintering avocet quoted as a qualifying population on the Humber Estuary SPA citation.
- 3.6.32. Birds were not seen making use of the site or adjacent agricultural habitats and no flights were recorded over the Site during vantage point surveys. Flights in and out of the Survey Area were from the south and south east (see **Figure 19**) to Killingholme Haven Pits. The species was not observed interacting with or flying over the Site.
- 3.6.33. WeBS data for avocet show the highest counts for Killingholme Marshes in March, with an average count of 16 birds and a peak of 24. WeBS counts for Killingholme Haven Pits show the highest numbers in October with an average count of 4 and a peak count of 12.
- 3.6.34. Records of avocet made during previous surveys show a similar distribution of birds within the field Survey Area, with the focus of records being Killingholme Haven Pits. Numbers in 2020 were higher than previously recorded (peak count of 79). The highest previous winter count was 55 birds, recorded in March 2007 at Killingholme Haven Pits. In 2010 a record of 38 birds was made at the same location.

Golden Plover

- 3.6.35. Golden plover was recorded on arable fields in small flocks of 14 and 36 on 31 October 2019 and 21 November 2020 respectively during winter bird survey transects (see **Chart 3-4** below). Birds were observed using arable fields containing winter crops in the Halton Marshes area, north east of the Site.
- 3.6.36. Two flights were recorded from the northern vantage point during vantage point surveys: one of five birds on 31 October 2019, arriving from the north, over the estuary and then turning to fly over the Site and the second of 30 birds on 21 November 2019 flying east over the Site (see **Figure 20**).

Chart 3-4 - Golden Plover Counts for Winter 2019/2020

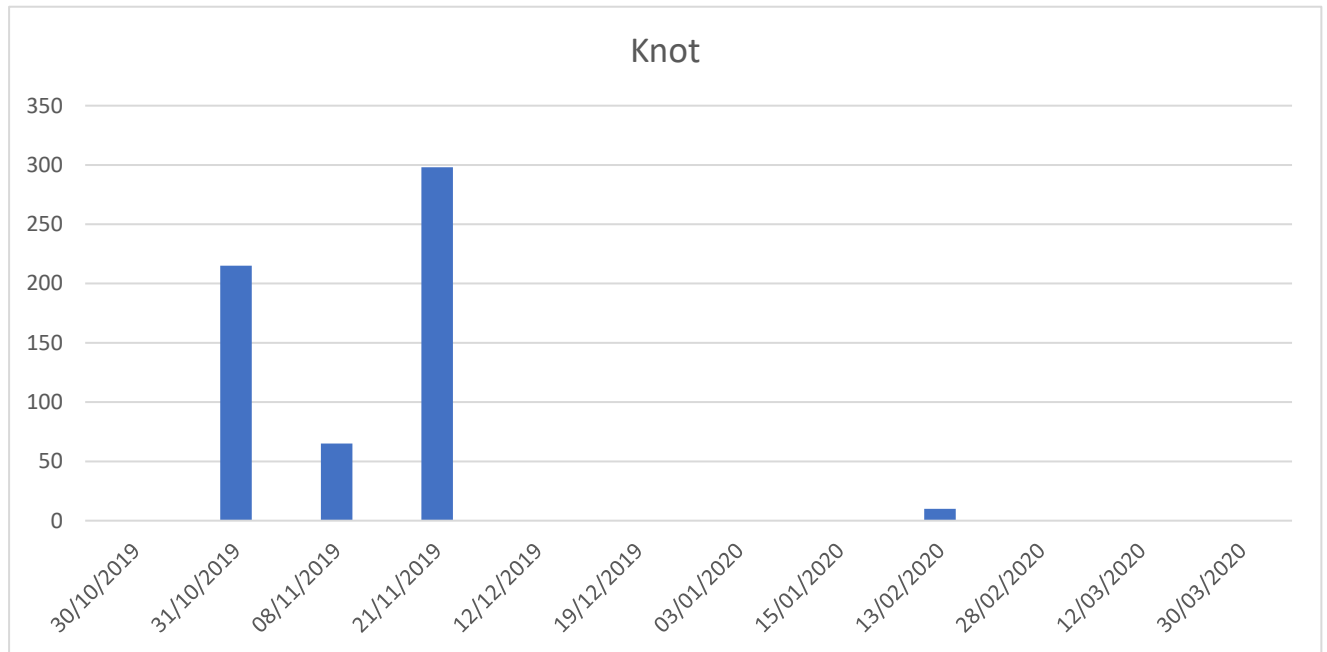


- 3.6.37. The numbers recorded within the Survey Area represent a small proportion (<1%) of the local wintering population as stated in the Humber Estuary SPA citation (30,709 birds).
- 3.6.38. WeBS data for golden plover included no counts for golden plover from the three sectors.
- 3.6.39. Previous surveys show intermittent use of the Survey Area by golden plover with the highest count being 617 birds in January 2007 in arable fields around the waterbodies at Halton Marshes. The majority of records detailed in previous survey reports relate to large accumulations of birds in fields around Thornton Abbey which is outside the Survey Area for the 2020 surveys.

Knot

- 3.6.40. Knot was recorded utilising the mud banks on the foreshore and areas of Killingholme Haven Pits during periods of low water level (see **Figures 3,4,5** and **10**). They were primarily recorded in the earlier part of the winter season with numbers peaking during wintering bird transect surveys on 21 November 2019 with a total count of 298 individuals as shown in **Chart 3-5** below.

Chart 3-5 - Knot Counts for Winter 2019/2020



3.6.41. A maximum of seven birds were recorded during vantage point surveys in December and January 2019, associating with dunlin along the foreshore (see **Figure 21**). Flights were primarily between locations on the northern foreshore although regular movements of individual and low numbers (<10) of birds between Killingholme Haven Pits and the foreshore and outflow to the south of the Site were also recorded.

3.6.42. No WeBS data was provided for knot for any of the three sectors.

3.6.43. Knot was recorded only in low numbers during the previous surveys so the peak count in 2020 is unusual for the area.

Dunlin

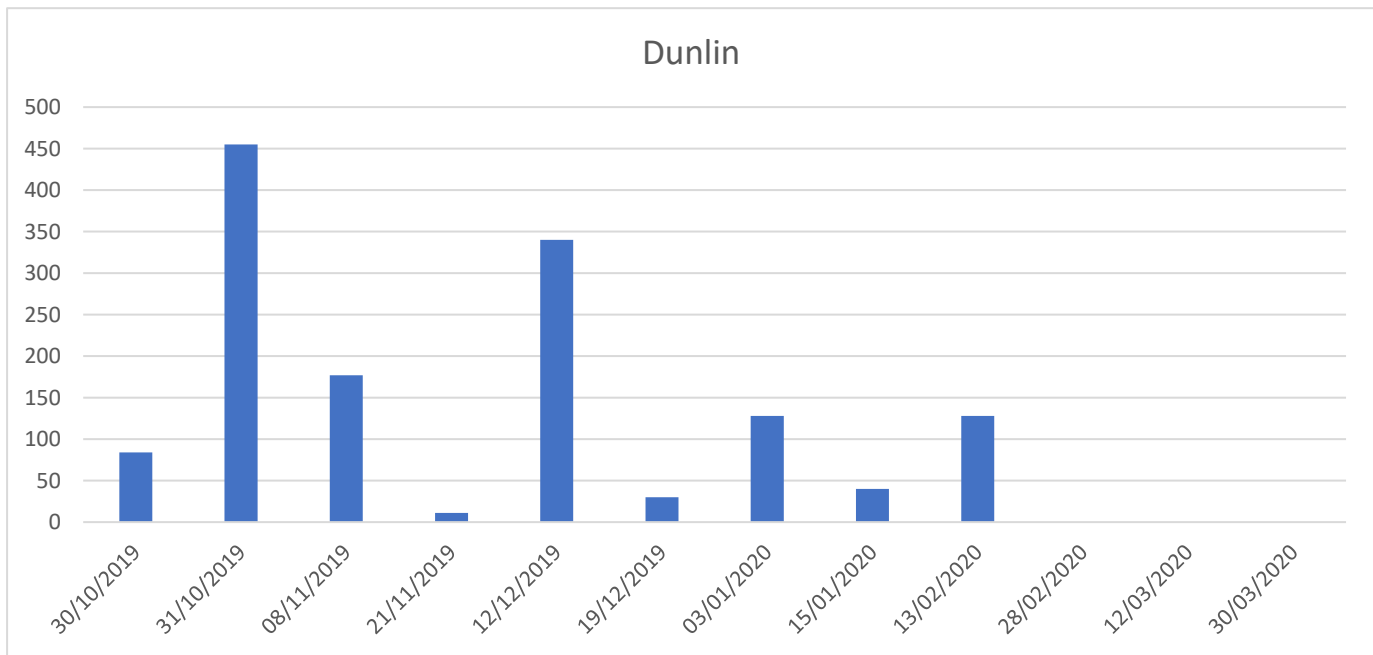
3.6.44. Dunlin was a ubiquitous presence during the winter bird and vantage point surveys. The maximum number counted was 455 birds during the wintering bird transect survey on 31 October 2019 (see **Chart 3-6** below). Birds were primarily recorded along the foreshore with the highest numbers present on the mudbank north of the port landing stages. The peak count in October also included some 400 birds roosting at Killingholme Haven Pits. Birds were seen regularly at Killingholme Haven Pits during periods of low water level (see **Figures 2 to 10**). High rainfall resulted in the nature reserve holding high levels of water for much of the season which may have reduced foraging potential and therefore numbers of waders.

3.6.45. Numbers of birds recorded during winter bird transects fluctuated over the rest of the season, showing a downward trend in numbers until late February, after which no dunlin were recorded.

3.6.46. Numbers of flights recorded also decreased over the course of the season with a peak of 19 flights in total for November, reduced to just three in February and none recorded in March (see **Figure 22**).

- 3.6.47. Movement up and down the foreshore accounted for the majority of recorded dunlin flights however flights between Killingholme Haven Pits and the mud banks on the outflow were regularly recorded from the southern VP.
- 3.6.48. Seven flights over the Site itself were recorded with three of those recorded from the southern VP, involving birds moving over the Site to the foreshore north of the landing stages. One from the northern VP involved birds apparently moving from the wet pasture at Halton Marshes to the foreshore with one anomalous flight of birds arriving from the north along the Humber and banking west to cross the Site.

Chart 3-6 - Dunlin Counts for Winter 2019/2020

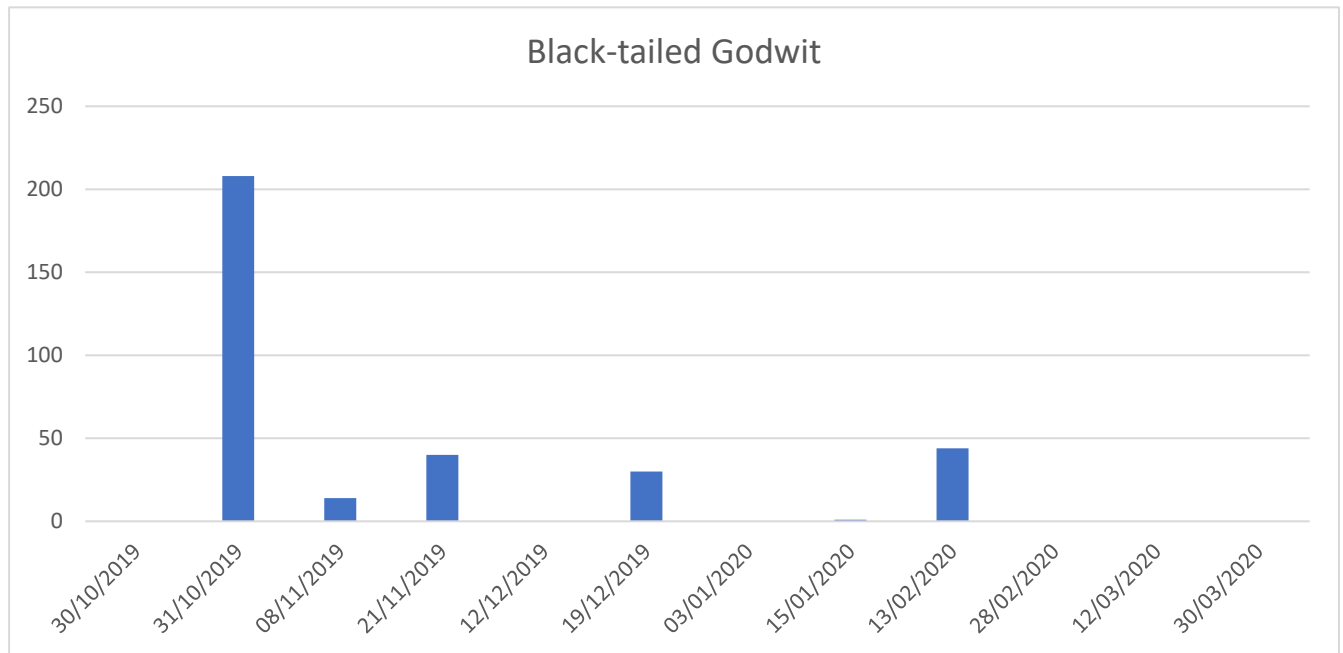


- 3.6.49. WeBS data shows dunlin present consistently throughout the winter season at Halton Marsh and Killingholme Marsh, with the exception of March at Halton Marshes. Dunlin appear in the data at Halton Marshes in their highest numbers in October when the average count is 123 birds and the peak count over five years is 245 birds and December when average count is 118 birds and the peak recorded for that month is 320 birds. Killingholme Marsh highest average and peak count is for January where the average count is 175 birds and the peak count is 245 birds. The counts for Killingholme Haven Pits are an average of 66 birds and peak of 180, for October and an average of 35 birds and peak of 138 birds in December with no records for February and March.
- 3.6.50. Data from previous surveys indicates a similar level and distribution of use of the Survey Area by dunlin. Surveys in October 2007 show good numbers along the foreshore (although the survey area used here extends beyond that of the 2019/2020 surveys) with 356 birds recorded. Surveys in February and March 2007 recorded 346 and 219 dunlin respectively at Killingholme Haven Pits.
- 3.6.51. Surveys in 2010 recorded 3,050 dunlin on North Killingholme Haven Pits, an unusually high count not replicated in other surveys, including the 2019/2020 surveys.

Black-Tailed Godwit

3.6.52. Black-tailed godwit was recorded in their highest numbers on 31 October 2019 (see **Chart 3-7** below). 200 birds were observed at Killingholme Haven Pits with another eight flying over the estuary (see **Figure 3**). Numbers recorded during winter bird surveys then fluctuated between absence and numbers in the 30s to mid-40s. Winter bird surveys in late February and March recorded no black-tailed godwits in the Survey Area, however vantage point surveys on 19 February and 19 March 2020 recorded flights of flocks of 37 and 35 birds respectively (see **Figure 23**).

Chart 3-7 - Black-Tailed Godwit Counts for Winter 2019/2020



3.6.53. Black-tailed godwit flights were recorded in the highest number in October 2019 with seven flights recorded on 30 October, with the largest flock numbering 108 birds, and two recorded on 31 October with a maximum of 45 birds.

3.6.54. Black-tailed godwit flights and the majority of other recorded activity was focussed on Killingholme Haven Pits and involved flights to and from the nature reserve, primarily from the south and the foreshore of Killingholme Marshes. This included nine flights between the nature reserve and the outflow at Killingholme Haven. A total of 34 black-tailed godwit flights were recorded with twelve including periods over the Site itself. Godwit flights across the centre of the Site were limited with only two flights recorded crossing the middle of the Site. Flights over the Site were primarily represented by arrival and repositioning flock movements from Killingholme Haven Pits crossing the southern Site boundary before turning to come back to land at the reserve.

3.6.55. WeBS counts for black-tailed godwit show low numbers throughout the winter season at Killingholme Marshes with the highest average count being 26 birds and the peak five year peak count of 52 birds, both in February. Halton Marshes shows an average of 16 birds and a peak count of 28 for October, an average of 2 birds and a peak of 5 birds. Killingholme Haven Pits only shows an October average of 2020 birds and a peak count for October of 3810.

3.6.56. Previous surveys show Killingholme Haven Pits supporting large numbers of roosting birds with counts in 2006/2007 of 3,600 birds in November, 2,350 birds in December and 2800 birds in January with 842 birds in February and 247 birds in March. Surveys in 2010 recorded counts of 4,000 birds in September declining gradually to 2,500 in late October at Killingholme Haven Pits.

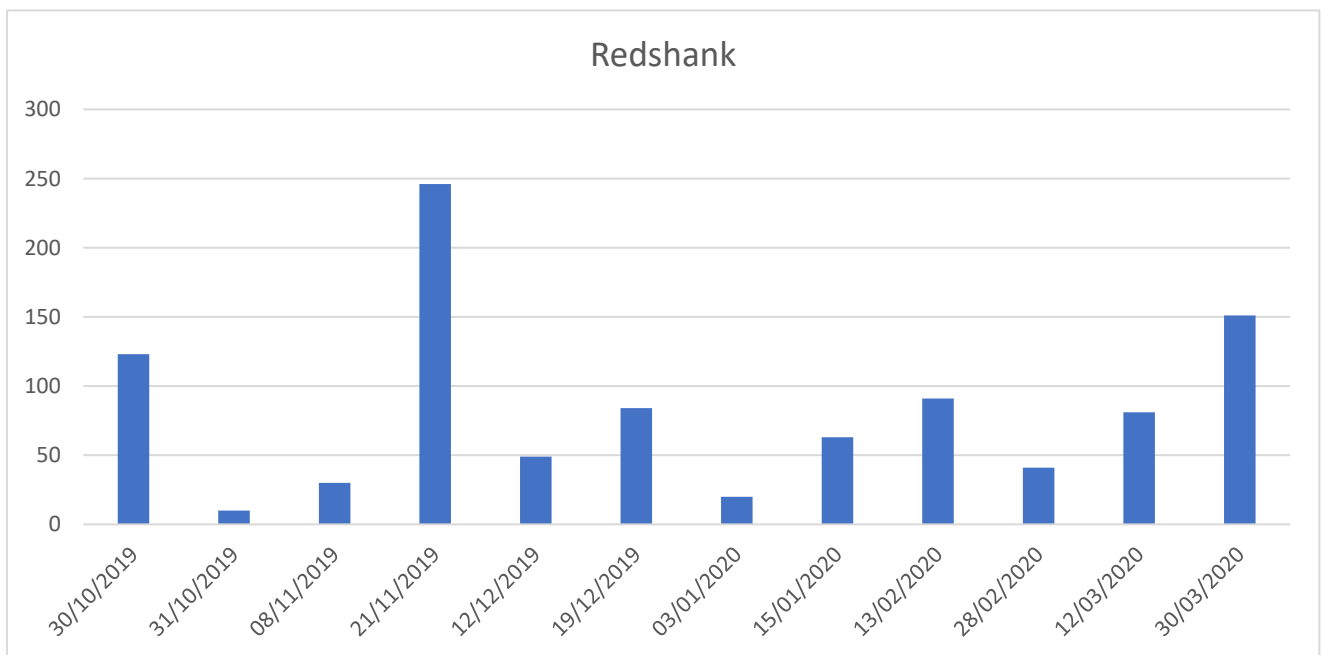
3.6.57. Numbers during 2019/2020 surveys did not approach these previous counts. The sustained high water level at Killingholme Haven Pits, which limited feeding opportunities by inundating the banks, may have contributed to these lower numbers.

Redshank

3.6.58. Redshank were a numerous and consistent presence within the Survey Area (see **Figures 2 to 13**). The foci of activity were the foreshore north of the port landing stages and at Killingholme Haven Pits. Birds were common along the northern foreshore and moving between locations along the mud flats. Aggregations of redshank were also common on Killingholme Haven Pits with birds remaining around the lagoons during times of high and low water. Numbers at the reserve were higher during low water periods as birds made use of exposed mud for foraging, however, of all species redshank were the most consistent at the reserve.

3.6.59. Peak numbers of redshank were recorded during wintering bird surveys with 246 birds recorded on 21 November 2019 (see **Chart 3-8** below).

Chart 3-8 - Redshank Counts for Winter 2019/2020



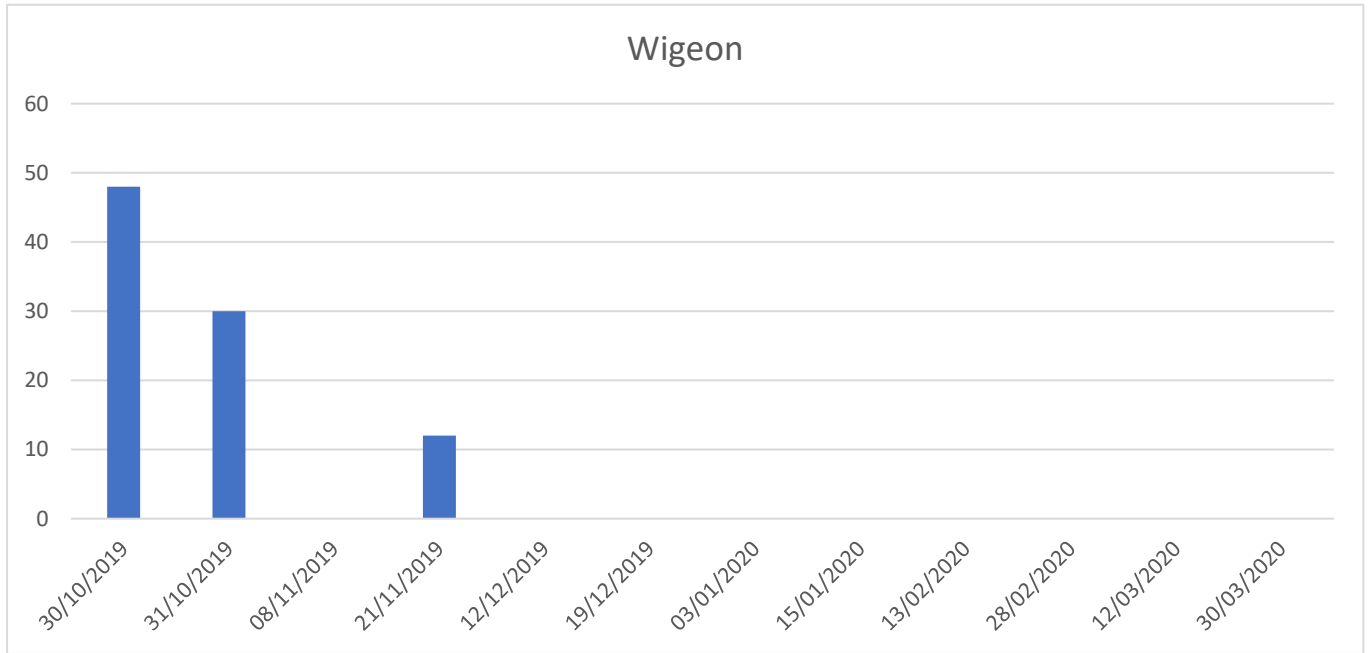
3.6.60. A total of 192 redshank flights were recorded during vantage point surveys (see **Figure 24**), 30 of which involved a period over the Site itself. The majority of the flights over the Site were between Killingholme Haven Pits and the mud bank to the north of the landing stages so involving a brief period over the south east corner of the Site.

- 3.6.61. WeBS data for redshank show the species as an almost constant presence across the sectors. There are counts for redshank at Halton Marshes for every month of the five years. The highest average counts for the sector are in October and November with 33 and 32 birds, with peak counts of 41 birds for both months. The data shows redshank present at Killingholme Marsh in every month but October and March. The highest counts for the sector are an average of 151 birds and the highest peak count for the five years is 203 birds. At Killingholme Haven Pits the numbers reduce as the winter season progresses with the highest average count of 66 birds and a highest peak of 157 in October.
- 3.6.62. The previous 2010 survey shows a similar trend at Killingholme Haven Pits as the WeBs data with numbers high in the early season, falling after November. Numbers at Killingholme Haven Pits recorded in November 2010 exceeded 250 birds. In common with the 2019/2020 surveys numbers were also high along the foreshore. 2007/2008 surveys recorded redshank numbers of 535 at Killingholme Haven Pits in October 2007. Similarly, 2006/2007 surveys recorded 225 redshank at Killingholme Haven Pits in February 2007.

Wigeon

- 3.6.63. Wigeon was recorded during winter bird surveys in the early winter season (see **Chart 3-9**). Numbers were focussed during all surveys in the Halton Marshes area, north of the Site boundary, associating with the wet grassland and flooded arable around the lagoons. Wigeon also made use of the waterbodies there as well (see **Figures 2,3 and 5**).
- 3.6.64. Wigeon was not recorded in the Survey Area after 21 November 2019 and no wigeon flights were recorded during vantage point surveys.
- 3.6.65. WeBS data records of wigeon recorded this species only occasionally and in low numbers within the three sectors.
- 3.6.66. Previous surveys recorded wigeon in numbers below 70 in the Survey Area with the exception of the 2006/2007 survey which recorded 92 birds in February 2007.

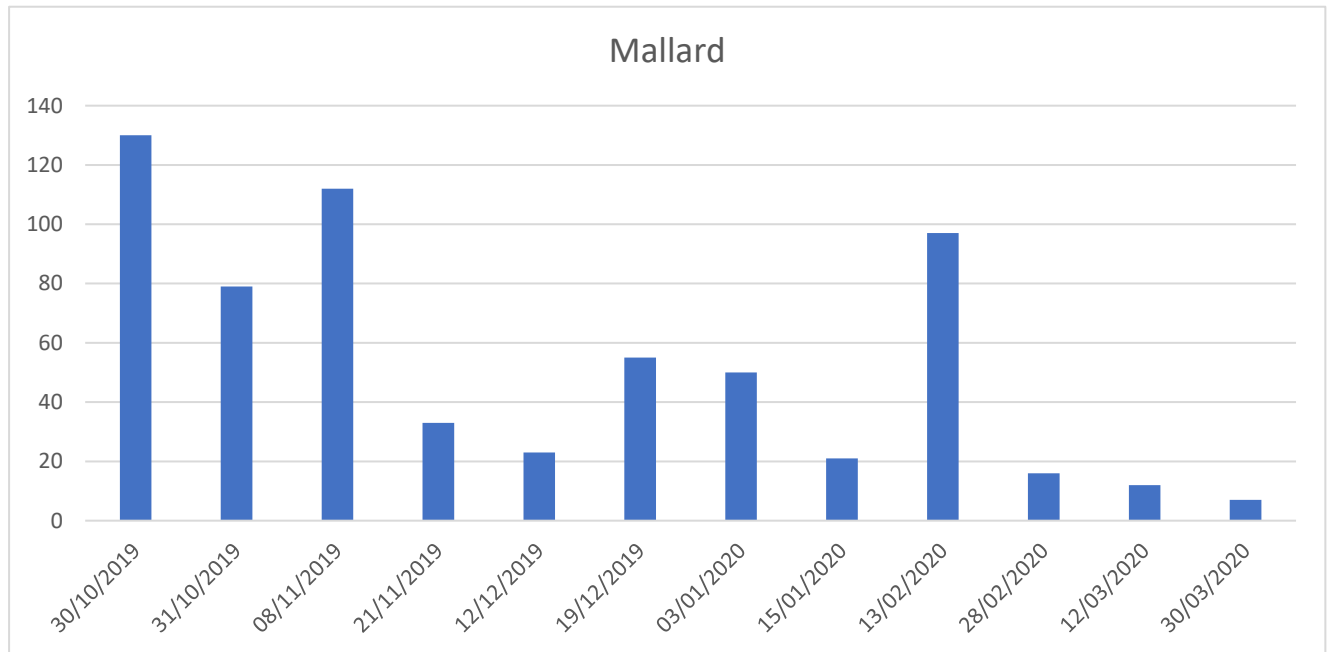
Chart 3-9 - Wigeon Counts for Winter 2019/2020



Mallard

- 3.6.67. Mallard was a consistent and numerous presence across the Survey Area, recorded on waterbodies at Killingholme Haven Pits, Halton Marshes, making use of the foreshore and the estuary as well as being present on pasture and arable, particularly during periods of flooding and high rainfall (see **Figures 2 to 13** and **Chart 3-10**, below).
- 3.6.68. The highest count of mallard during wintering bird transect surveys was recorded during the first visit on 30 October when 130 birds were recorded across the Survey Area.

Chart 3-10 - Mallard Counts for Winter 2019/2020



- 3.6.69. Sixty-one mallard flights were recorded during vantage point surveys throughout the survey period with ten flights recorded over the Site (see **Figure 14**).
- 3.6.70. WeBS data for the three sectors show mallard present in low numbers throughout the winter season with records for Halton Marshes showing the highest average in January of 33 birds and the highest peak also in January of 42 birds. January records for Killingholme Marshes were also highest in January with an average of 21 birds and a peak count of 41 birds. At Killingholme Haven Pits the highest average count was 10 birds and the highest peak was 15 birds both in March.
- 3.6.71. Previous surveys in 2010/2011 showed high counts at Killingholme Haven Pits when 90 birds were present. 2007/2008 surveys recorded a peak count of 212 birds at Killingholme Haven Pits in November 2007. 2006/2007 surveys recorded a peak count of 144 birds at Killingholme Haven Pits in January 2007.

Pochard

- 3.6.72. Individual pochard was recorded on three occasions during winter bird surveys on 31 October 2019 and 3rd January 2020 both on the smaller waterbody at Halton Marshes (see **Figures 3 and 8**).
- 3.6.73. A single pochard flight was recorded on 6 March 2020 - a single bird recorded leaving Killingholme Haven Pits towards the outflow at Killingholme Haven (see **Figure 24**).
- 3.6.74. WeBS data for pochard over winter show them absent from Killingholme Marshes and Killingholme Haven Pits. At Halton Marshes pochard are absent in the early winter, present in numbers below five from January until March.
- 3.6.75. Surveys in 2010/2011 recorded pochard absent or in low numbers at Halton Marshes in the early winter season with number rising in late January and February, peaking with a count of 39 birds in February and declining again into March. In November 2010 the only record of pochard at

Killingholme Haven Pits was a count of 20 birds in early November. In 2007/2008 35 birds were recorded at Halton Marshes in February 2008.

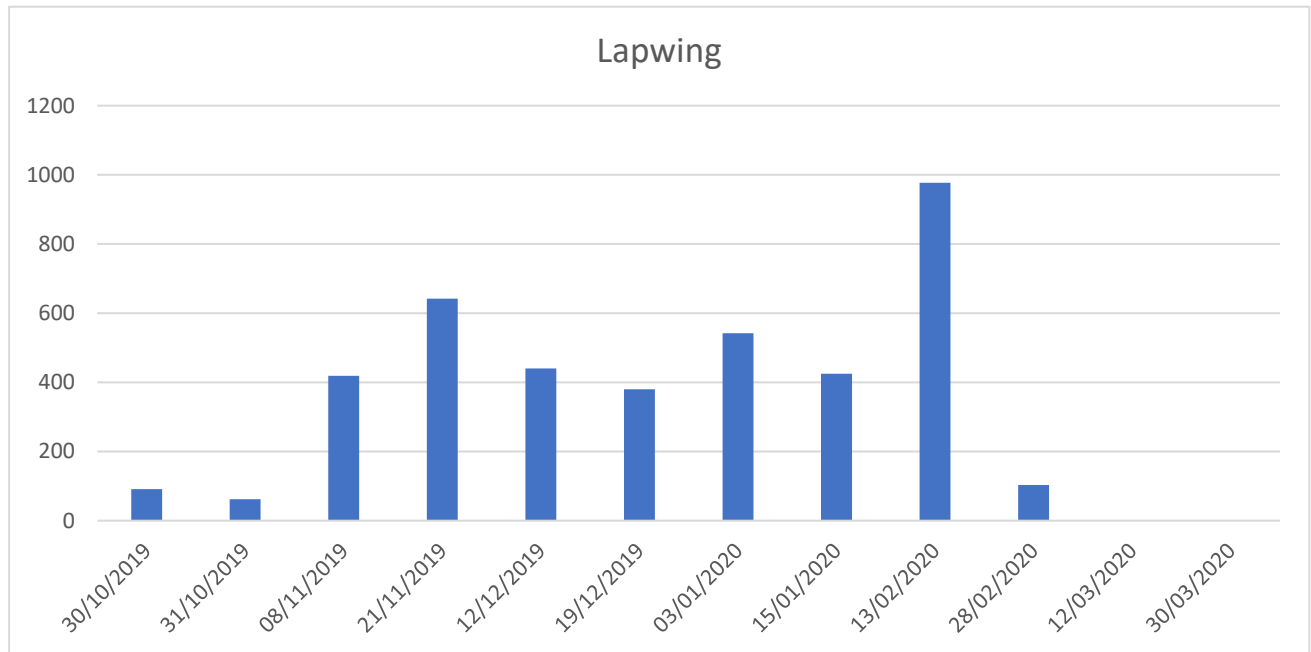
Oystercatcher

- 3.6.76. Oystercatcher was recorded in low numbers during both winter bird surveys and vantage point surveys with the peak count of five birds being taken on 30 March 2020 (see **Figure 13**). Four of these birds were recorded at Killingholme Haven Pits, with one other recorded in flight over the estuary.
- 3.6.77. A total of 12 oystercatcher flights were recorded during vantage point surveys. This included four flights over the northern part of the Site as birds move between the foreshore and agricultural fields at Halton Marshes.
- 3.6.78. WeBS data for oystercatcher show the species mostly absent from the three sectors. Killingholme Marshes shows a highest average count of 3 birds and a peak count of 6 birds in February. Birds are only recorded present at Killingholme Haven Pits in the late winter season in, with the highest average count of 1 bird and peak count of 2 in March.
- 3.6.79. Previous surveys recorded oystercatcher in similarly low numbers with a peak count of 2 birds at Killingholme Haven Pits in March 2011. The 2010/2011 survey did not record any oystercatcher at Halton Marshes.

Lapwing

- 3.6.80. Lapwing was the most numerous and consistent species recorded during wintering bird transect surveys (See **Chart 3-11**, below) and vantage point surveys in 2019/2020. Lapwing were recorded across the Survey Area with the highest numbers recorded on the mudbank north of Killingholme Haven and the port terminal jetties. Large flocks of lapwing were also recorded in the wet pasture between the Site's northern boundary and the lagoons at Halton Marshes. These two locations were by far the favoured locations for aggregations of lapwings however birds were also recorded on Killingholme Haven Pits and on arable land north east of the Site boundary.
- 3.6.81. Lapwing were rarely on arable fields in high numbers with 21 November 2019 recording the highest usage of arable by the species. November saw high rainfall levels (which persisted for most of the season) causing flooding across Yorkshire and UK. This resulted in flooding on areas of the Site and large areas of arable fields in the Survey Area. The highest arable counts for lapwing were during this flooded period as saturated soils brought the species and other waders onto the arable fields to feed.

Chart 3-11 - Lapwing Counts for Winter 2019/2020



- 3.6.82. A total number of 106 flights of lapwing were recorded during vantage point surveys of which 52 involved flights over the Site to some extent (see **Figure 26**). The majority of these flights involved a brief or short incursion over the edge of the Site boundary during repositioning flights of the flock from, primarily, the mudbank north of Killingholme Haven and the wet pasture, north of the Site boundary at Halton Marshes.
- 3.6.83. High winds during stormy conditions resulted in a greater numbers of birds spending more time over the Site apparently resulting from increased difficulty in controlling flight rather than birds seeking shelter or resorting to flight lines which crossed the Site to access other locations.
- 3.6.84. No regular movements of lapwing were recorded during vantage point surveys that would suggest the species regularly or habitually uses flight lines over the Site.
- 3.6.85. WeBS data show them absent from Halton and Killingholme Marshes in October and March. The highest counts at Halton Marshes are an average of 783 birds, a peak count of 2350 birds in November and an average of 478 birds and a peak of 945 in January. At Killingholme Marshes the species is present in the highest numbers in January when the average count is 974 and the highest peak over the five years is 1550 birds.
- 3.6.86. Surveys in 2010/2011 had a peak count of 244 at Killingholme Haven Pits in February 2011. The peak for this survey at Halton Marshes was 28 birds from November 2010. Surveys in 2007/2008 recorded a peak count of lapwing between East Halton Skitter and Killingholme Haven Pits with over 2,000 birds recorded, including 1,400 birds on the foreshore and 896 on fields in January 2008.

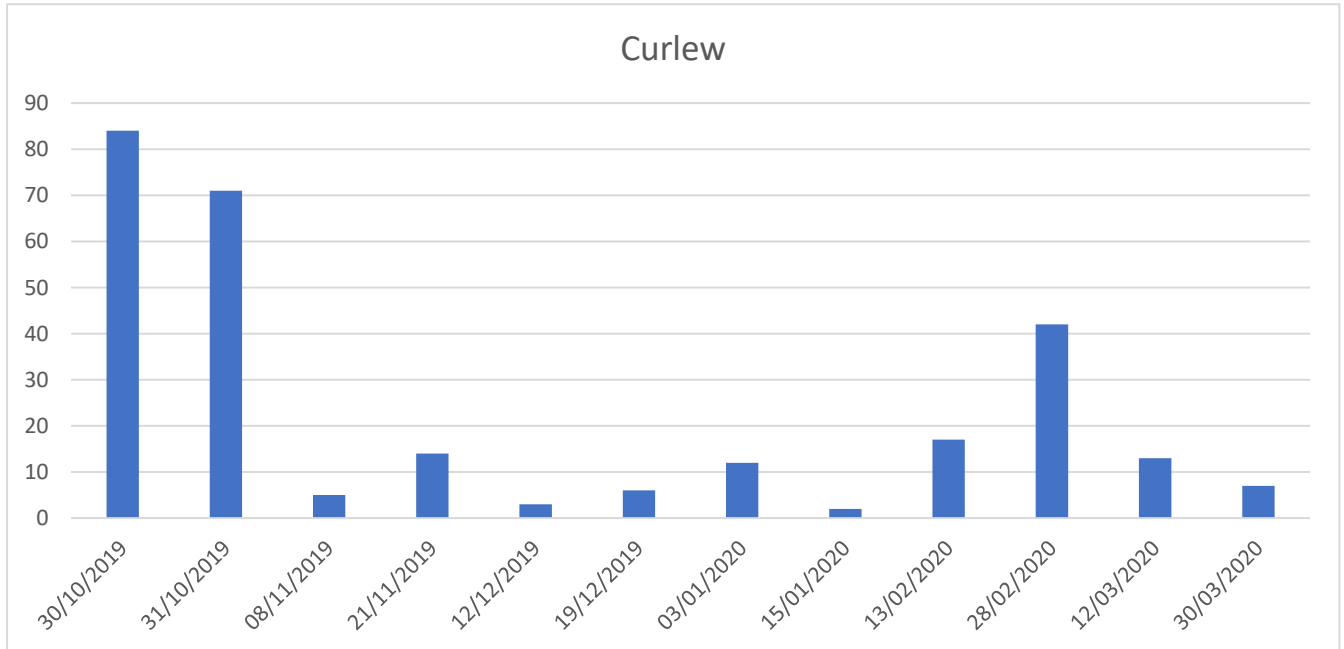
Curlew

- 3.6.87. Curlew was a regular and consistent species recorded during winter bird survey and vantage point surveys. The species was amongst the most widespread with birds favouring the wet pasture area at Halton Marshes, exposed mud, during low water at Killingholme Haven Pits and the foreshore of

the estuary (see **Figures 2 to 13**). However, the species was also recorded foraging in or flying over the arable fields to the north and west of the Survey Area.

3.6.88. The peak count of curlew was 84, recorded on 31 October 2019 (see **Chart 3-12** below).

Chart 3-12 - Curlew Counts for Winter 2019/2020



- 3.6.89. A total of 81 curlew flights were recorded during vantage point surveys over the winter (see **Figure 27**). The northern vantage point, and portion of the Survey Area saw the densest concentration of curlew flights with flights between Halton Marshes and the foreshore. This includes 14 of the 21 flights which crossed the Site boundary as the route between the wet pasture at Halton Marshes and the foreshore. Four flights were recorded crossing the Site between Killingholme.
- 3.6.90. Four curlew flights were recorded crossing the middle of the Site itself one east - west and one west – east and heading north from Killingholme Haven Pits.
- 3.6.91. Two other flights were recorded with birds moving to the foreshore mud bank, north of the landing stages from the Haven Pits.
- 3.6.92. WeBS data for curlew presence in the three sectors show that the species is present throughout the winter at Halton Marshes and Killingholme Marshes. The highest average count for Halton Marshes is 12 birds and the peak, also in February, is 23 birds. At Killingholme Marshes the highest average and peak have been recorded in November with an average number of 58 birds and a peak of 97 birds. Curlew presence at Killingholme Haven Pits is intermittent, the highest average count is one bird and the highest peak count is four birds, both in December.
- 3.6.93. Surveys in 2010/2011 recorded curlew as present at Killingholme Haven Pits during most of the winter season with a peak count of 21 birds in November 2010. From January 2011 to March 2011, numbers remained below 12 birds. At Halton Marshes, in 2010/2011, curlew were present only occasionally with a peak count of 40 birds in February. Previous surveys in 2006/2007 and 2007/2008 showed similar distributions of curlew within the Survey Area with curlew commonly

recorded in good numbers on the pasture at Halton Marshes. Numbers in these two seasons were higher than the counts made during 2010/2011 surveys and these 2019/2020 surveys.

Turnstone

- 3.6.94. Turnstone was recorded on one occasion during wintering bird transect surveys on 31 October 2019 (see **Figure 3**). A count of six birds was recorded over the estuary at the southern extent of the Survey Area.
- 3.6.95. All nine turnstone flights were recorded on 18 and 19 March 2020 during vantage point surveys from the northern vantage point. All flights were for birds moving along the northern foreshore of the estuary (see **Figure 25**) in pairs of groups of between 12 and 35 birds.
- 3.6.96. WeBS data for the three sectors show turnstone making use of Halton Marshes only, present in the early winter and in highest numbers in November when an average count of 8 birds has been recorded and a peak count, also in November of 25 birds.
- 3.6.97. Previous surveys in 2010/2011, 2007/2008 and 2006/2007 all recorded turnstone as absent from the inland waterbodies at Halton Marshes and Killingholme Haven Pits. Previous surveys also note that the highest counts of turnstone during these surveys were for the foreshore.

Greenshank

- 3.6.98. Two greenshank were recorded on the wet pasture to the immediate north of the Site boundary, in the Halton Marshes area on 30th March 2020. It is thought that these may represent early passage birds, possibly non-breeders which have begun to move from wintering grounds early as a result of mild weather conditions.
- 3.6.99. No other records of greenshank within the Survey Area were made.
- 3.6.100. The WeBS data includes no records of greenshank within the three sectors during the winter season.
- 3.6.101. Previous surveys do not record greenshank during the winter season, so the two birds recorded in 2020 constitute an unusual record.

Merlin

- 3.6.102. Merlin was recorded on two occasions during winter bird survey transects on visit 2 on 31 October and 21 November 2019. Both records were made in the Halton Marshes area, north of the Site boundary over the field of rough pasture frequented by foraging starlings (see **Figures 3 and 5**).
- 3.6.103. The absence of sightings of merlin later in the season suggest that the birds recorded in the early winter season were mobile across the wider riparian and agricultural habitats along the Humber estuary.
- 3.6.104. Previous surveys also recorded occasional merlin around their Humber estuary survey areas.

Kingfisher

- 3.6.105. Kingfisher was recorded during winter bird survey visit 8 on 15 January 2020 (see **Figure 9**) along the drain which runs parallel with Haven Road, north of Killingholme Haven Pits and south of the Site boundary.
- 3.6.106. Kingfisher was also observed along the drain during surveys from the southern vantage point.

3.6.107. WeBS data for kingfisher include a single peak count of one bird at Killingholme Haven Pits in November.

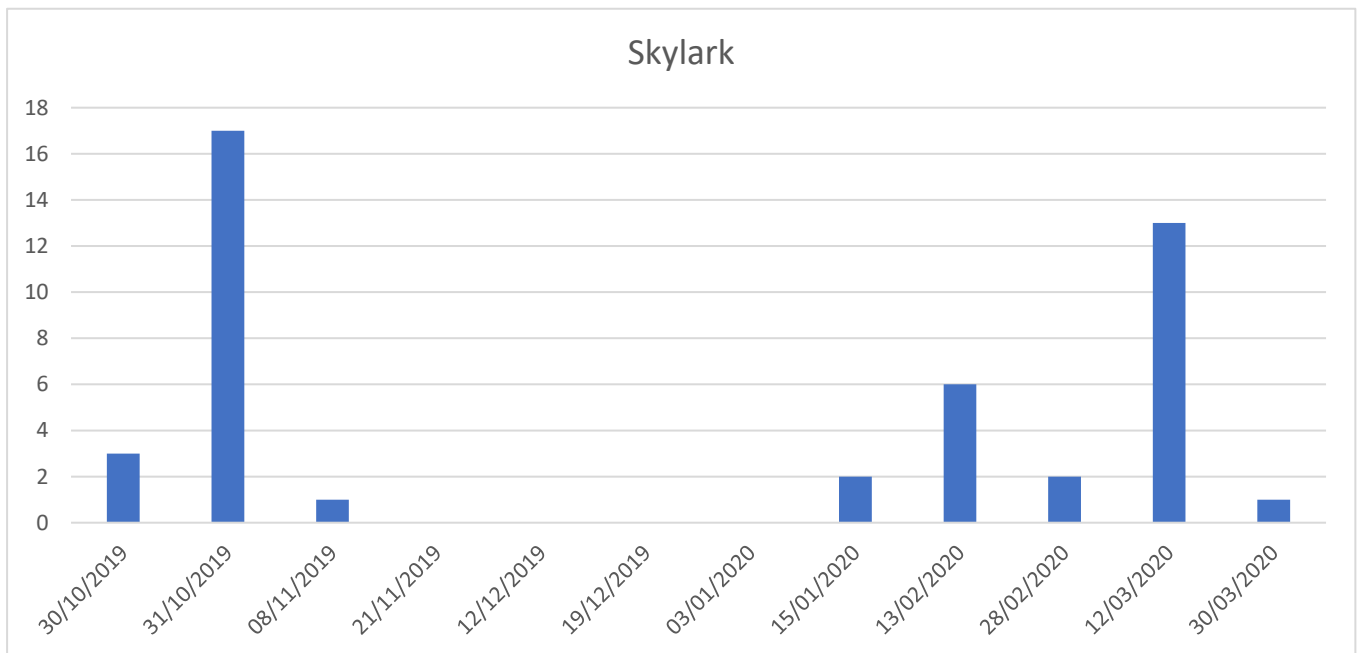
3.6.108. Previous surveys record kingfisher distributed across their survey areas. In 2010 a single kingfisher was recorded at Killingholme Haven Pits.

BIRDS OF CONSERVATION CONCERN – RED LIST SPECIES

Skylark

3.6.109. Skylark was recorded distributed across the agricultural habitats north and west of the Site boundary during winter bird surveys in the early and late parts of the winter season (see **Figures 2, 3, 4, 9, 10, 11, 12 and 13**). The peak count of skylark was on 31 October 2019 with 17 (see **Chart 3-13** below) birds recorded within the Survey Area: one group of seven birds and another of six birds on arable and the wet grassland habitat on Halton Marshes. The other records on 31 October 2019 were for individual birds on fields west of the Site boundary. This is indicative of the breakdown of territoriality amongst resident skylarks as the winter approaches.

Chart 3-13 - Skylark counts for winter 2019/2020



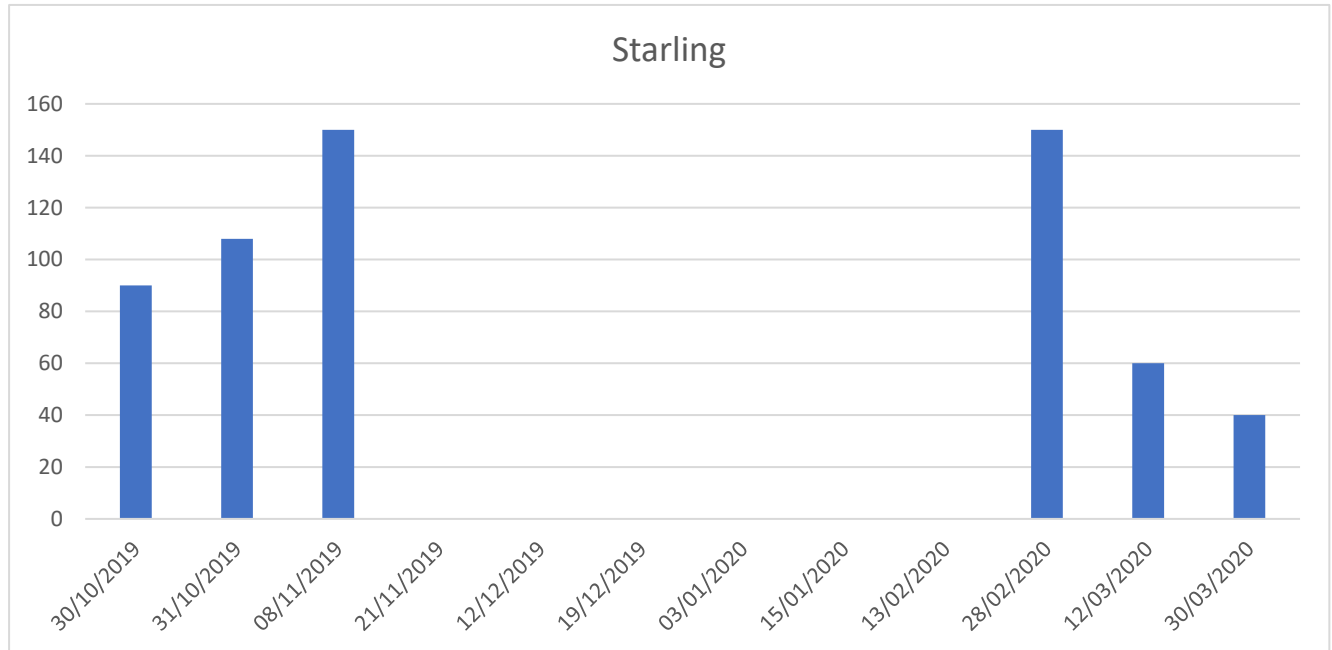
3.6.110. Skylark was absent from the Survey Area from late November until mid-January when two birds were recorded on 15 January. On 13 February 2020 numbers were up to 12 singing birds. A drop in recorded numbers was observed in late February, with a return to 13 birds recorded singing on 12 March 2020. Only a single bird was recorded on 30 March, this is likely to be result of the later start and finish for this transect coupled with cloudy conditions.

3.6.111. Previous surveys recorded skylark from across the wider area in numbers up to 150 during winter surveys. The 2010/2011 farmland bird survey recorded just a single redwing in December 2010.

Starling

3.6.112. Starling was recorded during winter bird surveys in numbers between 90 birds and 150 birds on 30 October, 31 October 2019, 8 November and 28 February 2020. A peak count of 60 starlings was recorded on 12 March 2020 and 40 on 30 March 2020 (see **Chart 3-14** below).

Chart 3-14 - Starling counts for winter 2019/2020



3.6.113. Starlings were recorded utilising the wet pasture habitats, foraging amongst the grassland, on Halton Marshes north of the Site boundary and south of the waterbodies there on all but the final survey on 30 March 2020 (see **Figures 2, 3, 4, 10, 11** and **12**). On 30 March 2020 a flock of 40 birds was recorded immediately to the east of Killingholme Haven Pits.

3.6.114. Starling are mentioned rarely in the previous survey reports.

Fieldfare

3.6.115. Fieldfare were recorded on three occasions during winter bird surveys: 21 November 2019, 12 December 2019 and 15 January 2020. The peak count was recorded in December with five birds recorded close to the port security building on Haven Road (see **Figure 6**). A single bird was recorded close to this location in November (see **Figure 5**). The final record, made in January, was for one bird in flight over arable fields to the far west of the Survey Area (see **Figure 9**).

3.6.116. Fieldfare are mentioned in previous survey reports as being present in small (six birds) and larger (400 birds) flocks from across the areas surrounding the Survey Area. The 2010/2011 farmland bird survey recorded six birds within the 2019/2020 Survey Area in December 2010 and January 2011.

Redwing

3.6.117. Small numbers of redwing were recorded on 31 October 2019 (ten birds total) and 21 November 2019 (seven birds total).

3.6.118. Birds were recorded utilising the arable habitats, along hedges and treelines to the west of the Site boundary on 31 October (see **Figure 3**) and to the arable habitats to the west of the Site boundary and the scrub habitats near Halton Marshes.

3.6.119. Redwing were recorded during all of the previous surveys in numbers between one bird, during the 2010/2011 farmland bird survey and 200 birds in October 2009. 150 birds were recorded to the south of Killingholme Haven Pits in December 2010.

Song Thrush

3.6.120. Song thrush were recorded in arable habitats in the south west and within the south west corner of the Site amongst the scrub habitat which dominates this part of the Site. The peak count for song thrush was recorded in this area with six birds recorded including four singing birds (see **Figures 3, 4, 8, 10 and 11**).

3.6.121. No song thrush was recorded during winter bird surveys in December 2019.

3.6.122. Previous surveys provided occasional records of song thrush from across the wider area in small groups (up to 18 birds) and individually.

Yellowhammer

3.6.123. Yellowhammer was recorded regularly during winter bird surveys using hedgerows and scrub habitats in and around the Halton Marshes. Usually recorded individually or in pairs and fours the peak count of yellowhammer was recorded near the western extent of the winter bird transect on 8 December 2019 (see **Figures 2, 3, 4, 6, 7, 10, 11, 12 and 13**). Ten yellowhammer were recorded feeding in a mixed flock with chaffinches and reed buntings in a patch of wild bird cover.

3.6.124. Yellowhammer was recorded from across the arable habitats in the wider survey area during previous surveys, often associating in mixed flocks. The 2010/2011 farmland bird survey only a single bird was recorded in January 2011.

Linnet

3.6.125. Linnet was recorded on arable and scrub habitats in the south west of the Survey Area (see **Figures 3, 11, 13**) as well as a single bird recorded over arable in the north west of the Survey Area (see **Figure 9**).

3.6.126. The peak count for linnet was recorded on 28 February 2020 when a flock of 15 birds was observed in the south west of the Survey Area.

3.6.127. Linnet was seldom recorded in previous winter bird surveys. The farmland bird survey in 2010/2011 recorded a peak of five birds from within the 2019/2020 Survey Area.

Herring Gull

3.6.128. Herring gull was a consistent presence over the estuary with the species recorded in numbers less than six on every survey except 19 December 2019. Herring gull were usually seen over the estuary however; four birds were recorded at Killingholme Haven Pits on 13 February 2020; a single bird was recorded over the Killingholme Haven outflow on 28 February 2020 and individuals were observed at the Haven Pits reserve and over the Site, near the jetty on 12 March 2020.

3.6.129. Previous surveys mention herring gull rarely. The 2010/2011 farmland bird survey recorded three herring gull in December 2010 and January 2011 and five in February 2011.

Grey Partridge

- 3.6.130. Grey partridge was recorded on arable fields in the Halton Marshes area to the west of the Survey Area on 31 October 2019, 8 November 2019, 13 February 2020 and 12 March 2020 (see **Figures 3, 4, 10 and 12**).
- 3.6.131. The peak count for partridge in the Survey Area was 7 on 31 October 2019.
- 3.6.132. Grey partridge was recorded in low numbers, up to ten, during previous surveys from across the arable habitats surrounding the 2019/2020 Survey Area. The 2010/2011 farmland bird survey did not record any grey partridge.

Woodcock

- 3.6.133. Two woodcock were recorded on 15 January 2020 in flight, leaving the scrub at Halton Marshes, between the northern Site boundary and the old brick works (see **Figure 9**).
- 3.6.134. Woodcock are a rare record in the previous survey reports. A single woodcock was recorded in the scrub to the north of Killingholme Haven Pits in December 2010.

BIRDS OF CONSERVATION CONCERN – AMBER LIST SPECIES

Shoveler

- 3.6.135. A flock of 30 shoveler was recorded in flight over Halton Marshes on 30 October 2019 with another three shoveler on the smaller waterbody at Halton Marshes, north of the Site boundary (see **Figure 2**).
- 3.6.136. A total of 14 shoveler was recorded on 8 November 2019 in the same part of the Survey Area. There was some flooding of fields during this survey however and six of those birds were recorded on or around flood water, with eight present on the smaller waterbody at Halton Marshes (see **Figure 3**).
- 3.6.137. A single shoveler flight was recorded during vantage point surveys (see **Figure 24**). A single bird was recorded flying north up the estuary on 19 March 2020.
- 3.6.138. WeBS data records shoveler seldom are present and in low numbers at Halton Marshes with an average of one bird and a peak of two in March only. The data includes an absence of shoveler in the early winter season at Killingholme Marshes, with the highest average and peak counts in January of 39 birds and 78 birds. Killingholme Haven Pits record presence of shoveler in October only with an average count for the five years of 11 birds and a peak count of 34 birds.
- 3.6.139. Previous survey in 2010/2011 recorded 64 birds at Killingholme Haven Pits in late October 2010 and 54 birds in both mid-October and early November that year. 2007/2008 surveys also recorded peak counts at Killingholme Haven Pits in late October. 2006/2007 surveys recorded 68 shoveler at Killingholme Haven Pits in February 2007.
- 3.6.140. Previous surveys recorded a distribution of shoveler across waterbodies in their wider survey areas.

Gadwall

- 3.6.141. Gadwall was recorded on waterbodies at Halton Marshes during four winter bird surveys on 30 October 2019, 8 November 2019, 21 November 2019 and 30 March 2020 (See **Figures 2,4,5,11,13**). The peak count for gadwall was recorded on 21 November 2019 with 27 birds on the Halton Marshes waterbodies.

- 3.6.142. Previous surveys in 2010/2011 recorded gadwall present at Killingholme Haven Pits in early October only, with a count of seven birds. These surveys recorded gadwall absent from Halton Marshes in October, present in low numbers in late November, early December. Gadwall was absent from Halton Marshes for the rest of December with numbers growing in the early part of 2011. The peak count for these surveys at Halton Marshes was 36 in late February-early March.
- 3.6.143. Surveys in 2006/2007 recorded peak counts of 40 birds and 30 birds at Halton Marshes in early January 2007 and early February 2007. Numbers at Killingholme Haven Pits were below ten through February and January and absent from the reserve from late February 2007, early March 2007.
- 3.6.144. WeBS data shows gadwall presence at Halton Marshes in March only with an average count of nine birds and a peak of 26 birds in March. Low numbers are shown as present at Killingholme Marshes with an average of nine birds and a peak of 17 in January and gadwall absent in October and November. WeBS data has no records for gadwall at Killingholme Haven Pits.
- 3.6.145. Surveys in 2007/2008 recorded gadwall at Halton Marshes from late January 2008 with a peak in early March of 16 birds.

Mute Swan

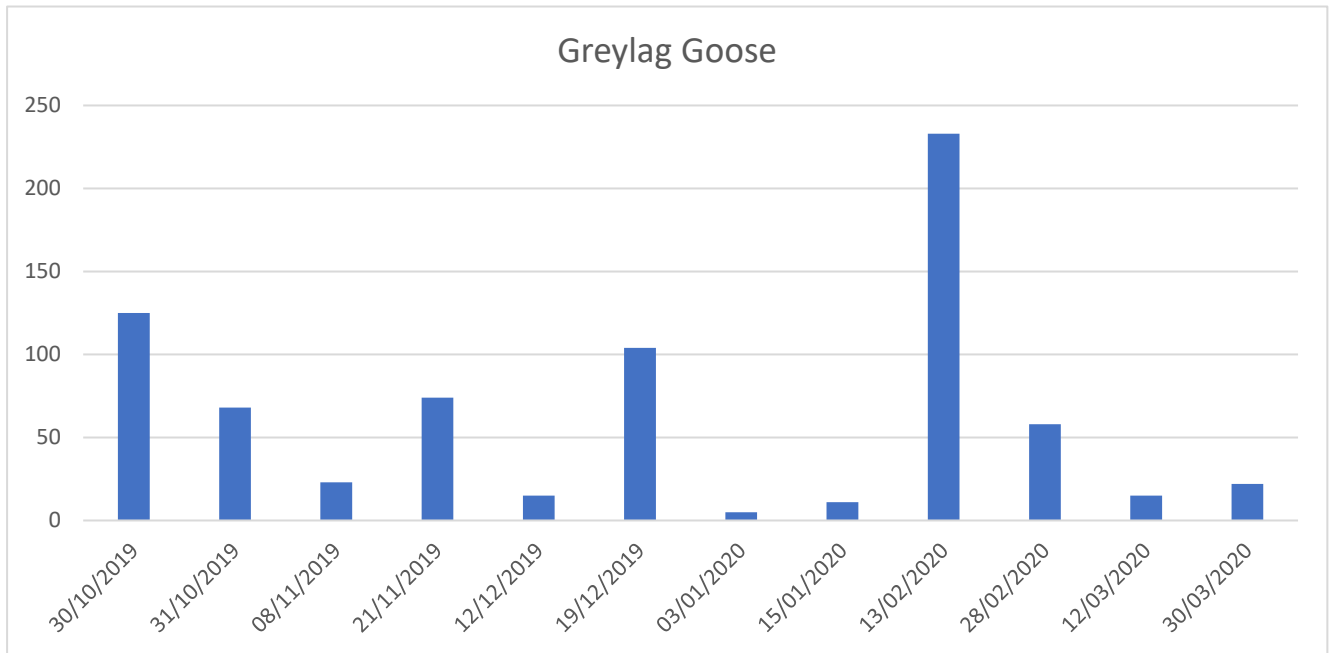
- 3.6.146. Mute swan were recorded during eight of the twelve winter birds' surveys (see **Figures 2, 3, 4, 7, 9, 10, 12 and 13**). These records were almost exclusively for birds on the waterbodies at Halton Marshes but include records of birds on the wet grassland habitat in the north of the Survey Area. Mute swans were recorded individually or in pairs. The peak count for the species was for four birds, taken on 13th February 2020.
- 3.6.147. Eight mute swan flights were recorded during vantage point surveys (see **Figure 24**) of which five crossed the Site to some extent. These included three flights over the middle of the Site, with birds flying south and arriving at Killingholme Haven Pits or leaving Halton Marshes, heading south and one flight from Killingholme Haven Pits, flying north east towards the estuary.
- 3.6.148. WeBS data has mute swan absent from Halton Marshes except in February and March, with the average count of three birds and peak count over the five years of 6 in February. The data shows mute swan also absent from Killingholme Marshes except in March with an average count of one birds and a peak count of two birds. Killingholme Haven Pits records also show an absence of mute swan for most of the winter season with an average of one birds and a peak count of two birds from January to March.
- 3.6.149. Previous surveys in 2010/2011 recorded no mute swans at Killingholme Haven Pits. The species was consistently present at Halton Marshes that season, usually in pairs but up to a peak count of six in mid-November 2010.
- 3.6.150. Surveys in 2006/2007 and 2007/2008 recorded breeding pairs with cygnets at both Halton Marshes and Killingholme Haven Pits.

Greylag Goose

- 3.6.151. Greylag geese were a consistent and relatively numerous presence in the Survey Area during the winter bird surveys (see **Chart 3-15** below). Birds were mainly recorded grazing on the wet pasture immediately north of the Site boundary or on waterbodies at Halton Marshes (see **Figures 2 to 13**). Numbers in this area were regularly in excess of 50 birds with 233 birds recorded in this area on 13th February 2020 (see **Figure 10**).

3.6.152. Greylag were also regularly recorded on waterbodies at Killingholme Haven Pits.

Chart 3-15 - Greylag Goose Counts for Winter 2019/2020



3.6.153. Greylag flights recorded during vantage point surveys were dominated by moving into and out of the Halton Marshes area. Of the 70 flights recorded, 56 were from the north vantage point and the remaining 14 from the south (see **Figure 26**). Of flights recorded from the north vantage point 24 crossed the Site to some extent and from the south 11 flights crossed the Site.

3.6.154. Whilst the vantage point survey results for greylag geese show that half of recorded flights passed over the Site, there were no regular flight paths used by greylags as they crossed the Site and the timings of flights were spread throughout the day with no clear link to time of day or tides.

3.6.155. WeBS data for greylag show them present throughout the season at Halton Marshes with a high average count of 20 birds and a peak count of 39 birds in February. Killingholme Marshes counts showed the species absent from the area until February when the average and peak counts are less than ten birds. Records for Killingholme Haven Pits show a high average count of 30 birds and a high peak count for the five years of 91 birds then present in low numbers for the rest of the season.

3.6.156. Previous surveys show greylag geese absent from Killingholme Haven Pits in 2010/2011 except for a count of two in late March 2011. This survey recorded greylag as absent at Halton Marshes for much of the winter season in those years with counts as high as 14 in Late January to March 2011. The other surveys show a similar distribution and counts of greylag across their wider survey areas.

Barnacle Goose

3.6.157. A single barnacle goose flight was recorded during the winter bird survey on 5 December 2019 when a flock of eight birds were recorded flying north up the Humber (see **Figure 26**).

3.6.158. There is no WeBS data for barnacle gees for the three sectors during the winter season.

3.6.159. Previous surveys recorded similar, low numbers of barnacle during winter bird surveys over the larger survey areas they employed.

Pink-Footed Goose

3.6.160. Pink-footed geese were recorded during winter bird surveys on 9 November 2019 and 3rd January 2020 when 18 birds and 40 birds, respectively were recorded in flight over the west of the Survey Area (see **Figures 4** and **8**). A single bird was also recorded in the wet pasture at Halton Marshes, foraging with greylag geese (see **Figure 7**).

3.6.161. Three pink-footed goose flights were recorded during vantage point surveys, all from the southern vantage point and all on 14 November 2019 (see **Figure 26**). All flights crossed the Site; two over the middle of the Site and one crossing the east of the site near the port jetty, crossing over Killingholme Haven Pits. All flights were heading south east to south.

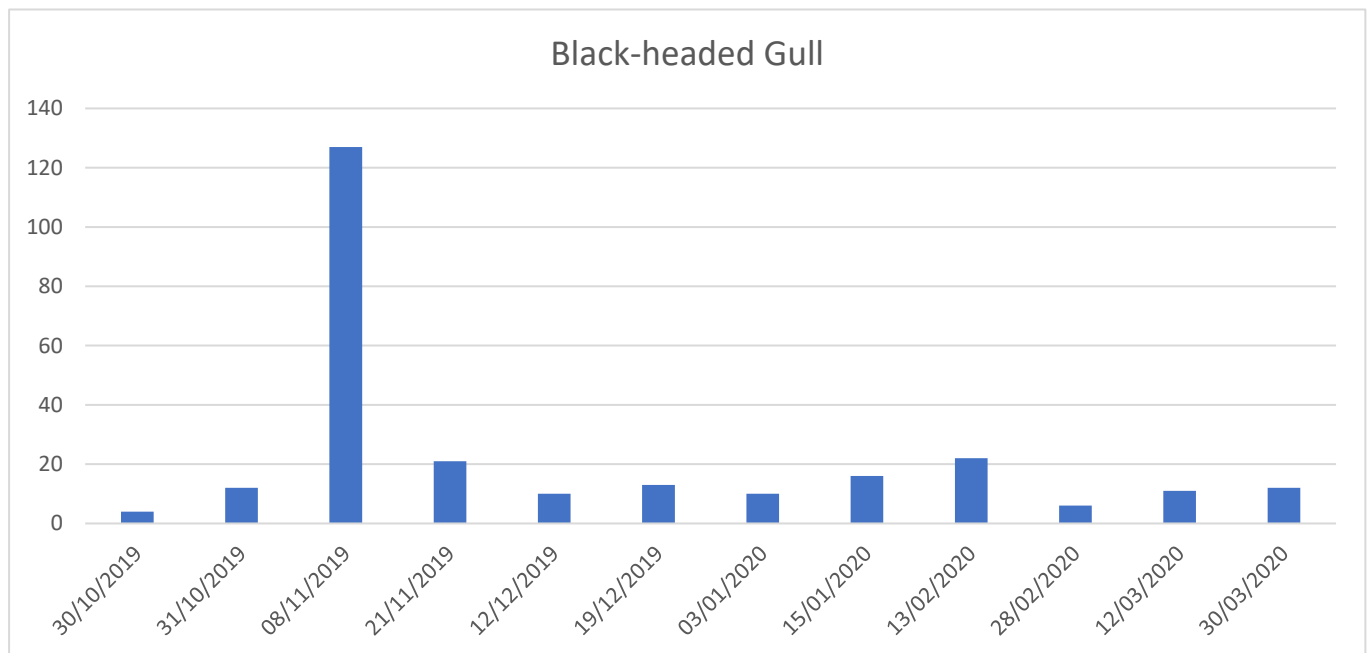
3.6.162. There is no WeBS data for pink-footed geese for the winter season over the five year period at any of the three sectors.

3.6.163. Previous surveys recorded only occasional, low numbers of pink-footed geese from the wider areas they surveyed.

Black-Headed Gull

3.6.164. Black-headed gulls were a constant presence during winter bird surveys (see **Figures 2** to **13**). Usually recorded in small numbers across the Survey Area including at Killingholme Haven Pits, Halton Marshes and the agricultural habitats to the west, the peak count of 127 birds was recorded on 8 November 2019 (see **Chart 3-16** below). Conditions in November were very wet, and the resulting flooding drew in a number of species to the fields in the west of Halton Marshes, including two groups of black-headed gull numbering 38 and 40 birds (see **Figure 4**).

Chart 3-16 - Black-Headed Gull Counts for Winter 2019/2020



- 3.6.165. Black-headed gull was not identified as a target species for vantage point surveys and no regular movements or movements of large numbers of the species was recorded during surveys.
- 3.6.166. Previous surveys mention black-headed gull rarely and contain no detail on numbers. The farmland bird survey of 2010/2011 recorded four birds in January 2011.

Common Gull

- 3.6.167. Common gull was a regularly recorded species during winter bird surveys with birds most commonly observed in flight over the estuary in numbers of four or below. Occasional records were taken for birds at Killingholme Haven Pits and in flight over the arable habitats to the west of the Site boundary in the Killingholme and Halton Marshes areas (see **Figures 2, 5, 8, 9, 10 and 12**).
- 3.6.168. The peak count for common gull was made on 12 March 2020 with 30 birds recorded on the foreshore in the north of the Survey Area near the location of the northern vantage point.
- 3.6.169. Common gull are mentioned rarely in the previous survey reports. The farmland bird survey of 2010/2011 recorded a peak count of 14 birds during the survey in February 2011.

Lesser Black-Backed Gull

- 3.6.170. Lesser black-backed gulls were recorded exclusively in flight over the estuary during both October 2019 surveys, on 19 December 2019, on both February 2020 survey and on 12 March 2020 (see **Figures 2, 3, 7, 10, 11 and 12**).
- 3.6.171. Lesser black-backed gull were rarely mentioned in the previous survey reports.

Great Black-Backed Gull

- 3.6.172. Two great black-backed gulls were recorded over the estuary towards the south of the Survey Area, opposite Killingholme Haven Pits, on 30 October 2019.
- 3.6.173. No other records of the species were made during the winter bird surveys.
- 3.6.174. Great black-backed gull was rarely mentioned in the previous survey reports.

Common Sandpiper

- 3.6.175. Two common sandpiper were recorded on 8 November 2019 on the flooded arable fields at Halton Marshes, in the north west of the Survey Area (See **Figure 4**).
- 3.6.176. The mild, wet winter conditions are believed likely to be responsible for these late migrants or winter vagrants reaching the Humber Estuary.
- 3.6.177. Previous survey reports include records of common sandpiper on passage only.

Snipe

- 3.6.178. Snipe activity and records were focussed on Killingholme Haven Pits where a peak wintering population of 75 birds was recorded on 21 November. Occasional records of snipe from Halton Marshes and the estuary foreshore were also made during winter bird transects (see **Figures 4 to 13**).
- 3.6.179. All snipe flights recorded during vantage point surveys were taken from the southern vantage point and primarily recorded flocking birds circling and repositioning as a result of marsh harrier or other raptor passes and other unknown causes.

- 3.6.180. Of the 27 snipe flights recorded nine involved some crossing of the Site (see **Figure 25**). Regular flights were also made between Killingholme Haven Pits and the foreshore south of the port jetty and exposed mud on the outflow.
- 3.6.181. WeBS data for snipe in the three sectors show the species absent from Halton Marshes and almost absent from Killingholme Marshes with a high average count of one bird and a peak count of three birds in March. At Killingholme Haven Pits the species is present throughout the season with a high average count of 26 birds and a high peak count for the five years of 52 birds.
- 3.6.182. The 2010/2011 surveys recorded an almost complete absence of snipe in winter with four birds recorded in March only. The survey also shows snipe absent from Halton Marshes in that season. The 2010/2011 farmland bird survey recorded three snipe in December 2010 and February and March 2011.

Kestrel

- 3.6.183. Kestrel was recorded individually across the habitats within the Survey Area. Early winter records were primarily for the Halton Marshes area, north of the Site boundary with birds observed perching, hunting and in flight (see **Figures 2, 4, 5, 7, 9, 11,12**). Later records include records for the arable fields in the west of the Survey Area and around Killingholme Haven Pits.
- 3.6.184. 21 kestrel flights were recorded during vantage point surveys, twelve from the north and eight from the south (see **Figure 28**). These records include eight flights involving hunting behaviour with the remaining being commuting or directional flights.
- 3.6.185. Seven flights over the Site were recorded. Those recorded from the southern vantage point included three flights from or towards the middle of the Site. Flights over the northern part of the Site only overflew the Site edges where scrub is often present, and flight recorded birds moving over and away from the Site.
- 3.6.186. Previous surveys mention kestrel in relation to areas outside the 2019/2020 Survey Area.

Reed Bunting

- 3.6.187. Reed bunting was recorded during all of the winter bird surveys in tall wetland vegetation, scrub and on hedgerows and wild bird cover within the arable habitats. The survey on 8 November 2019 recorded 8 birds in a mixed flock associating with yellowhammer and finches (see **Figures 2 to 13**).
- 3.6.188. Reed bunting was recorded on taller vegetation along the banks of the estuary as well as the scrub habitats at Killingholme Haven Pits and Halton Marshes. A single reed bunting was also recorded on the drainage channel that runs through the eastern side of the Site close to the landing jetty access.
- 3.6.189. Previous surveys show reed bunting present in varying numbers, often associating with other species in mixed flocks on arable land and in wild bird cover.

Bullfinch

- 3.6.190. Bullfinch was recorded on all surveys but the 28 February 2020 and 12 March 2020. They were recorded in scrub and hedgerow habitats across the Survey Area including the scrub which lines the western boundary of the Site (see **Figures 2 to 10 and 13**). Four birds were tracked along the route of the transect on 8 November 2019 in this area.

3.6.191. Birds were also recorded in the scrub at Halton Marshes, north of the Site boundary where eight birds were recorded on 30 October 2019, contributing to the peak count for the species during this survey of 11 individuals.

3.6.192. A single bullfinch was recorded on one occasion in February 2011 during the 2010/2011 farmland bird survey.

Dunnock

3.6.193. Dunnock was recorded on all but the winter bird surveys on 12 December 2019 and 30 March 2020 (see **Figures 2 to 5** and **7 to 12**). The species was distributed across the Survey Area within scrub, hedgerow and taller herb or ruderal habitats, including along the section of the transect which passed through the east of the Site.

3.6.194. The peak count for the species was five birds, recorded on 31 October 2019, 8 November 2019, and 3rd January 2020.

3.6.195. Previous surveys do not include detail of dunnock numbers observed.

Stock Dove

3.6.196. Stock dove was recorded during three winter bird surveys on 15 January 2020, 13 February 2020 and 30 March 2020 (see **Figures 9, 10** and **13**). All records were for birds in flight over arable habitats. The peak count of 30 birds was from the survey on 15 January 2020.

3.6.197. Previous surveys record similar numbers of stock dove distributed across their larger survey areas.

OTHER SPECIES OF NOTE

Barn Owl

3.6.198. Optimal barn owl foraging habitat is limited within the Survey Area with rough grassland present only in small amounts within the agricultural land in the west of the Survey Area. The northern extent of the Survey Area includes some of the wet grassland habitat of Halton Marshes which would offer an extensive area of optimal habitat for foraging barn owl.

3.6.199. Barn owl was recorded during two vantage point surveys (see **Figure 29**): from the southern vantage point on 24 January 2020 and from the southern vantage point on 19 March 2020. The first record in January was for a barn owl hunting low over the common reed beds at Killingholme Haven Pits, resting in hawthorn *Crataegus monogyna* scrub. The second vantage point record was from the northern vantage point and observed a bird hunting over the rough, wet grassland of Halton Marshes.

3.6.200. Previous surveys record a similar level of barn owl activity from the Survey Area and wider habitats. The 2010/2011 surveys recorded a hunting barn owl over Killingholme Haven Pits in January 2011.

Little Egret

3.6.201. Little egret was recorded on 31 October 2019, 8 November 2019, 21 November 2019, 12 December 2019, 19 December 2019, 3 January 2020, 13 February 2020 and 30 March 2020.

3.6.202. The majority of records of little egret from the winter bird surveys were recorded in the south of the Survey Area, most commonly on Killingholme Haven Pits although they were also recorded at Halton Marshes and on arable fields in the north of the Survey Area.

- 3.6.203. A total of 17 little egret flights were recorded during vantage point surveys, seven of which crossed the Site to some extent.
- 3.6.204. WeBS data for little egret shows the species present only as single birds at Halton Marshes in February. Little egret is only present at Killingholme Marshes in October, February and March, with February and March having average counts of one bird and a peak of two birds.
- 3.6.205. Survey data from 2010/2011 records no little egret at Killingholme Haven Pits. These surveys recorded two little egret present at Halton Marshes in March. Other surveys recorded low numbers of little egret distributed across their respective survey areas.

Cetti’s Warbler

- 3.6.206. Cetti’s warbler was recorded as an incidental record during the northern vantage point survey on 30 October 2019 and again during the winter bird survey on 31 October. On both occasions the bird, assumed to be the same individual was not seen but recorded singing consistently from scrub immediately north of the Site boundary between the boundary fence and the disused brickworks buildings to the north (see **Figure 3**).
- 3.6.207. After the early season records, no further records of Cetti’s warbler from the Survey Area were made.
- 3.6.208. Previous surveys record no Cetti’s warbler from within the 2019/2020 Survey Area however they do record the species in low numbers from the wider area across the winter season.

3.7 EVALUATION OF THE SITE FOR WINTERING BIRDS

- 3.7.1. Whilst there are some areas of semi-natural habitat within the Site boundary it offers very little suitable habitat for wintering bird species for which the Humber Estuary SPA is listed, or other wintering species. The Site is dominated by hardstanding and buildings and is subject to high levels of human activity and disturbance resulting from the regular movement of vehicles into, out of and around the Site.
- 3.7.2. The Site is located amongst habitats with much higher value for wintering birds which draws a diverse assemblage into the Survey Area. This includes the estuarine habitats of the Humber, the wetland habitats of the Killingholme Haven Pits and Halton Marshes, and farmland habitat.
- 3.7.3. Interactions between birds utilising the Humber estuary, the wetland and terrestrial habitats and the Site are limited to irregular, occasional flights over the main body of the Site. More regular crossing of the Site boundary does occur in limited sections to the north east and south east where the Site boundary lies close to the wetlands of Killingholme Haven Pits and Halton Marshes. These flights occur over areas subject to regular disturbance from ongoing port operations, including movement of plant/vehicles, shipping containers and personnel.
- 3.7.4. There appear to be no functional links between the Site and the SPA qualifying bird species, qualifying species from the SPA were not seen to visit the Site to any degree. Regular flight lines for SPA or other species across the Site are limited to the section between the landing stages and Killingholme Haven Pits and where bird flight line cross the Site in the north to and from Halton Marshes.

3.8 ASSESSMENT AGAINST PREVIOUS FINDINGS

- 3.8.1. The habitats within the Site and Survey Area have not undergone any significant changes since the previous survey in 2011 although some recent vegetation removal has occurred around one of the on-site waterbodies.
- 3.8.2. The 2019/2020 surveys included an assessment of bird activity around the Site and surrounding habitats and did not focus solely on the on-site habitats. The findings of the walked transect surveys, which took in much of the semi-natural habitats on-site, and the vantage point surveys, which overlooked the whole Site and surroundings, provide a comprehensive picture of the Site value for wintering birds.
- 3.8.3. Species composition and activity recorded is broadly consistent with previous surveys in 2010/2011 and earlier of the wider area and the WeBS data provided by the BTO for the years 2013/2014 to 2017/2018. A summary of previous SPA bird species data (including desk-based sources used to inform the original DCO application submission) and that obtained during the 2019/20 surveys is presented in Table 3.1, below. The original application bird survey data is appended in **Appendix D**. Species that are individual qualifying interests of the SPA are included, with assemblage species not listed. This includes reference to the results of breeding and passage bird surveys completed by WSP in 2019/20, which are reported separately⁵.
- 3.8.4. It should be noted that none of the surveys used to inform the original DCO application covered the same (or even similar) study area as the surveys completed in 2019/20. The previous (third party) surveys typically covered more extensive areas north, south and west of the Site, including habitats in excess of 500m from the Site that would experience no conceivable disturbance impacts from the Project. The exception to this is the 2010/11 Parsons Brinckerhoff (PB) surveys, which covered the Operations Area of the Project and its immediate surrounds only. As such, recorded peak counts from the 2019/20 surveys are not directly comparable with peak counts from the datasets that informed the original DCO application. Differing results between the original application information and the 2019/20 surveys are to be expected given the differing spatial extents, methodologies and survey methods employed.
- 3.8.5. Increases in the counts of avocet at Killingholme Haven Pits and knot at Killingholme Haven Pits and on the foreshore north and south of the Site, and confirmation of breeding activity by marsh harrier at Halton Marshes north of the Site are of note. However, the absence of interaction between these species (and other SPA species) and the Site and the fact that their distribution in relation to the site is similar to that previously recorded, means the previous assessment of Site value and potential impact pathways is not altered. The mitigation measures required under the made DCO and associated Deemed Marine Licence remain appropriate for avoiding and mitigating impacts on SPA and other bird species.

⁵ WSP. July 2020. North Killingholme Power Project – DCO Amendments: Breeding Bird and Waterbird Survey Report.

Table 3-6 – Summary of SPA Bird Species Data

Species	Peak Count (Winter Bird Survey, Killingholme 2006/7) ⁶	Peak Count (Humber Inca Winter Surveys, 2010 – 2011) ⁷	Peak Count (Weekly Survey Reports August 2009 – March 2010) ⁸	Peak Count (North Lincolnshire Winter Survey January – March 2009) ⁹	Peak Count (East Killingholme Winter Birds Survey 2007/2008) ¹⁰	Peak Count (Spring Wader Counts April 2007 – May 2007) ¹¹	Peak Count (PB Wintering Bird Surveys of Operations Area (winter 2010 – 2011) ¹²	Peak Count (2013/14 – 2017/18 WeBS Data (Sector I; Sector J; Sector JJ))	Peak Count (WSP 2019/20 Wintering Bird Surveys)	Peak Count (WSP 2019/2020 Passage and Waterbird surveys) ¹³
Avocet	55	38	12	Present, numbers not stated	43	28	0	I = 0 J = 24 JJ = 12	88	98
Bittern	0	0	1	0	0	0	0	I = 0 J = 0 JJ = 0	2	0
Hen harrier	0	2	1	1	0	0	0	I = 0 J = 0 JJ = 0	0	0
Golden plover	617	4452	698	0	443	0	0	I = 0 J = 0 JJ = 0	36	0
Bar-tailed godwit	0	880	240	1	1	1	0	I = 0 J = 6 JJ = 0	0	0

⁶ ABLE HUMBER PORTS FACILITY, KILLINGHOLME. WINTER FARMLAND BIRD SURVEY, 2007. JUST ECOLOGY.

⁷ HUMBER INCA NORTH AND NORTH-EAST LINCOLNSHIRE AUTUMN AND WINTER BIRD SURVEYS SEPTEMBER 2010 – APRIL 2011. G.P. CATLEY. NYCTEA LTD.

⁸ WEEKLY SURVEY REPORTS AUGUST 2009 – MARCH 2010. G.P. CATLEY. NYCTEA LTD.

⁹ NORTH LINCOLNSHIRE WINTER SURVEY JANUARY – MARCH 2009. G.P. CATLEY. NYCTEA LTD.

¹⁰ EAST HALTON – KILLINGHOLME WINTER BIRDS SURVEY 2007/2008. G.P. CATLEY. NYCTEA LTD.

¹¹ SPRING WADER COUNTS IN EAST HALTON – KILLINGHOLME MARSHES APRIL 2007 – MAY 2007. G.P. CATLEY. NYCTEA LTD.

¹² C.GEN Killingholme Limited. North Killingholme Power Project. Environmental Statement: Appendix 7.8.

¹³ WSP. July 2020. North Killingholme Power Project – DCO Amendments: Breeding Bird and Waterbird Survey Report

Ruff	14	13	3		11	10	0	I = 0 J = 0 JJ = 7	0	0
Marsh harrier	1	3	2	3	1	0	0	I = 0 J = 0 JJ = 0	2	0
Little tern	0	0	0	0	0	0	0	I = 0 J = 0 JJ = 0	0	0
Shelduck	19	20	16	0	10	0	0	I = 4 J = 110 JJ = 14	24	0
Knot	14	42	32	161	0	0	0	I = 0 J = 0 JJ = 0	298	26
Dunlin	387	3050	1400	2200	1250	0	0	I = 320 J = 245 JJ = 180	455	47
Black-tailed godwit	3600	4000	161	3	3562	282	0	I = 28 J = 52 JJ = 3810	208	550
Redshank	225	450 (approximate)	22	0	535	64	0	I = 41 J = 203 JJ = 157	246	88

4 IMPLICATIONS FOR DEVELOPMENT

4.1 OVERVIEW

- 4.1.1. The survey results indicate that the Site has limited value for wintering birds. The surrounding habitats are of greater value and provide roosting and foraging habitats for a variety of bird species, including 21 of those listed as qualifying species on the Humber Estuary SPA citation. The most significant consideration for the Proposed Scheme is the potential for increased levels of disturbance to result in displacement of SPA and other bird species from habitats adjacent to the Site.
- 4.1.2. Current human activity and vehicle/plant/shipping container movements on the Site generate a high degree of noise and visual disturbance which birds using adjacent habitats are either not affected by or have become habituated to. Construction and operational activity at the Proposed Scheme has the potential to change the frequency and nature of these disturbance effects.
- 4.1.3. These matters were explored in detail during preparation and Examination of the DCO application. A number of Requirements of the DCO include measures which are either directly targeted at or incidentally provide measures to address these impacts. These include:
- Requirements 15 (Construction Environmental Management Plan);
 - Requirements 17 and 23 (Control of Noise during Construction and Operation, respectively);
 - Requirement 25 (Piling Method Statement);
 - Requirement 26 (Method Statement to protect North Killingholme Haven Pits during construction);
 - Requirement 30 (Construction and Security Lighting Scheme);
 - Requirement 31 (Permanent Lighting Scheme);
 - Requirements 34 and 35 (Other Ecological Matters);
 - Requirement 48 (Train Speed at North Killingholme Haven Pits);
 - Requirement 49 (Acoustic Hoarding of northern and western boundaries);
 - Requirement 50 (Visual Attenuation of Train Movements); and
 - Requirement 51 (Control of Construction Noise at North Killingholme Haven Pits).
- 4.1.4. The desk study research and analysis and the surveys completed in 2019/2020 have demonstrated that the baseline for wintering birds remains similar to that assessed for the DCO application. As such, the Requirements set out above remain appropriate for addressing potential disturbance and other effects on these species.

5 CONCLUSIONS

- 5.1.1. The Site is located amongst valuable and legally designated winter bird habitat and is bordered by the Humber Estuary SPA and two SSSIs. This situation remains unchanged from when the DCO application was submitted. A total of 88 species were recorded on or over the Survey Area during the wintering bird transect and vantage point surveys in 2019/2020. A similar range and number of wintering birds were recorded during the 2019/2020 surveys as were recorded during surveys to inform the DCO application. The distribution of the species recorded and how they used habitats within the Survey Area was also similar.
- 5.1.2. This survey report highlights the value of adjacent habitats to wintering bird species listed on the SPA citation and the interactions between those habitats and the SPA itself via bird movements. However, it also illustrates that the Site in its current condition offers habitat of negligible value to wintering bird species, including those from the SPA. Interactions between SPA species and the Site are limited to crossing flights at the north east and south east extents of the Site where the Site borders or is in close proximity to wetland habitats of Halton Marshes and Killingholme Haven Pits. These do not represent regular movements of significant numbers of birds and are not the sole route used by birds to move between the inland and estuarine habitats.
- 5.1.3. Care should continue to be taken to mitigate for any potentially significant increases to the levels of disturbance at the Site during construction and operation of the Proposed Development. The DCO (as made by the Secretary of State) includes Requirements which avoid or mitigate the potential disturbance effects of the Proposed Scheme. The update baseline for wintering birds suggests these Requirements remain appropriate and should be implemented during delivery of the Proposed Scheme. This will ensure significant disturbance effects on wintering/passage birds are avoided.

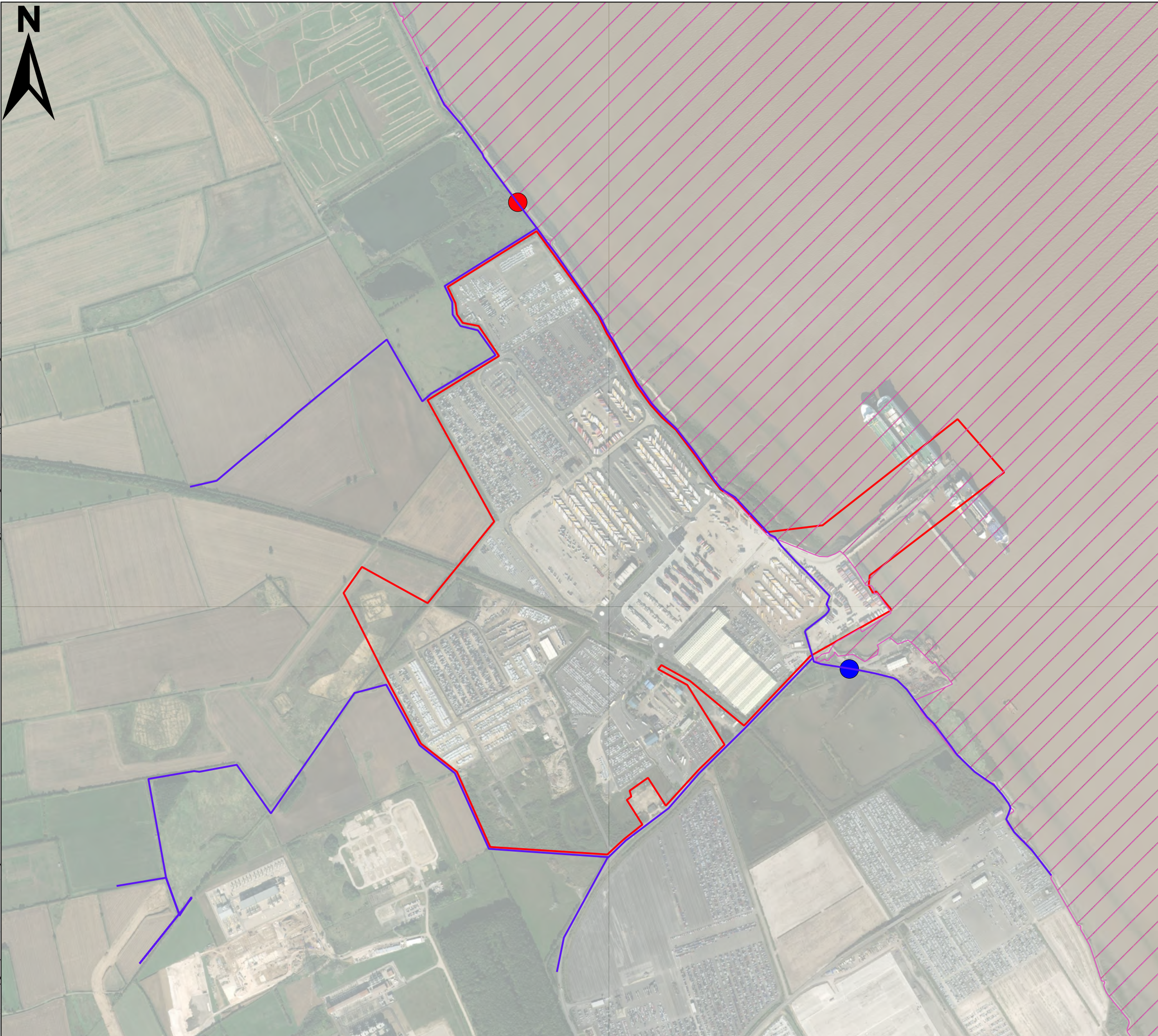
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- Woodward I., Aebischer N., Burnell D., Eaton M., Frost T., Hall C., Stroud D., Noble D., (2020) *Population estimates of birds in Great Britain and the United Kingdom*. *British Birds* 113: 69-104.



Key

- Site Boundary
- Humber Estuary SPA
- Transect Route

Vantage Point

- North
- South

100 0 100 200 m

Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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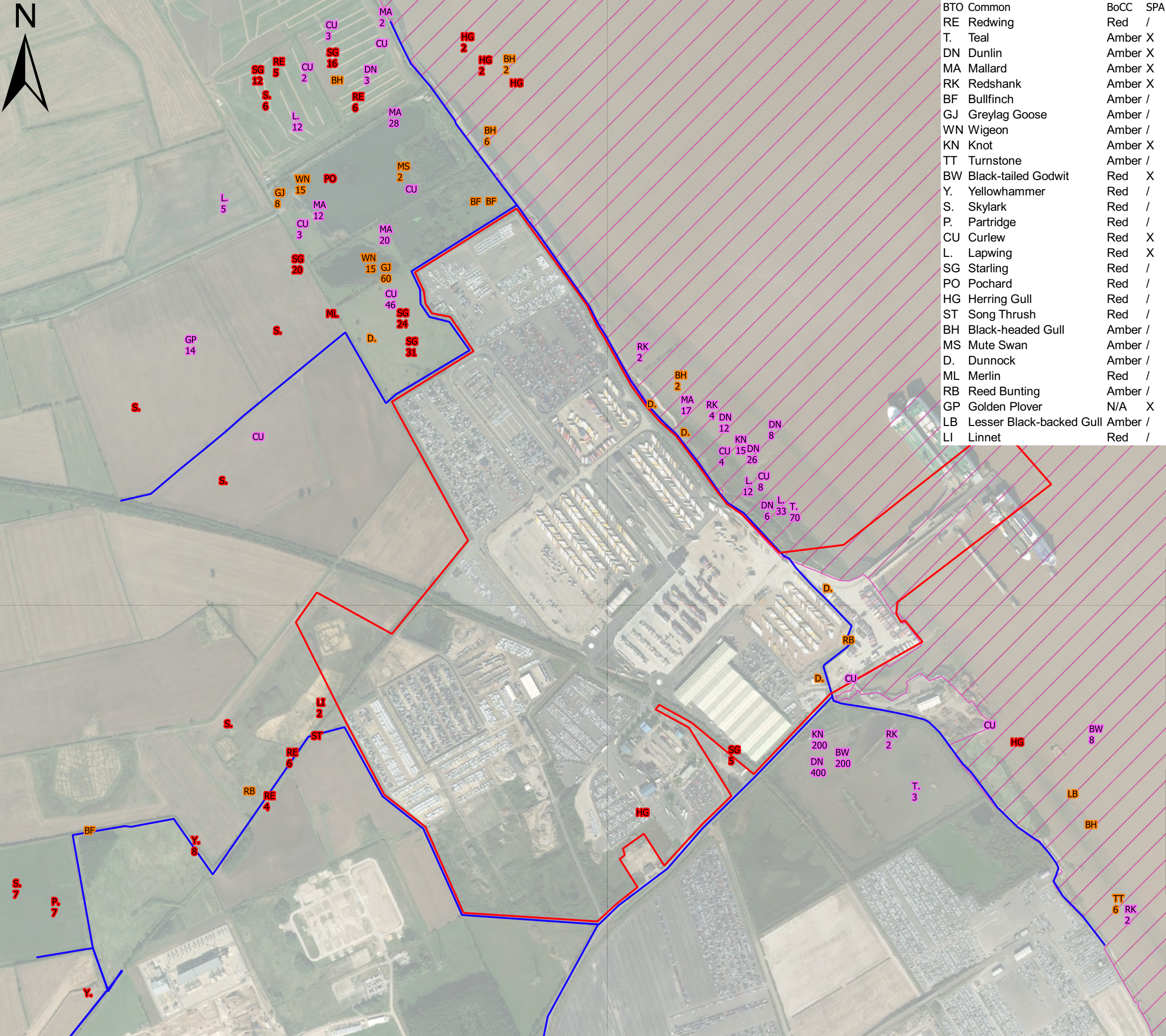
CLIENT: **C.GEN**

PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 1 - Wintering Bird Surveys
Transect Route and Vantage Point Locations**

SCALE @A3: 1:10,000	CHECKED: DC	APPROVED: LR	
PROJECT No: 70055743	DESIGNED:	DRAWN: JR	DATE: 27/04/20
DRAWING No: Figure 1			REV: -

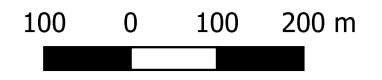
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BTO	Common	BoCC	SPA
RE	Redwing	Red	/
T.	Teal	Amber	X
DN	Dunlin	Amber	X
MA	Mallard	Amber	X
RK	Redshank	Amber	X
BF	Bullfinch	Amber	/
GJ	Greylag Goose	Amber	/
WN	Wigeon	Amber	/
KN	Knot	Amber	X
TT	Turnstone	Amber	/
BW	Black-tailed Godwit	Red	X
Y.	Yellowhammer	Red	/
S.	Skylark	Red	/
P.	Partridge	Red	/
CU	Curlew	Red	X
L.	Lapwing	Red	X
SG	Starling	Red	/
PO	Pochard	Red	/
HG	Herring Gull	Red	/
ST	Song Thrush	Red	/
BH	Black-headed Gull	Amber	/
MS	Mute Swan	Amber	/
D.	Dunnock	Amber	/
ML	Merlin	Red	/
RB	Reed Bunting	Amber	/
GP	Golden Plover	N/A	X
LB	Lesser Black-backed Gull	Amber	/
LI	Linnet	Red	/

Key

- Site Boundary
- Transect Route
- Humber Estuary SPA
- BoCC Amber List Species Only
- BoCC Red List Species Only
- Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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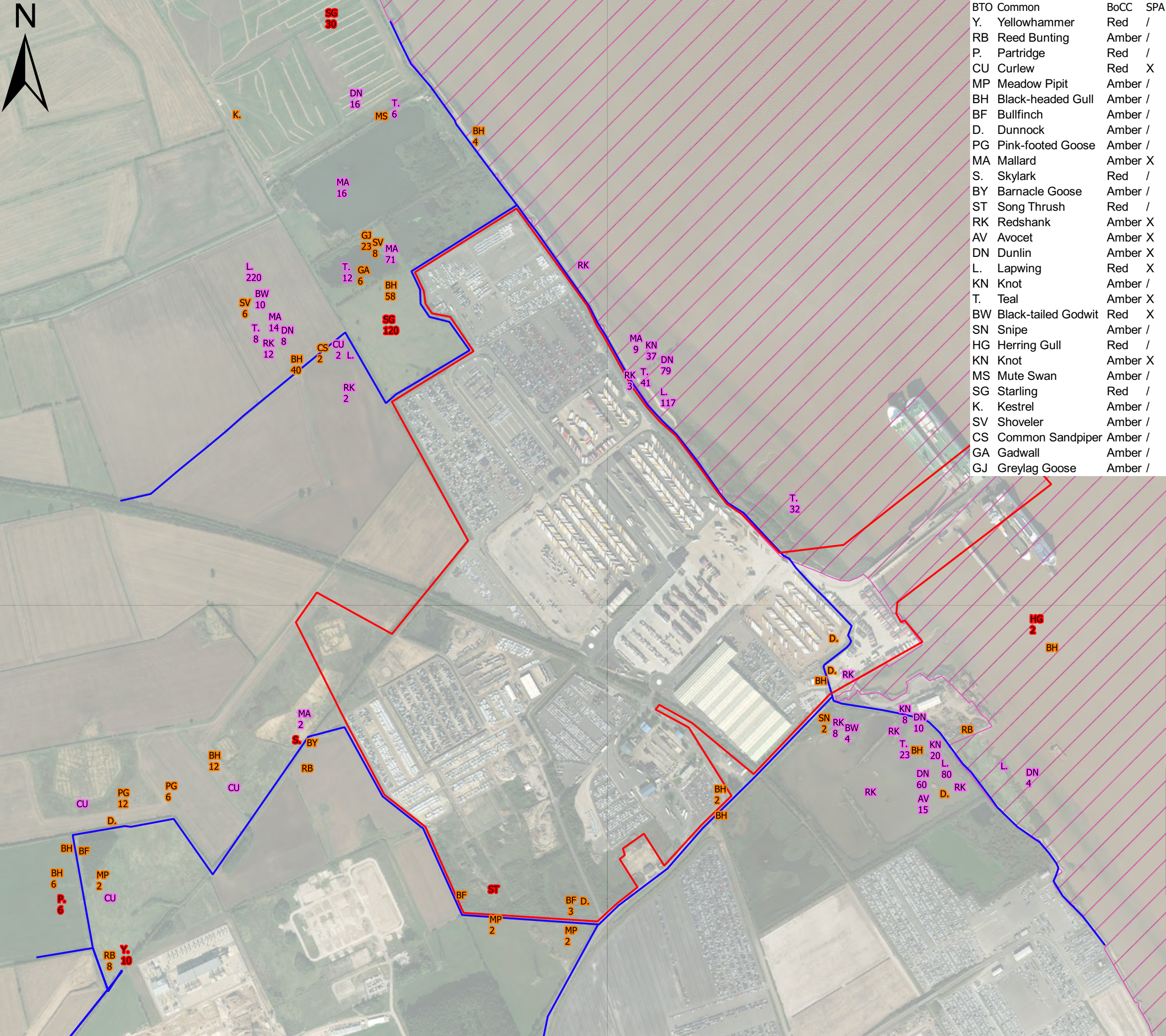
PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 3 - Wintering Bird Surveys
Transects
Visit 2**

SCALE @ A3	1:8750	CHECKED:	DC	APPROVED:	LR
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PROJECT No:	70055743	DESIGNED:		DRAWN:	JR	DATE:	27/04/20
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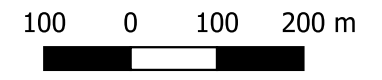
DRAWING No:	Figure 3			REV:	-
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BTO	Common	BoCC	SPA
Y.	Yellowhammer	Red	/
RB	Reed Bunting	Amber	/
P.	Partridge	Red	/
CU	Curlew	Red	X
MP	Meadow Pipit	Amber	/
BH	Black-headed Gull	Amber	/
BF	Bullfinch	Amber	/
D.	Dunnock	Amber	/
PG	Pink-footed Goose	Amber	/
MA	Mallard	Amber	X
S.	Skylark	Red	/
BY	Barnacle Goose	Amber	/
ST	Song Thrush	Red	/
RK	Redshank	Amber	X
AV	Avocet	Amber	X
DN	Dunlin	Amber	X
L.	Lapwing	Red	X
KN	Knot	Amber	/
T.	Teal	Amber	X
BW	Black-tailed Godwit	Red	X
SN	Snipe	Amber	/
HG	Herring Gull	Red	/
KN	Knot	Amber	X
MS	Mute Swan	Amber	/
SG	Starling	Red	/
K.	Kestrel	Amber	/
SV	Shoveler	Amber	/
CS	Common Sandpiper	Amber	/
GA	Gadwall	Amber	/
GJ	Greylag Goose	Amber	/

Key

- Site Boundary
- Transect Route
- Humber Estuary SPA
- BoCC Amber List Species Only
- BoCC Red List Species Only
- Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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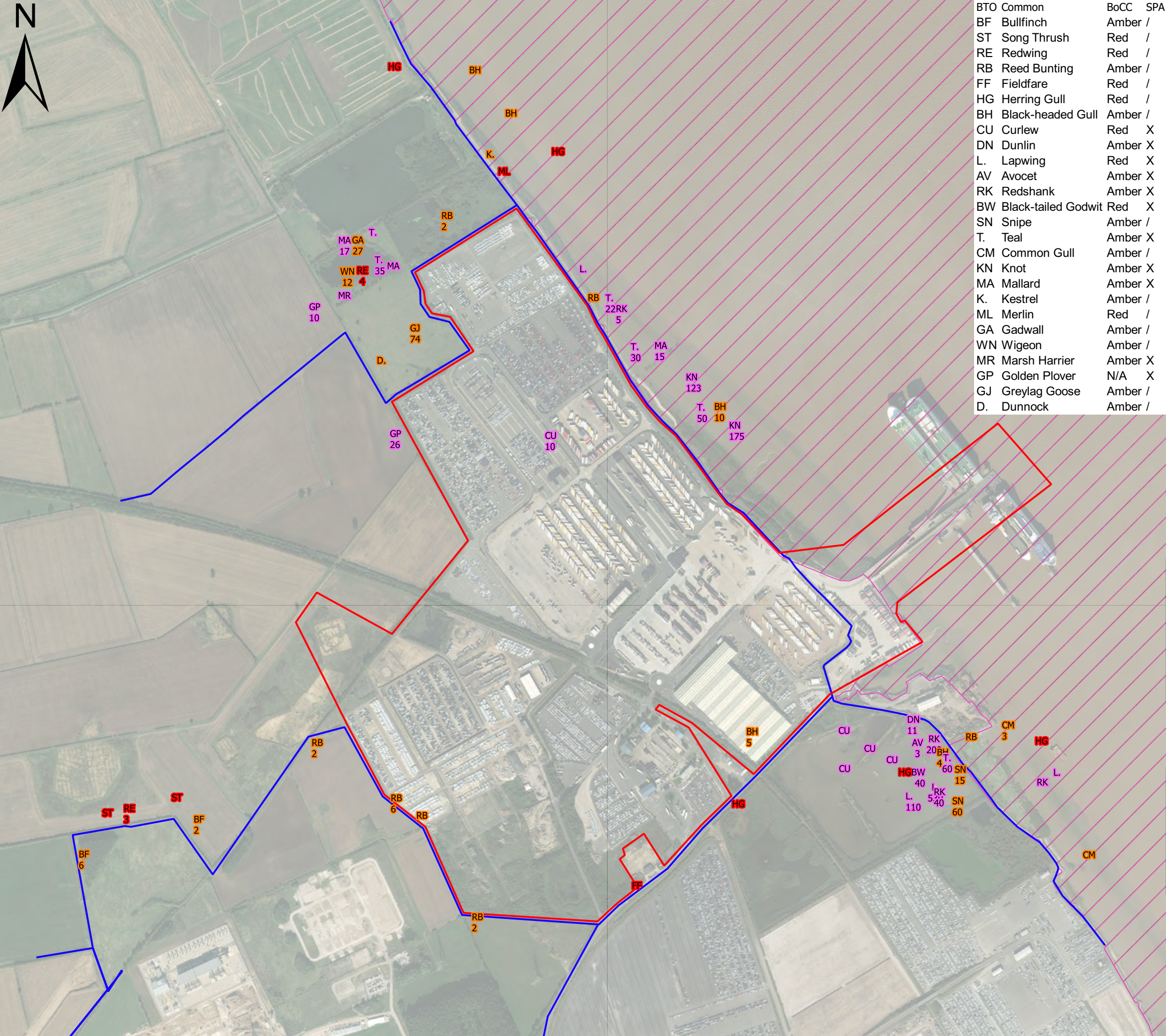
TITLE: **Figure 4 - Wintering Bird Surveys
Transects
Visit 3**

SCALE @ A3	1:8750	CHECKED:	DC	APPROVED:	LR
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PROJECT No:	70055743	DESIGNED:		DRAWN:	JR	DATE:	27/04/20
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DRAWING No:	Figure 4			REV:	-
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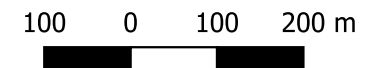
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BTO	Common	BoCC	SPA
BF	Bullfinch	Amber	/
ST	Song Thrush	Red	/
RE	Redwing	Red	/
RB	Reed Bunting	Amber	/
FF	Fieldfare	Red	/
HG	Herring Gull	Red	/
BH	Black-headed Gull	Amber	/
CU	Curlew	Red	X
DN	Dunlin	Amber	X
L.	Lapwing	Red	X
AV	Avocet	Amber	X
RK	Redshank	Amber	X
BW	Black-tailed Godwit	Red	X
SN	Snipe	Amber	/
T.	Teal	Amber	X
CM	Common Gull	Amber	/
KN	Knot	Amber	X
MA	Mallard	Amber	X
K.	Kestrel	Amber	/
ML	Merlin	Red	/
GA	Gadwall	Amber	/
WN	Wigeon	Amber	/
MR	Marsh Harrier	Amber	X
GP	Golden Plover	N/A	X
GJ	Greylag Goose	Amber	/
D.	Dunnock	Amber	/

Key

- Site Boundary
- Transect Route
- Humber Estuary SPA
- BoCC Amber List Species Only
- BoCC Red List Species Only
- Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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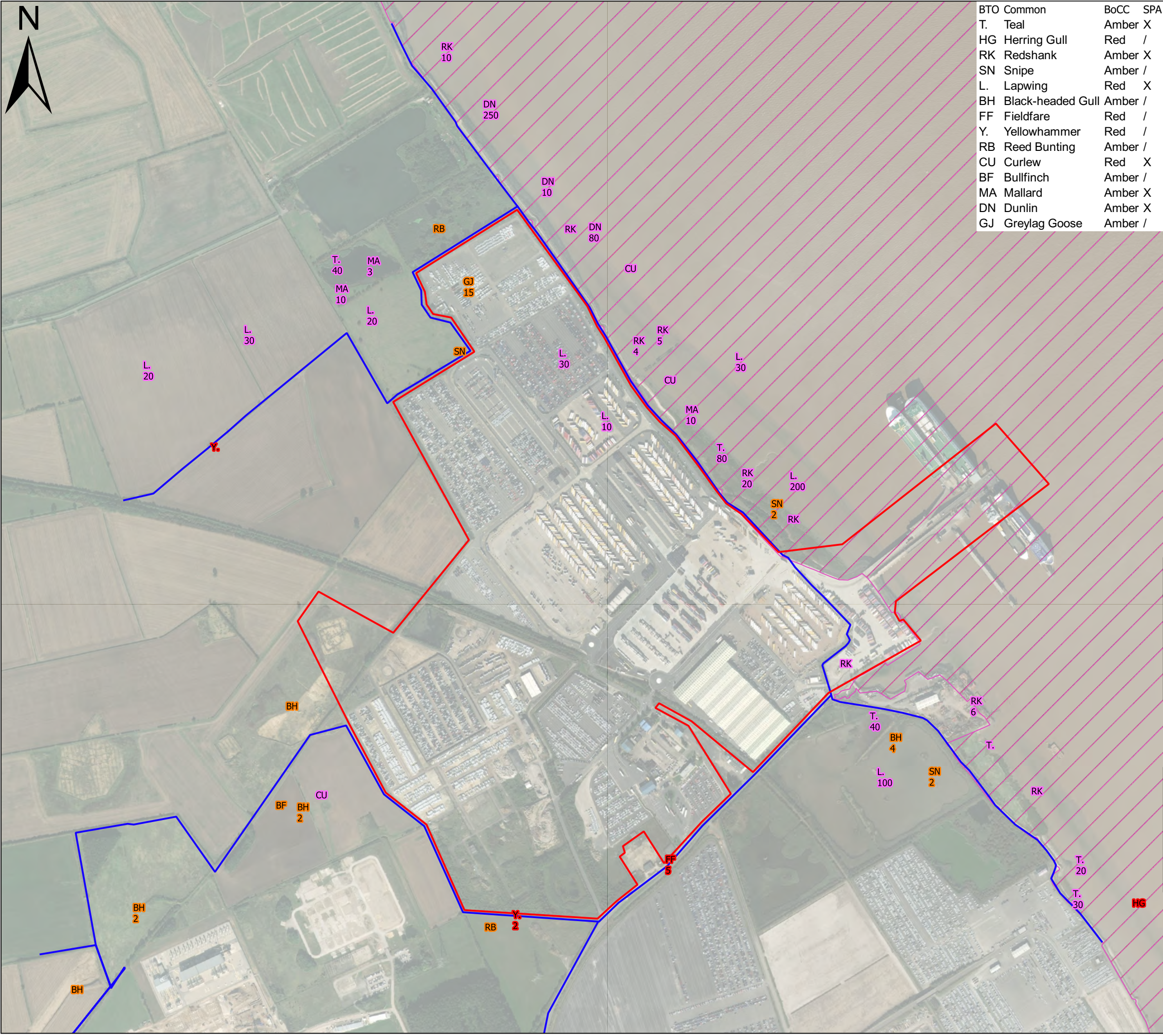
TITLE: **Figure 5 - Wintering Bird Surveys
Transects
Visit 4**

SCALE @ A3	1:8750	CHECKED:	DC	APPROVED:	LR
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PROJECT No:	70055743	DESIGNED:		DRAWN:	JR	DATE:	27/04/20
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DRAWING No:	Figure 5			REV:	-
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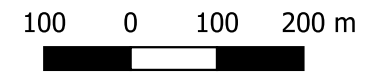
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BTO	Common	BoCC	SPA
T.	Teal	Amber	X
HG	Herring Gull	Red	/
RK	Redshank	Amber	X
SN	Snipe	Amber	/
L.	Lapwing	Red	X
BH	Black-headed Gull	Amber	/
FF	Fieldfare	Red	/
Y.	Yellowhammer	Red	/
RB	Reed Bunting	Amber	/
CU	Curlew	Red	X
BF	Bullfinch	Amber	/
MA	Mallard	Amber	X
DN	Dunlin	Amber	X
GJ	Greylag Goose	Amber	/

Key

- Site Boundary
- Transect Route
- Humber Estuary SPA
- BoCC Amber List Species Only
- BoCC Red List Species Only
- Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT: **North Killingholme DCO Amendments**

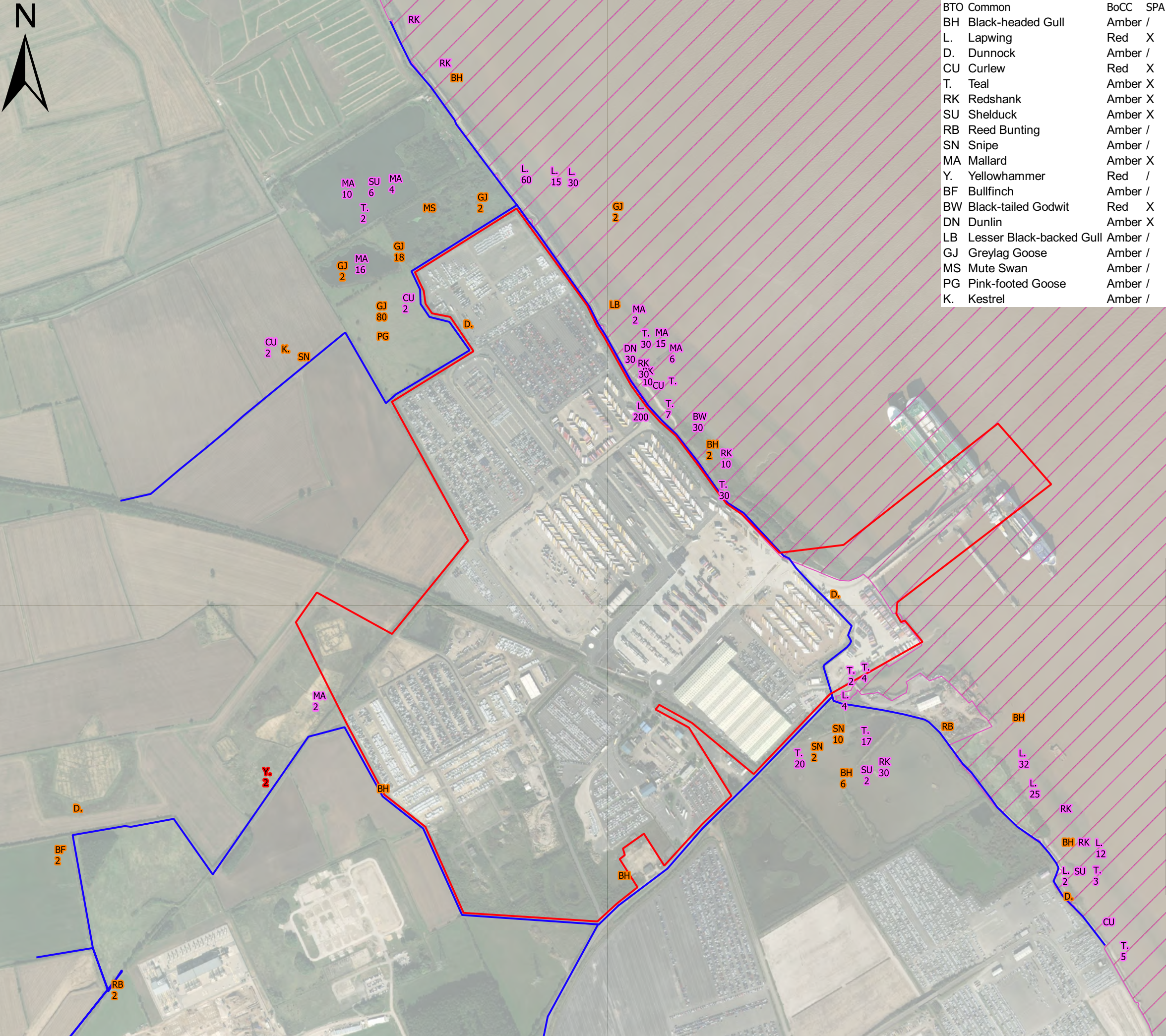
TITLE: **Figure 6 - Wintering Bird Surveys
Transects
Visit 5**

SCALE @ A3	1:8750	CHECKED:	DC	APPROVED:	LR
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PROJECT No:	70055743	DESIGNED:		DRAWN:	JR	DATE:	27/04/20
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DRAWING No:	Figure 6			REV:	-
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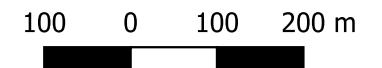
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BTO Common	BoCC SPA
BH Black-headed Gull	Amber /
L. Lapwing	Red X
D. Dunnock	Amber /
CU Curlew	Red X
T. Teal	Amber X
RK Redshank	Amber X
SU Shelduck	Amber X
RB Reed Bunting	Amber /
SN Snipe	Amber /
MA Mallard	Amber X
Y. Yellowhammer	Red /
BF Bullfinch	Amber /
BW Black-tailed Godwit	Red X
DN Dunlin	Amber X
LB Lesser Black-backed Gull	Amber /
GJ Greylag Goose	Amber /
MS Mute Swan	Amber /
PG Pink-footed Goose	Amber /
K. Kestrel	Amber /

Key

- Red outline: Site Boundary
- Blue line: Transect Route
- Pink hatched area: Humber Estuary SPA
- Orange box: BoCC Amber List Species Only
- Red box: BoCC Red List Species Only
- Pink box: Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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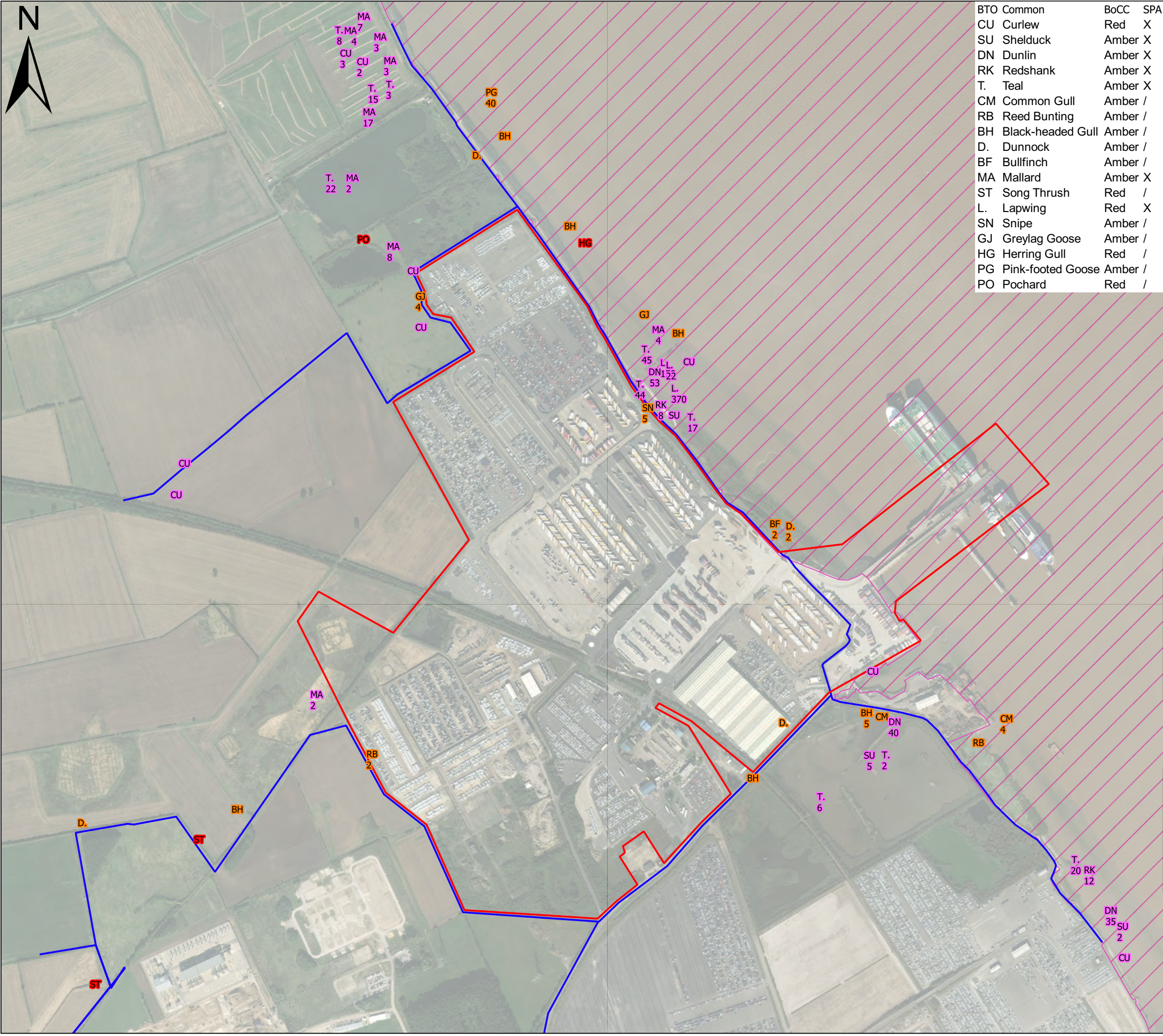
PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 7 - Wintering Bird Surveys
Transects
Visit 6**

SCALE @ A3: 1:8750	CHECKED: DC	APPROVED: LR
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PROJECT No: 70055743	DESIGNED:	DRAWN: JR	DATE: 27/04/20
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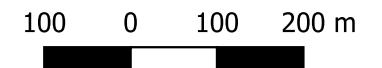
DRAWING No: Figure 7	REV: -
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BTO	Common	BoCC	SPA
CU	Curlew	Red	X
SU	Shelduck	Amber	X
DN	Dunlin	Amber	X
RK	Redshank	Amber	X
T.	Teal	Amber	X
CM	Common Gull	Amber	/
RB	Reed Bunting	Amber	/
BH	Black-headed Gull	Amber	/
D.	Dunnock	Amber	/
BF	Bullfinch	Amber	/
MA	Mallard	Amber	X
ST	Song Thrush	Red	/
L.	Lapwing	Red	X
SN	Snipe	Amber	/
GJ	Greylag Goose	Amber	/
HG	Herring Gull	Red	/
PG	Pink-footed Goose	Amber	/
PO	Pochard	Red	/

Key

- Site Boundary
- Transect Route
- Humber Estuary SPA
- BoCC Amber List Species Only
- BoCC Red List Species Only
- Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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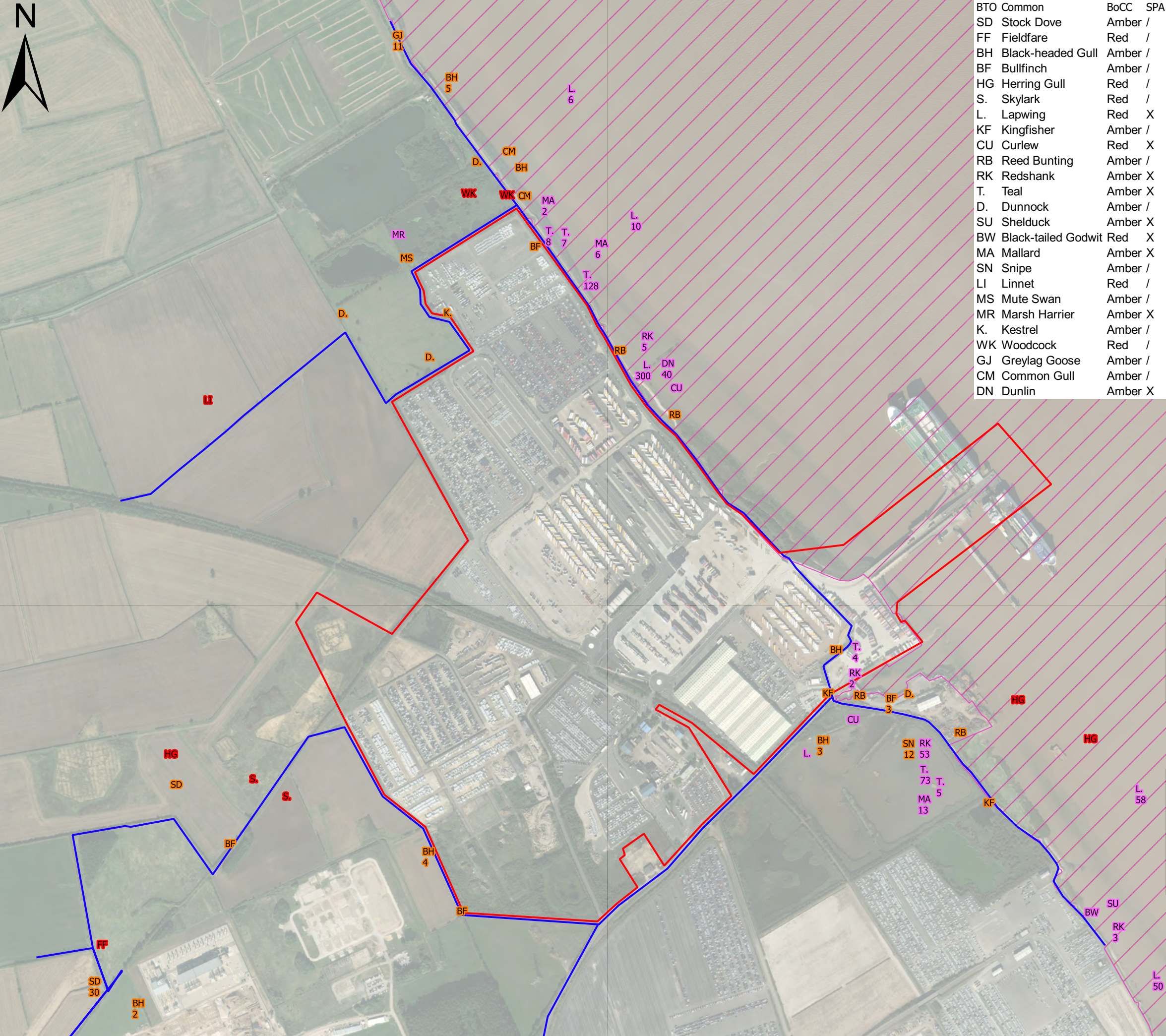
TITLE: **Figure 8 - Wintering Bird Surveys Transects Visit 7**

SCALE @ A3	1:8750	CHECKED:	DC	APPROVED:	LR
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PROJECT No:	70055743	DESIGNED:		DRAWN:	JR	DATE:	27/04/20
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DRAWING No:	Figure 8			REV:	-
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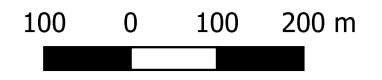
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BTO	Common	BoCC	SPA
SD	Stock Dove	Amber	/
FF	Fieldfare	Red	/
BH	Black-headed Gull	Amber	/
BF	Bullfinch	Amber	/
HG	Herring Gull	Red	/
S.	Skylark	Red	/
L.	Lapwing	Red	X
KF	Kingfisher	Amber	/
CU	Curlew	Red	X
RB	Reed Bunting	Amber	/
RK	Redshank	Amber	X
T.	Teal	Amber	X
D.	Dunnock	Amber	/
SU	Shelduck	Amber	X
BW	Black-tailed Godwit	Red	X
MA	Mallard	Amber	X
SN	Snipe	Amber	/
LI	Linnet	Red	/
MS	Mute Swan	Amber	/
MR	Marsh Harrier	Amber	X
K.	Kestrel	Amber	/
WK	Woodcock	Red	/
GJ	Greylag Goose	Amber	/
CM	Common Gull	Amber	/
DN	Dunlin	Amber	X

Key

- Site Boundary
- Transect Route
- Humber Estuary SPA
- BoCC Amber List Species Only
- BoCC Red List Species Only
- Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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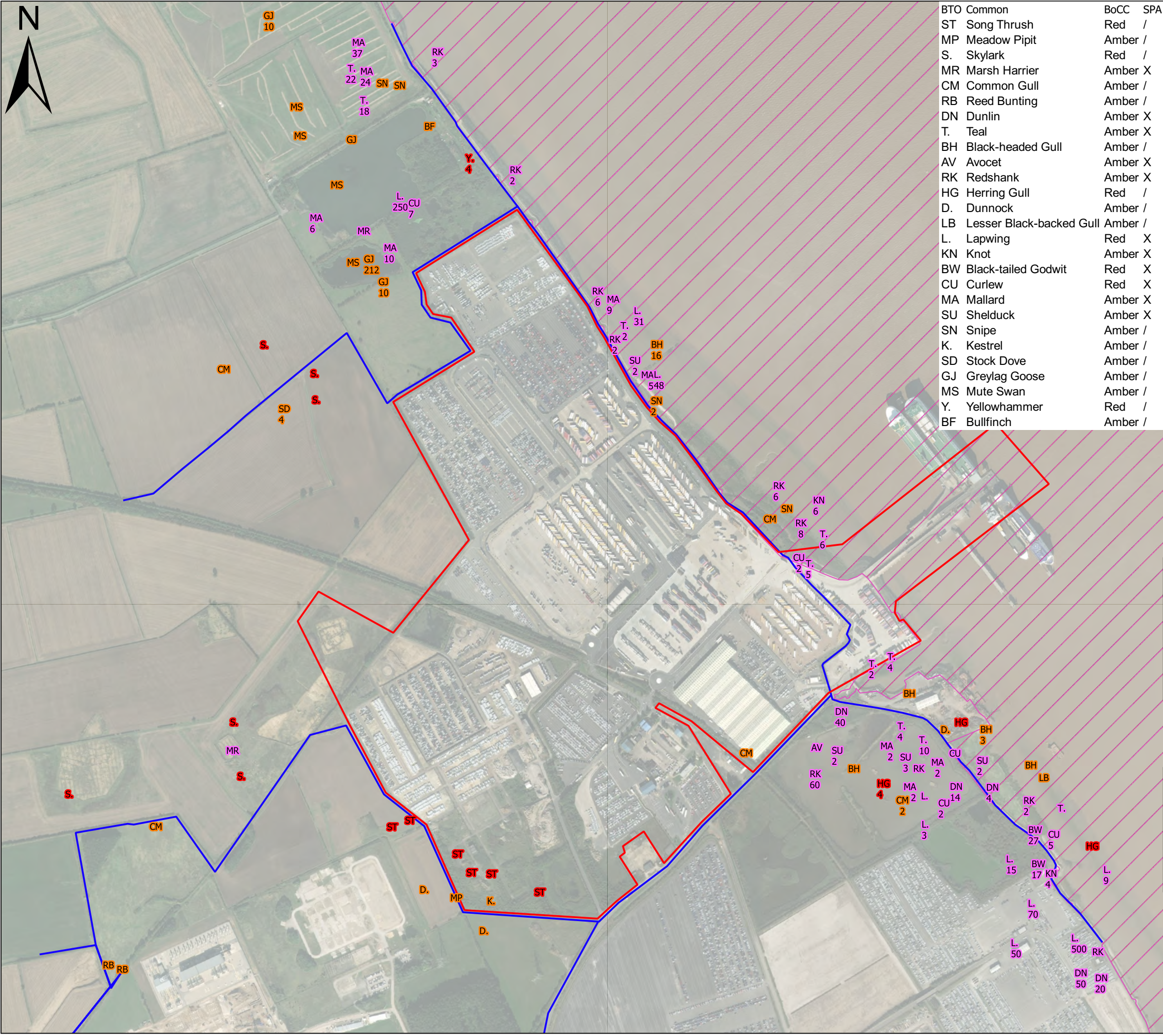
TITLE: **Figure 9 - Wintering Bird Surveys
Transects
Visit 8**

SCALE @ A3	1:8750	CHECKED:	DC	APPROVED:	LR
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PROJECT No:	70055743	DESIGNED:		DRAWN:	JR	DATE:	27/04/20
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DRAWING No:	Figure 9	REV:	-
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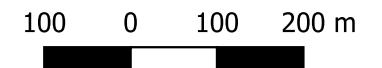
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BTO	Common	BoCC	SPA
ST	Song Thrush	Red	/
MP	Meadow Pipit	Amber	/
S.	Skylark	Red	/
MR	Marsh Harrier	Amber	X
CM	Common Gull	Amber	/
RB	Reed Bunting	Amber	/
DN	Dunlin	Amber	X
T.	Teal	Amber	X
BH	Black-headed Gull	Amber	/
AV	Avocet	Amber	X
RK	Redshank	Amber	X
HG	Herring Gull	Red	/
D.	Dunnock	Amber	/
LB	Lesser Black-backed Gull	Amber	/
L.	Lapwing	Red	X
KN	Knot	Amber	X
BW	Black-tailed Godwit	Red	X
CU	Curlew	Red	X
MA	Mallard	Amber	X
SU	Shelduck	Amber	X
SN	Snipe	Amber	/
K.	Kestrel	Amber	/
SD	Stock Dove	Amber	/
GJ	Greylag Goose	Amber	/
MS	Mute Swan	Amber	/
Y.	Yellowhammer	Red	/
BF	Bullfinch	Amber	/

Key

- Site Boundary
- Transect Route
- Humber Estuary SPA
- BoCC Amber List Species Only
- BoCC Red List Species Only
- Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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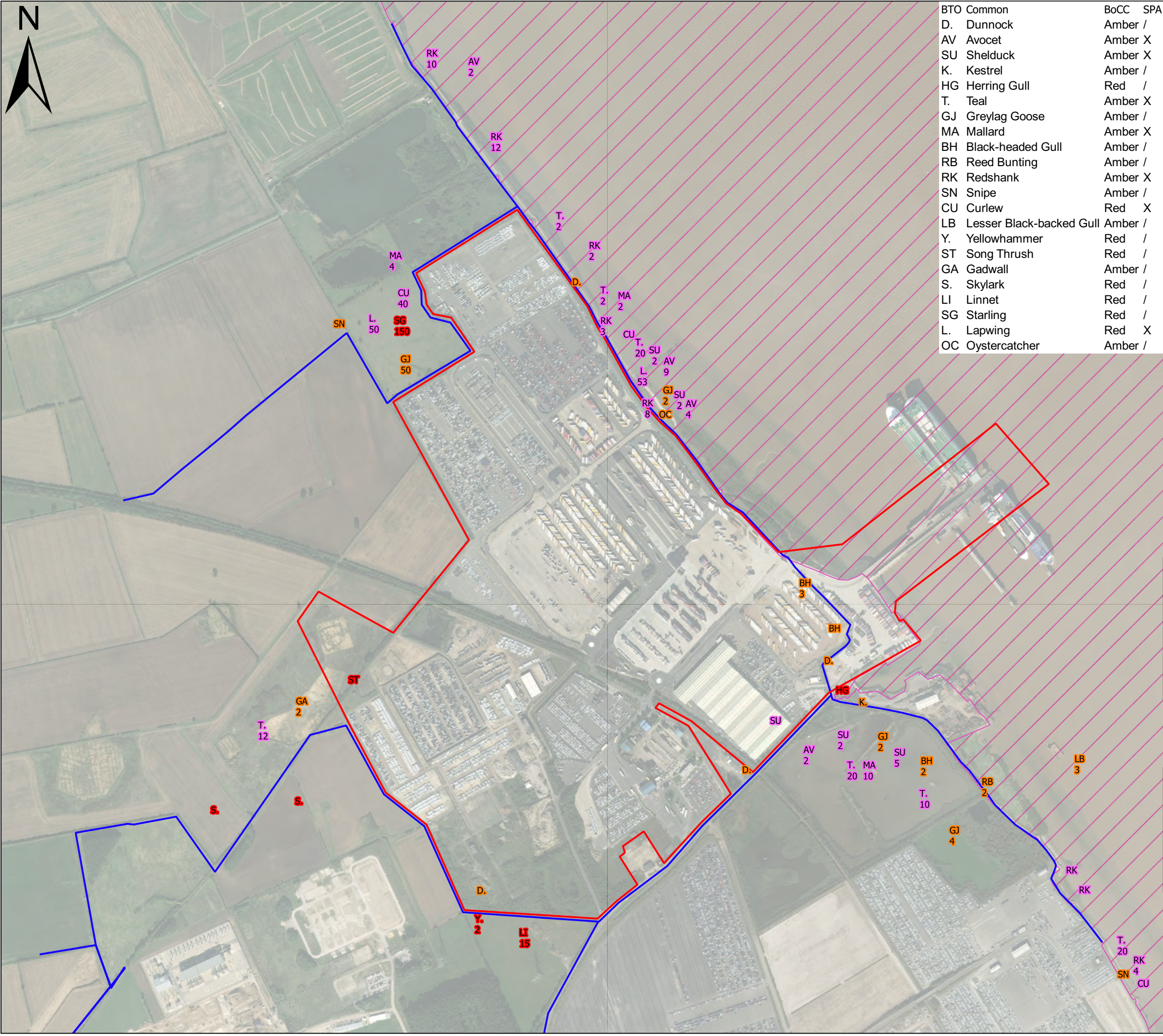
PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 10 - Wintering Bird Surveys Transects Visit 9**

SCALE @ A3: 1:8750	CHECKED: DC	APPROVED: LR
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PROJECT No: 70055743	DESIGNED:	DRAWN: JR	DATE: 27/04/20
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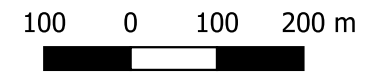
DRAWING No: Figure 10	REV: -
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BTO Common	BoCC SPA
D. Dunnock	Amber /
AV Avocet	Amber X
SU Shelduck	Amber X
K. Kestrel	Amber /
HG Herring Gull	Red /
T. Teal	Amber X
GJ Greylag Goose	Amber /
MA Mallard	Amber X
BH Black-headed Gull	Amber /
RB Reed Bunting	Amber /
RK Redshank	Amber X
SN Snipe	Amber /
CU Curlew	Red X
LB Lesser Black-backed Gull	Amber /
Y. Yellowhammer	Red /
ST Song Thrush	Red /
GA Gadwall	Amber /
S. Skylark	Red /
LI Linnet	Red /
SG Starling	Red /
L. Lapwing	Red X
OC Oystercatcher	Amber /

Key

- Site Boundary
- Transect Route
- Humber Estuary SPA
- BoCC Amber List Species Only
- BoCC Red List Species Only
- Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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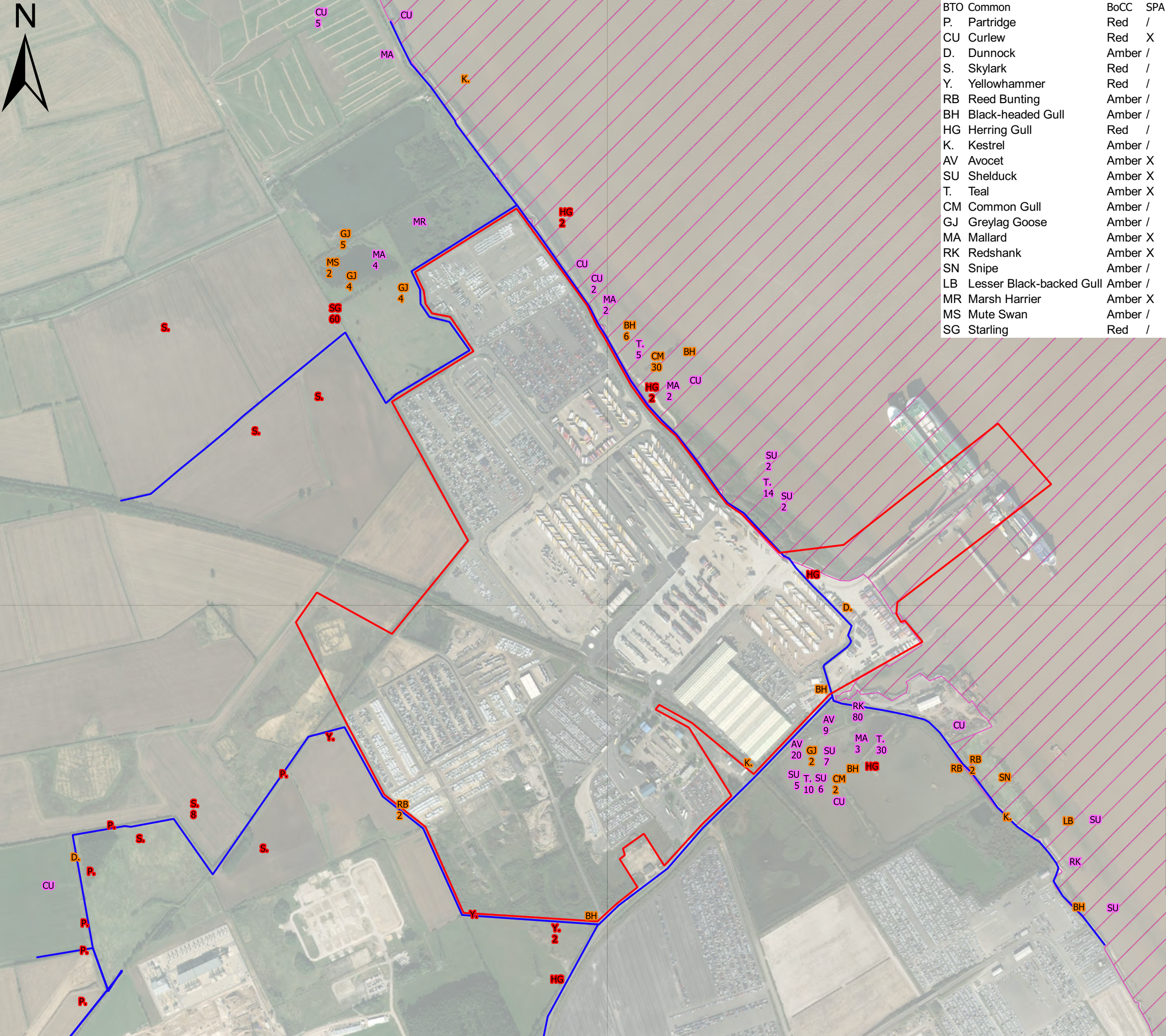
PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 11 - Wintering Bird Surveys
Transects
Visit 10**

SCALE @ A3	1:8750	CHECKED:	DC	APPROVED:	LR
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PROJECT No:	70055743	DESIGNED:		DRAWN:	JR	DATE:	27/04/20
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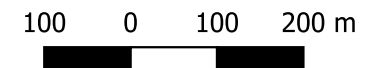
DRAWING No:	Figure 11	REV:	-
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BTO	Common	BoCC	SPA
P.	Partridge	Red	/
CU	Curlew	Red	X
D.	Dunnock	Amber	/
S.	Skylark	Red	/
Y.	Yellowhammer	Red	/
RB	Reed Bunting	Amber	/
BH	Black-headed Gull	Amber	/
HG	Herring Gull	Red	/
K.	Kestrel	Amber	/
AV	Avocet	Amber	X
SU	Shelduck	Amber	X
T.	Teal	Amber	X
CM	Common Gull	Amber	/
GJ	Greylag Goose	Amber	/
MA	Mallard	Amber	X
RK	Redshank	Amber	X
SN	Snipe	Amber	/
LB	Lesser Black-backed Gull	Amber	/
MR	Marsh Harrier	Amber	X
MS	Mute Swan	Amber	/
SG	Starling	Red	/

Key

- Site Boundary
- Transect Route
- Humber Estuary SPA
- BoCC Amber List Species Only
- BoCC Red List Species Only
- Humber Estuary SPA Designated Species



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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CLIENT: **C.GEN**

PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 12 - Wintering Bird Surveys Transects Visit 11**

SCALE @ A3	1:8750	CHECKED:	DC	APPROVED:	LR
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PROJECT No:	70055743	DESIGNED:		DRAWN:	JR	DATE:	27/04/20
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DRAWING No:	Figure 12	REV:	-
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Key

- Site Boundary
- Humber Estuary SPA

Vantage Point

- North
- South

Flight Line

- Brent geese
- Mallard

BTO Common
 MA Mallard
 BG Brent geese

100 0 100 200 m

Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 14 - Wintering Bird Surveys Vantage Points Mallard and Brent Goose Flight Lines**

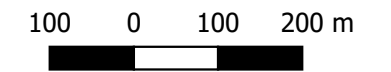
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PROJECT No: 70055743	DESIGNED: DRAWN: JR	DATE: 27/04/20
DRAWING No: Figure 14		REV: -

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Key

- Site Boundary
- Humber Estuary SPA
- Vantage Point**
- North
- South
- Flight Line**
- Shelduck



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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CLIENT:

PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 15 - Wintering Bird Surveys
Vantage Points
Shelduck Flight Lines**

SCALE @A3	1:9,000	CHECKED: DC	APPROVED: LR
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PROJECT No:	70055743	DESIGNED: DRAWN: JR	DATE: 27/04/20
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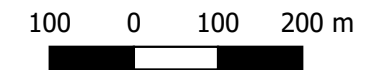
DRAWING No: Figure 15	REV: -
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Key

- Site Boundary
- Humber Estuary SPA
- Vantage Point**
- North
- South
- Flight Line**
- Teal



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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CLIENT:

PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 16 - Wintering Bird Surveys
Vantage Points
Teal Flight Lines**

SCALE @A3	1:9,000	CHECKED: DC	APPROVED: LR
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PROJECT No:	70055743	DESIGNED: DRAWN:	DATE: 27/04/20
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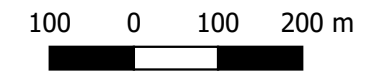
DRAWING No: Figure 16	REV: -
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Key

- Site Boundary
- Humber Estuary SPA
- Vantage Point**
- North
- South
- Flight Line**
- Bittern



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT: **North Killingholme DCO Amendments**

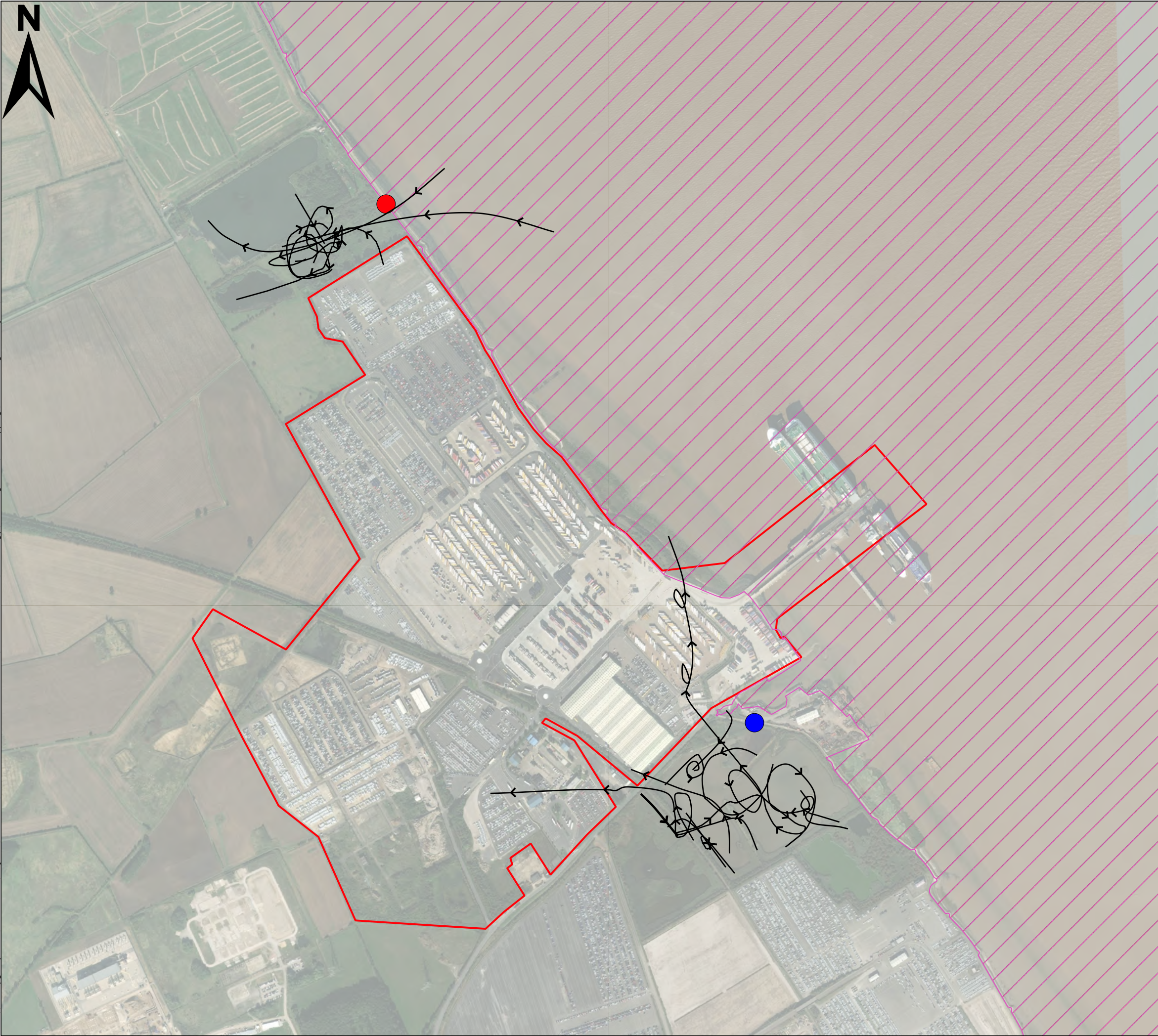
TITLE: **Figure 17 - Wintering Bird Surveys
Vantage Points
Bittern Flight Lines**

SCALE @A3	1:9,000	CHECKED: DC	APPROVED: LR
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PROJECT No:	70055743	DESIGNED: DRAWN:	DATE: 27/04/20
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DRAWING No: Figure 17	REV: -
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Key

- Site Boundary
- Humber Estuary SPA
- Vantage Point**
- North
- South
- Flight Line**
- Marsh harrier

Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 18 - Wintering Bird Surveys
Vantage Points
Marsh Harrier Flight Lines**

SCALE @A3: 1:9,000	CHECKED: DC	APPROVED: LR
PROJECT No: 70055743	DESIGNED: JR	DATE: 27/04/20
DRAWING No: Figure 18		REV: -

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Key

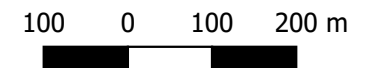
- Site Boundary
- Humber Estuary SPA

Vantage Point

- North
- South

Flight Line

- Avocet



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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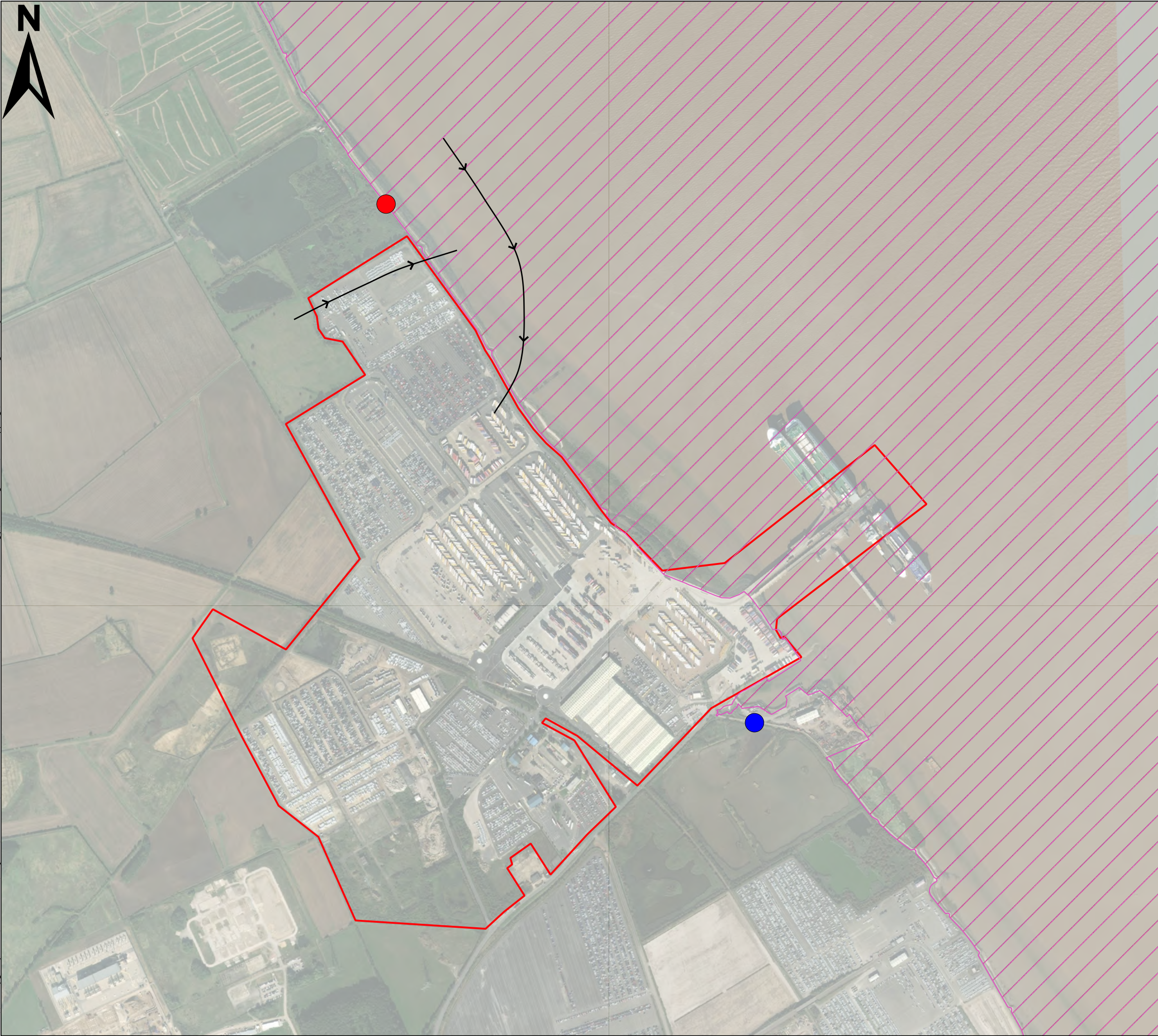
CLIENT:

PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 19 - Wintering Bird Surveys
Vantage Points
Avocet Flight Lines**

SCALE @A3: 1:9,000	CHECKED: DC	APPROVED: LR
PROJECT No: 70055743	DESIGNED: JR	DATE: 27/04/20
DRAWING No: Figure 19		REV: -

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Key

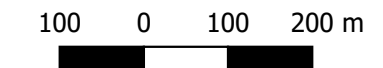
- Site Boundary
- Humber Estuary SPA

Vantage Point

- North
- South

Flight Line

- Golden plover



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT: **North Killingholme DCO Amendments**

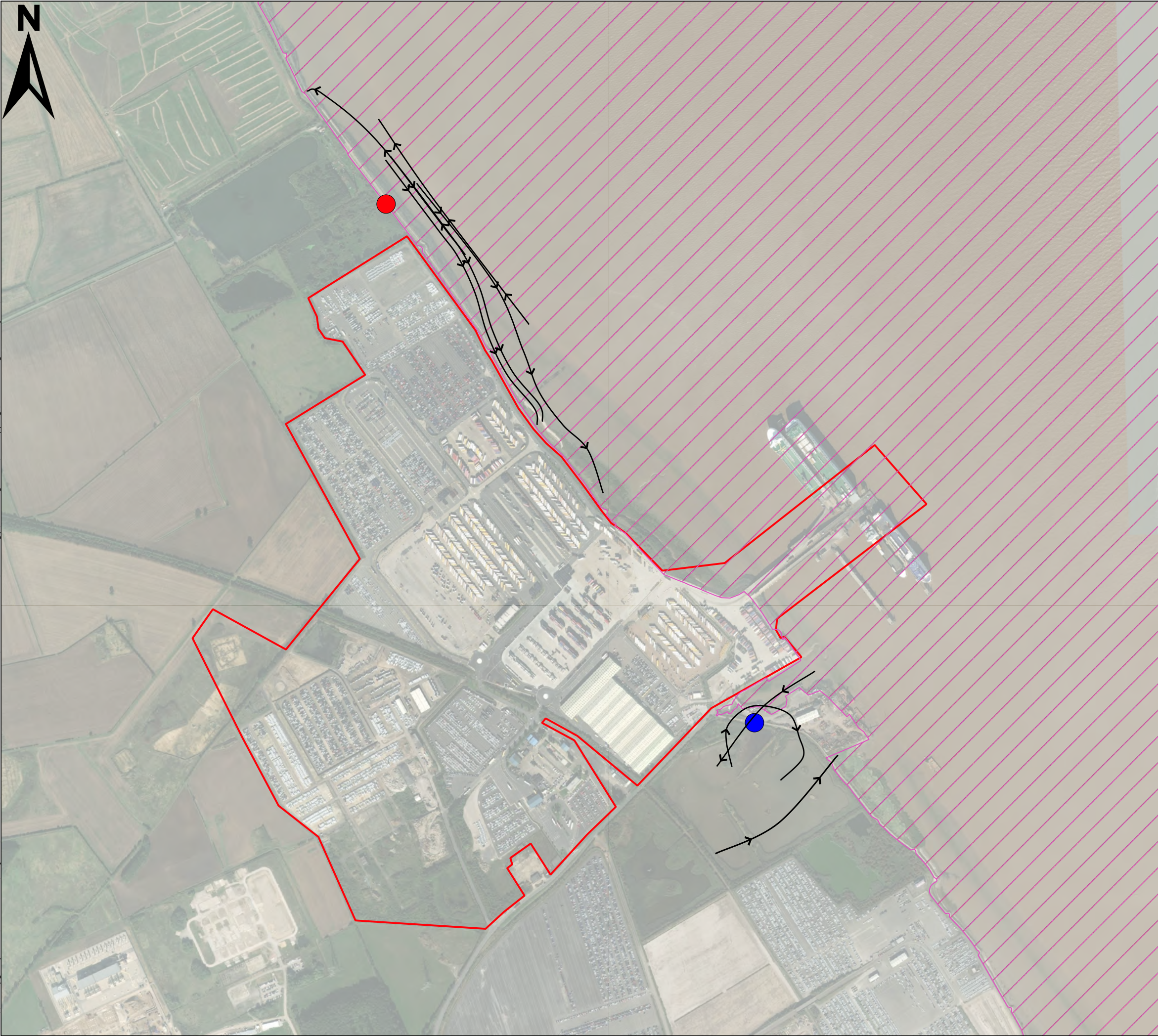
TITLE: **Figure 20 - Wintering Bird Surveys
 Vantage Points
 Golden Plover Flight Lines**

SCALE @A3: 1:9,000	CHECKED: DC	APPROVED: LR
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PROJECT No: 70055743	DESIGNED:	DRAWN: JR	DATE: 27/04/20
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DRAWING No: Figure 20	REV: -
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Key

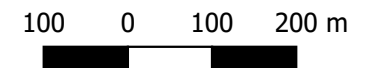
- Site Boundary
- Humber Estuary SPA

Vantage Point

- North
- South

Flight Line

- Knot



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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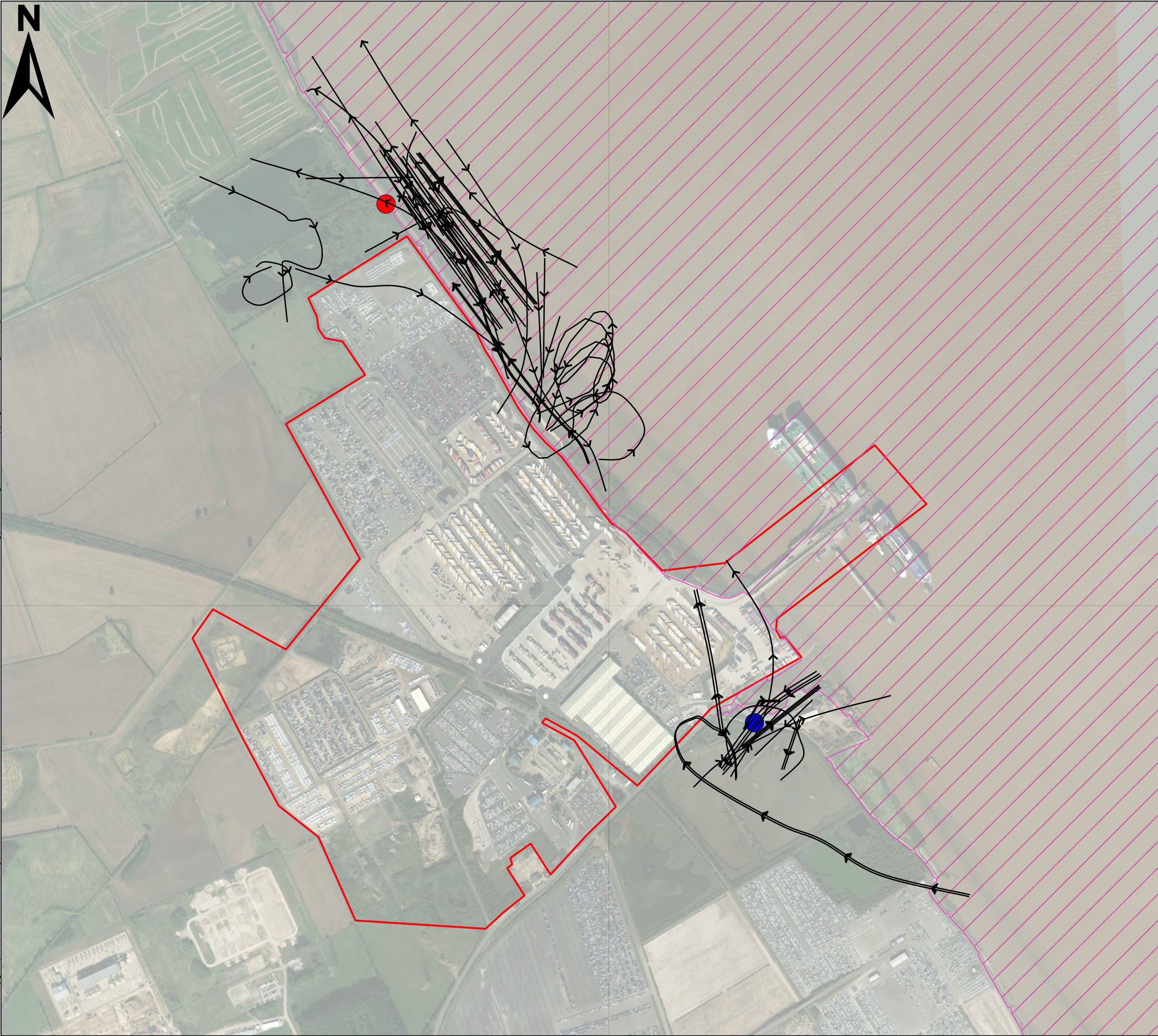


PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 21 - Wintering Bird Surveys
Vantage Points
Knot Flight Lines**

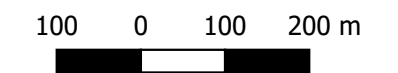
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PROJECT No: 70055743	DESIGNED: JR	DATE: 27/04/20
DRAWING No: Figure 21		REV: -

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Key

- Site Boundary
- Humber Estuary SPA
- Vantage Point**
- North
- South
- Flight Line**
- Dunlin



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT: **North Killingholme DCO Amendments**

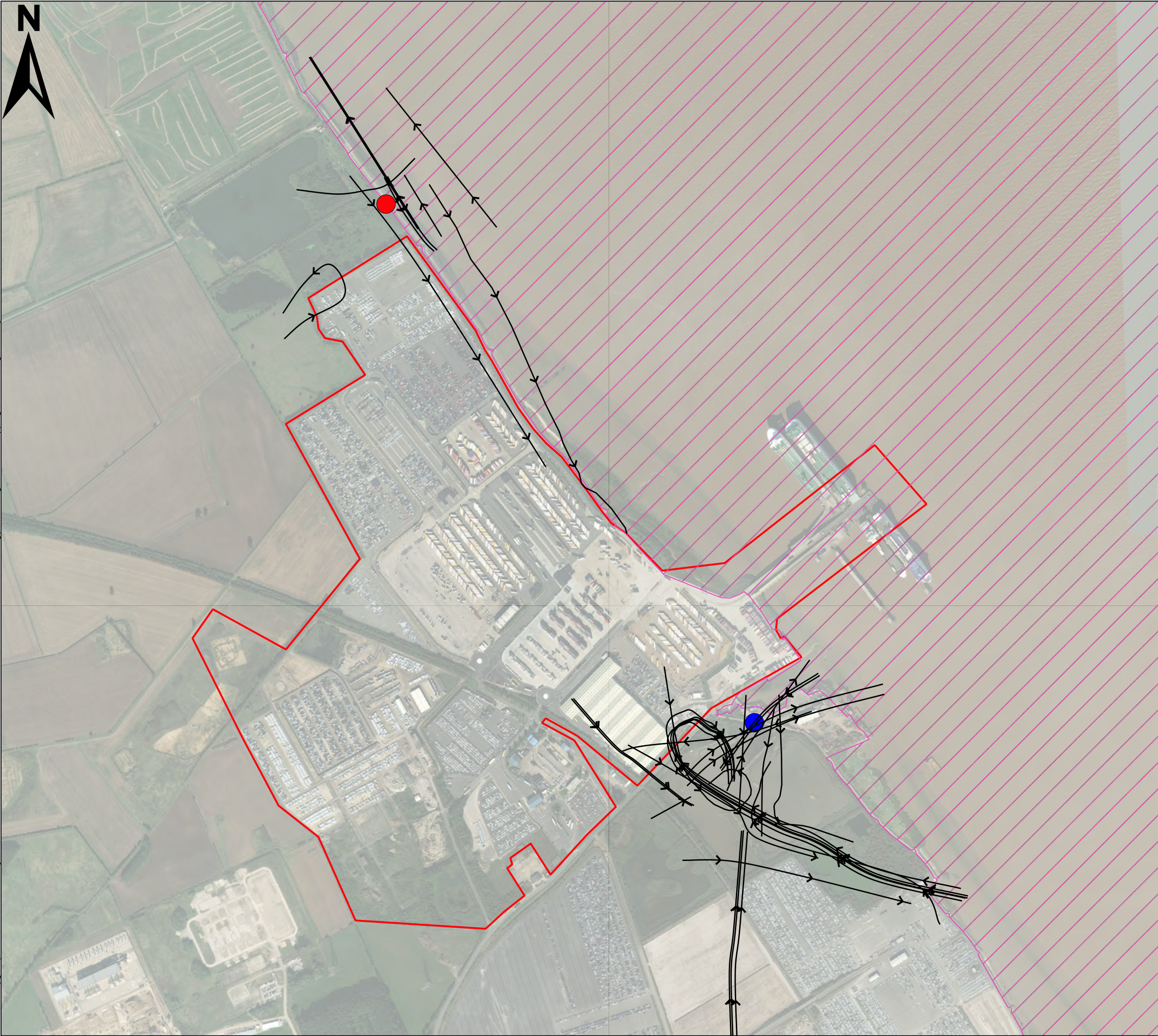
TITLE: **Figure 22 - Wintering Bird Surveys
Vantage Points
Dunlin Flight Lines**

SCALE @A3	1:9,000	CHECKED: DC	APPROVED: LR
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PROJECT No:	70055743	DESIGNED: DRAWN:	DATE: 27/04/20
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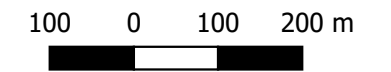
DRAWING No: Figure 22	REV: -
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Key

- Site Boundary
- Humber Estuary SPA
- Vantage Point**
- North
- South
- Flight Line**
- Black tailed godwit



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 23 - Wintering Bird Surveys
Vantage Points
Black Tail Godwit Flight Lines**

SCALE @A3	1:9,000	CHECKED: DC	APPROVED: LR
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PROJECT No:	70055743	DESIGNED: DRAWN:	DATE: 27/04/20
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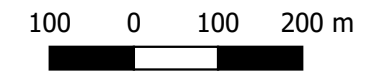
DRAWING No: Figure 23	REV: -
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Key

- Site Boundary
- Humber Estuary SPA
- Vantage Point**
- North
- South
- Flight Line**
- Redshank



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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DRAWING STATUS: **FINAL**

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PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 24 - Wintering Bird Surveys
Vantage Points
Redshank Flight Lines**

SCALE @A3	1:9,000	CHECKED: DC	APPROVED: LR
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PROJECT No:	70055743	DESIGNED: DRAWN: JR	DATE: 27/04/20
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DRAWING No: Figure 24	REV: -
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Key

- Site Boundary
- Humber Estuary SPA

Vantage Point

- North
- South

Flight Line - Additional BoCC List Species

- Amber List Waterfowl Species

BTO Common
 GJ Greylag goose
 BY Barnacle goose
 MS Mute swan
 PG Pink-footed goose
 PO Pochard
 SV Shoveler

100 0 100 200 m

Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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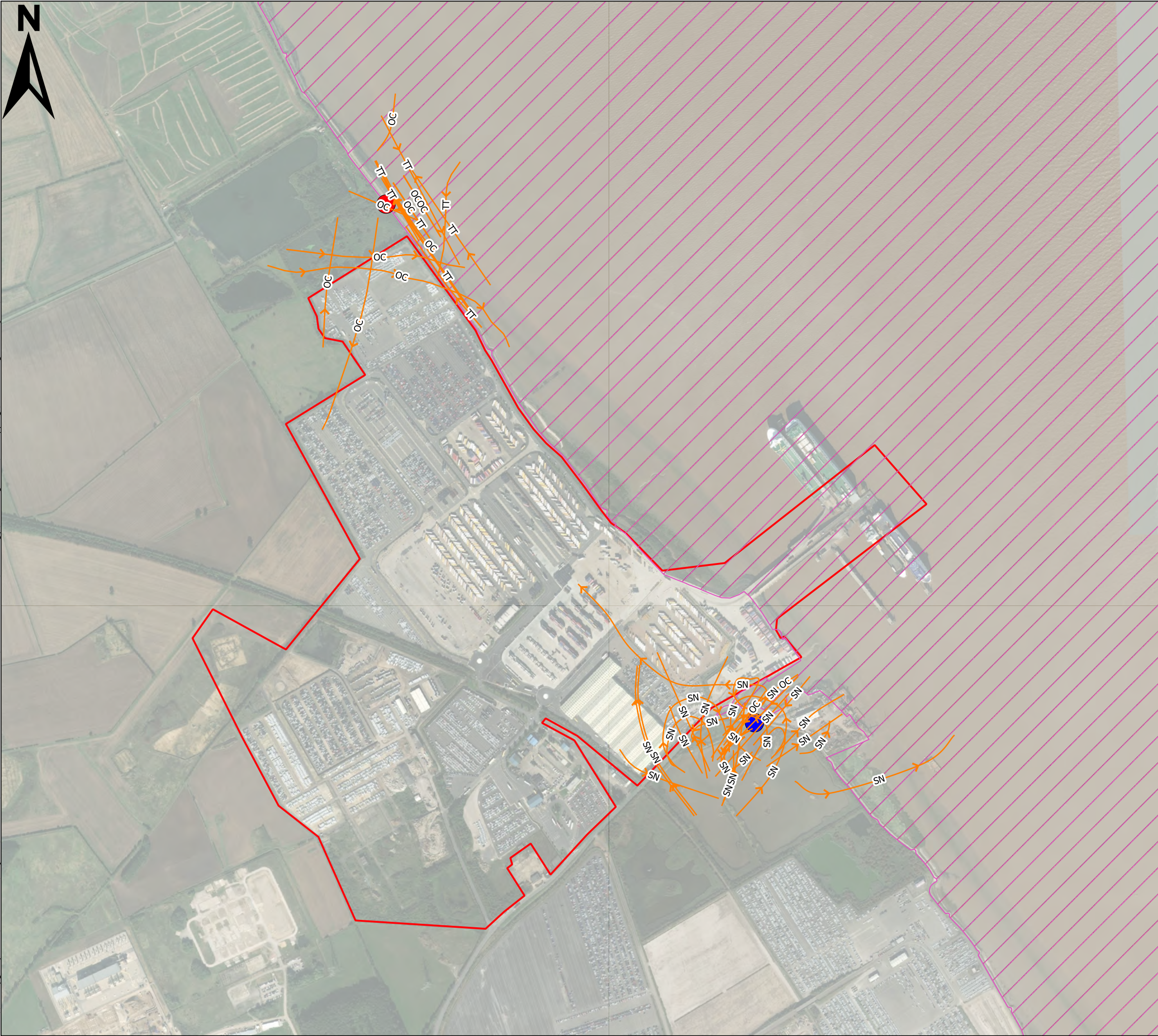
C.GEN

PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 25 - Wintering Bird Surveys
 Vantage Points
 Waterfowl Species Flight Lines**

SCALE @A3	1:9,000	CHECKED:	DC	APPROVED:	LR	
PROJECT No:	70055743	DESIGNED:		DRAWN:	JR	
DRAWING No:	Figure 25				REV:	-

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Key

- Site Boundary
- Humber Estuary SPA

Vantage Point

- North
- South

Flight Line - Additional BoCC List Species

- Amber List Wader Species

BTO Common
 SN Snipe
 OC Oystercatcher
 TT Turnstone

100 0 100 200 m

Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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DRAWING STATUS: **FINAL**

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PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 26 - Wintering Bird Surveys
 Vantage Points
 Wading Species Flight Lines**

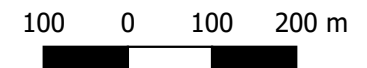
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PROJECT No: 70055743	DESIGNED: DRAWN: JR	DATE: 27/04/20
DRAWING No: Figure 26		REV: -

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Key

- Site Boundary
- Humber Estuary SPA
- Vantage Point**
- North
- South
- Flight Line**
- Lapwing



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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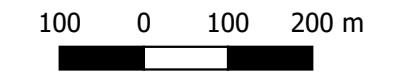
TITLE: **Figure 27 - Wintering Bird Surveys
 Vantage Points
 Lapwing Flight Lines**

SCALE @A3: 1:9,000	CHECKED: DC	APPROVED: LR
PROJECT No: 70055743	DESIGNED: JR	DATE: 27/04/20
DRAWING No: Figure 27		REV: -

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- Key**
- Site Boundary
 - Humber Estuary SPA
 - Vantage Point**
 - North
 - South
 - Flight Line**
 - Curlew



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: **FINAL**



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CLIENT:

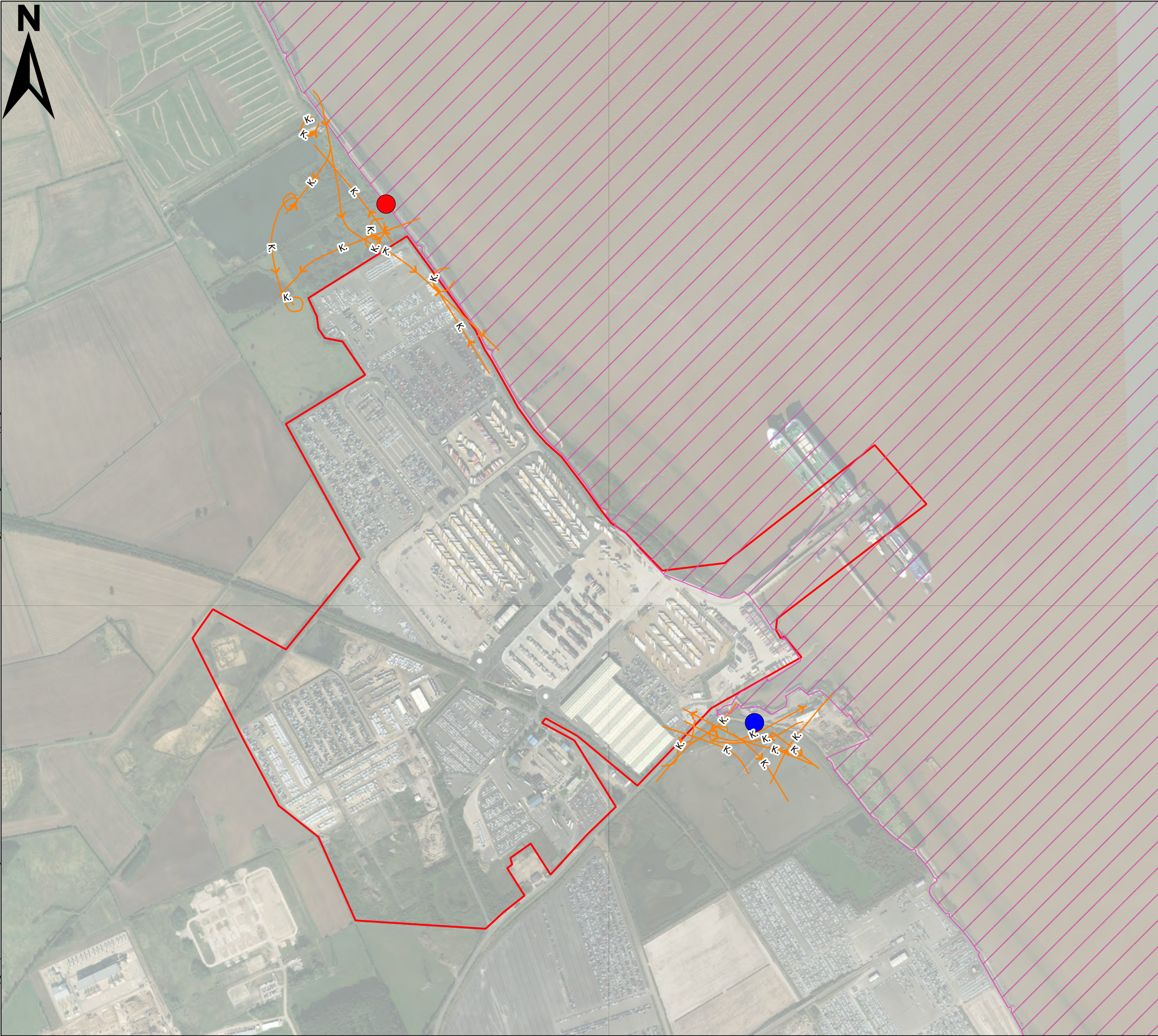


PROJECT: **North Killingholme DCO Amendments**

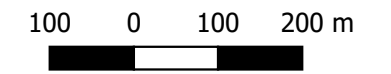
TITLE: **Figure 28 - Wintering Bird Surveys
Vantage Points
Curlew Flight Lines**

SCALE @A3: 1:9,000	CHECKED: DC	APPROVED: LR
PROJECT No: 70055743	DESIGNED: JR	DATE: 27/04/20
DRAWING No: Figure 28		REV: -

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- Key**
- Site Boundary
 - Humber Estuary SPA
 - Vantage Point**
 - North
 - South
 - Flight Line - Additional BoCC List Species**
 - Amber List Raptor Species
 - BTO Common
 - K. Kestrel



Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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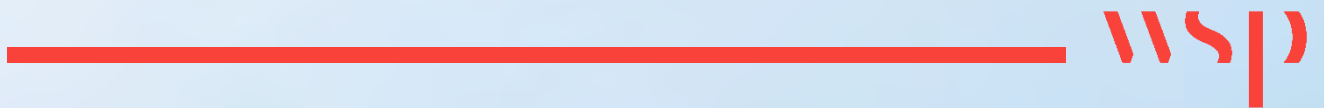
PROJECT: **North Killingholme DCO Amendments**

TITLE: **Figure 29 - Wintering Bird Surveys
Vantage Points
Raptor Species Flight Lines**

SCALE @A3: 1:9,000	CHECKED: DC	APPROVED: LR
PROJECT No: 70055743	DESIGNED: DRAWN: JR	DATE: 27/04/20
DRAWING No: Figure 29		REV: -

Appendix A

FULL SPECIES LIST



Species Common Name	Scientific Name	Annex I	BoCC List	NERC s41	SPA	LBAP	Total count
Avocet	Recurvirostra avosetta	X	Amber	-	X	-	232
Barnacle Goose	Branta leucopsis	X	Amber	-	-	-	1
Bittern	Botaurus stellaris	X	Amber	X	X	X	1
Blackbird	Turdus merula	-	-	-	-	-	215
Black-headed Gull	Larus ridibundus	-	Amber	-	-	-	264
Black-tailed Godwit	Limosa limosa	-	Red	X	X	-	337
Blue Tit	Cyanistes caeruleus	-	-	-	-	-	76
Brambling	Fringilla montifringilla	-	-	-	-	-	4
Brent Goose	Branta bernicla	-	Amber	-	X*	-	1
Bullfinch	Pyrrhula pyrrhula	-	Amber	-	-	X	41
Buzzard	Buteo buteo	-	-	-	-	-	12
Canada Goose	Branta canadensis	-	-	-	-	-	41
Carrion Crow	Corvus corone	-	-	-	-	-	160
Cetti's Warbler	Cettia cetti	-	-	-	-	-	1
Chaffinch	Fringilla coelebs	-	-	-	-	-	235
Chiffchaff	Phylloscopus collybita	-	-	-	-	-	1
Coal Tit	Parus ater	-	-	-	-	-	10
Collared Dove	Streptopelia decaocto	-	-	-	-	-	3

Species Common Name	Scientific Name	Annex I	BoCC List	NERC s41	SPA	LBAP	Total count
Common Gull	Larus canus	-	Amber	-	-	-	52
Common Sandpiper	Actitis hypoleucos	-	Amber	-	-	-	2
Coot	Fulica atra	-	-	-	-	-	25
Cormorant	Phalacrocorax carbo	-	-	-	-	-	54
Curlew	Numenius arquata	-	Red	X	X*	X	201
Dunlin	Calidris alpina	-	Amber	-	X	-	
Dunnock	Prunella modularis	-	Amber	X	-	-	
Ferral Pigeon	Columba livia domestica	-	-	-	-	-	
Fieldfare	Turdus pilaris	-	Red	-	-	-	
Gadwall	Anas strepera	-	Amber	-	-	-	
Goldcrest	Regulus regulus	-	-	-	-	-	
Golden Plover	Pluvialis apricaria	X	-	-	X	-	
Goldfinch	Carduelis carduelis	-	-	-	-	-	
Great Black-backed Gull	Larus marinus	-	Amber	-	-	-	
Great Crested Grebe	Podiceps cristatus	-	-	-	-	-	
Great Spotted Woodpecker	Dendrocopos major	-	-	-	-	-	

Appendix B

VANTAGE POINT SURVEY TIMINGS
AND CONDITIONS DATA





Date	VP	Sunrise	Sunset	Start Time	Finish Time	High Tide	Low Tide	Weather								
								Air temp (°C)	Cloud cover (Oktas)	Cloud height (0-2)	Wind Speed (Beaufort)	Wind Direction	Rain	Snow	Frost	Visibility (1-3)
30/10/2019	South	06:56	16:32	06:56	08:56	07:07	13:40	10	5	2	1	E	0	0	0	3
30/10/2019	North	06:56	16:32	11:20	13:20	07:07	13:40	11	4	2	3	SE	0	0	0	3
30/10/2019	South	06:56	16:32	14:05	16:05	07:07	13:40	11	4	2	4	E	0	0	0	3
31/10/2019	North	06:58	16:30	06:56	08:56	07:50	14:17	7	3	2	3	E	0	0	0	3
31/10/2019	South	06:58	16:30	11:15	13:15	07:50	14:17	11	4	2	3	E	0	0	0	3
31/10/2019	North	06:58	16:30	14:05	16:05	07:50	14:17	9	5	2	3	E	0	0	0	3
14/11/2019	South	07:24	16:05	07:25	09:25	06:46	13:13	5	8	1	5	NE	3	0	0	3
14/11/2019	North	07:24	16:05	10:30	12:30	06:46	13:13	7	8	1	7	NE	3	0	0	3
14/11/2019	South	07:24	16:05	14:00	16:00	06:46	13:13	5	8	1	7	NE	4	0	0	1
19/11/2019	North	07:34	15:58	07:35	09:35	10:25	16:29	-1	4	2	1	SE	0	0	1	3
19/11/2019	South	07:34	15:58	10:30	12:30	10:25	16:29	3	1	2	1	SE	0	0	1	3
19/11/2019	North	07:34	15:58	13:50	15:50	10:25	16:29	5	6	2	2	N	0	0	0	3
27/11/2019	South	07:49	15:47	07:48	09:48	06:03	12:33	9	8	2	3	NE	3	0	0	2
27/11/2019	North	07:49	15:47	10:20	12:20	06:03	12:33	9	8	2	3	NE	3	0	0	2
27/11/2019	South	07:49	15:47	13:49	15:49	06:03	12:33	10	8	2	3	N	3	0	0	2
28/11/2019	North	07:50	15:47	07:50	09:50	06:48	13:13	9	8	2	4	NW	2	0	0	3
28/11/2019	South	07:50	15:47	10:20	12:20	06:48	13:13	9	8	2	4	N	3	0	0	3
28/11/2019	North	07:50	15:47	13:48	15:48	06:48	13:13	9	8	2	4	N	1	0	0	3
04/12/2019	South	08:00	15:42	07:55	09:59	11:31	17:09	2	0	N/A	2	W	0	0	0	3
04/12/2019	North	08:00	15:42	10:25	12:25	11:31	17:09	4	0	N/A	2	W	0	0	0	3
04/12/2019	South	08:00	15:42	12:55	14:55	11:31	17:09	7	0	N/A	3	S	0	0	0	3
05/12/2019	North	08:01	15:41	08:00	10:00	12:43	18:16	3	3	1	3	SE	0	0	1	3
05/12/2019	South	08:01	15:41	11:00	13:00	12:43	18:16	6	7	1	3	SW	0	0	0	3
05/12/2019	North	08:01	15:41	13:45	15:45	12:43	18:16	7	7	1	4	SW	0	0	0	3
13/12/2019	North	08:08	15:40	13:50	15:50	06:25	12:47	6	8	1	3	S	4	0	0	2
13/12/2019	South	08:09	15:40	08:30	10:30	06:25	12:47	7	6	2	2	SW	0	0	0	3
13/12/2019	North	08:09	15:40	10:50	12:50	06:25	12:47	7	4	2	2	SW	0	0	0	3
18/12/2019	South	08:14	15:41	08:14	10:14	10:18	16:19	0	8	0	1	S	0	0	1	1
18/12/2019	North	08:14	15:41	10:44	12:44	10:18	16:19	3	8	0	2	SE	0	0	0	1
18/12/2019	South	08:14	15:41	13:20	15:20	10:18	16:19	6	8	1	2	SE	0	0	0	2



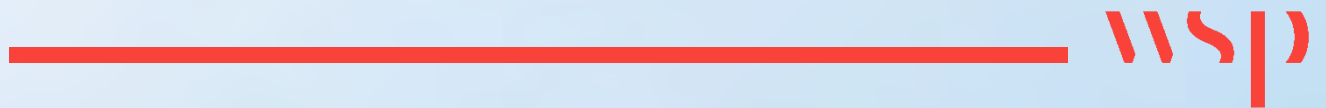
Date	VP	Sunrise	Sunset	Start Time	Finish Time	High Tide	Low Tide	Weather								
								Air temp (°C)	Cloud cover (Oktas)	Cloud height (0-2)	Wind Speed (Beaufort)	Wind Direction	Rain	Snow	Frost	Visibility (1-3)
08/01/2020	North	08:15	15:59	08:20	10:20	16:19	10:08	10	7	1	2	SW	0	0	0	3
08/01/2020	South	08:15	15:59	10:50	12:50	16:19	10:08	9	7	1	3	SW	0	0	0	3
08/01/2020	North	08:15	15:59	13:20	15:20	16:19	10:08	9	6	2	2	SW	0	0	0	3
09/01/2020	South	08:15	16:01	08:15	10:15	17:02	10:56	11	8	1	5	SW	0	0	0	3
09/01/2020	North	08:15	16:01	10:45	12:45	17:02	10:56	11	2	2	5	SW	0	0	0	3
09/01/2020	South	08:15	16:01	13:20	15:20	17:02	10:56	9	4	2	5	SW	0	0	0	3
23/01/2020	North	08:01	16:24	08:15	10:15	17:09	11:09	7	8	0	1	SW	0	0	0	1
23/01/2020	South	08:01	16:24	10:45	12:45	17:09	11:09	7	8	0	0	SW	0	0	0	1
23/01/2020	North	08:01	16:24	13:45	15:45	17:09	11:09	8	8	0	0	WSW	0	0	0	1
24/01/2020	South	07:59	16:26	08:05	10:05	17:51	11:53	6	8	2	0	NA	0	0	0	3
24/01/2020	North	07:59	16:26	11:00	13:00	17:51	11:53	8	7	1	0	NA	0	0	0	3
24/01/2020	South	07:59	16:26	14:00	16:00	17:51	11:53	9	3	1	1	W	0	0	0	3
06/02/2020	North	07:38	16:52	08:05	10:05	15:48	09:33	0	0	N/A	1	SW	0	0	Light	3
06/02/2020	South	07:38	16:52	11:00	13:00	15:48	09:33	6	0	N/A	1	SW	0	0	0	3
06/02/2020	North	07:38	16:52	14:30	16:30	15:48	09:33	8	1	2	1	WSW	0	0	0	3
07/02/2020	South	07:37	16:54	08:20	10:20	16:38	10:28	3	8	0	3	SE	0	0	1	2
07/02/2020	North	07:37	16:54	11:15	13:15	16:38	10:28	5	7	0	4	SE	0	0	0	2
07/02/2020	South	07:37	16:54	14:30	16:30	16:38	10:28	8	6	0	1	S	0	0	0	3
19/02/2020	North	07:12	17:18	08:30	10:30	15:09	09:06	4	0	N/A	2	WSW	0	0	1	3
19/02/2020	South	07:12	17:18	11:05	13:05	15:09	09:06	5	1	2	2	WSW	0	0	0	3
19/02/2020	North	07:12	17:18	14:30	16:30	15:09	09:06	5	8	0	3	WSW	2	0	0	3
20/02/2020	South	07:10	17:19	07:30	09:30	16:06	10:06	9	6	1	5	SW	0	0	0	0
20/02/2020	North	07:10	17:19	10:15	12:15	16:06	10:06	10	7	1	6	SSW	0	0	0	3
20/02/2020	South	07:10	17:19	13:30	15:30	16:06	10:06	8	8	2	4	W	0	0	0	2
05/03/2020	South	06:38	17:47	10:10	12:10	14:17	07:56	7	7	2	3	NE	0	0	0	3
05/03/2020	North	06:38	17:47	12:40	14:40	14:17	07:56	7	8	2	4	NE	0	0	0	3
05/03/2020	South	06:38	17:47	15:45	17:45	14:17	07:56	7	8	2	4	NE	0	0	0	3
06/03/2020	North	06:39	17:49	06:35	08:35	15:21	09:06	1	2	2	1	NW	0	0	1	3
06/03/2020	South	06:39	17:49	09:00	11:00	15:21	09:06	2	4	2	1	NW	0	0	0	3
06/03/2020	North	06:39	17:49	11:30	13:30	15:21	09:06	8	4	2	1	NW	0	0	0	3



Date	VP	Sunrise	Sunset	Start Time	Finish Time	High Tide	Low Tide	Weather								
								Air temp (°C)	Cloud cover (Oktas)	Cloud height (0-2)	Wind Speed (Beaufort)	Wind Direction	Rain	Snow	Frost	Visibility (1-3)
18/03/2020	South	06:07	18:11	10:30	12:30	13:29	07:12	8	8	2	2	W	1	0	0	3
18/03/2020	North	06:07	18:11	13:30	15:30	13:29	07:12	8	8	2	1	W	0	0	0	3
18/03/2020	South	06:07	18:11	16:12	18:12	13:29	07:12	8	8	2	2	W	1	0	0	3
19/03/2020	North	06:05	18:13	06:10	08:10	14:23	08:47	5	8	2	1	NE	0	0	0	3
19/03/2020	South	06:05	18:13	08:45	10:45	14:23	08:47	5	8	2	1	NE	0	0	0	3
19/03/2020	North	06:05	18:13	11:15	13:15	14:23	08:47	9	8	2	1	NE	0	0	0	3

Appendix C

VANTAGE POINT SURVEY FLIGHT
DATA





Oct	Total Flights				Over Site			
Species	Number	Peak	Average	Height	Number	Peak	Average	Height
RK	32	22.00	4.56	9.00	4	18.00	5.90	7.50
SN	1	4.00	4.00	10.00	0	-	-	-
CA	14	1.00	1.00	19.00	4	1.00	1.00	30.00
GJ	5	8.00	5.83	16.67	3	4.00	3.50	20.00
T.	6	15.00	7.25	10.00	0	-	-	-
MA	7	3.00	2.33	16.67	0	-	-	-
CU	7	50.00	4.43	11.25	1	50.00	25.50	15.00
BW	20	200.00	42.93	16.83	9	108.00	42.23	16.67
MS	2	1.00	1.00	15.00	2	1.00	1.00	20.00
L.	18	80.00	18.50	15.40	11	80.00	27.20	12.00
ET	5	2.00	1.25	10.00	0	-	-	-
DN	16	100.00	27.10	7.50	3		18.50	10.00
K.	1	1.00	1.00	8.00	0	-	-	-
MR	5	1.00	1.00	11.00	1	1.00	1.00	25.00
KN	1	7.00	7.00	10.00	0	-	-	-
CG	1	15.00	15.00	20.00	1	15.00	15.00	20.00
GP	1	80.00	80.00	10.00	1	-	-	-
OC	1	-	-	-	0	-	-	-
BG	2	320.00	197.50	30.00	0	-	-	-



Nov	Total Flights				Over Site			
Species	Number	Peak	Average	Height	Number	Peak	Average	Height
RK	47	14.00	6.96	4.88	9	4.00	4.50	6.10
SN	16	60.00	16.72	13.46	7	60.00	26.00	20.00
CA	7	2.00	1.13	16.25	1	1.00	1.00	10.00
GJ	10	31.00	19.32	11.20	6	31.00	20.50	12.00
T.	22	120.00	20.21	10.86	3	3.00	2.17	13.33
MA	10	17.00	3.18	11.40	3	1.00	1.00	10.00
CU	8	10.00	6.10	8.33	2	7.00	5.50	12.50
MS	1	-	-	-	0	-	-	-
SU	1	2.00	2.00	10.00	0	-	-	-
L.	29	500.00	69.65	21.41	15	139.00	45.58	25.00
ET	4	1.00	1.00	5.00	3	1.00	1.00	5.00
DN	19	18.00	11.08	14.88	4	3.00	2.50	15.00
KN	1	40.00	40.00	10.00	0	-	-	-
AV	1	41.00	41.00	10.00	0	-	-	-
PG	3	72.00	6.00	55.00	3	72.00	6.00	55.00
CG	2	6.00	5.00	10.00	0	-	-	-
GP	1	30.00	30.00	10.00	1	30.00	30.00	10.00
BI	2	1.00	1.00	5.00	2	1.00	1.00	5.00



Dec	Total Flights				Over Site			
Species	Number	Peak	Average	Height	Number	Peak	Average	Height
RK	43	20.00	7.59	10.59	11	20.00	4.80	10.50
SN	4	16.00	6.00	14.00	0	-	-	-
CA	17	3.00	1.29	10.25	6	2.00	1.33	13.33
GJ	28	400.00	37.35	20.00	9	32.00	11.15	19.33
T.	32	22.00	6.18	8.13	3	4.00	3.00	8.75
MA	10	20.00	5.45	11.00	0	-	-	-
CU	14	5.00	2.88	12.25	2	2.00	1.50	5.00
L.	18	250.00	30.16	20.38	4	26.00	20.50	12.50
ET	3	1.00	1.00	11.67	2	1.00	1.00	15.00
DN	15	200.00	49.45	5.17	0	-	-	-
KN	4	5.00	2.30	3.50	0	-	-	-
K.	16	1.00	1.00	20.71	5	1.00	1.00	16.25
BZ	1	1.00	1.00	20.00	0	-	-	-
BW	8	5.00	2.44	13.75	1	-	-	-
MR	2	1.00	1.00	20.00	0	-	-	-
BY	1	1.00	8.00	20.00	0	-	-	-
OC	3	1.00	1.00	2.00	0	-	-	-
H.	2	1.00	1.00	10.00	1	1.00	1.00	20.00



Jan	Total Flights				Over Site			
Species	Number	Peak	Average	Height	Number	Peak	Average	Height
RK	26	4.00	3.65	3.18	1	2.00	1.50	32.50
SN	3	11.00	5.33	5.33	1	11.00	11.00	10.00
CA	12	1.00	1.00	14.83	4	1.00	1.00	28.33
GJ	10	200.00	18.40	30.87	8	7.00	3.25	37.50
T.	23	20.00	5.28	5.61	0	-	-	-
MA	12	25.00	5.71	19.43	0	-	-	-
CU	14	50.00	4.56	20.20	2	2.00	1.50	30.00
SU	4	2.00	1.33	3.67	0	-	-	-
BW	2	38.00	21.50	25.00	1	-	-	-
MS	2	2.00	2.00	12.50	2	2.00	2.00	12.50
L.	23	400.00	60.02	32.32	11	400.00	75.65	43.50
ET	2	1.00	1.00	6.30	0	-	-	-
DN	9	150.00	75.20	7.20	1	-	-	-
K.	2	1.00	1.00	12.50	2	1.00	1.00	12.50
MR	7	1.00	1.00	31.00	1	1.00	1.00	50.00
KN	3	2.00	1.50	14.00	0	-	-	-
SH	6	1.00	1.00	3.67	0	-	-	-
H.	1	1.00	1.00	10.00	0	-	-	-
BO	1	1.00	1.00	5.00	0	-	-	-



Feb	Total Flights				Over Site			
Species	Number	Peak	Average	Height	Number	Peak	Average	Height
RK	22	60.00	5.41	6.30	3	2.00	1.50	12.50
SN	1	1.00	1.00	15.00	0	-	-	-
CA	6	1.00	1.00	16.67	3	1.00	1.00	18.33
GJ	11	3.00	1.87	14.90	4	3.00	2.25	17.50
T.	27	20.00	3.73	7.43	2	2.00	1.50	5.50
MA	5	4.00	3.25	11.25	0	-	-	-
CU	10	2.00	2.47	13.40	4	2.00	1.17	16.67
SU	3	7.00	2.50	17.50	1	1.00	1.00	15.00
BW	2	37.00	19.50	22.50	1	37.00	37.00	15.00
MS	3	2.00	2.00	16.25	1	2.00	2.00	20.00
TU	1	3.00	3.00	20.00	0	-	-	-
L.	17	400.00	72.83	24.56	10	300.00	75.08	21.67
ET	1	1.00	1.00	30.00	0	-	-	-
DN	3	30.00	27.00	16.25	0	-	-	-
AV	1	10.00	10.00	10.00	0	-	-	-
K.	2	1.00	1.00	12.50	0	-	-	-
MR	5	1.00	1.00	31.80	2	1.00	1.00	40.00



Mar	Total Flights				Over Site			
Species	Number	Peak	Average	Height	Number	Peak	Average	Height
RK	24	60.00	4.10	3.00	3	12.00	10.00	4.50
SN	2	7.00	4.00	6.00	1	7.00	7.00	10.00
CA	3	7.00	4.00	22.50	1	7.00	7.00	20.00
GJ	6	2.00	1.50	9.00	4	2.00	1.67	8.00
T.	35	32.00	2.99	2.30	7	2.00	2.00	2.00
MA	17	4.00	5.15	17.49	7	4.00	2.50	18.50
CU	29	45.00	8.05	11.06	10	45.00	6.72	12.00
AV	8	8.00	3.31	5.29	0			
SU	8	2.00	1.22	9.83	3	2.00	1.33	14.67
OC	8	2.00	1.70	12.20	4	2.00	2.00	10.00
PO	1	2.00	2.00	12.00	0			
ET	2	1.00	1.00	2.00	2	1.00	1.00	2.00
BW	2	35.00	21.50	11.00	1	35.00	35.00	20.00
TT	8	35.00	16.58	2.33	0			
MR	3	2.00	1.00	18.50	0	1.00	1.00	40.00
BO	1	2.00	2.00	2.00	0			
SV	1	1.00	1.00	2.00	0			
SH	1	1.00	1.00	35.00	1	1.00	1.00	35.00