

MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Onshore Terrestrial Waterbird Note



Deadline: 4

Application Reference: EN020028

Document Numbers:

MRCNS-J3303-RPS-19187

MOR001-FLO-CON-CAG-TEC-0012

Document Reference: S_D4_17

8 August 2025

F01

Document status

Version	Purpose of document	Approved by	Date	Approved by	Date
F01	Deadline 4	HK	August 2025	IM	August 2025

Prepared by:**RPS****Prepared for:****Morgan Offshore Wind Limited,
Morecambe Offshore Windfarm Ltd**

Contents

1	OVERVIEW	1
1.1	Introduction.....	1
2	DETERMINATION OF FLL (SPECIES ABOVE 1% OF THE RIBBLE AND ALT ESTUARIES SPA CONSIDERED IN THE HRA STAGE 2).....	3
2.2	Species accounts	4
2.2.2	Whooper swan	5
2.2.3	Pink-footed goose	8
2.2.4	Shelduck	10
2.2.5	Wigeon	12
2.2.6	Teal	15
2.2.7	Golden plover.....	18
2.2.8	Redshank.....	20
2.2.9	Black-tailed godwit.....	22
2.3	Functionally Linked Land summary	25
3	NON-BREEDING WATERBIRD ASSEMBLAGE.....	28
3.1.2	Citation named features and assemblage features	28
3.1.3	Waterbirds recorded during site specific survey	30
3.1.4	Non-named Non-breeding Waterbird Assemblage summary.....	40
4	PROPOSED MITIGATION AREAS	40
4.1	Lytham Moss	40
4.1.1	Site Description.....	40
4.1.2	Proposed measures.....	41
4.2	Land south of Newton with Scales	45
4.2.1	Description	45
4.2.2	Proposed measures.....	45
4.3	Mitigation areas summary	49
5	REFERENCES	50

Tables

Table 1: The specific risk and issues log comments by Natural England that this note aims to address.....	1
Table 2: Qualifying features using terrestrial habitats during the site-specific surveys which exceeded the 1% of the SPA citation (in red) count during the over-wintering period (September to April inclusive)	4
Table 3: Whooper swan citation and recent WeBS estimates	5
Table 4: Pink-footed goose citation and recent WeBS estimates	8
Table 5: Shelduck citation and recent WeBS estimates.....	10
Table 6: Wigeon citation and recent WeBS estimates	12
Table 7: Wigeon peak count and mean count split between Newton Marsh SSSI and the rest of the onshore ornithology survey area.....	12
Table 8: Teal citation and recent WeBS estimates	15
Table 9: Teal peak count and mean count split between Newton Marsh SSSI and the rest of the onshore ornithology survey area.....	15
Table 10: Golden plover citation and recent WeBS estimates	18
Table 11: Redshank citation and recent WeBS estimates	20
Table 12: Black-tailed godwit citation and recent WeBS estimates	22
Table 13: Black-tailed godwit peak count and mean count split between Newton Marsh SSSI and the rest of the onshore ornithology survey area.....	22
Table 14: Summary of the species for which FLL exists within the onshore ornithology survey area	26
Table 15: Qualifying species: The site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:	28
Table 16: Migratory species: The site qualifies under article 4.2 of the Directive (79/409/EEC) 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) in any season:	29
Table 17: All non-breeding waterbirds recorded during site-specific terrestrial surveys over the non-breeding periods in 2022/23 and 2023/24 (peak count data taken from Tables 1.12 and 1.13 in F3.4.2 Volume 3, Annex 4.2: Wintering and migratory birds technical report – Part 2 of 2 (APP-093)).....	31
Table 18: The daily energy requirements for the affected species	42
Table 19: The proposed recipients of mitigation at Lytham Moss	43
Table 20: The proposed recipients of mitigation at Newton with Scales	47

Figures

Figure 1: Monthly abundance of whooper swan within the onshore ornithology survey area.....	6
Figure 2: Whooper swan distribution along the survey corridor	7
Figure 3: Monthly abundance of pink-footed goose within the onshore ornithology survey area	8
Figure 4: Pink-footed goose distribution along the survey corridor	9
Figure 5: Monthly abundance of shelduck within the onshore ornithology survey area	10
Figure 6: Shelduck distribution along the survey corridor	11
Figure 7: Monthly abundance of wigeon within the onshore ornithology survey area	13
Figure 8: Wigeon distribution along the survey corridor	14
Figure 9: Monthly abundance of teal within the onshore ornithology survey area	16
Figure 10: Teal distribution along the survey corridor	17
Figure 11: Monthly abundance of golden plover within the onshore ornithology survey area	18
Figure 12: Golden plover distribution along the survey corridor.....	19
Figure 13: Monthly abundance of redshank within the onshore ornithology survey area	20
Figure 14: Redshank distribution along the survey corridor	21
Figure 15: Monthly abundance of black-tailed godwit within the onshore ornithology survey area	23
Figure 16: Black-tailed godwit distribution along the survey corridor	24

Glossary

Term	Meaning
400 kV grid connection cables	Cables that will connect the proposed onshore substations to the existing National Grid Penwortham substation.
400 kV grid connection cable corridor	The corridor within which the 400 kV grid connection cables will be located.
Applicants	Morgan Offshore Wind Limited (Morgan OWL) and Morecambe Offshore Windfarm Ltd (Morecambe OWL).
Biodiversity benefit	<p>An approach to development that leaves biodiversity in a better state than before. Where a development has an impact on biodiversity, developers are encouraged to provide an increase in appropriate natural habitat and ecological features over and above that being affected.</p> <p>For the Transmission Assets, biodiversity benefit will be delivered within identified biodiversity benefit areas within the Onshore Order Limits. Further qualitative benefits to biodiversity are proposed via potential collaboration with stakeholders and local groups, contributing to existing plans and programmes, both within and outside the Order Limits.</p>
Code of Construction Practice	A document detailing the overarching principles of construction, contractor protocols, construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes.
Commitment	This term is used interchangeably with mitigation and enhancement measures. The purpose of commitments is to avoid, prevent, reduce or, if possible, offset significant adverse environmental effects. Primary and tertiary commitments are taken into account and embedded within the assessment set out in the ES.
Construction Traffic Management Plan	A document detailing the construction traffic routes for heavy goods vehicles and personnel travel, protocols for delivery of Abnormal Indivisible Loads to site, measures for road cleaning and sustainable site travel measures.
Design envelope	A description of the range of possible elements and parameters that make up the Transmission Assets options under consideration, as set out in detail in Volume 1, Chapter 3: Project Description. This envelope is used to define the Transmission Assets for EIA purposes when the exact engineering parameters are not yet known. This is also referred to as the Maximum Design Scenario or Rochdale Envelope approach.
Development Consent Order	An order made under the Planning Act 2008, as amended, granting development consent.
Direct pipe	A cable installation technique which involves the use of a mini (or micro) tunnel boring machine and a hydraulic (or other) thruster rig to directly install a steel pipe between two points.
Environmental Impact Assessment	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.

Term	Meaning
Environmental Statement	The document presenting the results of the Environmental Impact Assessment process.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to, and information to support, the EIA and Habitats Regulations Assessment processes for certain topics.
Generation Assets	The generation assets associated with the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm include the offshore wind turbines, inter-array cables, offshore substation platforms and platform link (interconnector) cables to connect offshore substations.
Intertidal area	The area between Mean High Water Springs and Mean Low Water Springs.
Intertidal Infrastructure Area	The temporary and permanent areas between MLWS and MHWS.
Landfall	The area in which the offshore export cables make landfall (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Lytham St. Annes between Mean Low Water Springs and the transition joint bay inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area and landfall compound(s).
Local Authority	A body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and County Borough Councils.
Local Highway Authority	A body responsible for the public highways in a particular area of England and Wales, as defined in the Highways Act 1980.
Main rivers	The term used to describe a watercourse designated as a Main River under the Water Resources Act 1991 and shown on the Main River Map. These are usually larger rivers or streams and are managed by the Environment Agency.
Marine licence	The Marine and Coastal Access Act 2009 requires a marine licence to be obtained for licensable marine activities. Section 149A of the Planning Act 2008 allows an applicant for to apply for 'deemed marine licences' in English waters as part of the development consent process
Maximum design scenario	The realistic worst case scenario, selected on a topic-specific and impact specific basis, from a range of potential parameters for the Transmission Assets.
Mean High Water Springs	The height of mean high water during spring tides in a year.
Mean Low Water Springs	The height of mean low water during spring tides in a year.
Micro-tunnel / micro-tunnelling	A tunnelling technique involving the use of a hydraulic (or other) jacking rig and a mini (or micro) tunnel boring machine to install a concrete tunnel between two points.
Mitigation measures	This term is used interchangeably with Commitments. The purpose of such measures is to avoid, prevent, reduce or, if possible, offset significant adverse environmental effects.
Morecambe Offshore Windfarm: Generation Assets	The offshore generation assets and associated activities for the Morecambe Offshore Windfarm.

Term	Meaning
Morecambe Offshore Windfarm: Transmission Assets	The offshore export cables, landfall, and onshore infrastructure required to connect the Morecambe Offshore Windfarm to the National Grid.
Morecambe OWL	Morecambe Offshore Windfarm Limited is owned by Copenhagen Infrastructure Partners' (CIP) fifth flagship fund, Copenhagen Infrastructure V (CI V).
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	<p>The offshore export cables, landfall, and onshore infrastructure for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm. This includes the offshore export cables, landfall site, onshore export cables, onshore substations, 400 kV grid connection cables and associated grid connection infrastructure such as circuit breaker compounds.</p> <p>Also referred to in this report as the Transmission Assets, for ease of reading.</p>
Morgan Offshore Wind Project: Generation Assets	The offshore generation assets and associated activities for the Morgan Offshore Wind Project.
Morgan Offshore Wind Project: Transmission Assets	The offshore export cables, landfall and onshore infrastructure required to connect the Morgan Offshore Wind Project to the National Grid.
Morgan OWL	Morgan Offshore Wind Limited is a joint venture between JERA Nex bp (JNbp) and Energie Baden-Württemberg AG (EnBW).
National Grid Penwortham substation	The existing National Grid substation at Penwortham, Lancashire.
National Policy Statement(s)	The current national policy statements published by the Department for Energy and Net Zero in 2023 and adopted in 2024.
Offshore booster station	A fixed structure located along the offshore export cable route, containing electrical equipment to ensure bulk wind farm capacity can be fully transmitted to the onshore substations.
Offshore substation platform(s)	A fixed structure located within the wind farm sites, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
Offshore export cables	The cables which would bring electricity from the Generation Assets to the landfall.
Offshore export cable corridor	The corridor within which the offshore export cables will be located.
Offshore Permanent Infrastructure Area	The area within the Transmission Assets Offshore Order Limits (up to MLWS) where the permanent offshore electrical infrastructure (i.e. offshore export cables) will be located.
Offshore Order Limits	See Transmission Assets Order Limits: Offshore (below).
Offshore substation platform(s)	A fixed structure located within the wind farm sites, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substations.
Onshore export cable corridor	The corridor within which the onshore export cables will be located.
Onshore Infrastructure Area	The area within the Transmission Assets Order Limits landward of MHWS. Comprising the offshore export cable corridor from MHWS to

Term	Meaning
	the transition joint bay, onshore export cable corridor, onshore substations and 400 kV grid connection cable corridor, and associated temporary and permanent infrastructure including temporary and permanent compound areas and accesses. Those parts of the Transmission Assets Order Limits proposed only for ecological mitigation and/or biodiversity benefit are excluded from this area.
Onshore Order Limits	See Transmission Assets Order Limits: Onshore (below).
Onshore substations	The onshore substations will include a substation for the Morgan Offshore Wind Project: Transmission Assets and a substation for the Morecambe Offshore Windfarm: Transmission Assets. These will each comprise a compound containing the electrical components for transforming the power supplied from the generation assets to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid.
Preliminary Environmental Information Report	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a project, and which helps to inform consultation responses.
Renewable energy	Energy from a source that is not depleted when used, such as wind or solar power.
Scour protection	Protective materials to avoid sediment being eroded away from the base of the foundations due to the flow of water.
Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of electrical transformers.
The Secretary of State for Energy Security and Net Zero	The decision maker with regards to the application for development consent for the Transmission Assets.
Transmission Assets	See Morgan and Morecambe Offshore Wind Farms: Transmission Assets (above).
Transmission Assets Order Limits	The area within which all components of the Transmission Assets will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds).
Transmission Assets Order Limits: Offshore	<p>The area within which all components of the Transmission Assets seaward of Mean Low Water Springs will be located, including areas required on a temporary basis during construction and/or decommissioning.</p> <p>Also referred to in this report as the Offshore Order Limits, for ease of reading.</p>
Transmission Assets Order Limits: Onshore	<p>The area within which all components of the Transmission Assets landward of Mean High Water Springs will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds).</p> <p>Also referred to in this report as the Onshore Order Limits, for ease of reading.</p>

Acronyms

Acronym	Meaning
AIS	Air Insulated Switchgear
AOD	Above Ordnance Datum
BCA	Bilateral Grid Connection Agreement
CoCP	Code of Construction Practice
CoT	Project Commitment
CBRA	Cable Burial Risk Assessment
CfD	Contracts for Difference
CMS	Construction Method Statement
CSIP	Cable Specification and Installation Plan
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
Defra	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security & Net Zero
dML	Deemed Marine Licence
EnBW	Energie Baden-Württemberg AG
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPP	Evidence Plan Process
ES	Environmental Statement
EWG	Expert Working Group
GIS	Gas Insulated Switchgear
HDD	Horizontal Directional Drilling
HGV	Heavy goods vehicle
HNDR	Holistic Network Design Review
HVAC	High Voltage Alternating Current
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IAQM	Institute of Air Quality Management
LAT	Lowest Astronomical Tide
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone
MDS	Maximum Design Scenario

Acronym	Meaning
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MPS	Marine Policy Statement
MTBM	Mini (or micro) tunnel boring machine
NGESO	National Grid Electricity System Operator
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
O&M	Operation and Maintenance
OSP	Offshore Substation Platform
OTNR	Offshore Transmission Network Review
PDE	Project Design Envelope
PEIR	Preliminary Environmental Information Report
PPP	Pollution Prevention Plan
PRoW	Public rights of way
SAC	Special Areas of Conservation
SAR	Search and Rescue
SPA	Special Protection Area
SNCBs	Statutory Nature Conservation Bodies
SSSI	Sit of Special Scientific Interest
SWMP	Site Waste Management Plan
TEP	Technical Engagement Plan
TJB	Transition Joint Bay
UK	United Kingdom
UXO	Unexploded Ordnance
WSI	Written scheme of investigation

Units

Unit	Description
%	Percentage
dB	Decibels
Kg	Kilogram
kHz	Kilohertz

Unit	Description
KJ	Kilojoules
km	Kilometres
km ²	Kilometres squared
kV	Kilovolt
m	Metres
m ²	Metres squared
m ³	Metres cubed
nm	Nautical mile
μPa	micropascal

1 Overview

1.1 Introduction

- 1.1.1.1 Natural England has provided submissions during examination for the Morgan and Morecambe Transmission Assets (hereafter referred to as the Transmission Assets) in regards to terrestrial waterbirds as detailed in Table 1. This technical note addresses these submissions by:
- Providing clarity on how species above 1% of SPA population have been included in the HRA (APP-017) and if Functionally Linked Land (FLL) exists within the Transmission Assets Order Limits for all of these features (Section 2);
 - Clarifying the non-breeding waterbird assemblage features and providing additional details on how this has been assessed and is being mitigated (Section 3), and
 - Providing additional details on the waterbird mitigation measures at Newton with Scales and Lytham Moss as shown in brown and orange in Figure 1 (Section 4) to provide confidence that these measures are suitable.

Table 1: The specific risk and issues log comments by Natural England that this note aims to address

NE Ref Appendix K1 - Risk and Issues Log (APP-093)		Where addressed in this document
Comment		
RI_H6	<p>Ribble and Alt Estuaries SPA/Ramsar – inadequate assessment of impacts on terrestrial waterbirds:</p> <p>Natural England do not agree with the Applicant's HRA conclusions. We note that the current conclusions are based on modelled information on likely habitat availability. This is often based on out-of-date information and models that claim urban/infrastructure areas are available foraging habitat. The focus should be on the populations revealed by the site-specific surveys rather than generic assumptions. Furthermore, there is a lack of information regarding the spatio-temporal implications of the habitat loss.</p> <p>With regards to mitigation, we advise that the Applicant provides further information on how the tunnel end works of the Ribble crossing will be managed to ensure no disruption to SPA/Ramsar site waterbirds moving along the corridor of the estuary. The justification of only using trenchless techniques is inadequate.</p>	Section 2
RI_H7	<p>Ribble & Alt Estuaries SPA – mitigation for terrestrial impacts/compensation</p> <p>The proposed mitigation measures are hoping to support the needs of a number of species with different ecological needs, however no information is included showing clear design and management information to ensure that these areas are going to be fit for purpose.</p> <p>The terrestrial mitigation areas need reviewing against the specifics of the species (and the number of those species) that they need to host, which relates to the above comments around the phasing of works and being able to accommodate all displaced birds from the whole onshore order limits. Detailed site assessments that articulate site management and structure in relation to the role they need to fulfil need to be generated.</p>	Section 4

NE Ref Appendix K1 - Risk and Issues Log (APP-093)		Where addressed in this document
Comment		
RI_H9	Reliance on the Functionally Linked Land (FLL) description in Bowland Ecology (2021) is flawed for the purposes of this survey. Natural England do not agree with the criteria used for FLL threshold. Natural England requires further information on reasoning for not using standard 1% threshold for measuring significance of FLL. Further, Natural England advises the Applicant to ensure all figures for species are included and consider the possibility of FLL for the species referenced.	Section 2
RI_H14	Natural England note that a number of these species are also non-breeding interest of the Ribble and Alt Estuary SPA and there may be functional linkage. Natural England advises the Applicant to consider the potential for FLL for these species and whether there is potential to impact if so.	Section 2
RI_H46	The SPA non-breeding waterbird assemblage is a feature in its own right, therefore all the other species that contribute to it also have to be considered, in particular in this case in terms of numbers, as diversity and quality are more likely to be robust at a site scale. Natural England advise the Applicant to revisit the framing of [APP-017] and re-consider impacts/risks and compensation and mitigations options and planning for managing the risks.	Section 3

2 **Determination of FLL (species above 1% of the Ribble and Alt Estuaries SPA considered in the HRA Stage 2)**

- 2.1.1.1 The Ribble and Alt Estuaries SPA and relevant onshore ornithological features for which the potential for Likely Significant Effects (LSE) could not be ruled out have been considered in the HRA Stage 2 (Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment (ISAA) (APP-017). This includes whooper swan, pink-footed goose, shelduck, wigeon, teal, golden plover, redshank and black-tailed godwit which have all been assessed in Section 1.6 of the Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment (APP-017).
- 2.1.1.2 The ISAA concluded no adverse effects on integrity of the Ribble and Alt Estuary SPA as a result of temporary loss of supporting habitat and/or resource availability and disturbance and displacement from construction, decommissioning, and operation and maintenance activities.
- 2.1.1.3 The SPA citation counts and the peak count recorded during the site-specific surveys (Volume 3, Chapter 4: Onshore and intertidal ornithology of the ES (APP-090) are presented in Table 1.67 of the Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment (APP-017) together with the proportion of peak count from SPA populations (using citation counts). The Applicants have followed the Natural England recommendations by using the 1% criterion for measuring significance of the FLL and assessed all the Ribble and Alt Estuaries SPA features which were recorded in the terrestrial habitats during the site-specific surveys which can be seen below in Table 2 to Table 13.
- 2.1.1.4 For clarity, the Applicants have presented in Table 2 the features of the SPA which were present in numbers exceeding 1% of the citation threshold together with the proportion of the SPA citation and WeBS count. This section aims to examine these features in greater detail and to consider if FLL exists for each of these features in turn.

Table 2: Qualifying features using terrestrial habitats during the site-specific surveys which exceeded the 1% of the SPA citation (in red) count during the over-wintering period (September to April inclusive)

Species	Peak count	Peak count as % of SPA citation count	Peak count as % of WeBS count	Mean	Mean as % of SPA citation count	Mean as % of WeBS count
Whooper swan <i>Cygnus cygnus</i>	132	72.5	18.6	41.1	22.6	5.8
Pink-footed goose <i>Anser brachyrhynchus</i>	8,319	70.7	14.9	2,800.4	23.8	7.2
Shelduck <i>Tadorna tadorna</i>	374	7.6	7.4	87.2	1.8	1.7
Wigeon <i>Mareca penelope</i>	1,818	2.1	3.6	604.8	0.7	1.2
Teal <i>Anas crecca</i>	312	4.4	3.6	160.2	2.2	1.9
Golden plover <i>Pluvialis apricaria</i>	381	10.6	7.6	135.3	3.8	2.7
Redshank <i>Tringa totanus</i>	61	2.4	2.5	14.6	0.6	0.6
Black-tailed godwit <i>Limosa limosa</i>	423	12.7	9.4	119.4	9.4	2.6

2.2 Species accounts

- 2.2.1.1 The distribution maps have been presented in the Application documents (F3.4.2 Volume 3, Annex 4.2: Wintering and migratory birds technical report – Part 1 of 2 (APP-092) and F3.4.2 Volume 3, Annex 4.2: Wintering and migratory birds technical report – Part 2 of 2 (APP-093)). The Applicants have re-produced these density maps in the subsequent section on individual species, at a finer resolution scale
- 2.2.1.2 The Applicants have also presented the usage of the proposed mitigation areas by each terrestrial feature of the Ribble and Alt Estuaries SPA in Table 19 and 20 below.

2.2.2 Whooper swan

Table 3: Whooper swan citation and recent WeBS estimates

Species	Survey peak count	Peak count as % of SPA citation count	SPA citation count	1% of the citation	Recent WeBS estimate	1% of the WeBS
Whooper swan	132	72.5	182	2	711	71

- 2.2.2.1 Whooper swan have seen significant population increases within the Ribble and Alt Estuaries SPA in recent years. The current WeBS population estimate is at around 700 birds (Table 3). The site-specific surveys recorded peaks in February during both 2022/23 and 2023/24 winters of over 120 birds (Figure 1).
- 2.2.2.2 Whooper swan are early to migrate with most birds having departed Lancashire for Iceland by the end of March in most years (BirdTrack, 2025). Therefore, the February peaks may represent pre-migration gatherings as birds try to build up enough energy resources to make the journey to Iceland to breed. With the exception of the February peaks, whooper swan were present in lower numbers between October and March during both years.
- 2.2.2.3 Whooper swan were not evenly distributed throughout the onshore ornithology survey area (which included a 500 m buffer around the Onshore Order Limits to account for any disturbance caused during construction) but were instead found in agricultural areas to the south of the Ribble and around the Lytham Moss area (Figure 2). This area, with its fertile soils, is recognised as being functionally linked to the SPA as a foraging ground for geese and swans (Bowland Ecology, 2021). The whooper swan to the south of the Ribble are over 500 m from the Transmission Assets Order Limits and therefore any potential impacts are predicted to be negligible to these birds.

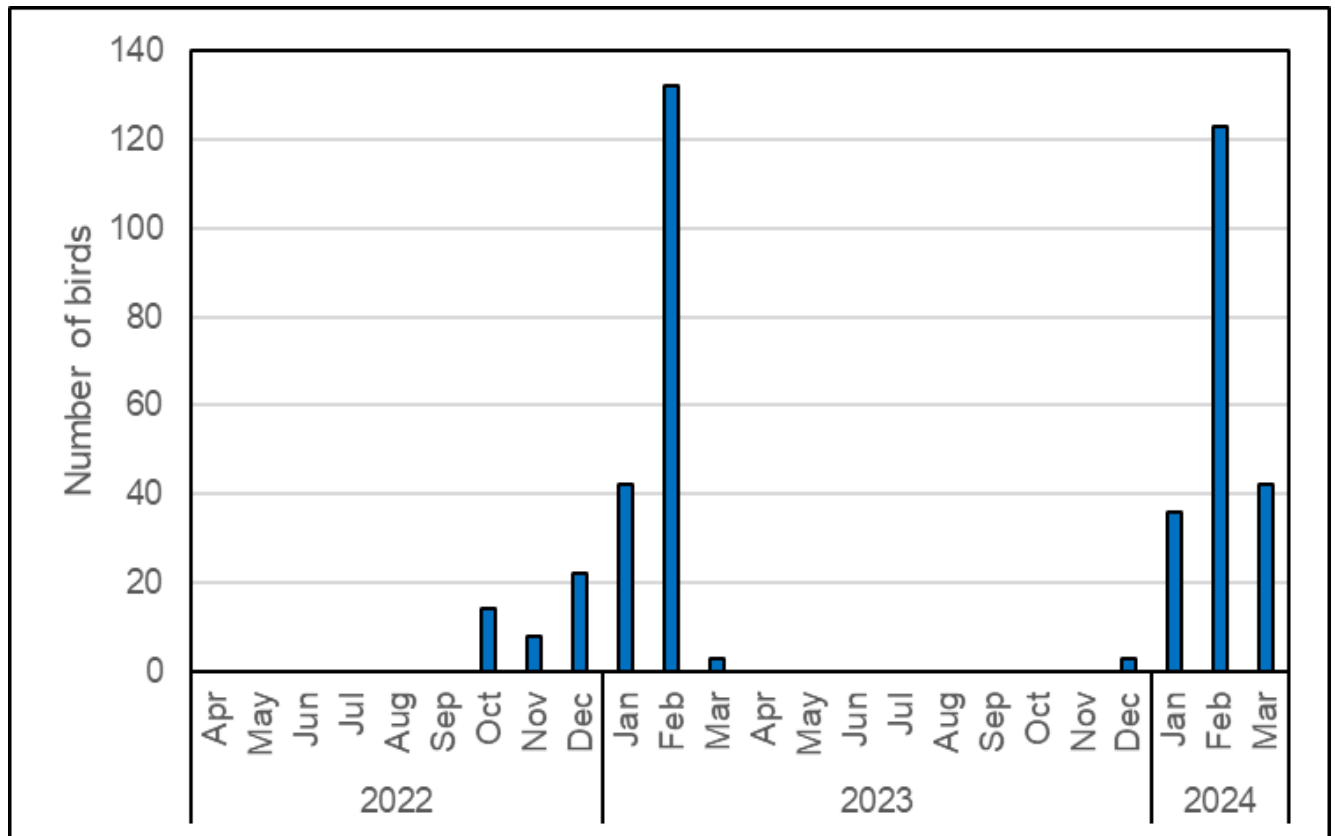


Figure 1: Monthly abundance of whooper swan within the onshore ornithology survey area

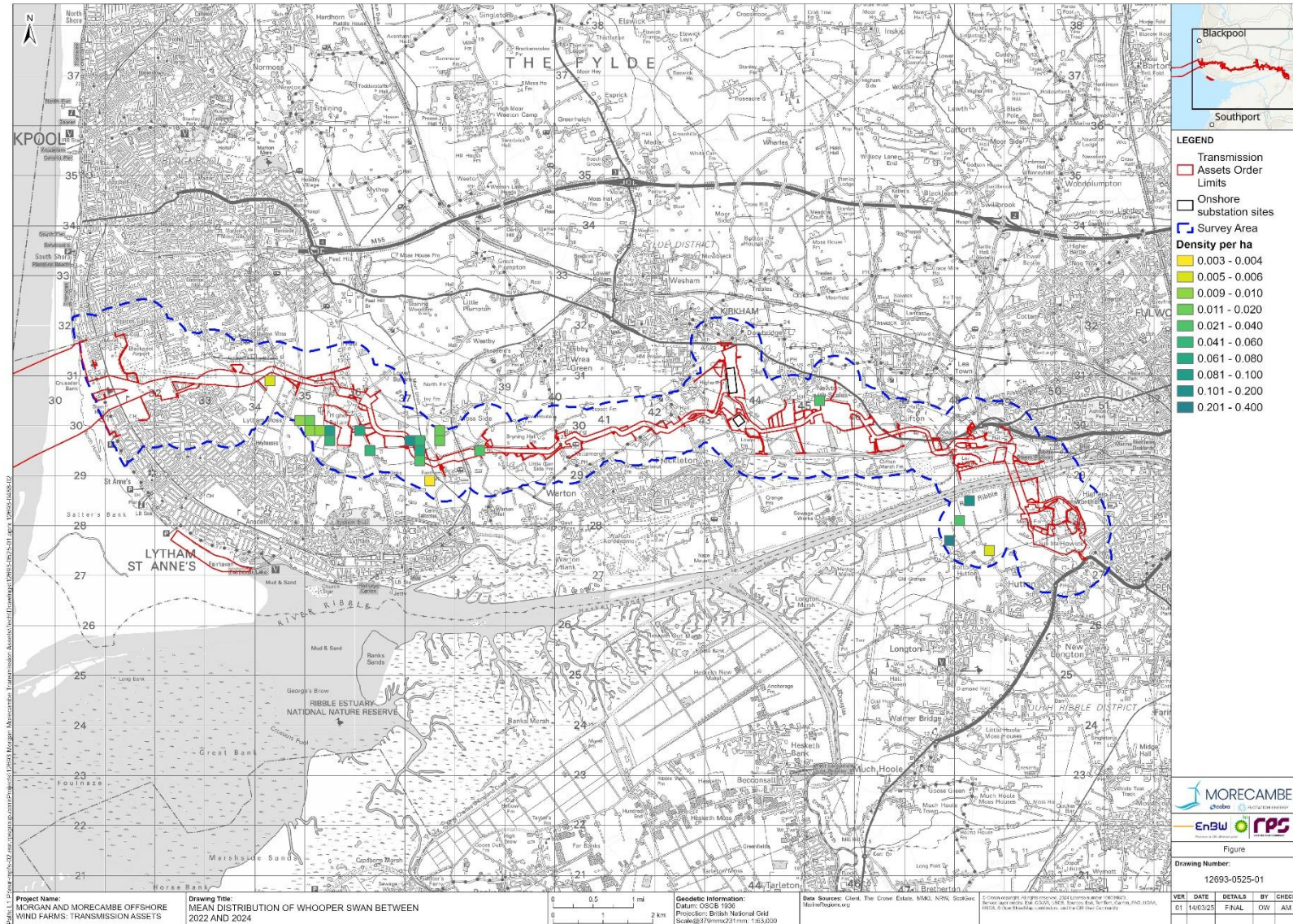


Figure 2: Whooper swan distribution along the survey corridor

2.2.3 Pink-footed goose

Table 4: Pink-footed goose citation and recent WeBS estimates

Species	Survey peak count	Peak count as % of SPA citation count	SPA citation count	1% of the citation	Recent WeBS estimate	1% of the WeBS
Pink-footed goose	8,319	70.7	11,764	118	38,775	388

- 2.2.3.1 Pink-footed goose were regularly present in numbers above 1% of the citation or recent WeBS estimate for the Ribble and Alt Estuaries SPA (Table 3) between September and February (
- 2.2.3.2 Figure 3) with numbers declining sharply in March during both years.
- 2.2.3.3 Pink-footed goose are early migrants with birds arriving back on their Icelandic breeding grounds by mid-April and many of the wintering Lancashire birds will already have commuted north to Scotland by mid-March (Fox et al., 1994). Pink-footed goose diet also changes throughout the winter with birds tending to feed on cereal and root crops in autumn and winter then switching to grass shoots in spring (Cramp, 1977).
- 2.2.3.4 Most pink-footed goose sightings within the onshore survey area were made on arable land in autumn and winter with all sightings either within, or within a few kilometres of Lytham Moss (Figure 4). This area has previously been identified as functionally linked land for this species (Bowland Ecology, 2021) and therefore the Applicants have proposed to mitigate for pink-footed goose in the Lytham Moss area (Section 4.1).

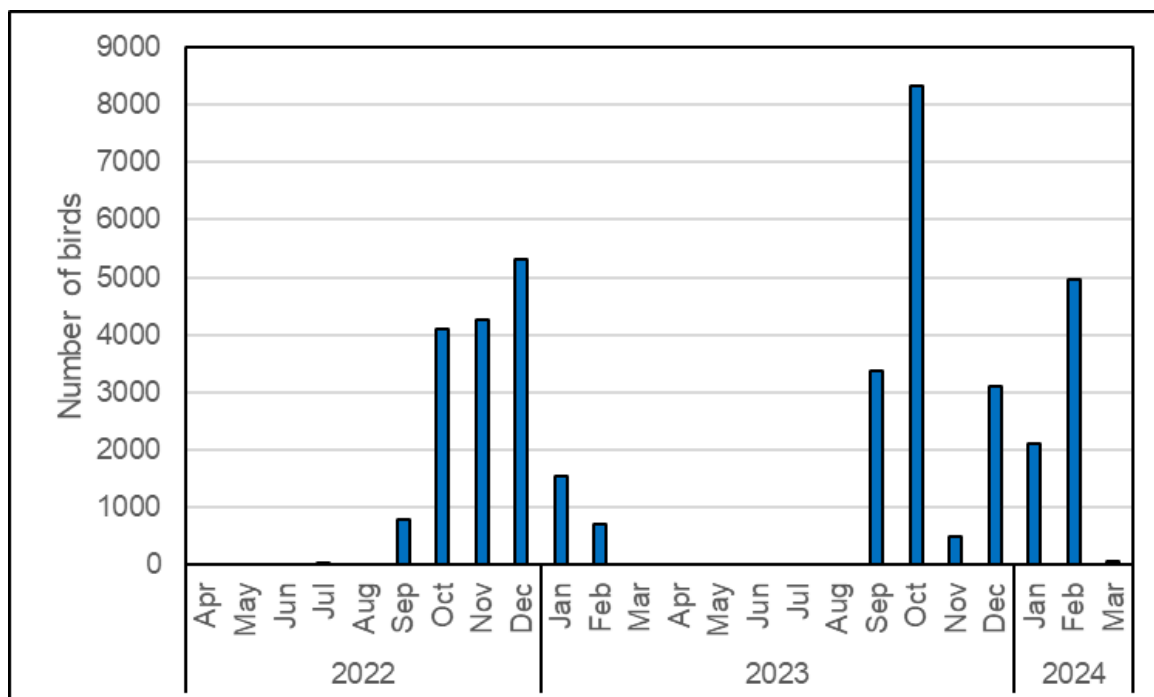


Figure 3: Monthly abundance of pink-footed goose within the onshore ornithology survey area

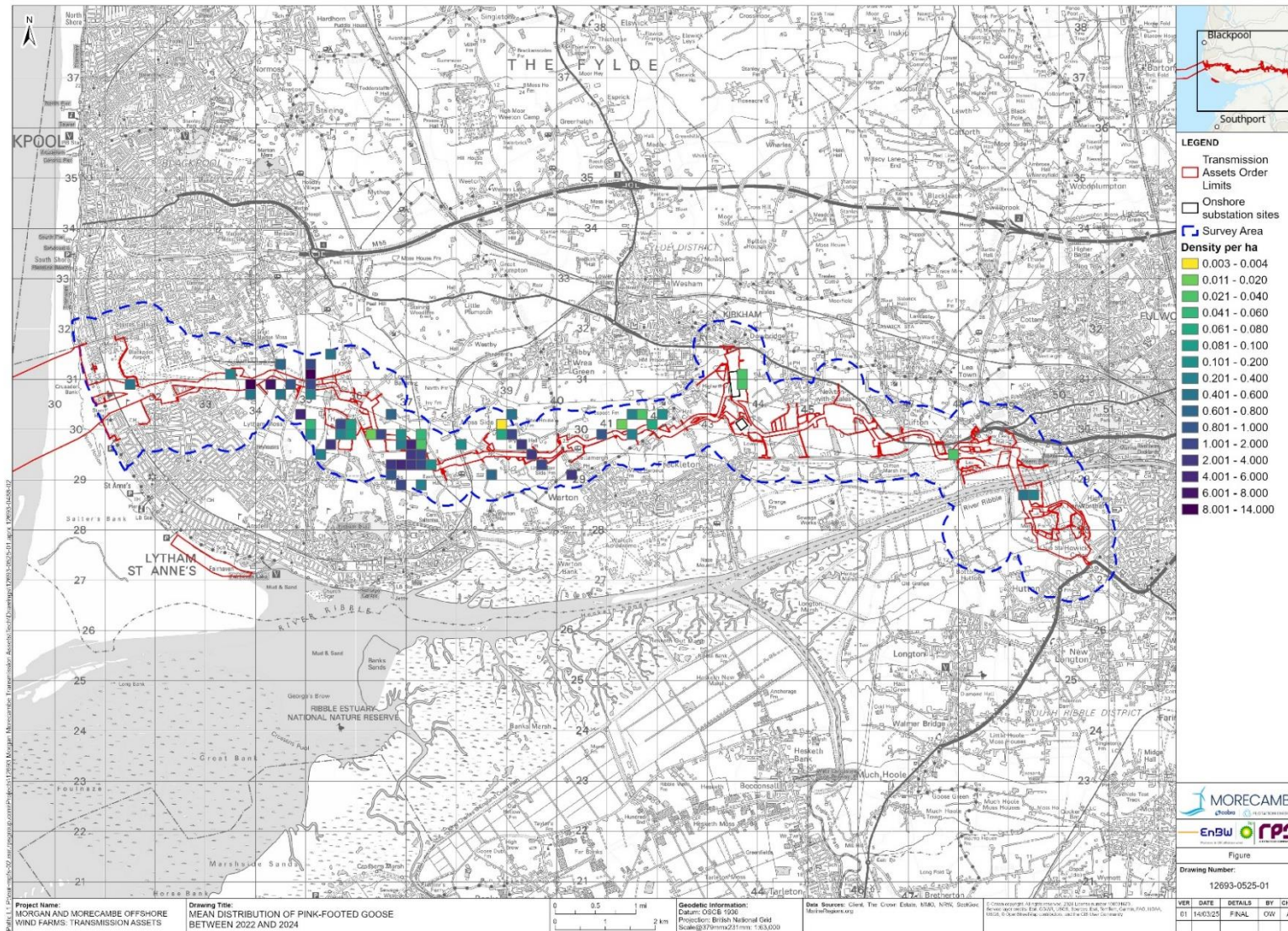


Figure 4: Pink-footed goose distribution along the survey corridor

2.2.4 Shelduck

Table 5: Shelduck citation and recent WeBS estimates

Species	Survey peak count	Peak count as % of SPA citation count	SPA citation count	1% of the citation	Recent WeBS estimate	1% of the WeBS
Shelduck	374	7.6	4,925	49	5,050	51

- 2.2.4.1 Shelduck were present in numbers exceeding 1% of the citation or recent WeBS estimate for the Ribble and Alt Estuaries SPA (Table 5) during most months between January and May between 2022 and 2024 (Figure 5).
- 2.2.4.2 Shelduck were well distributed throughout the onshore cable corridor in low densities, although clusters were more concentrated to the south of the Ribble (Figure 6). This may indicate that shelduck are breeding throughout the cable corridor. The shelduck breeding season runs until May/June when young leave the nest to find water, the nest is usually situated in a tree hollow, rabbit warren, etc, and may be some distance from the estuary. Wintering shelduck feed almost exclusively on a marine snail (e.g. *Peringia ulvae*) on mudflats and only occasionally taking grain in terrestrial habitats (BirdLife International, 2025). The peak in birds during late winter 2023/24 may be indicative of the high rainfall and extensive flooding during that period.
- 2.2.4.3 Breeding shelduck are not a feature of the nearby Ribble and Alt Estuaries SPA or Ramsar, and due to their estuarine wintering diet (which consist of gastropods), there will be negligible impacts upon non-breeding shelduck during the terrestrial construction and operation phases of the project (e.g., onshore export cable installation and substation construction).

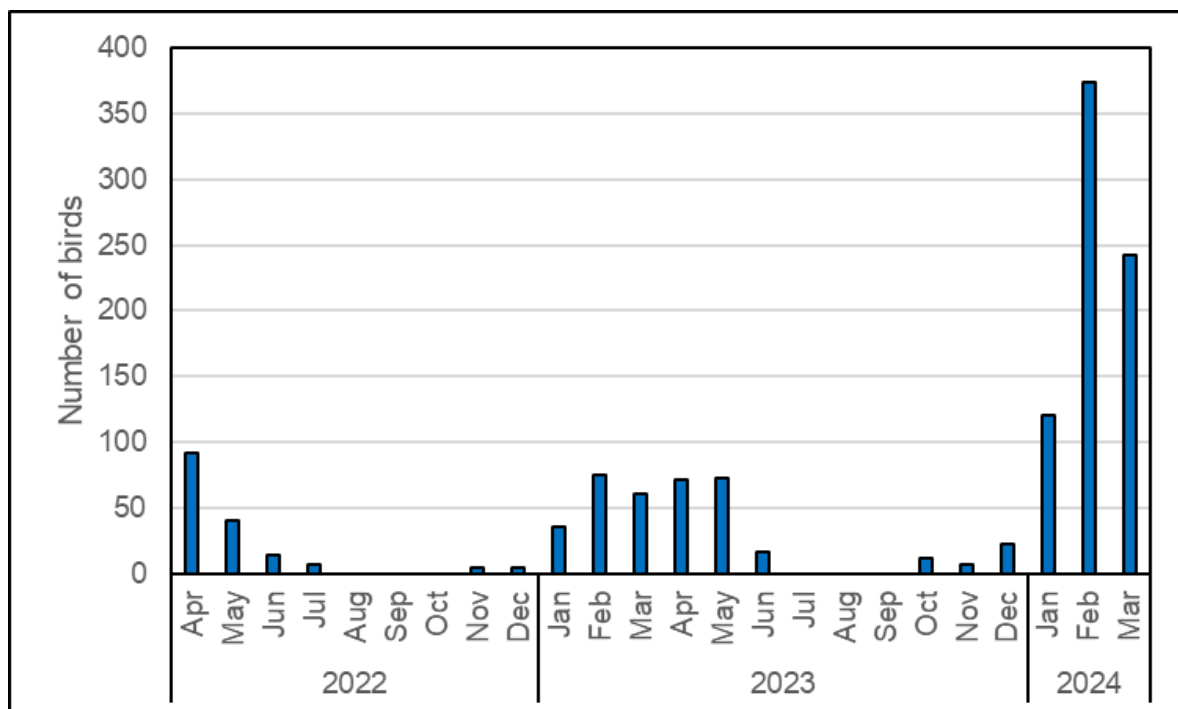


Figure 5: Monthly abundance of shelduck within the onshore ornithology survey area

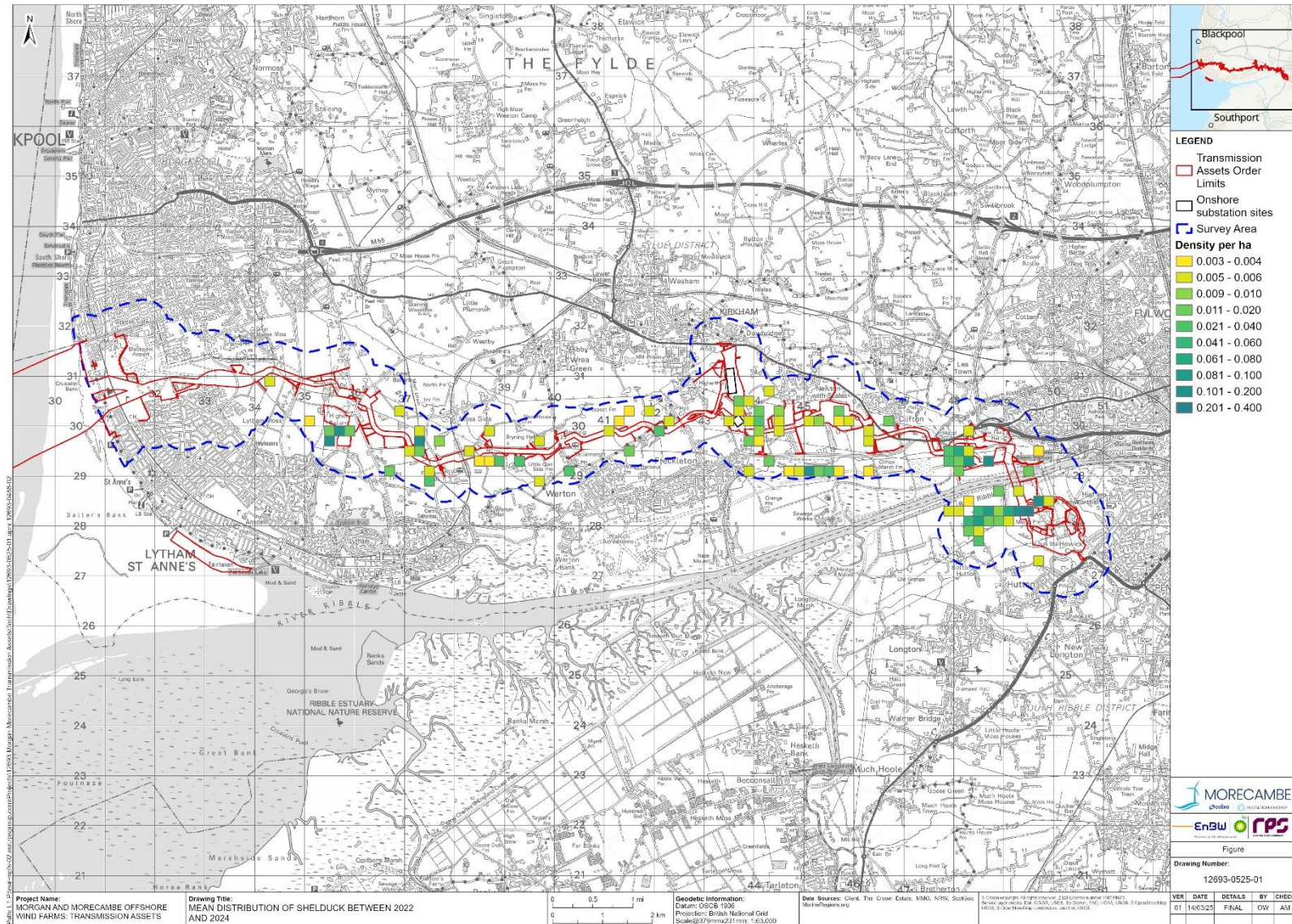


Figure 6: Shelduck distribution along the survey corridor

2.2.5 Wigeon

Table 6: Wigeon citation and recent WeBS estimates

Species	Survey peak count	Peak count as % of SPA citation count	SPA citation count	1% of the citation	Recent WeBS estimate	1% of the WeBS
Wigeon	1,818	2.1	85,259	853	51,178	512

- 2.2.5.1 Wigeon roost and loaf on waterbodies but then move onto surrounding grassland where they feed primarily on grass shoots. Wigeon were present in numbers exceeding 1% of the citation or recent WeBS estimate (Table 6) for the Ribble and Alt Estuaries SPA between October and March (Figure 7) with the very high peak counts being recorded at Newton Marsh SSSI and lower numbers at the land south of Newton with Scales and Lea Marsh (Figure 8). Wigeon were also present along the River Ribble corridor, these birds are discussed further in S_D2_11 Technical note on Newton Marsh SSSI and River Ribble Crossing - Rev F01 (REP2-044).
- 2.2.5.2 Table 7 shows the number of wigeon that were located at Newton Marsh SSSI compared to those that were recorded within the wider survey area. There will be no direct impacts upon the wigeon at Newton Marsh SSSI (see REP2-044) and the peak number of birds outside of this area was 482 which is below 1% of the citation count and recent WeBS estimate. Therefore, the land outside of Newton Marsh SSSI would not be considered as functionally linked for wigeon according to Natural England's 1% criterion. Despite that, the mitigation outlined in Section 4.2.2 will benefit wigeon.

Table 7: Wigeon peak count and mean count split between Newton Marsh SSSI and the rest of the onshore ornithology survey area.

Area	Survey peak count	Peak as a % of citation	Peak as a % of WeBS	Mean	Mean as a % of citation	Mean as a % of WeBS
Entire onshore survey area	1,818	2.1	3.6	604.8	0.7	1.2
Newton Marsh SSSI	980	1.15	1.91	239	0.28	0.47
Onshore survey area (excluding Newton Marsh SSSI)	482	0.57	0.94	203	0.24	0.40

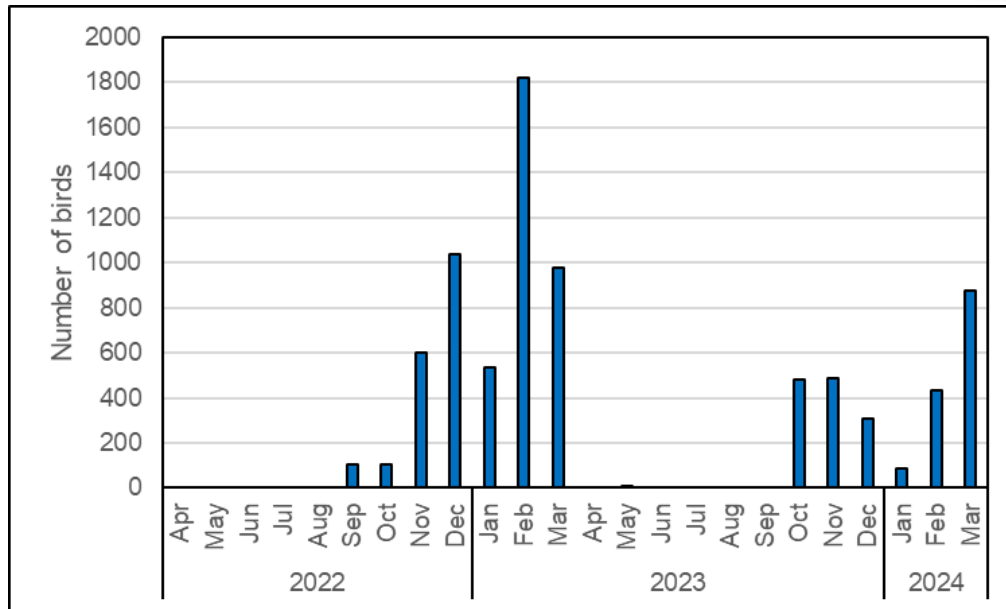


Figure 7: Monthly abundance of wigeon within the onshore ornithology survey area

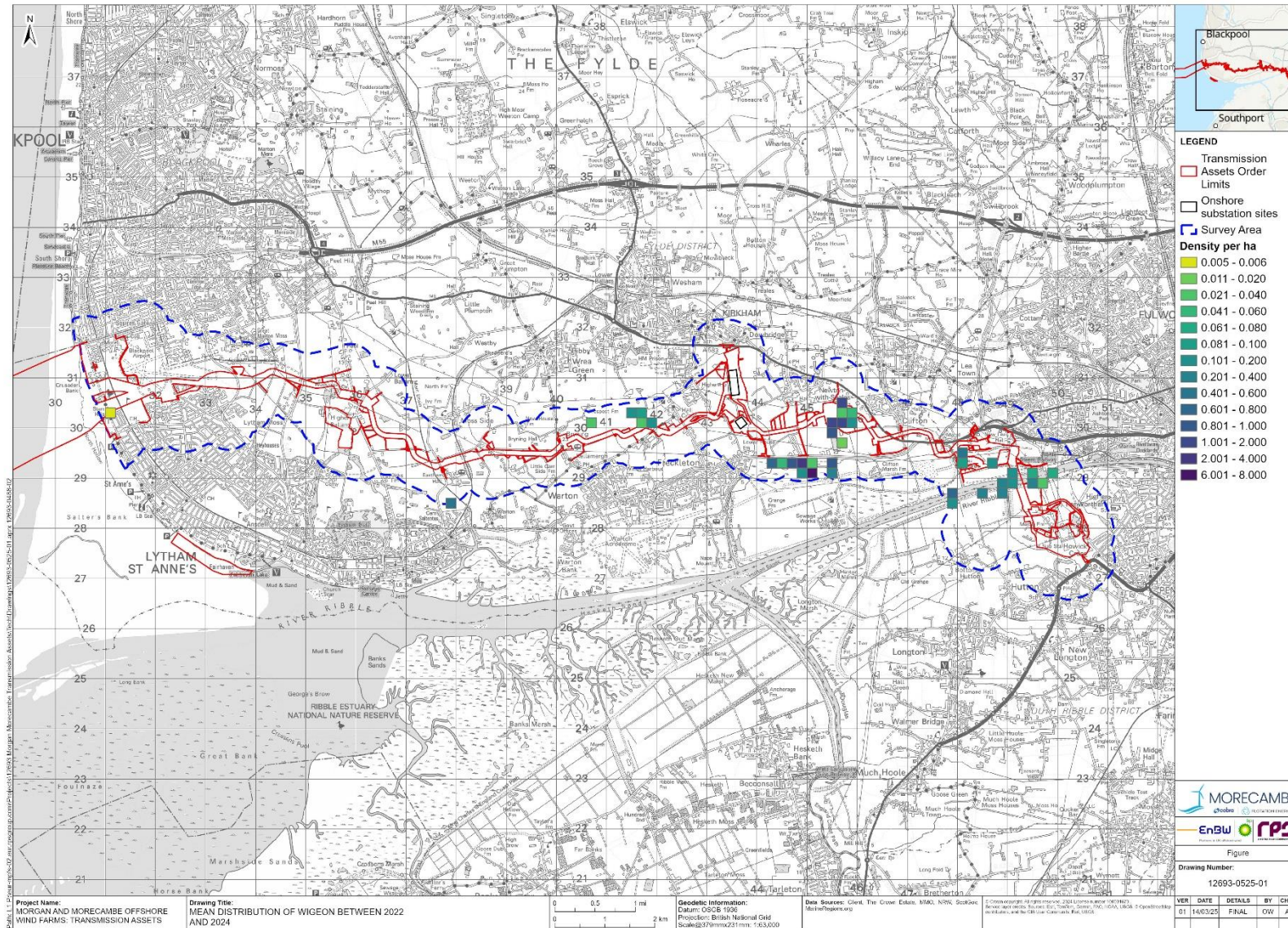


Figure 8: Wigeon distribution along the survey corridor

2.2.6 Teal

Table 8: Teal citation and recent WeBS estimates

Species	Survey peak count	Peak count as % of SPA citation count	SPA citation count	1% of the citation	Recent WeBS estimate	1% of the WeBS
Teal	312	4.4	7,157	72	8,556	86

2.2.6.1 Teal, a small duck, are often found on shallow waters such as flooded fields, creeks and drainage ditches where they feed by dabbling for aquatic invertebrates and plant matter. Teal numbers have been relatively stable since the creation of the SPA. The site-specific surveys showed numbers exceeding 1% of the citation and recent WeBS estimate (Table 8) for the Ribble and Alt Estuaries SPA between September and March (Figure 9), with most birds having left the area by April (with the exception of small numbers that breed at Newton Marsh SSSI (Volume 3, Annex 4.1: Breeding birds technical report (APP-091)).

2.2.6.2 Teal showed a similar distribution to wigeon with the main areas being Newton Marsh SSSI, land south of Newton with Scales, Lea Marsh and the River Ribble corridor (see REP2-044) (Figure 10), although unlike wigeon there were higher numbers of teal outside of Newton Marsh SSSI than there were within the SSSI (Table 9). This proposed mitigation area south of Newton with Scales could therefore be considered as functionally linked for teal as greater than 1% of the SPA population are using it and the planned mitigation for this area will include long term benefits for teal (Section 4.2).

Table 9: Teal peak count and mean count split between Newton Marsh SSSI and the rest of the onshore ornithology survey area.

Area	Survey peak count	Peak as a % of citation	Peak as a % of WeBS	Mean	Mean as a % of citation	Mean as a % of WeBS
Onshore survey area	312	4.4	3.6	160.2	2.2	1.9
Newton Marsh SSSI	261	3.6	3.0	50.9	0.7	0.6
Onshore survey area (minus Newton Marsh SSSI)	312	4.4	3.6	101.4	1.4	1.2

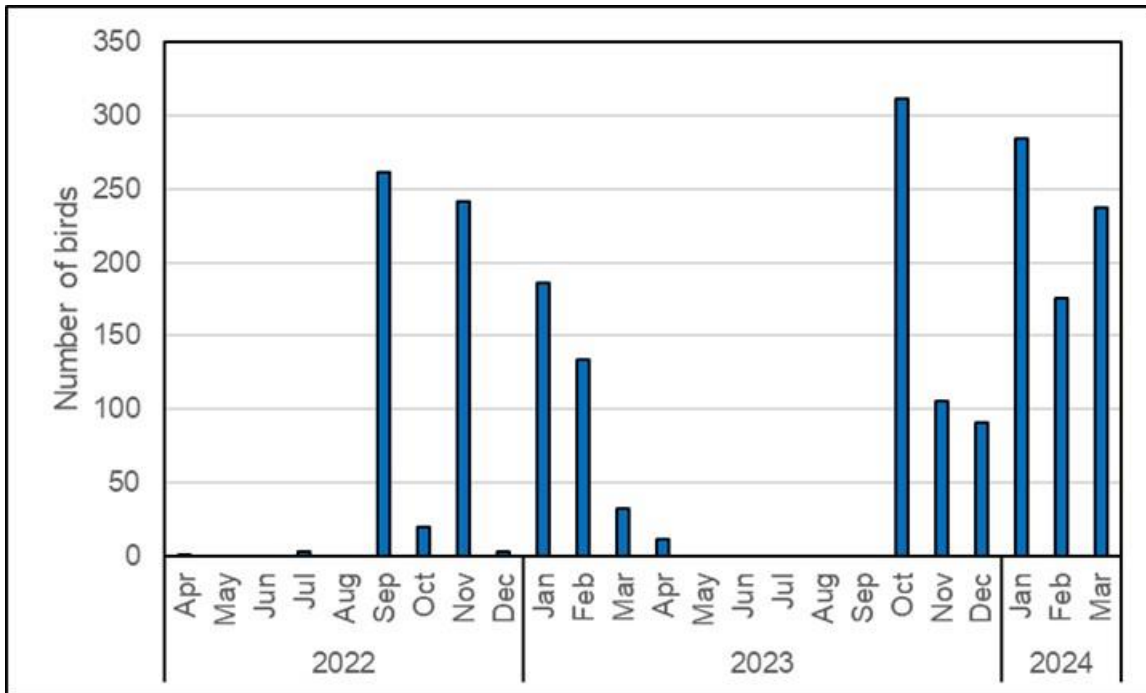


Figure 9: Monthly abundance of teal within the onshore ornithology survey area

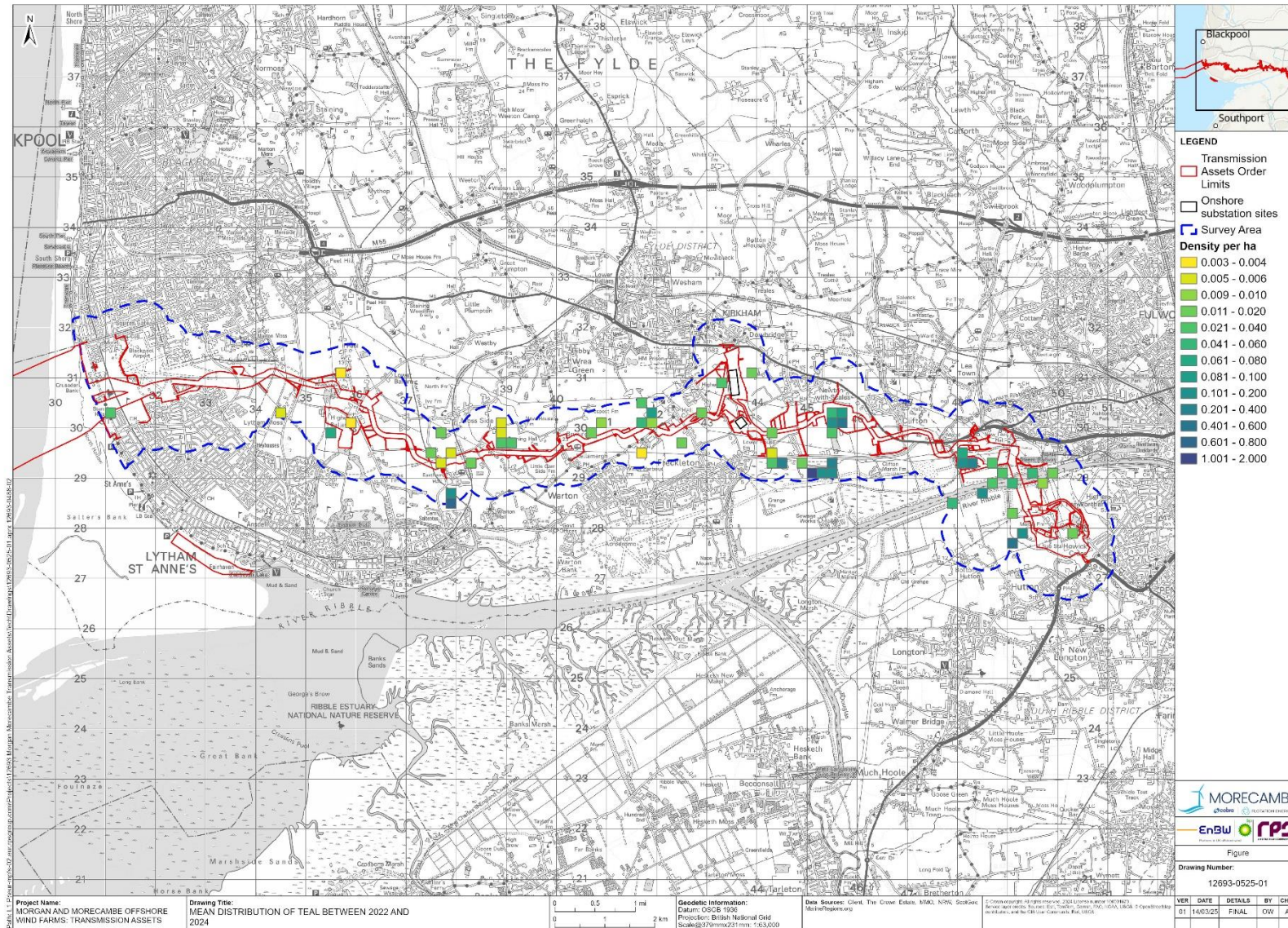


Figure 10: Teal distribution along the survey corridor

2.2.7 Golden plover

Table 10: Golden plover citation and recent WeBS estimates

Species	Survey peak count	Peak count as % of SPA citation count	SPA citation count	1% of the citation	Recent WeBS estimate	1% of the WeBS
Golden plover	381	10.6	3,598	36	5,038	50

2.2.7.1 Golden plover were present in numbers exceeding 1% of the citation or recent WeBS estimate (Table 10) for the Ribble and Alt Estuaries SPA twice over the two-year period, once in December 2022 and once in January 2024 (Figure 11) with birds scattered throughout the area near the substations and widely around Lytham Moss (Figure 12).

2.2.7.2 The Applicants are already providing mitigation for golden plover for both the temporary and permanent impacts of the project at Lytham Moss and Newton with Scales. The measures proposed at these areas are discussed in Section 4.

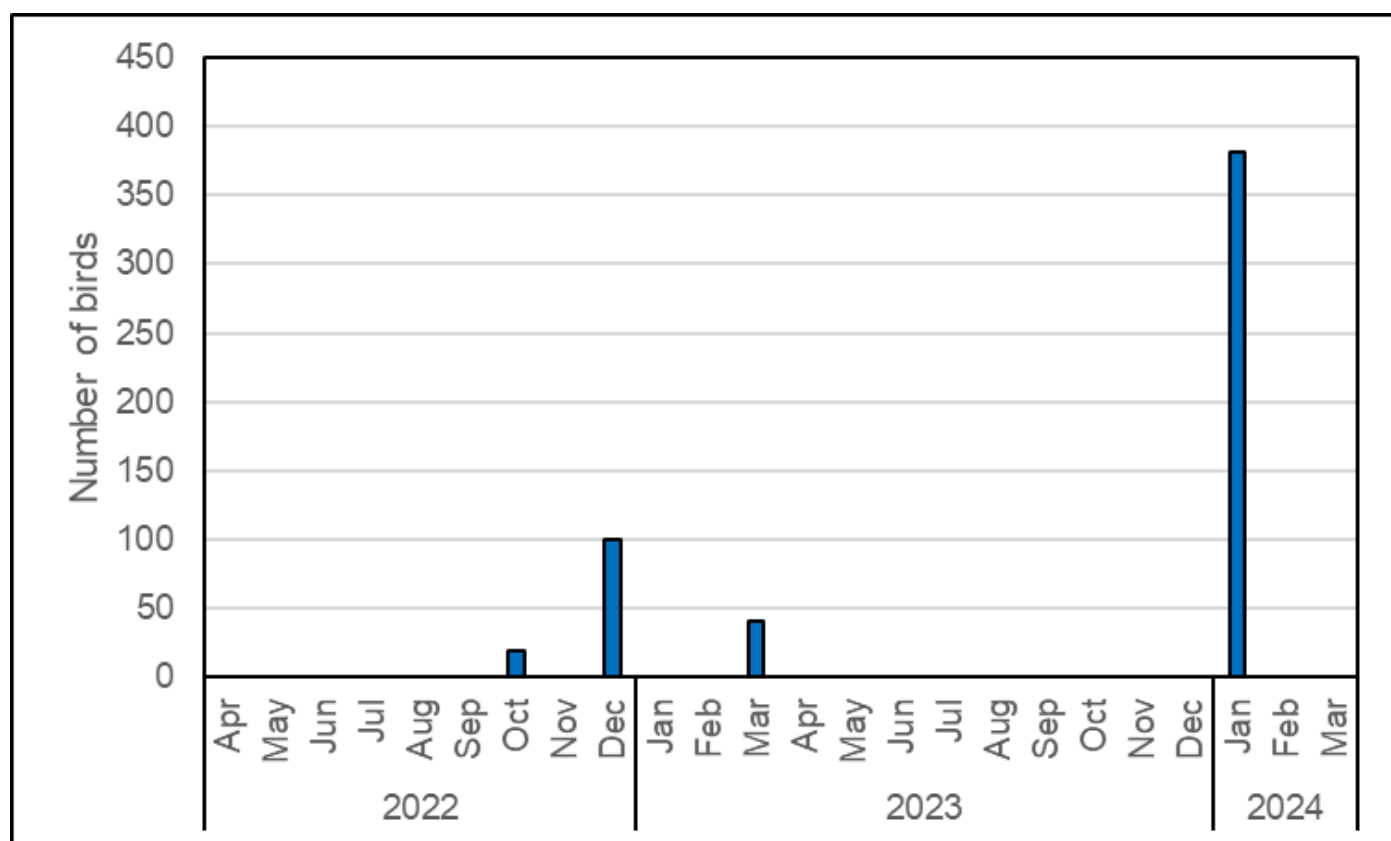


Figure 11: Monthly abundance of golden plover within the onshore ornithology survey area

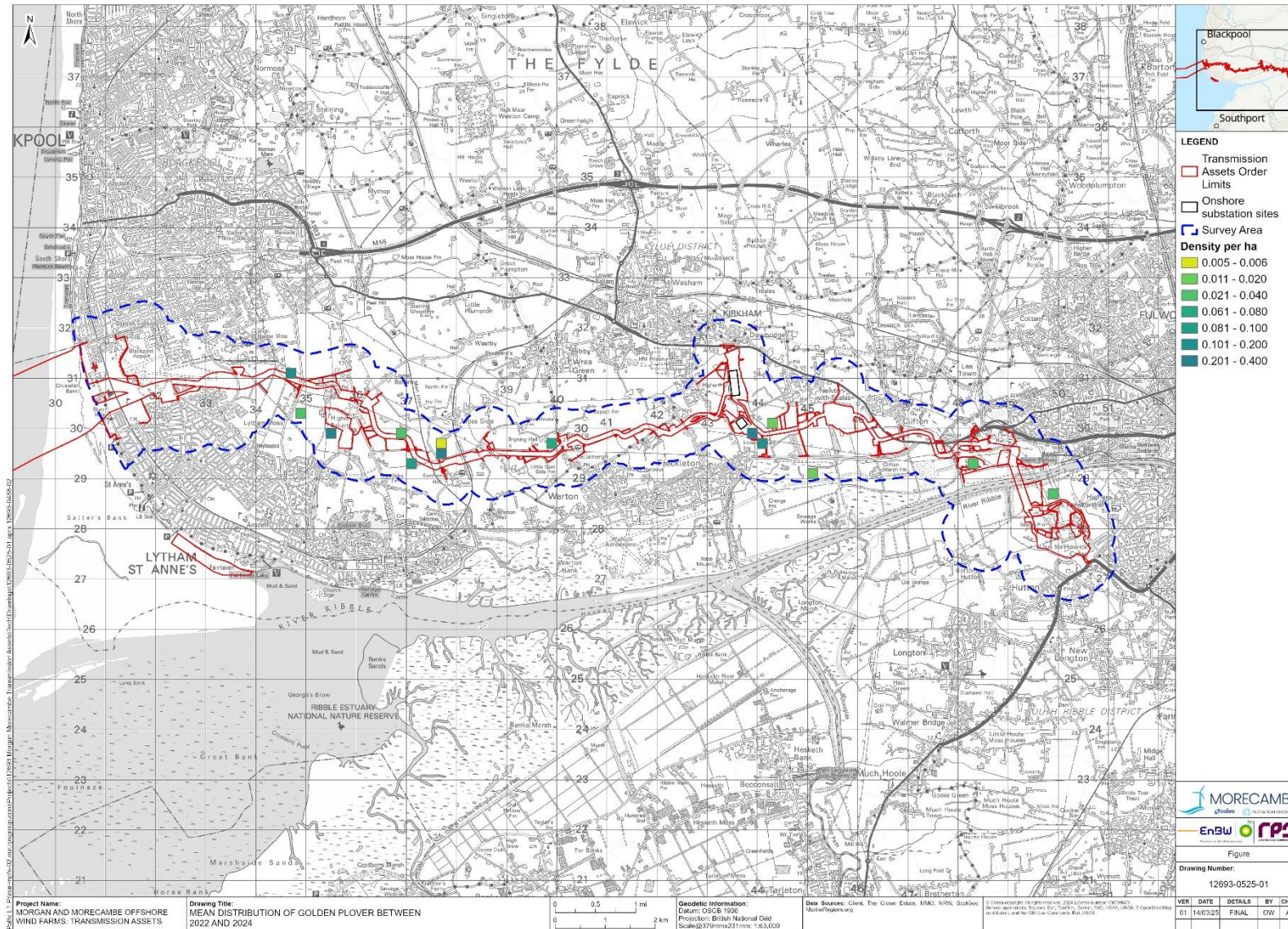


Figure 12: Golden plover distribution along the survey corridor

2.2.8 Redshank

Table 11: Redshank citation and recent WeBS estimates

Species	Survey peak count	SPA citation count	1% of the citation	Recent WeBS estimate	1% of the WeBS
Redshank	61	2,502	25	2,470	25

2.2.8.1 Redshank were only present in numbers exceeding 1% of the citation or recent WeBS estimate (Table 11) for the Ribble and Alt Estuaries SPA in March 2024 (Figure 13), these birds showed a strong association to the wetter marshy areas at Newton Marsh SSSI where negligible impacts are predicted due to the trenchless crossing of the River Ribble (see S_D2_11 Technical note on Newton Marsh SSSI and River Ribble Crossing - Rev F01. REP2-044), Lee Marsh and the River Ribble corridor (see REP2-044).

2.2.8.2 Therefore, the Applicants consider that the terrestrial areas within Transmission Asset Order Limits (onshore cable corridor and at the substations) are not functionally linked for redshank. The impacts to redshank at the landfall have been clarified in the Response to Issue Specific Hearing (ISH2.12), and impacts at the Ribble crossing are discussed in REP2-044

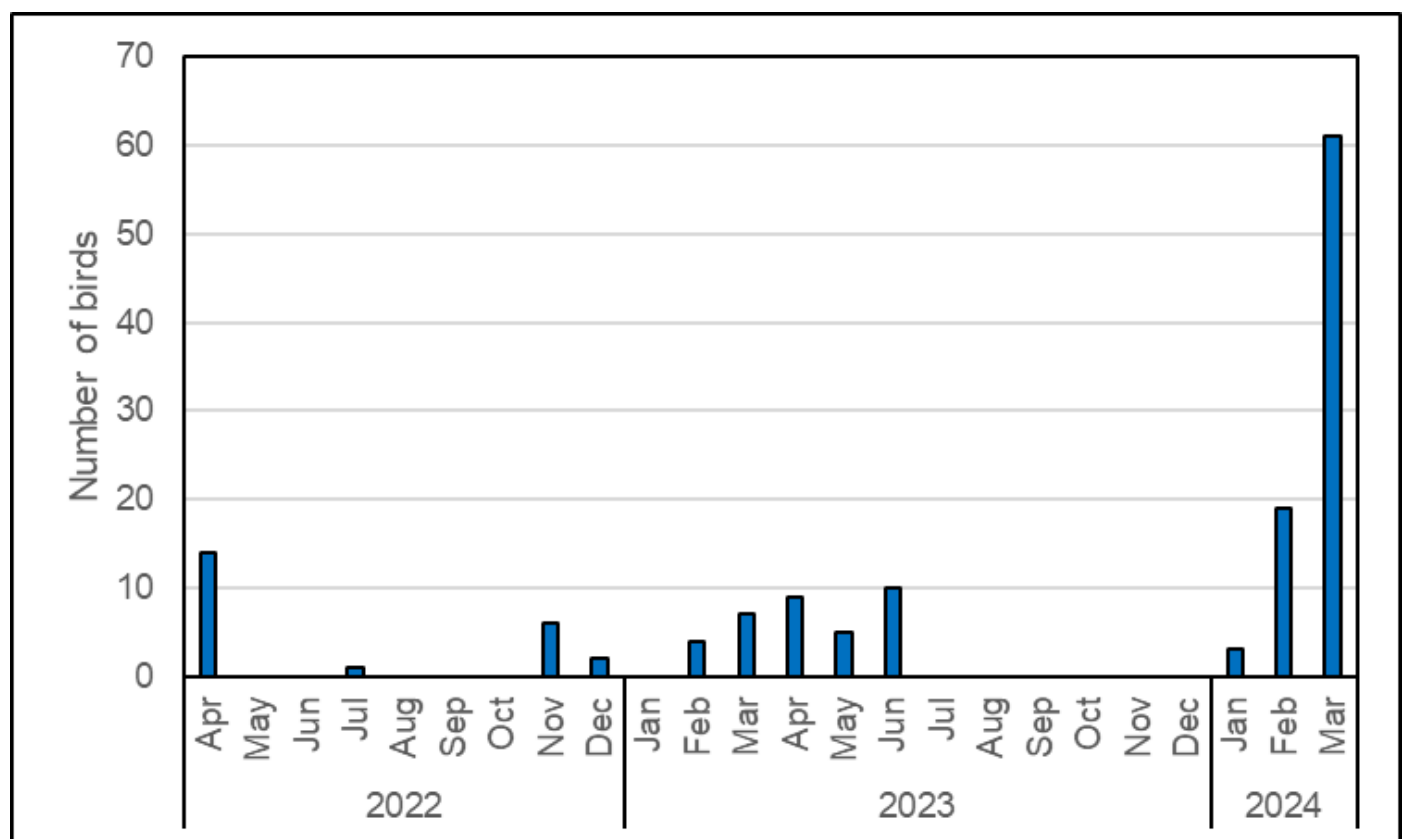


Figure 13: Monthly abundance of redshank within the onshore ornithology survey area

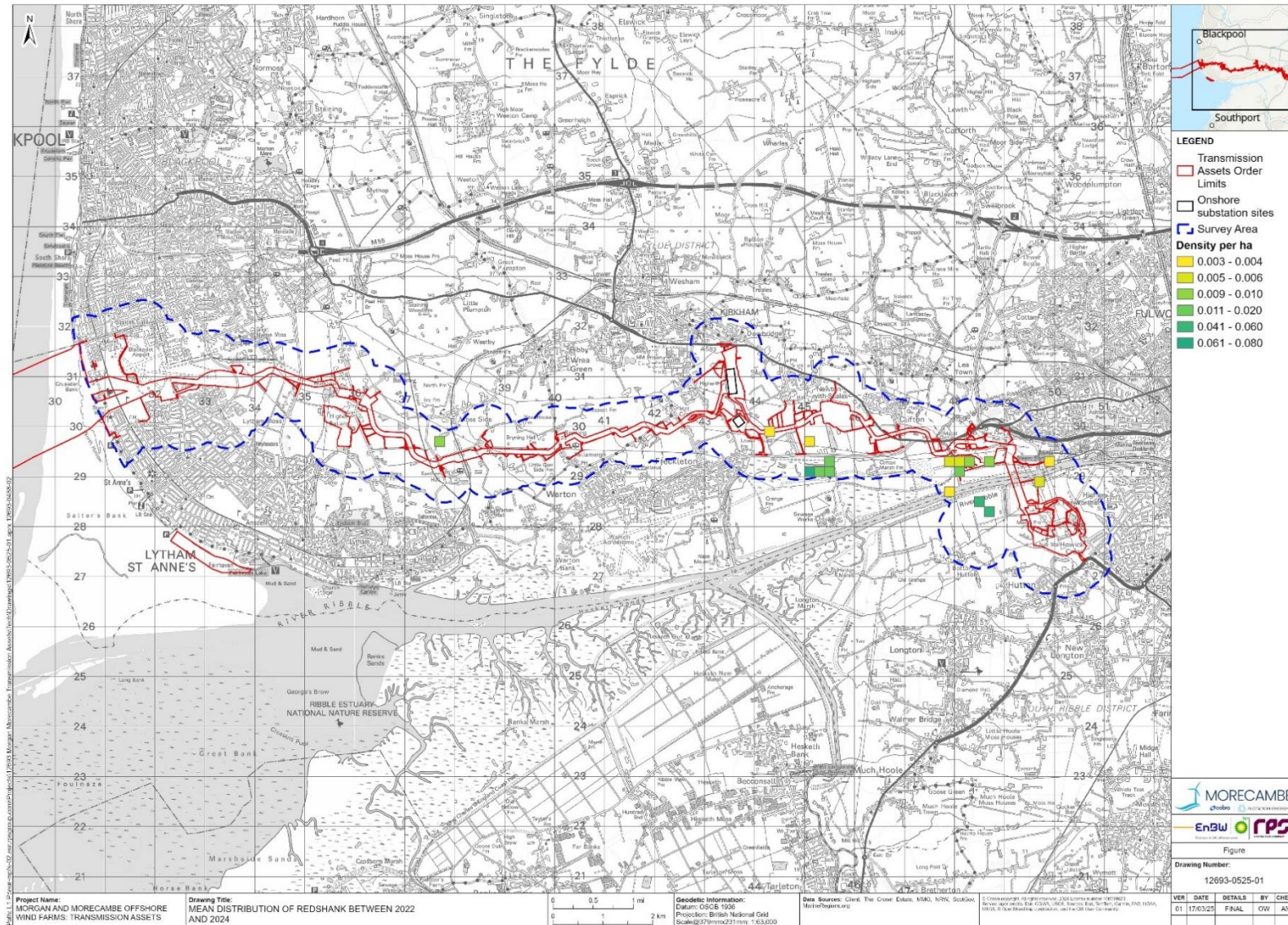


Figure 14: Redshank distribution along the survey corridor

2.2.9 Black-tailed godwit

Table 12: Black-tailed godwit citation and recent WeBS estimates

Species	Survey peak count	SPA citation count	1% of the citation	Recent WeBS estimate	1% of the WeBS
Black-tailed godwit	423	1,273	13	4,522	45

2.2.9.1 Black-tailed godwit were present in numbers exceeding 1% of the citation or recent WeBS estimate for the Ribble and Alt Estuaries SPA in five separate months (Figure 15). Black-tailed godwit were present during both the winter and autumn passage periods with peak counts recorded during February 2023 and March 2024. The wintering subspecies present is *Limosa limosa islandica* which breed in Iceland. Recent studies have shown that this species is more dependent upon tidal habitats during the autumn and winter with a switch to supplementary feeding on terrestrial habitats in late winter when feeding resources on the estuary can no longer fulfil their energy requirements (Jourdan et al., 2022). Therefore, the late winter peaks are likely to represent field feeding birds preparing for their migration to Iceland.

2.2.9.2 The high counts of black-tailed godwit were found within Newton Marsh SSSI, where there will be no direct impacts from the construction work associated with the Transmission Assets (as shown in S_D2_11 Technical note on Newton Marsh SSSI and River Ribble Crossing - Rev F01. REP2-044). The onshore survey area (minus Newton Marsh SSSI) supported a peak count of 93 birds with the mean over the non-breeding season of 46 birds (Table 13). Outside of Newton Marsh SSSI birds were scattered in terrestrial habitats of the onshore survey area and found to be using the proposed mitigation area south of Newton with Scales (Section 4.2)

Table 13: Black-tailed godwit peak count and mean count split between Newton Marsh SSSI and the rest of the onshore ornithology survey area.

Area	Survey peak count	Peak as a % of citation	Peak as a % of WeBS	Mean	Mean as a % of citation	Mean as a % of WeBS
Onshore survey area	423	12.73	9.35	119	3.59	2.64
Newton Marsh SSSI	406	12.22	8.98	30	0.92	0.67
Onshore survey area (minus Newton Marsh SSSI)	93	2.80	2.06	46	1.38	1.01

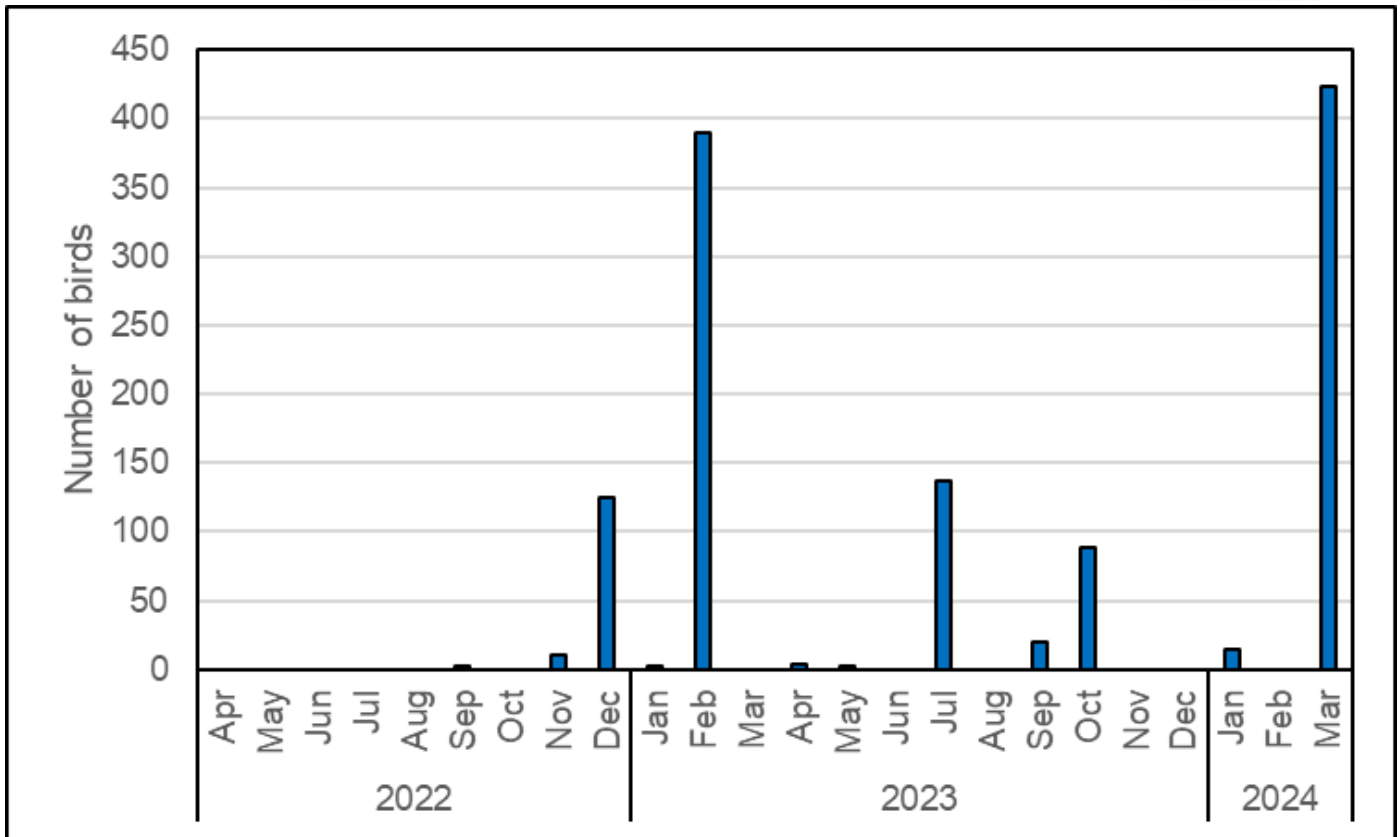


Figure 15: Monthly abundance of black-tailed godwit within the onshore ornithology survey area

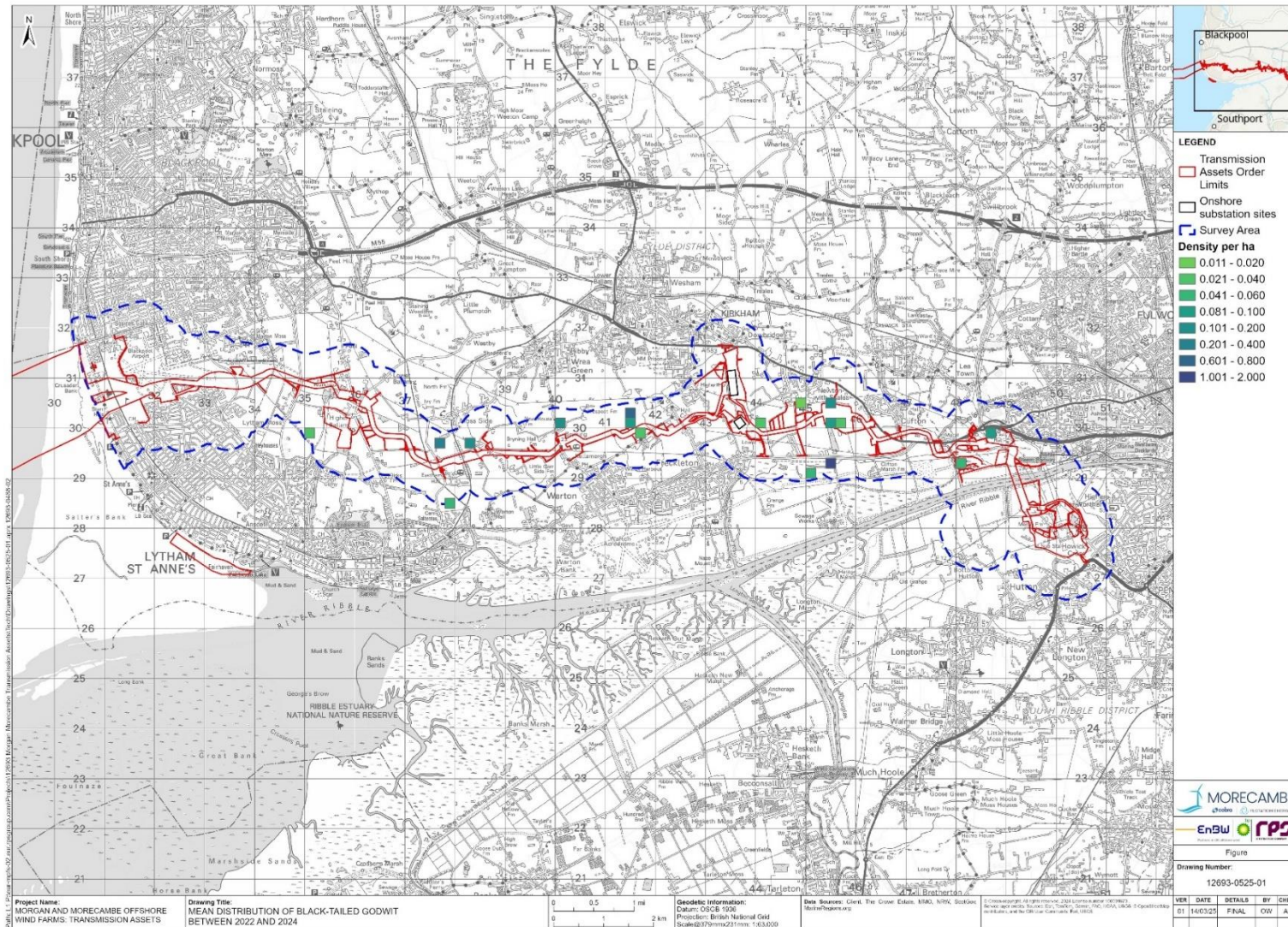


Figure 16: Black-tailed godwit distribution along the survey corridor

2.3 Functionally Linked Land summary

2.3.1.1 Table 14 below summarises those species that rely on Functionally Linked Land within the cable corridor. This table shows that not all species identified above are considered to rely on the land compared to others. Using the 1% criterion (as advocated by Natural England), the species ecology (i.e. reliance of terrestrial habitats) and distribution from the site-specific surveys, the Applicants confirmed that the habitats within the Transmission Assets Order Limits are functionally linked to the Ribble and Alt Estuary for a selection of species:

- whooper swan,
- pink-footed goose,
- teal,
- golden plover and
- black-tailed godwit.

2.3.1.2 All five species were also found to be present in relatively important numbers at the proposed mitigation areas (e.g. pink-footed goose and whooper swan at Lytham Moss; teal at land south of Newton with Scales).

2.3.1.3 The Applicants confirmed that the terrestrial habitats used by shelduck, wigeon, and redshank were not considered to be functionally linked to the Ribble and Alt Estuary SPA during the non-breeding season. There is therefore no adverse effect on the integrity of the Ribble and Alt Estuaries for shelduck, wigeon, and redshank during the construction, operation and maintenance phases of the onshore cable corridor and substation. As the result, the mitigation areas were selected and would be designed to support pink-footed geese, whooper swan, teal, golden plover and black-tailed godwit. The mitigation areas will also benefit wigeon and other field feeding wader species such as redshank, curlew and lapwing.

Table 14: Summary of the species for which FLL exists within the onshore ornithology survey area

Species	Peak count	% of SPA	Does this species rely on FLL in the corridor	Justification	Is proposed mitigation suitable for this species	Location of mitigation – further information can be found in Table 19 and Table 20
Whooper swan	132	72.5	Yes	Very high percentage of SPA population use the corridor, particularly around Lytham Moss	Yes	Lytham Moss
Pink-footed goose	8,319	70.7	Yes	Very high percentage of SPA population use the corridor, particularly around Lytham Moss	Yes	Lytham Moss
Shelduck	374	7.6	No	Mostly present during the breeding season, well distributed and not reliant upon terrestrial habitats or food during the non-breeding season	N/A	N/A
Wigeon	1,818	2.1	No	Only 0.57% of the SPA population found outside of Newton Marsh SSSI. Natural England have agreed that there are no impacts upon Newton Marsh SSSI	N/A	N/A
Teal	312	4.4	Yes	4.4% of the SPA population using land within the corridor	Yes	Newton with Scales
Golden plover	381	10.6	Yes	10.6% of the SPA population using land within the corridor	Yes	Lytham Moss and Newton with Scales

Species	Peak count	% of SPA	Does this species rely on FLL in the corridor	Justification	Is proposed mitigation suitable for this species	Location of mitigation – further information can be found in Table 19 and Table 20
Redshank	61	2.4	No	Redshank were only present in numbers exceeding 1% of the Ribble and Alt Estuaries SPA in March 2024, these birds showed a strong association to the wetter marshy areas at Newton Marsh SSSI where negligible impacts are predicted	N/A	N/A
Black-tailed godwit	423	12.7	Yes	2.8% of the SPA population using land within the corridor	Yes	Lytham Moss and Newton with Scales

3 Non-breeding waterbird assemblage

3.1.1.1 This section aims to address Natural England's outstanding comment regarding the assessment of the Ribble and Alt Estuaries SPA and Ramsar assemblage feature.

RI_H46 – *“The SPA non-breeding waterbird assemblage is a feature in its own right, therefore all the other species that contribute to it also have to be considered, in particular in this case in terms of numbers, as diversity and quality are more likely to be robust at a site scale. Natural England advise the Applicant to revisit the framing of [APP-017] and re-consider impacts/risks and compensation and mitigations options and planning for managing the risks.”*

3.1.2 Citation named features and assemblage features

3.1.2.1 The information in Table 15, Table 16, and the following paragraph sets out the SPA citation for the Ribble and Alt Estuaries SPA.

Table 15: Qualifying species: The site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

Annex 1 species	Count and season	Period	% GB population
Ruff (<i>Philomachus pugnax</i>)	1 nest - breeding	Late 1980s count	9.1%
Common Tern (<i>Sterna Hirundo</i>)	182 pairs - breeding	Count at 1996	1.5%
Bewick's Swan Cygnus (<i>columbianus bewickii</i>)	276 individuals - wintering	5 year peak mean 1993/94 - 1997/98	3.9%
Whooper Swan (<i>Cygnus cygnus</i>)	182 individuals - wintering	5 year peak mean 1993/94 - 1997/98	3.3%
Golden Plover (<i>Pluvialis apricaria</i>)	3,598 individuals - wintering	5 year peak mean 1993/94 - 1997/98	1.4%
Bar-tailed Godwit (<i>Limosa lapponica</i>)	20,086 individuals - wintering	5 year peak mean 1993/94 - 1997/98	37.9%

Table 16: Migratory species: The site qualifies under article 4.2 of the Directive (79/409/EEC) 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) in any season:

Migratory species	Count and season	Period	% of population
Lesser Black-backed Gull <i>Larus fuscus graellsii</i>	1,800 pairs - breeding	Count as at 1993	1.5% Western Europe/ Med/W Africa
Ringed Plover <i>Charadrius hiaticula</i>	1,657 individuals - passage	5 year peak mean 1993 - 1997	3.3% Europe/ Northern Africa (win)
Sanderling <i>Calidris alba</i>	6,535 individuals - passage	5 year peak mean 1993 - 1997	6.5% E Atlantic/W&S Africa (win)
Redshank <i>Tringa totanus</i>	3,247 individuals - passage	5 year peak mean 1993 - 1997	2.2% Eastern Atlantic (wintering)
Pink-footed Goose <i>Anser brachyrhynchus</i>	11,764 individuals - wintering	5 year peak mean 1993/94 - 1997/98	5.2% E Greenland/ Iceland/UK
Shelduck <i>Tadorna tadorna</i>	4,925 individuals - wintering	5 year peak mean 1993/94 - 1997/98	1.6% Northwestern Europe
Wigeon <i>Anas penelope</i>	85,259 individuals - wintering	5 year peak mean 1993/94 - 1997/98	6.8% W Siberia & NW/NE Europe
Teal <i>Anas crecca</i>	7,157 individuals - wintering	5 year peak mean 1993/94 - 1997/98	1.8% Northwestern Europe
Pintail <i>Anas acuta</i>	2,731 individuals - wintering	5 year peak mean 1993/94 - 1997/98	4.6% Northwestern Europe
Oystercatcher <i>Haematopus ostralegus</i>	18,535 individuals - wintering	5 year peak mean 1993/94 - 1997/98	2.1% Europe & N/W Africa (win)
Grey Plover <i>Pluvialis squatarola</i>	9,355 individuals - wintering	5 year peak mean 1993/94 - 1997/98	6.2% Eastern Atlantic (wintering)
Knot <i>Calidris canutus islandica</i>	68,922 individuals - wintering	5 year peak mean 1993/94 - 1997/98	19.7% NE Can/Gr/I/ Iceland/NW Eur
Sanderling <i>Calidris alba</i>	2,882 individuals - wintering	5 year peak mean 1993/94 - 1997/98	2.9% E Atlantic/W&S Africa (win)
Dunlin <i>Calidris alpina alpina</i>	39,376 individuals - wintering	5 year peak mean 1993/94 - 1997/98	2.8% N Siberia/Europe/ W Africa
Black-tailed Godwit <i>Limosa limosa islandica</i>	1,273 individuals - wintering	5 year peak mean 1993/94 - 1997/98	1.8% Iceland (breeding)
Redshank <i>Tringa totanus</i>	2,505 individuals - wintering	5 year peak mean 1993/94 - 1997/98	1.7% Eastern Atlantic (wintering)

Assemblage qualification:

- 3.1.2.2 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 323,861 individual waterbirds (5 year peak mean 1993/94 - 1997/98), including Cormorant (*Phalacrocorax carbo*), Bewick's Swan (*Cygnus columbianus bewickii*), Whooper Swan (*Cygnus cygnus*), Pink-footed Goose (*Anser brachyrhynchus*), Shelduck (*Tadorna tadorna*), Wigeon (*Anas penelope*), Teal (*Anas crecca*), Pintail (*Anas acuta*), Scaup (*Aythya marila*), Common Scoter (*Melanitta nigra*), Oystercatcher (*Haematopus ostralegus*), Ringed Plover (*Charadrius dubius*), Golden Plover (*Pluvialis apricaria*), Grey Plover (*Pluvialis squatarola*), Lapwing (*Vanellus vanellus*), Knot (*Calidris canutus islandica*), Sanderling (*Calidris alba*), Dunlin (*Calidris alpina alpina*), Black-tailed Godwit (*Limosa limosa islandica*), Bar-tailed Godwit (*Limosa lapponica*), Whimbrel (*Numenius phaeopus*), Curlew (*Numenius arquata*) and Redshank (*Tringa tetanus*).

3.1.3 Waterbirds recorded during site specific survey

- 3.1.3.1 Table 17 sets out the peak counts of all non-breeding waterbirds as recorded during site-specific surveys within the onshore survey area between 2021 and 2024. If species are not assessed individually within the Information to Support Appropriate Assessment (ISAA), this table summarises whether mitigation is needed, and if so, whether the existing mitigation is suitable to support the additional species. All species were fully assessed in the ES and it was recognised that mitigation may also be required for the terrestrial waders such as lapwing and curlew, although the potential impact of the Transmission Assets on these species would not trigger an AEoI for the Ribble and Alt Estuaries SPA.
- 3.1.3.2 No additional mitigation is needed for non-breeding waterbirds as the creation of temporary scrapes at Lytham Moss and the creation of permanent scrapes and wet grassland habitat at Newton with Scales are already suitable to accommodate these species. Despite no additional mitigation being required, it is noted that the proposed mitigations for Lytham Moss and Newton with Scales are appropriate to accommodate a number of species for which the impacts are predicted to be negligible.

Table 17: All non-breeding waterbirds recorded during site-specific terrestrial surveys over the non-breeding periods in 2022/23 and 2023/24 (peak count data taken from Tables 1.12 and 1.13 in F3.4.2 Volume 3, Annex 4.2: Wintering and migratory birds technical report – Part 2 of 2 (APP-093))

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed for ISAA	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
Brent goose	12	No not a named feature	N/A	Yes – within non-breeding geese, ducks and swans.	In the EIA these species were grouped together and assessed with other water bird species under the heading 'ducks, geese and swans'. Collectively the EIA assessment concluded adverse effects, but this was only due to the high numbers of other species, such as pink-footed goose and whooper swan. These species alone, or considered collectively (without those in high numbers) would have a conclusion of negligible to minor, due to their low abundances, being a naturalised species and low sensitivity. These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "ducks geese and swans" which included species present in relatively high numbers such as pink-footed goose, whooper swan etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, low abundances, naturalised species or lack of sensitivity.		No	No	Low numbers	Specific mitigation is not required for the reason listed out the justification column.
Canada goose	636	No not a named feature	N/A				No	No	Naturalised species with moderate numbers	
Barnacle goose	12	No not a named feature	N/A				No	No	Low numbers	
Greylag goose	517	No not a named feature	N/A				No	No	Naturalised species with moderate numbers	
Pink-footed goose	8,319	Yes	The Applicants have made a commitment (CoT107 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) that where construction activities are undertaken along the onshore export cable corridor within the FLL a mitigation area will be provided. This will include supplementary feeding of pink-footed goose and whooper swan during the core wintering bird period (November to March, inclusive) This is secured by (Requirement 12 within Schedules 2A & 2B) of the draft Development Consent Order (REP3-009). Detailed Ecological Management Plans will be implemented by the Applicants as approved by and in consultation with relevant stakeholders, as appropriate. With the implementation of the mitigation measures at Lytham Moss there will be no adverse effects.	Yes - within non-breeding geese, ducks and swans.	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Moderate adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Moderate adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Minor adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	Yes	Yes	High numbers of pink footed geese regularly in the vicinity of the cable corridor as noted in Section 2.2.3	Yes – see Table 19: The proposed recipients of mitigation at Lytham Moss
Mute swan	24	No not a named feature	N/A	Yes – Within non-breeding geese, ducks	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "ducks geese and swans" which included species present in relatively high numbers such as pink-footed goose, whooper swan etc. However for these species, a conclusion of negligible to minor adverse significance is		No	No	Low Numbers, No impact	Specific mitigation is not required for the reason listed out the justification column.

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed for ISAA	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
				and swans.	more appropriate, due to various factors including, low abundances, naturalised species or lack of sensitivity.					
Whooper swan	132	Yes	The Applicants have made a commitment (CoT107 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) that where construction activities are undertaken along the onshore export cable corridor within the FLL a mitigation area will be provided. This will include supplementary feeding of pink-footed goose and whooper swan during the core wintering bird period (November to March, inclusive) This is secured by (Requirement 12 within Schedules 2A & 2B) of the draft Development Consent Order (REP3-009). Detailed Ecological Management Plans will be implemented by the Applicants as approved by and in consultation with relevant stakeholders, as appropriate. With the implementation of the mitigation measures at Lytham Moss there will be no adverse effects.	Yes – Within non-breeding geese, ducks and swans.	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Moderate adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Moderate adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Minor adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	Yes	Yes	High numbers of whooper swan regularly in the vicinity of the cable corridor as outlined in Section 2.2.2	Yes – see Table 19: The proposed recipients of mitigation at Lytham Moss
Shelduck	374	Yes	No adverse effects	Yes – within non breeding and breeding geese, ducks and swans.	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "ducks geese and swans" which included species present in relatively high numbers such as pink-footed goose, whooper swan etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, low abundances, naturalised species or lack of sensitivity.		No	No	Birds are mostly present during the breeding season and are a non-breeding feature and non-breeding shelduck feed in tidal habitats which are not being impacted (Section 2.2.4)	Specific mitigation is not required for the reason listed out the justification column
Shoveler	31	No not a named feature	N/A	Yes – Within non-breeding geese, ducks and swans.	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "ducks geese and swans" which included species present in relatively high numbers such as pink-footed goose, whooper swan etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, low abundances, naturalised species or lack of sensitivity.		No	No	Low numbers	Specific mitigation is not required for the reason listed out the justification column.
Gadwall	11	No not a named feature	N/A				No	No	Low numbers	
Wigeon	1,647	Yes	The Applicants have made a commitment (CoT120 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) to provide an area south of Newton-with-Scales for waders and farmland birds due to the permanent loss of habitat due to	Yes – within non breeding and breeding geese,	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Moderate adverse</p>	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Minor adverse</p>	Yes	Yes	Birds are present in low numbers outside of Newton Marsh SSSI as detailed in Section 2.2.5	Specific mitigation is not required for the reason listed out the justification column, however, the measures set out in Section 4.2.2 will provide

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed for ISAA	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
			<p>construction of the onshore substations. Measures within these areas may include measures, such as, the creation of scrapes and thickening of hedgerows.</p> <p>This is secured by (Requirement 12 within Schedules 2A & 2B) of the draft Development Consent Order (REP3-009). Detailed Ecological Management Plans will be implemented by the Applicants as approved by and in consultation with relevant stakeholders, as appropriate.</p> <p>With the implementation of the mitigation measures at Newton-with-Scales there will be no adverse effects.</p>	ducks and swans.	<p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Moderate adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	<p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>				some benefit to this species.
Mallard	273	No not a named feature	N/A	Yes – Within non-breeding geese, ducks and swans.	This species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "ducks geese and swans" which included species present in relatively high numbers such as pink-footed goose, whooper swan etc. However for this species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, low abundances, naturalised species or lack of sensitivity.		No	No	Common and widespread species	Specific mitigation is not required for the reason listed out the justification column.
Teal	312	Yes	<p>The Applicants have made a commitment (CoT120 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) to provide an area south of Newton-with-Scales for waders and farmland birds due to the permanent loss of habitat due to construction of the onshore substations. Measures within these areas may include measures, such as, the creation of scrapes and thickening of hedgerows.</p> <p>This is secured by (Requirement 12 within Schedules 2A & 2B) of the draft Development Consent Order (REP3-009). Detailed Ecological Management Plans will be implemented by the Applicants as approved by and in consultation with relevant stakeholders, as appropriate.</p> <p>With the implementation of the mitigation measures at Newton-with-Scales there will be no adverse effects.</p>	Yes - Within breeding and non-breeding geese, ducks and swans.	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Moderate adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Moderate adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Minor adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	Yes	Yes	High numbers of birds regularly using the corridor	Yes – see Table 20: The proposed recipients of mitigation at Newton with Scales
Goosander	4	No not a named feature	N/A	Yes – Within non-breeding	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "ducks geese and swans" which included species present in relatively high numbers such as pink-footed goose,		No	No	Low numbers	Specific mitigation is not required for the reason

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *		Residual effect	Is mitigation needed for ISAA	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
				geese, ducks and swans.	whooper swan etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, low abundances, naturalised species or lack of sensitivity.					listed out the justification column.	
Water rail	1	No not a named feature	N/A	Yes – within Rails, crakes and coots	The impact of permanent loss of supporting habitats – Minor adverse	The impact of permanent loss of supporting habitats – Minor adverse	N/A	No	Low numbers	Specific mitigation is not required for the reason listed out the justification column.	
Moorhen	16	No not a named feature	N/A		The temporary impact of habitat loss and resource availability – Minor adverse	The temporary impact of habitat loss and resource availability – Minor adverse	N/A	No	Low numbers		
Coot	6	No not a named feature	N/A		Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse The impact of pollution caused by accidental spills/contaminant release – Negligible The impact of spreading INNS - Negligible The impact of habitat fragmentation and species isolation – Negligible	Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse The impact of pollution caused by accidental spills/contaminant release - Negligible The impact of spreading INNS - Negligible The impact of habitat fragmentation and species isolation – Negligible	N/A	No	Low numbers		
Oystercatcher	126	Yes	No adverse effects	Yes	This species was assessed as having a moderate adverse effect in the EIA collectively under the heading of "waders" which included species present in relatively high numbers such as black-tailed godwit, curlew etc. However for this species, a conclusion of negligible to minor adverse significance is more appropriate, due to low abundances.		No	No	Low numbers	Specific mitigation is not required for the reason listed out the justification column.	
Avocet	17	No not a named feature	N/A	Yes – Within non-breeding waders.	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "waders" which included species present in relatively high numbers such as black-tailed godwit, curlew etc. However for this species, a conclusion of negligible to minor adverse significance is more appropriate, due to this species only occurring at Newton Marsh SSSI where there will be no effects.		N/A	No	All birds within Newton Marsh SSSI	Specific mitigation is not required for the reason listed out the justification column.	
Lapwing	2,081	Yes, as assemblage	No adverse effects	Yes – Within breeding and non-breeding waders	The impact of permanent loss of supporting habitats – Moderate adverse The temporary impact of habitat loss and resource availability – Moderate adverse Disturbance and displacement from	The impact of permanent loss of supporting habitats – Minor adverse The temporary impact of habitat loss and resource availability – Minor adverse Disturbance and displacement from	No	Yes	High numbers of birds	Yes – see Table 20: The proposed recipients of mitigation at Newton with Scales	

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed for ISAA	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
					<p>construction, decommissioning, and operation and maintenance activities – Moderate adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	<p>construction, decommissioning, and operation and maintenance activities – Minor adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>				
Golden plover	381	Yes	<p>The Applicants have made a commitment (CoT120 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) to provide an area south of Newton-with-Scales for waders and farmland birds due to the permanent loss of habitat due to construction of the onshore substations. Measures within these areas may include measures, such as, the creation of scrapes and thickening of hedgerows.</p> <p>The Applicants have made a commitment (CoT107 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) that where construction activities are undertaken along the onshore export cable corridor within the FLL a mitigation area will be provided. This will include supplementary feeding of pink-footed goose and whooper swan during the core wintering bird period (November to March, inclusive).</p> <p>These are both secured by (Requirement 12 within Schedules 2A & 2B) of the draft Development Consent Order (REP3-009). Detailed Ecological Management Plans will be implemented by the Applicants as approved by and in consultation with relevant stakeholders, as appropriate.</p> <p>With the implementation of the mitigation measures at Newton-with-Scales and Lytham Moss there will be no adverse effects.</p>	Yes – within non-breeding waders	<p>The impact of permanent loss of supporting habitats – Moderate adverse</p> <p>The temporary impact of habitat loss and resource availability – Moderate adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Moderate adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Minor adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	Yes	Yes	High numbers of birds using the corridor on an annual basis see Section 2.2.7	Yes – see further details in Table 19: The proposed recipients of mitigation at Lytham Moss and Table 20: The proposed recipients of mitigation at Newton with Scales
Grey plover	2	Yes	No adverse effects	Yes – see non-	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "waders" which included species present in relatively high		No	No	Unsuitable habitats and low numbers	Specific mitigation is not required for the reason

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed for ISAA	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
				breeding waders	numbers such as black-tailed godwit, curlew etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, unsuitable habitats, low abundances, naturalised species or lack of sensitivity.					listed out the justification column.
Curlew	696	Yes, as assemblage	No adverse effects	Yes – Within breeding and non-breeding waders	<p>The impact of permanent loss of supporting habitats – Moderate adverse</p> <p>The temporary impact of habitat loss and resource availability – Moderate adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Moderate adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Minor adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse</p> <p>The impact of pollution caused by accidental spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	No	Yes	High numbers of birds	Yes – see further details in Table 19: The proposed recipients of mitigation at Lytham Moss and Table 20: The proposed recipients of mitigation at Newton with Scales
Bar-tailed godwit	3	Yes	No adverse effects	Yes – Within non-breeding waders	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "waders" which included species present in relatively high numbers such as black-tailed godwit, curlew etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, unsuitable habitats, low abundances, naturalised species or lack of sensitivity.		No	No	Unsuitable habitats	Specific mitigation is not required for the reason listed out the justification column.
Black-tailed godwit	423	Yes	The Applicants have made a commitment (CoT120 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) to provide an area south of Newton-with-Scales for waders and farmland birds due to the permanent loss of habitat due to construction of the onshore substations. Measures within these areas may include measures, such as, the creation of scrapes and thickening of hedgerows. The Applicants have made a commitment (CoT107 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) that where	Yes – Within breeding and non-breeding waders	<p>The impact of permanent loss of supporting habitats – Moderate adverse</p> <p>The temporary impact of habitat loss and resource availability – Moderate adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Moderate adverse</p> <p>The impact of pollution caused by accidental</p>	<p>The impact of permanent loss of supporting habitats – Minor adverse</p> <p>The temporary impact of habitat loss and resource availability – Minor adverse</p> <p>Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse</p> <p>The impact of pollution caused by accidental</p>	Yes	Yes	High numbers of birds using the corridor on an annual basis see Section 2.2.9	Yes – see further details in Table 19: The proposed recipients of mitigation at Lytham Moss and Table 20: The proposed recipients of mitigation at Newton with Scales

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed for ISAA	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
			<p>construction activities are undertaken along the onshore export cable corridor within the FLL a mitigation area will be provided. This will include supplementary feeding of pink-footed goose and whooper swan during the core wintering bird period (November to March, inclusive).</p> <p>These are both secured by (Requirement 12 within Schedules 2A & 2B) of the draft Development Consent Order (REP3-009). Detailed Ecological Management Plans will be implemented by the Applicants as approved by and in consultation with relevant stakeholders, as appropriate.</p> <p>With the implementation of the mitigation measures at Newton-with-Scales and Lytham Moss there will be no adverse effects.</p>		<p>spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>	<p>spills/contaminant release - Negligible</p> <p>The impact of spreading INNS - Negligible</p> <p>The impact of habitat fragmentation and species isolation – Negligible</p>				
Dunlin	21	Yes	No adverse effects	Yes – within non-breeding waders	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "waders" which included species present in relatively high numbers such as black-tailed godwit, curlew etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, unsuitable habitats, low abundances, naturalised species or lack of sensitivity.		No	No	Low numbers	Specific mitigation is not required for terrestrial impacts for the reason listed out the justification column. See updated Outline Ecological Management Plan (J6/F04) for details of mitigation at the landfall.
Ruff	2	Yes	No adverse effects	Yes – within non-breeding waders	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "waders" which included species present in relatively high numbers such as black-tailed godwit, curlew etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, unsuitable habitats, low abundances, naturalised species or lack of sensitivity.		No	No	Low numbers	Specific mitigation is not required for terrestrial impacts for the reason listed out the justification column.
Woodcock	6	No not a named feature	N/A	Yes – Within non-breeding waders.	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "waders" which included species present in relatively high numbers such as black-tailed godwit, curlew etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, low abundances, naturalised species or lack of sensitivity.		No	No	Low numbers and a common and widespread species	Specific mitigation is not required for terrestrial impacts for the reason listed out the justification column.
Jack snipe	3	No not a named feature	N/A				No	No	Low numbers and a common and widespread species	
Snipe	78	No not a named feature	N/A				No	No	Low numbers and a common and widespread species	
Green sandpiper	1	No not a named feature	N/A				No	No	Low numbers	

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed for ISAA	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species	
Redshank	61	Yes	No adverse effects	Yes – Within breeding and non-breeding waders	These species were assessed as having a moderate adverse effect in the EIA collectively under the heading of "waders" which included species present in relatively high numbers such as black-tailed godwit, curlew etc. However for these species, a conclusion of negligible to minor adverse significance is more appropriate, due to various factors including, low abundances, naturalised species or lack of sensitivity.		No	No	Birds only present in high numbers once, the highest densities of redshank were within Newton Marsh SSSI – see Section 2.2.8	Specific mitigation is not required for terrestrial impacts for the reason listed out the justification column.	
Black-headed gull	1,927	No not a named feature	N/A	Yes – within Non-breeding Gulls and Terns	The impact of permanent loss of supporting habitats – Minor adverse to Negligible The temporary impact of habitat loss and resource availability – Minor adverse to Negligible Disturbance and displacement from construction, decommissioning, and operation and maintenance activities - Minor adverse to Negligible The impact of pollution caused by accidental spills/contaminant release - Negligible The impact of spreading INNS - Negligible The impact of habitat fragmentation and species isolation – Negligible	The impact of permanent loss of supporting habitats – Minor adverse to Negligible The temporary impact of habitat loss and resource availability – Minor adverse to Negligible Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – Minor adverse to Negligible The impact of pollution caused by accidental spills/contaminant release - Negligible The impact of spreading INNS - Negligible The impact of habitat fragmentation and species isolation – Negligible	N/A	No	Common and widespread with a large foraging range, generalist and able to exploit a wide variety of habitats	Specific mitigation is not required for the reason listed out the justification column.	
Common gull	461	No not a named feature	N/A				N/A	No			
Great black-backed gull	44	No not a named feature	N/A				N/A	No			
Herring gull	1,009	No not a named feature	N/A	N/A			No				
Lesser black-backed gull	176	No not a named feature	N/A	N/A			No				
Cormorant	6	Yes, as assemblage	No adverse effects	Yes – within non-breeding Cormorants and shags			No	No			Unsuitable habitats
Cattle egret	1	No not a named feature	N/A				N/A	No			Low numbers and occasional vagrant
Grey heron	36	No not a named feature	N/A	Yes – within breeding and non-breeding herons, storks and ibis			N/A	No			Common and widespread species
Great white egret	1	No not a named feature	N/A	Yes – within non-breeding herons.			N/A	No	Low numbers		

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed for ISAA	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
				storks and ibis						
Little egret	38	No not a named feature	N/A	Yes – within breeding and non-breeding herons, storks and ibis			N/A	No	Common and widespread species	

3.1.4 Non-named Non-breeding Waterbird Assemblage summary

- 3.1.4.1 All non-named assemblage species recorded during the site-specific surveys are assessed in the EIA as outlined in Table 17. Twenty-five of these species are not assessed in the ISAA. However, due to their generally low numbers, wide distribution, and status (i.e. naturalised species), they are considered to have negligible or no impact from the proposed Transmission Assets works, and no mitigation is deemed necessary for these species
- 3.1.4.2 The 25 non-named assemblage species not assessed in the ISAA are brent goose, Canada goose, barnacle goose, greylag goose, mute swan, shoveler, gadwall, mallard, goosander, water rail, moorhen, coot, avocet, woodcock, jack snipe, green sandpiper, black-headed gull, common gull, great black-backed gull, herring gull, lesser black-backed gull, cattle egret, grey heron, great white egret and little egret. Gulls were the most abundant group of the non-named assemblage species making up 68% of all non-named assemblage birds.
- 3.1.4.3 Despite not being individually assessed within the ISAA, these species are generally present in low numbers or are widespread and generalist. The exceptions are curlew and lapwing; however, it is recognised that the proposed mitigations for Lytham Moss and Newton with Scales are appropriate to accommodate these species, and many more. All species were considered for assessment in the ES (F3.4 Volume 3, Chapter 4: Onshore and intertidal ornithology (APP-090)).

4 Proposed mitigation areas

4.1 Lytham Moss

4.1.1 Site Description

- 4.1.1.1 An area of land at Lytham Moss has been identified to mitigate for the effect of temporary habitat loss and disturbance within the onshore survey area. This area was found to contain the largest concentrations of wildfowl and waders (Annex 4.2, Wintering and Migratory birds of the ES (APP-091/092)) within the onshore survey area. This area has also been identified by Natural England as Functionally Linked Land (FLL) to the Ribble and Alt Estuaries SPA (Bowland Ecology, 2021). Furthermore, areas to directly to the west and south are currently being used as mitigation for the Queensway development and the M55 to Heyhouses link, known as the Farmland Conservation Area (FCA).
- 4.1.1.2 The mitigation area identified at Lytham Moss is 25.9 ha of low-lying reclaimed fenland which is dominated by B4 improved grassland, B2.2 neutral grassland – semi-improved, and J1.1 arable (Volume 3, Annex 3.3: Phase 1 habitat, national vegetation classification and hedgerow survey technical report (APP-077)). Species which have been recorded in this area during the site-specific surveys included, pink-footed goose, whooper swan, wigeon, oystercatcher, lapwing, golden plover, redshank, curlew and black-tailed godwit.
- 4.1.1.3 The proposed mitigation area borders the FCA. The FCA is an area of previously low-lying fenland that has been drained and converted to arable farmland with some pasture. The FCA is managed for ditches and reedbeds, hedges and woodland, and mixed arable farmland. This is to benefit breeding farmland birds and foraging wintering birds. Seasonal scrapes have also been created and in one of the fields geese and swans are being fed to encourage more birds into the area. Currently the FCA spread 40 tonnes of potatoes over 1.1 ha in batches between October 1st and

28th February. The field directly to the southwest is where the FCA currently feed the geese and swans, and the field to the west of that has seasonal scrapes.

4.1.1.4 The Applicants consider that the proposed mitigation area can run in conjunction with the FCA to mitigate for pink-footed goose, whooper swan, teal, golden plover and black-tailed godwit.

4.1.1.5 Current plans are to use part of the area for the supplementary feeding of the geese and swans and part of the area for seasonal scrapes to provide refuge for non-breeding waders and wildfowl (see Appendix B of the updated Outline Ecological Management Plan (J6/F03)).

4.1.2 Proposed measures

4.1.2.1 The proposed mitigation measures at Lytham Moss will include the creation of additional scrapes and the supplementary feeding of geese and swans. This area is intended as temporary mitigation and will be secured through Requirement 12, Schedules 2A & 2B of the Draft DCO.

4.1.2.2 The Applicants consider that the proposed area at Lytham Moss will be sufficient to mitigate the potential impacts due to the construction of the Transmission Assets. Given the proposed mitigation area is within the FLL and that the greatest impacts are to non-breeding waterbirds, the Applicants consider the mitigation area to be very suitable (see S_D2_13 Site Selection of the Environmental Mitigation and Biodiversity Benefit Areas - Rev F01 (REP2-046) for further details).

Supplementary feeding

4.1.2.3 Table 18 outlines an indicative approach of how much food may need to be provided to fully mitigate for the affected species. However, to prevent increasing the risk of bird collisions with aircraft and recognising that passage turnover may be high, it is recommended that this feed is only supplied between November and March. This will lower the risks of attracting additional autumn passage birds to stopover in the Ribble Estuary for the winter. Due to aircraft, it is also proposed that this food is provided on a 'little and often' basis. The Applicants therefore propose that 1.2 tonnes of grain are provided on a weekly (seven day) basis, this is equivalent to 20.9 tonnes over a single winter period. This will be repeated every winter whilst impacts remain and will be subject to recalculation in consultation with Natural England in response to bird count data, the predicted levels of construction disturbance in a given winter and informed by dynamic bird hazard assessment. Volumes of feed will be monitored and adjusted if required.

Table 18: The daily energy requirements for the affected species

Species	Average number of birds (taken from the monthly counts between Nov – Mar over two years)	Daily energy requirement (calories)	Total calories needed per day	Calories per kg of grain	kg of grain needed per day
Pink-footed goose	2,262	2571	581,385	3,400	171.0
Whooper swan	41	3332	10,323	3,400	3.4
Total	N/A	N/A	591,708	N/A	174.4

1 Therkildsen & Madsen (2000) 2 Lui, et al. (2022)

4.1.2.5 Whist the primary aim of the mitigation area is to provide supplementary feeding to pink-footed geese and whooper swan, additional scrapes will be created in the area to mitigate for teal, golden plover and black-tailed godwit. Table 19 below highlights the peak count and average number of birds that the mitigation is designed for and how the proposed measures will provide mitigation for each species. It should be noted that there may be a greater diversity of species that benefit from the proposed measures than those listed below.

Other measures at Lytham Moss:

4.1.2.6 **Seasonal scrapes** – These scrapes will benefit all species of roosting or loafing waders and waterfowl. Scrapes will be located away from field boundaries, created in irregular shapes to increase the amount of edge, be a maximum of 45cm deep and have gently sloping edges. Although there is no literature available on species specific designs, these are widely accepted as best practice for the creation of scrapes. One scrape of approx. 200m² will be constructed in this area.

4.1.2.7 **Short vegetation** – The land is currently arable, and it is proposed that the areas outside of the scrapes or supplementary feeding area are left as stubble or short grassland over the winter. Wintering waders such as lapwing, golden plover, curlew and black-tailed godwit favour short grassland. raising the where practicable water table in this area will bring these soil invertebrates closer to the surface and make them easier to catch by wading birds.

Table 19: The proposed recipients of mitigation at Lytham Moss

Impact	Species	Peak count of birds (taken from the monthly counts between Sep – Apr over two years)	Average number of birds (taken from the monthly counts between Sep – Apr over two years)	Foraging habitat	Roosting habitat	Species specific mitigation measures at Lytham Moss
Temporary loss of habitat and/or resources Disturbance and displacement from construction activities	Pink-footed goose	See Table 17 for more detail				
	Whooper swan	See Table 17 for more detail				
	Teal	312	140	<ul style="list-style-type: none"> Freshwater lakes, ponds, scrapes and estuaries 	<ul style="list-style-type: none"> Freshwater lakes, ponds, scrapes and estuaries 	Seasonal scrapes
	Lawing	2,081	360	<ul style="list-style-type: none"> Pasture Arable 	<ul style="list-style-type: none"> Pasture Arable Freshwater lakes and ponds Scrapes 	Seasonal scrapes Short vegetation
	Golden plover	381	135	<ul style="list-style-type: none"> Pasture Arable 	<ul style="list-style-type: none"> Pasture Arable Freshwater lakes and ponds Scrapes 	Seasonal scrapes Short vegetation
	Curlew	696	167	<ul style="list-style-type: none"> Pasture Arable Intertidal 	<ul style="list-style-type: none"> Pasture Arable Freshwater lakes and ponds Scrapes Saltmarsh 	Seasonal scrapes Short vegetation

Impact	Species	Peak count of birds (taken from the monthly counts between Sep – Apr over two years)	Average number of birds (taken from the monthly counts between Sep – Apr over two years)	Foraging habitat	Roosting habitat	Species specific mitigation measures at Lytham Moss
	Black-tailed godwit	423	108	Pasture Arable Intertidal	Pasture Arable Freshwater lakes and ponds Scrapes Saltmarsh	Seasonal scrapes Short vegetation

- 4.1.2.8 Pre-construction surveys will collate a detailed baseline prior to any construction taking place and regular monthly monitoring (during the winter months only) will take place after the habitat creation and whilst feeding is taking place, this will inform if targets are being met or if the management needs to be updated.

4.2 Land south of Newton with Scales

4.2.1 Description

- 4.2.1.1 To mitigate for the permanent loss of habitat from the construction of the substations, land south of Newton with Scales has been identified. This area is approx. 1.5 km from the substation sites. Survey data collected over the 2022/23 and 2023/24, alongside ongoing monitoring (including winter walkover and nocturnal surveys), indicate that waterbirds such as wigeon, teal, shoveler, curlew, lapwing, and black-tailed godwit already use the proposed mitigation area.
- 4.2.1.2 The habitats in the proposed mitigation area include B4 improved grassland and B5 marsh grassland. There are also several ditches, at least one existing seasonal pool, and hedgerows. The area is low lying and bordered by A2.2 scattered scrub and B6 poor semi-improved grassland to the south, B6 semi-improved grassland to the west, B4 improved grassland to the east, and to the north a slope with hedgerows and A1.1 broadleaved woodland – semi-natural (Volume 3, Annex 3.3: Phase 1 habitat, national vegetation classification and hedgerow survey technical report (APP-077)).
- 4.2.1.3 This area has been selected given it is currently used by waterbirds which are connected to Newton Marsh SSSI (e.g. non-breeding waterbirds) and the Ribble and Alt Estuaries SPA. The area is also close to the habitat that will be permanently lost at the substation sites and is therefore suitably placed (see S_D2_13 Site Selection of the Environmental Mitigation and Biodiversity Benefit Areas - Rev F01 (REP2-046) for further details).

4.2.2 Proposed measures

- 4.2.2.1 The proposed mitigation measures include the creation of additional scrapes and controlling drainage to keep the area wet for longer to mitigate for permanent habitat loss (at the substation) and temporary habitat loss and disturbance/displacement during construction in the Transmission Assets Order Limits (i.e. onshore cable corridor) (see Appendix B of the updated Outline Ecological Management Plan (J6/F03). Waterbirds such as wigeon, teal, shoveler, curlew, lapwing, and black-tailed godwit already use the proposed mitigation site, and the Applicants consider that habitat creation and improvement will result in greater utilisation of the site.
- 4.2.2.2 This area is intended as permanent mitigation and will be secured through Requirement 12, Schedules 2A & 2B of the Draft DCO and kept in place for the lifetime of the project. Additionally, the area has the potential to be improved for other species such as breeding passerines by improving field margins, thickening hedgerows.

Specific measures at Newton with Scales:

- 4.2.2.3 **Scrapes** – These scrapes will benefit all species of roosting or loafing waders and will also provide liveable habitat for teal. Scrapes will be located away from field boundaries, created in irregular shapes to increase the amount of edge, be a maximum of 50cm deep and have gently sloping edges. Although there is no

literature available on species specific designs, these are widely accepted as best practice for the creation of scrapes and as such are likely to attract the greatest number and diversity of wader species (Working for Waders, 2020). Dabbling ducks such as teal feed by submerging their head underwater. Therefore they do not feed over deep water and less than 50cm is a beneficial depth for teal, wigeon and shoveler. At least three scrapes of 20m² each will be created in this area. The water levels in the scrapes will be controlled by the sluice system on the ditches.

- 4.2.2.4 **Water management** – Many non-breeding terrestrial waders and wildfowl are dependent upon wet grassland habitats during both the non-breeding and breeding seasons. Wetting the grassland softens the ground and pushes soil invertebrates closer to the surface. Sluices allow control of this so that water levels can be controlled throughout the year, this system will be used to maintain water levels in the scrapes. Although there is no literature on species specific interventions, this measure will benefit teal, lapwing, golden plover, curlew and black-tailed godwit, in addition to all non-breeding and breeding waders that utilise terrestrial habitats. Water levels will be regularly monitored and adjusted as necessary.
- 4.2.2.5 **Grassland management** – Damp grassland is favoured by non-breeding and breeding waders as it forces soil invertebrates closer to the surface, it is also used by wildfowl such as wigeon which graze upon the grass at night. Management of the sward structure will be by grazing or rotational mowing and should not take place during the breeding season between April and July. A diverse sward will increase the structural heterogeneity and suit a wider range of species including teal, lapwing, golden plover, curlew and black-tailed godwit as well as breeding waders such as lapwing. Grazing/mowing will be rotational to ensure a diverse range of habitats with compartments targeted as necessary to maintain a diverse sward. This will be regularly monitored and adjusted as necessary.
- 4.2.2.6 **Rush management** – Whilst some areas of rush are good for wading birds, especially jack snipe, snipe, woodcock, and wader chicks, extensive areas of rush offer cover for predators and waders may avoid these areas. Therefore, areas of rush are to be intermittently targeted by mowing to ensure that there is enough open habitat left for non-breeding waders, this will be proceeded with grazing/rotational mowing to keep rush regrowth to a minimum. Areas of rush surrounding ponds may favour teal, and scattered areas of rush are likely to be beneficial for non-breeding teal, lapwing, golden plover, curlew and black-tailed godwit, as well as other non-breeding and breeding waders.
- 4.2.2.7 **Hedgerows** – Perimeter hedgerows will be thickened and gap-filled with native species. The cutting regime will then be to keep them short and thick, as preferred by waders and farmland species such as grey partridge and corn bunting. They will be rotationally cut every other year to provide bi-annual flowering shrubs to flower, i.e. the western boundary cut in year one and the eastern cut in year two. This will provide benefits for invertebrates which in turn may benefit farmland bird species (Farm Wildlife, 2025). This measure is mostly an additional enhancement for farmland birds, grey partridge, corn bunting, yellowhammer, linnet and tree sparrow are all examples of species that benefit from thick hedgerows.
- 4.2.2.8 **Field margins** - A 6 m wide strip will be left at all field margins and will be excluded from grazing/mowing. This area will be planted with a mix of wildflowers and seed rich grasses with a hay cut taken in late summer. This will provide winter food for passerines and habitat to increase invertebrate diversity and abundance. This increase in invertebrates will in turn provide food for breeding farmland birds and waders. Field margins are widely suggested as a conservation measure to benefit farmland birds (RSPB, 2025).

Table 20: The proposed recipients of mitigation at Newton with Scales

Impact	Species	Peak count of birds (taken from the monthly counts between Sep – Apr over two years)	Average number of birds (taken from the monthly counts between Sep – Apr over two years)	Foraging habitat	Roosting habitat	Species specific mitigation measures taken at Newton with Scales
Permanent loss of habitat and/or resources	Golden plover	381	135	<ul style="list-style-type: none"> • Pasture • Arable 	<ul style="list-style-type: none"> • Pasture • Arable • Freshwater lakes and ponds • Scrapes 	Scrapes Water management Grassland management Rush management
Temporary loss of habitat and/or resources	Teal	312	140	<ul style="list-style-type: none"> • Freshwater lakes, ponds, scrapes and estuaries 	<ul style="list-style-type: none"> • Freshwater lakes, ponds, scrapes and estuaries 	Scrapes Water management Grassland management Rush management
Disturbance and displacement from construction activities	Lawing	2,081	360	<ul style="list-style-type: none"> • Pasture • Arable 	<ul style="list-style-type: none"> • Pasture • Arable • Freshwater lakes and ponds • Scrapes 	Scrapes Water management Grassland management Rush management
	Curlew	696	167	<ul style="list-style-type: none"> • Pasture • Arable • Intertidal 	<ul style="list-style-type: none"> • Pasture • Arable • Freshwater lakes and ponds • Scrapes • Saltmarsh 	Scrapes Water management Grassland management Rush management

Impact	Species	Peak count of birds (taken from the monthly counts between Sep – Apr over two years)	Average number of birds (taken from the monthly counts between Sep – Apr over two years)	Foraging habitat	Roosting habitat	Species specific mitigation measures taken at Newton with Scales
	Black-tailed godwit	423	108	<ul style="list-style-type: none"> • Pasture • Arable • Intertidal 	<ul style="list-style-type: none"> • Pasture • Arable • Freshwater lakes and ponds • Scrapes • Saltmarsh 	Scrapes Water management Grassland management Rush management

-
- 4.2.2.9 A detailed baseline will be collected prior to any construction taking place and regular monitoring will take place after the habitat creation and enhancement has taken place. This will inform if targets are being met or if the management needs to be updated.

4.3 Mitigation areas summary

- 4.3.1.1 Both areas south of Newton with Scales and at Lytham Moss have been identified as being very suitable to provide mitigation for pink-footed goose, whooper swan, teal, lapwing, golden plover, curlew and black-tailed godwit and the proposed the measures adopted are adequate (i.e. supplementary feeding and habitat creation and improvements).

5 References

- Bowland Ecology. (2021). Identification of Functionally Linked Land supporting SPA waterbirds in the North West of England. NERC361. Natural England.
- BirdLife International. (2025) Common Shelduck Tadorna Tadorna Species | BirdLife DataZone. Available from <https://datazone.birdlife.org/species/factsheet/common-shelduck-tadorna-tadorna>.
- Cramp, S. (1977) Handbook of the Birds of Europe, the Middle East and North Africa - The Birds of the Western Palearctic. Vol 1. Ostrich to Ducks. Oxford University Press, Oxford, UK.
- Devenish, C., Marsden, S., Harrison, C., Field, C. (2015) Mapping and assessing pink-footed goose *Anser brachyrhynchus* usage of land beyond SPA boundaries in northwest England. A collaborative project between Natural England and Manchester Metropolitan University.
- FarmWildlife, (2025) Hedges - Farm Wildlife
- Fox, A.D., Mitchell, C., Stewart, A., Fletcher, J.D., Turner, J.V.N., Boyd, H., et al. (1994) Winter movements and site-fidelity of Pink-footed Geese *Anser brachyrhynchus* ringed in Britain, with particular emphasis on those marked in Lancashire. *Bird Study*, 41, 221–234.
- Jourdan, C., Fort, J., Robin, F, Pinaud, D., Delaporte, P., Desmots, D., Gentric, A., Lagrange, P., Gernigon, J., Jomat, L., Rousseau, P., Bocher, P., (2022) Combination of marine and freshwater artificial habitats provide wintering Black-tailed Godwits with landscape supplementation. *Wader Study*. DOI 10.18194/ws.00271.
- Liu, L., Liu, X., Du, C., Fang, H., Zhang, J., Li, W., Cao, L. and Gao, L., 2022. Spring diet and energy intake of whooper swans (*Cygnus cygnus*) at the Yellow River National Wetland in Baotou, China. *Plos one*, 17(2), p.e0264528.
- RSPB, (2025) Linnet - advice for Farmers
- Therkildsen, O.R. and Madsen, J., 2000. Energetics of feeding on winter wheat versus pasture grasses: a window of opportunity for winter range expansion in the pink-footed goose *Anser brachyrhynchus*. *Wildlife Biology*, 6(2), pp.65-74.
- ITV, (2024) 'We're really struggling': British farmers pushed to brink by 'shocking' levels of floods | ITV News