MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Outline Ecological Management Plan

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Glossary

Term	Meaning
400 kV grid connection cable corridor	The corridor within which the 400 kV grid connection cables will be located.
400 kV grid connection cables	Cables that will connect the proposed onshore substations to the existing National Grid Penwortham substation.
Applicants	Morgan Offshore Wind Limited (Morgan OWL) and Morecambe Offshore Windfarm Ltd (Morecambe OWL).
Biodiversity benefit	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. For the Transmission Assets, biodiversity benefit will be delivered within identified biodiversity benefit areas within the Onshore Order Limits.
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.
Development Consent Order	An order made under the Planning Act 2008, as amended, granting development consent.
Environmental Statement	The document presenting the results of the Environmental Impact Assessment process.
European Protected Species	Species (such as bats, great crested newts, otters and dormice) which receive full protection under The Conservation of Species and Habitats Regulations 2017 and Conservation of Offshore Marine Habitats and Species Regulations 2017.
European sites	Designated nature conservation sites which include the National Site Network (designated within the UK) and Natura 2000 sites (designated in any European Union country). This includes Sites of Community Importance, Special Areas of Conservation and Special Protection Areas.
Favourable Conservation Status	The situation in which a habitat or species is thriving throughout its natural range and is expected to continue to thrive into the future.
Intertidal area	The area between Mean High Water Springs and Mean Low Water Springs.

Term	Meaning
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 bays inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area and landfall compound(s).
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.
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 OWL	Morecambe Offshore Windfarm Ltd (Morecambe OWL), owned by Copenhagen Infrastructure Partners' (CIP) fifth flagship fund, Copenhagen Infrastructure V (CI V~~), is developing the Morecambe Offshore Windfarm, also located in the east Irish Sea.~~).
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The offshore and onshore infrastructure connecting the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm to the national grid. 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. Also referred to in this report as the Transmission Assets, for ease of reading.
Morgan OWL	Morgan Offshore Wind Limited (Morgan OWL), is a joint venture between JERA Nex bp (JNbp) and Energie Baden-Württemberg AG (EnBW~~), is developing the Morgan Offshore Wind Project. The Morgan Offshore Wind Project is a proposed wind farm in the east Irish Sea.~~).
National Site Network	The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 have created a National Site Network on land and at sea, including both the inshore and offshore marine areas in the UK. The National Site Network includes existing Special Areas of Conservation and Special Protection Areas alongside new Special Areas of Conservation and Special Protection Areas designated under these Regulations.
Onshore export cable corridor	The corridor within which the onshore export cables will be located.
Onshore export cables	The cables which would bring electricity from landfall to the onshore substations.
Onshore Infrastructure Area	The area within the Transmission Assets Order Limits landward of Mean High Water Springs. Comprising the offshore export cables from Mean High Water Springs to the transition joint bays, onshore export cables, onshore substations and 400 kV grid connection cables, 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/biodiversity benefit and enhancement areas are excluded from this area.

Term	Meaning
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.
Protected species	A species of animal or plant which it is forbidden by law to harm or destroy.
Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of electrical transformers.
Survey area	The area within which each survey has been undertaken. This may differ from the Study Area as a Survey Area will be based on species or survey-specific guidance on the extent of survey required, which may be limited by, for example, habitat conditions, or be defined in terms of buffer areas around an area of potential impact.
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
Transmission Assets Order Limits: Onshore	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). Also referred to in this report as the Onshore Order Limits, for ease of reading.

Acronyms

Acronym	Meaning
BAP	Biodiversity Action Plan
BHS	Biological Heritage Site
BMWP	Biological Monitoring Working Party
BPZ	Bird Protection Zone
CIEEM	Chartered Institute of Ecology and Environmental Management
CoCP	Code of Construction Practice
DCO	Development Consent Order
ECoW	Ecological Clerk of Works
ES	Environmental Statement
EMP	Ecological Management Plan

Acronym	Meaning
GCN	Great Crested Newt
IEF	Important Ecological Features
INNS	Invasive Non-native Species
LMP	Landscape Management Plan
OEMP	Outline Ecological Management Plan
OLMP	Outline Landscape Management Plan
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UK	United Kingdom

Units

Unit	Description
%	Percentage
ha	Hectare
kV	Kilovolt
m	Metre

1 Outline Ecological Management Plan

1.1 Background

1.1.1 Introduction

1.1.1.1 This document forms the Outline Ecological Management Plan (OEMP) prepared for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (referred to hereafter as 'the Transmission Assets').

1.1.1.2 This OEMP has been updated at Deadline 2 to include the following:

- The update of Appendix B to include indicative locations and details of management measures for the environmental mitigation areas.

1.1.1.3 Updates to the OEMP were also made at the following deadlines:

- Deadline 3
  - The inclusion of Appendix E: Outline Wildlife Hazard Management Plan
  - Refinement of the onshore site preparation works to remove onshore substation preparatory ground works.
- Deadline 4
  - Clarification of the roles and responsibilities for implementing this outline ecological management plan
  - Clarification that the measures within this outline management plan will be implemented during the onshore site preparation works.
  - The inclusion of Appendix E: Outline Sand Lizard Mitigation Plan
  - The inclusion of measures that will be implemented during the construction at landfall
  - The inclusion of measures that will be implemented at Mill Brook Valley Biological Heritage Site
  - Further detail added on the management measures at Newton-with-Scales and Lytham Moss.
- Deadline 5
  - The Outline Wildlife Hazard Management Plan is changed to a standalone document and Appendix E is the Outline Sand Lizard Mitigation Plan
  - Further detail added regarding tree and hedgerow removal methodology and retention has been added to Section 1.6.3
  - The commitment to establish a Construction Coordination Working Group post DCO award that will provide a forum for

post-consent engagement between the Applicants and local authorities

  - Further detail added regarding the management measures for the mitigation areas at Lytham Moss, Newton-with-Scales and Fairhaven Saltmarsh
  - Updates to the pre-construction surveys to include overwintering birds.

- Deadline 6
  - The addition of the Terrestrial Waterbird Note as Appendix F
  - The addition of the Supplementary Feeding Strategy as Appendix G
  - The addition of the Strategy for Delivery of Onshore and Intertidal Ornithology Mitigation as Appendix H
  - Updates to Appendix A (Indicative Timeframes) and Appendix B (Mitigation Areas) to include further detail on the management of the ornithology mitigation areas and clarification on the monitoring frequency and duration (i.e., for the lifetime of the Project for Newton-with-Scales)
  - Details on the interlinked management plans and the update process
  - Updates to the Construction Coordination Working Group
  - Updates to Appendix E: Outline Sand Lizard Mitigation Plan in response to feedback from Fylde Borough Council
  - Updates to the wording of CoT128 and CoT129
  - The inclusion of peat within section 1.5.2

1.1.2 Project overview

1.1.2.1 Morgan Offshore Wind Limited (Morgan OWL), a joint venture between JERA Nex bp (JNbp) and Energie Baden-Württemberg AG (EnBW), is developing the Morgan Offshore Wind Project. The Morgan Offshore Wind Project is a proposed wind farm in the east Irish Sea.

1.1.2.2 Morecambe Offshore Windfarm Ltd (Morecambe OWL), owned by Copenhagen Infrastructure Partners' (CIP) fifth flagship fund, Copenhagen Infrastructure V (CI V), is developing the Morecambe Offshore Windfarm, also located in the east Irish Sea.

1.1.2.3 The purpose of the Transmission Assets is to connect the Morgan Offshore Wind Project: Generation Assets and Morecambe Offshore Windfarm: Generation Assets (referred to collectively as the 'Generation Assets') to the National Grid.

1.1.2.4 Morgan OWL and Morecambe OWL (the Applicants~~),~~) are jointly seeking a single consent for their electrically separate transmission assets comprising aligned offshore export cable corridors to landfall and

aligned onshore export cable corridors to separate onshore substations and onward connection to the National Grid at Penwortham, Lancashire.

1.1.2.5 The key components of the Transmission Assets include offshore elements, landfall and onshore elements. Full details of the activities and infrastructure associated with the Transmission Assets are set out in Volume 1, Chapter 3: Project description of the Environmental Statement (ES) (document reference F1.3).

1.1.2.6 This OEMP has been developed for onshore elements of Transmission Assets, landwards of Mean Low Water Springs. The onshore and intertidal elements of the Transmission Assets relevant to this plan are:

- onshore export cables: these cables will link the landfall site and the proposed onshore substations
- onshore substations: the proposed substations containing the components for transforming the power supplied via the onshore export cables up to 400 kV;
- 400 kV grid connection cables: these 400 kV cables will connect the proposed onshore substations to the existing National Grid Penwortham substation. Circuit breaker infrastructure may also be required within the 400 kV grid connection cable corridor;
- environmental mitigation areas – temporary and/or permanent areas, including accesses identified to provide environmental mitigation only.

1.1.3 Aim and purpose of the OEMP

1.1.3.1 The aim of this OEMP is to ensure the protection and appropriate management of ecological receptors within the area to be affected by the Transmission Assets. The final EMP (which shall be based on this OEMP, see CoT104 of Volume 1 Annex 5.3: Commitments Register (REP4-018))) will be followed alongside adherence to legislative requirements relating to ecology and nature conservation and onshore and intertidal ornithology. Information in relation to enhancement is provided in **section 1.10** of this OEMP.

1.1.3.2 This OEMP provides outline measures required to mitigate temporary and permanent impacts on identified ecological receptors via the restoration, enhancement, and management of existing and created habitats during the onshore site preparation works, construction and operation and maintenance phases of the Transmission Assets. In addition, this OEMP also describes the requirements for future monitoring and reporting during the operation of the Transmission Assets to evaluate the efficacy of the proposed management measures.

1.1.3.3 This OEMP has been drafted based on the following:

- Volume 3, Chapter 3: Onshore ecology and nature conservation of the ES (document reference F3.3);

- Volume 3, Chapter 4: Onshore and intertidal ornithology of the ES (document reference F3.4);
- Site surveys undertaken in 2023 and 2024 and reported in Volume 3, Annexes 3.1 to 3.15 of the ES (document references F3.3.1 to F3.3.15); and
- Site surveys undertaken in 2022 and 2023 and reported in Volume 3, Annexes 4.1 to 4.4 of the ES (document references F3.4.1 to F3.4.4).

1.1.3.4 [redacted]

1.1.3.5 This OEMP references the following documents:

- Outline Code of Construction Practice (CoCP) (document reference J1) including supporting appendices (document references J1.1 to J1.14); and,
- Outline Landscape management Plan (OLMP) (document reference J2).

1.1.4 Interlinked Management Plans and the Update Process

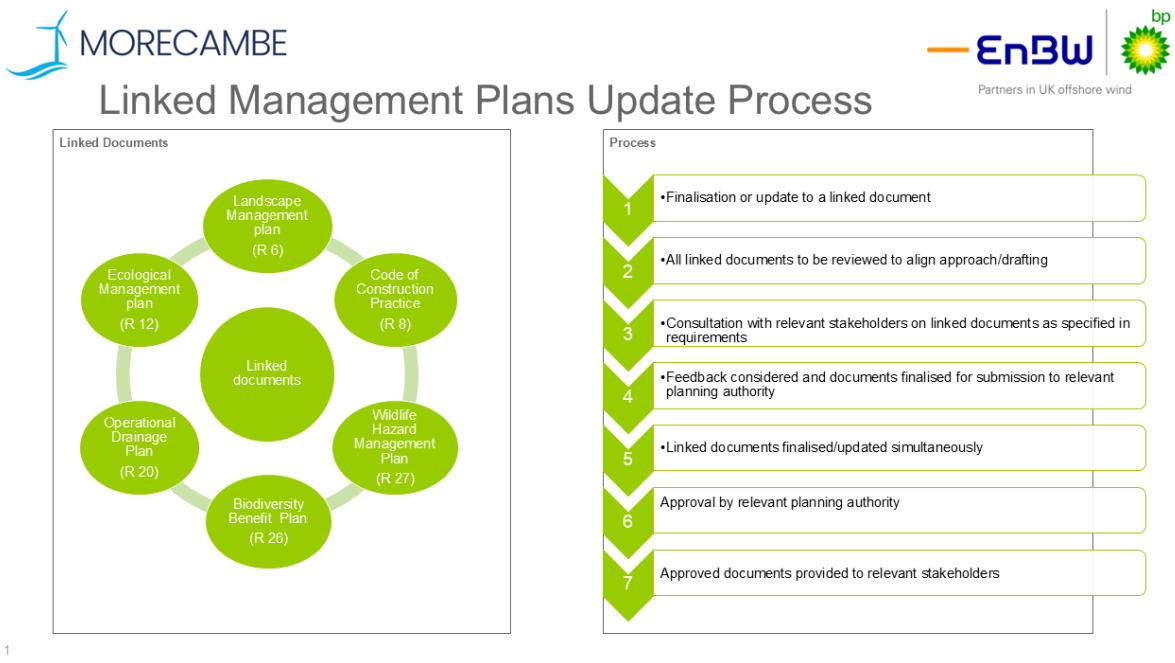
1.1.4.1 The OEMP forms part of a suite of interlinked outline management plans relating to the design, management and monitoring of environmental mitigation and biodiversity areas and management of construction impacts associated with the Transmission Assets Project. These interlinked plans are:

- Code of Construction Practice;
- Wildlife Hazard Management Plan;
- Landscape Management Plan;
- Ecological Management Plan;
- Biodiversity Benefit Plan; and
- Operational Drainage Management Plan

1.1.4.2 The outline management plans form part of the Transmission Asset DCO application. Each outline management plan is secured by a requirement of the draft DCO; detailed management plans will be prepared in accordance with the corresponding outline plan and approved by the relevant planning authority. The approved plans must be implemented as approved.

1.1.4.3 Each management plan has its own purpose and objectives specific to the subject of the plan, but there is cross-over in the objectives of the different plans. The outline plans have been prepared to ensure that the objectives of each management plan can be delivered and that the management measures are aligned between the interlinked plans. The Applicants will adopt a structured approach in the preparation of the

detailed management plans to ensure continued alignment of management measures across the interlinked management plans. The interlinked management plans will remain as 'live' documents during the construction and operation stages to reflect the adaptive management approach. Where a review/update of a management plan is required (e.g. in response to monitoring results), the review/updates will be undertaken in the context of the other interlinked plans and will follow the staged approach set out below.



~~1.1.4~~1.1.5 Structure of this document

~~1.1.4.1~~1.1.5.1 This Outline OEMP has been separated into the following sections:

- **section 1.1**: this provides an introduction, overview of the project, purpose and scope of this OEMP and sets out relevant guidance documents;
- **section 1.2**: this provides details on how this OEMP and final EMP will be implemented;
- **section 1.3**: this provides an overview of the environmental mitigation areas proposed;
- **section 1.4**: this describes the roles and responsibilities of the Applicants, Principal Contractors, site managers, environmental coordinators, and other technical roles;
- ~~:~~**section 1.5**: this describes the measures required prior to the commencement of construction;
- **section 1.6**: this describes the measures required during construction of the onshore and intertidal elements of the Transmission Assets;

- **section 1.7**: this describes the measures required upon completion of the construction phase of the onshore and intertidal elements of the Transmission Assets; and
- **section 1.8**: this describes the long term management measures required upon completion of the construction phase of the onshore and intertidal elements of the Transmission Assets.
- **section 1.9**: this describes the requirements for species monitoring and management during the operation of the Transmission Assets.

~~1.1.4.2~~1.1.5.2 In addition to the sections listed above, this Outline OEMP is also supported by the following appendices:

- **Appendix A** – this provides an indicative timetable and apportionment of works between the Morgan OWL and Morecambe OWL;
- **Appendix B** – this provides further detail regarding the mitigation areas, including key parameters, management measures and apportionment between the Morgan OWL and Morecambe OWL;
- **Appendix C** – this provides the Outline Bird Protection Plan, including the mitigation and monitoring requirements for breeding birds;
- **Appendix D** – this provides a summary of the legislation relevant to protected or notable species discussed in this OEMP ~~and~~
- **Appendix E** – this provides the Outline Sand Lizard Mitigation Plan including measures to mitigate construction impacts on sand lizards.
- **Appendix F** - this provides the Terrestrial Waterbirds Note
- **Appendix G** – this provides the Supplementary Feeding Strategy for Lytham Moss
- **Appendix H** – this provides the Strategy for Delivery of Onshore and Intertidal Ornithology Mitigation

1.2 Implementation

1.2.1 DCO Requirement

1.2.1.1 Following the granting of consent for the Transmission Assets, detailed OEMPs will be prepared on behalf of Morgan OWL and/or Morecambe OWL, prior to commencement of the relevant stage of works and will follow the principles established in this OEMP. The detailed Ecological Management Plans will require approval by the relevant planning authority following consultation with relevant stakeholders. The Applicants and all appointed contractors will be responsible for the implementation of the respective detailed Ecological Management Plans.

1.2.1.2 The Applicants have committed to implementation of detailed Ecological Management Plans via the following commitment, CoT76 (see

Volume 1, Annex 5.3: Commitments Register, document reference F1.5.3), and is secured by inclusion of Requirement 12 of the draft Development Consent Order (DCO) (document reference C1) Schedules 2A & 2B.

1.2.1.3 Below sets out the requirement wording for Project A (Project B's requirement mirror those of Project A for this requirement and are, therefore, not repeated):

12~~)~~ ~~(~~)— (1) No stage of the Project A onshore works or Project A intertidal works may commence until for that stage a written ecological management plan in accordance with the OEMP as appropriate for the relevant stage, has, following consultation with –

(a) Natural England;

(b) the Environment Agency where works have the potential to impact wetland habitats; and

(c) BAE and BAOL in respect of the outline wildlife hazard management plan,

been submitted to and approved by the relevant planning authority.

(2) The ecological management plan submitted under sub-paragraph (1) must include an implementation timetable and must be implemented as approved.

(3) Onshore site preparation works must only take place in accordance with the relevant details set out in the OEMP.

1.2.1.4 The Transmission Assets may adopt a staged approach to the approval of DCO requirements. This will enable requirements to be approved in part or in whole, prior to the commencement of the relevant stage of works in accordance with whether staged approach is to be taken to the delivery of the each of the offshore wind farms.

1.2.1.5 For onshore and intertidal works (landward of Mean Low Water Springs), this approach will be governed by the inclusion of Requirement 3 within the draft DCO, which requires notification to be submitted to the relevant planning authority/authorities detailing whether Project A or Project B relevant works will be constructed in a single stage; or in two or more stages to be approved prior to the commencement of the authorised development.

1.2.2 Construction Coordination Working Group

1.2.2.1 Following DCO award and prior to the commencement of construction, the Applicants would establish a Construction Coordination Working Group (CCWG). The CCWG will provide a forum for post-consent engagement between the Applicants and the local planning authorities, to ensure consideration is given to the potential for coordination (where appropriate) between the projects. This will ensure that the planning authorities are engaged, and can provide input, throughout the Applicants' process of preparing information to discharge requirements of the made Order. In particular, the CCWG will facilitate discussion of detailed management plans and enable feedback on how comments

have been addressed between each of the Applicants, specifically in the context of Requirement 25 (onshore collaboration) in Schedules 2A and 2B of the draft DCO.

1.2.2.2 Relevant planning authorities will be requested to nominate staff and invite relevant third parties i.e. stakeholders where discussions and feedback on detailed management plans may be relevant to those parties. The costs of attendance at meetings and engagement by the relevant planning authorities will be covered by post-consent Planning Performance Agreements. The membership of the CCWG will be kept under review throughout construction, with members added or removed as required~~.~~, via the ongoing engagement within the CCWG meetings. The mechanism to add or remove members will be agreed with the relevant planning authorities at the time the CCWG is set up.

1.2.2.3 It is proposed that CCWG meetings will be monthly, unless agreed otherwise between the members of the CCWG.

1.2.2.4 Topics for discussion will include the exploration of opportunities and measures for coordination between the projects in relation to:

- Indicative programming and staging of construction
- Survey planning and findings
- Requests for specific post consent information to inform the discharge of requirements
- Progress on design (e.g. onshore substation design, design of environmental mitigation areas)
- Update on engagement with statutory consultees
- Other consents or licences
- Construction implementation, including feedback on monitoring and complaints
- Requests for specific post consent information to inform the discharge of requirements
- Outputs of Requirement 25 (Onshore collaboration).

1.2.2.5 The process of how the Applicants will respond to matters raised by the CCWG, and the timescales for provision of responses, will be agreed with the relevant planning authorities at the setup of the CCWG.

1.2.3 Scope of this OEMP

1.2.3.1 Onshore site preparation activities are defined in Article 2 of the draft DCO (document reference REP3-009). This OEMP applies to the onshore site preparation works and the construction and operation and maintenance phases of the Transmission Assets.

1.2.3.2 Onshore site preparation works will be undertaken prior to the commencement of construction. These works will be carried out in accordance with the following sections of the OEMP as certified through the DCO:

- **Section 1.5**: Onshore site preparation measures
- **Appendix B**: Mitigation Areas
- **Appendix C**: Outline Breeding bird protection plan – **section C.1.3**: Onshore site preparation measures.
- ~~**Appendix E**~~**Appendix G**: Outline Sand Lizard Mitigation Plan

1.2.3.3 The measures within this outline management plan are in accordance with best practice and are appropriate to manage the impacts associated with onshore site preparation works.

1.2.3.4 Ecological surveys will be undertaken during the onshore site preparation works (see section 1.5) and the results will be used to inform the preparation of the detailed EMPs for Morgan OWL and Morecambe OWL respectively.

1.3 Overview of environmental mitigation areas

1.3.1 Mitigation areas

1.3.1.1 Several areas are proposed within the Transmission Assets Order Limits: Onshore, hereafter referred to as the Onshore Order Limits, to mitigate potential impacts on Important Ecological Features (IEFs) identified in Volume 3, Chapter 3: Onshore ecology and nature conservation of the ES (document reference F3.3) and Volume 3, Chapter 4: Onshore and intertidal ornithology of the ES (document reference F3.4). These proposed mitigation areas can be summarised as follows.

- **Permanent mitigation area at Fairhaven Saltmarsh**: to reduce impacts of disturbance on intertidal waders that may be disrupted during construction, operation and maintenance, and decommissioning of the Transmission Assets. Measures are proposed to reduce disturbance to roosting waders within a nearby area of suitable habitat at Fairhaven Saltmarsh. Although this mitigation area would primarily be required during construction of the Transmission Assets, the measures will also need to be implemented during the operation and maintenance phase of the Transmission Assets. This is to account for cable repair and reburial events proposed within the Intertidal Infrastructure Area (see **Figure 1.2**).
- **Temporary construction mitigation area at Lytham Moss**: the provision of seasonal scrapes and supplementary feed within a suitable area of arable land at Lytham Moss to mitigate potential impacts of temporary habitat loss (foraging grounds) on geese, swans and waders during construction of the Transmission Assets (see **Figure 1.3**).
- **Pond creation at Moss Side**: creation of ponds to compensate for the permanent loss of a pond and associated aquatic invertebrate habitat during construction of the onshore export cable corridor for the Morecambe OWL (see **Figure 1.4**).

- **Pond creation at the Morgan onshore substation**: creation of ponds to compensate for the permanent loss of ponds and suitable aquatic invertebrate habitat, including Freshfield Farm Pond, North Biological Heritage Site (BHS) and Freshfield Farm Pond, South BHS during construction the Morgan onshore substation (see **Figure 1.5**).
- **Permanent mitigation area south of Newton-with-Scales**: implementation of habitat enhancement measures to mitigate potential impacts of temporary and permanent habitat loss on identified ornithological features during construction of the Transmission Assets (see **Figure 1.6**).
- **Temporary construction mitigation area at Lea Marsh**: implementation of habitat enhancement measures to mitigate potential impacts of temporary habitat loss and disturbance on otters at Lea Marsh BHS during construction of the Transmission Assets (see **Figure 1.7**).

1.3.1.2 Further information regarding each of the mitigation areas listed above is provided in **Appendix B** of this OEMP. The location and geographic extent of these mitigation areas is presented in **Figure 1.1** to **Figure 1.7** of this OEMP.

1.3.1.3 A further area within the Onshore Order Limits is proposed for biodiversity benefit at Lea Marsh Fields, which is considered separately within the ~~Onshore~~Outline Biodiversity Benefit ~~Statement~~Management Plan (document reference J11).

1.3.1.4 The Transmission Assets have also sought to avoid potential impacts on ecology and ornithology receptors as part of the iterative design process, where possible. The primary (embedded) mitigation measures which have been adopted as part of the project and are relevant to this OEMP are summarised in ~~**Table 1-1 below.**~~**Table 1.1** below. Further detail is provided within Volume 1, Annex 5.3 Commitment Register of the ES (document reference F1.5.3).

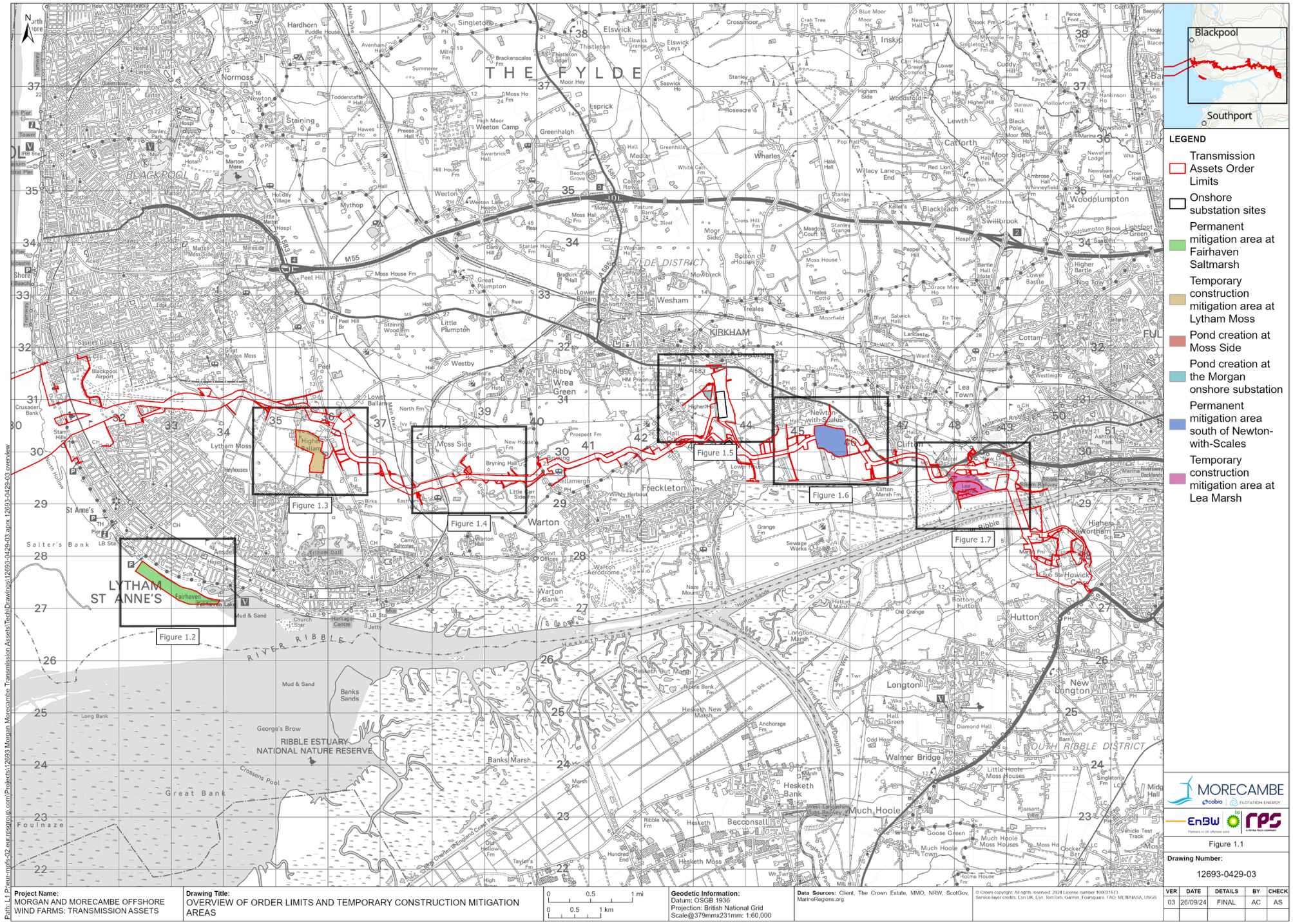
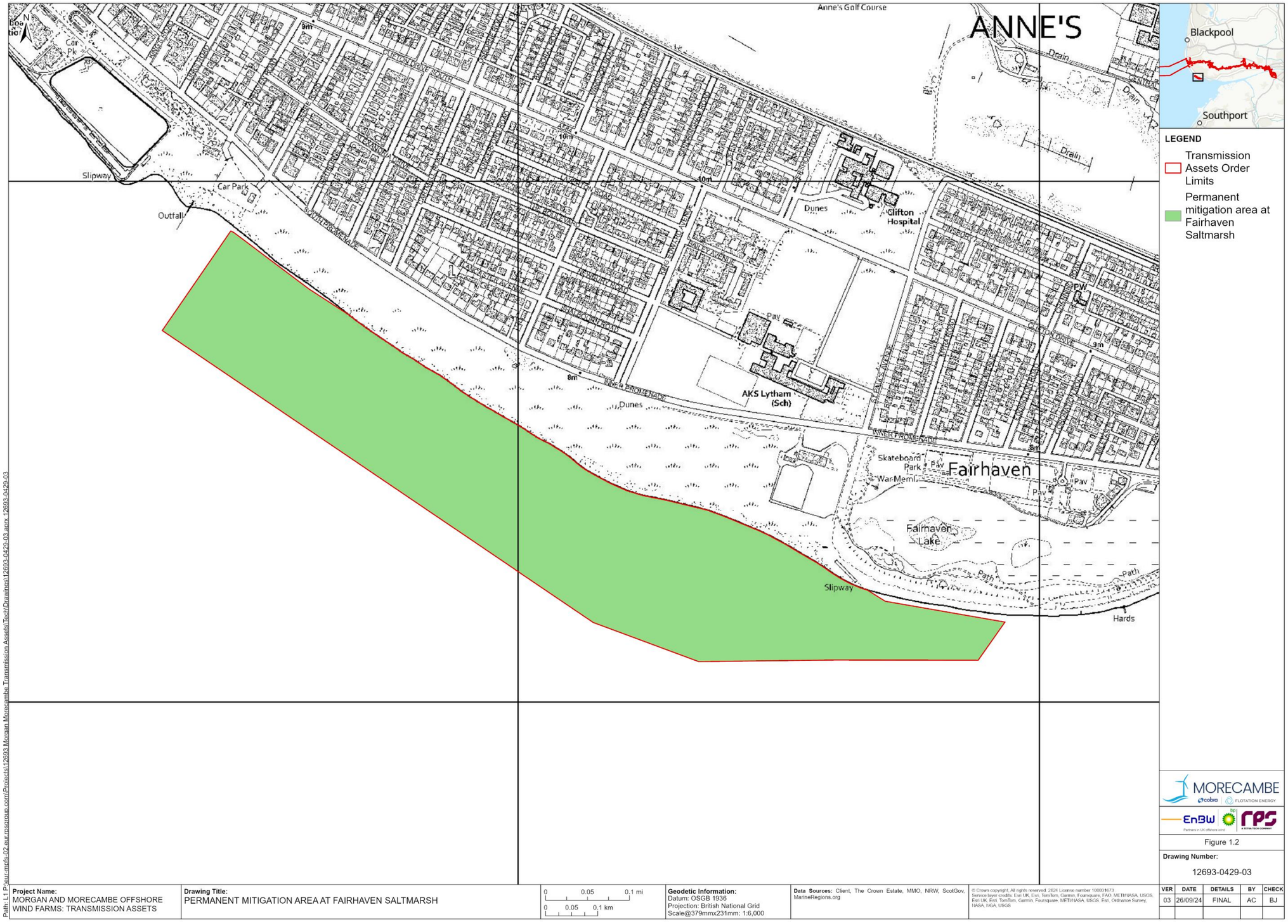


Figure 1.1: Overview of Onshore Order Limits and mitigation areas



Path: L:\1 P:\eur-nrdfs-02.eur.rpsgroup.com\Projects\12693 Morgan Morecambe Transmission Assets\Tech\Drawings\12693-0429-03\12693-0429-03.aprx 12693-0429-03

Project Name: MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS	**Drawing Title:** PERMANENT MITIGATION AREA AT FAIRHAVEN SALTMARSH	0 0.05 0.1 mi / 0 0.05 0.1 km	**Geodetic Information:** Datum: OSGB 1936 Projection: British National Grid Scale@379mmx231mm: 1:6,000	**Data Sources:** Client, The Crown Estate, MMO, NRW, ScotGov, MarineRegions.org	© Crown copyright, All rights reserved. 2024. License number 100031673. Service layer credits: Esri UK, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, Esri UK, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, Esri, Ordnance Survey, NASA, IHOA, USGS	VER	DATE	DETAILS	BY	CHECK
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MORECAMBE cobra | FLOTATION ENERGY
EnBW bp rps A TETRA TECH COMPANY Partners in UK offshore wind

Figure 1.2

Drawing Number: 12693-0429-03

Figure 1.2: Permanent mitigation area at Fairhaven Saltmarsh

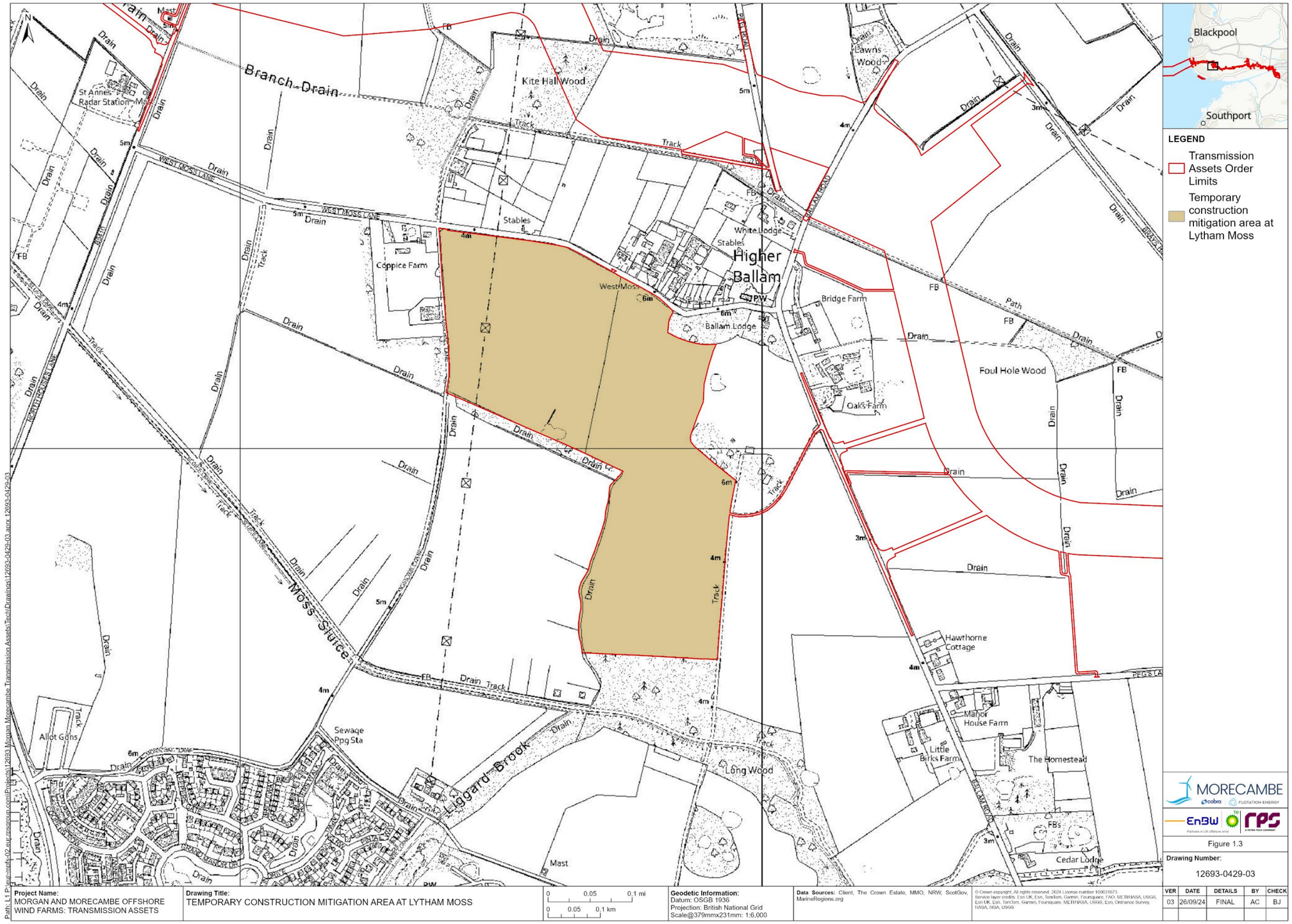

Figure 1.3: Temporary construction mitigation area at Lytham Moss

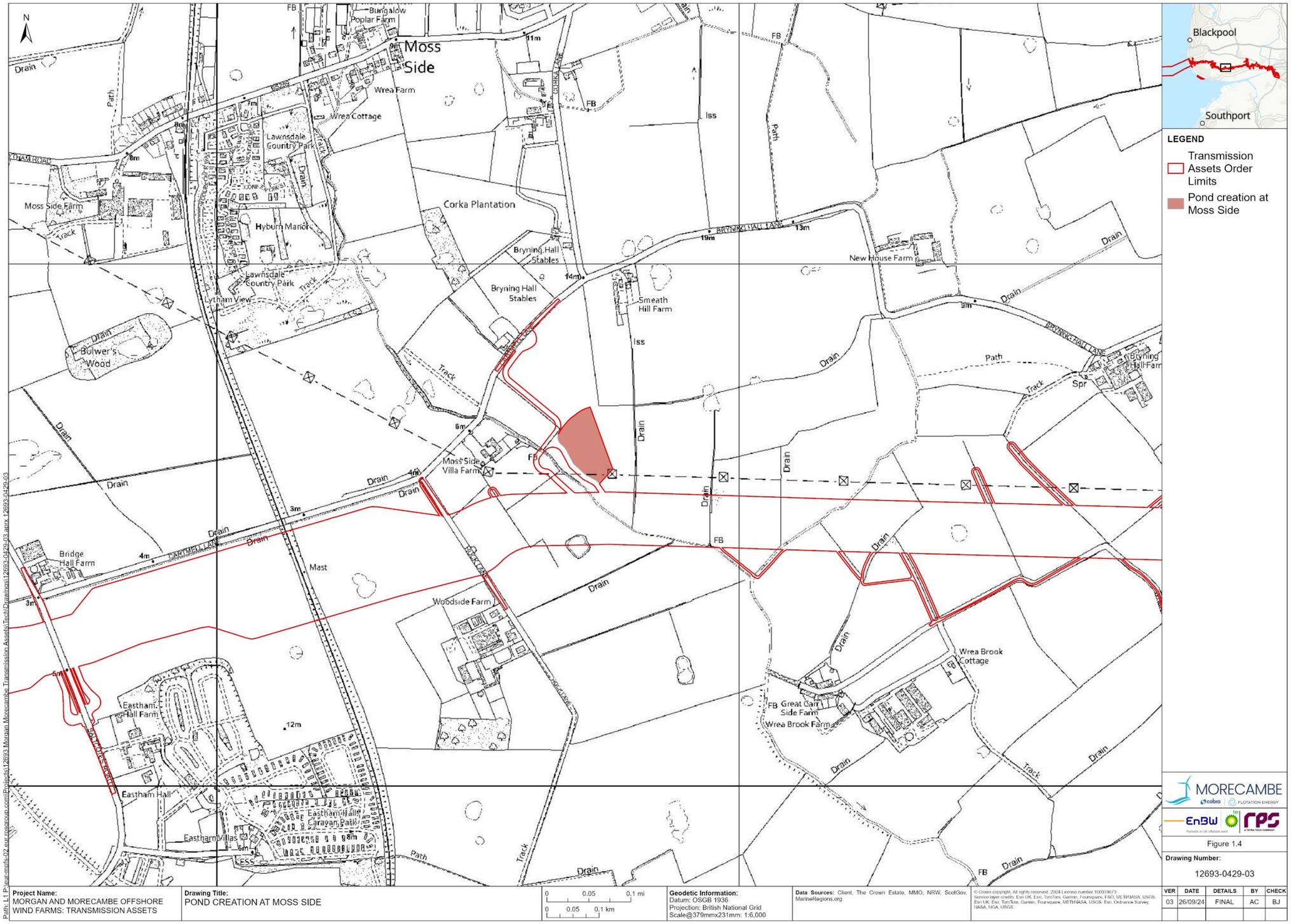

Figure 1.4: Pond creation at Moss Side

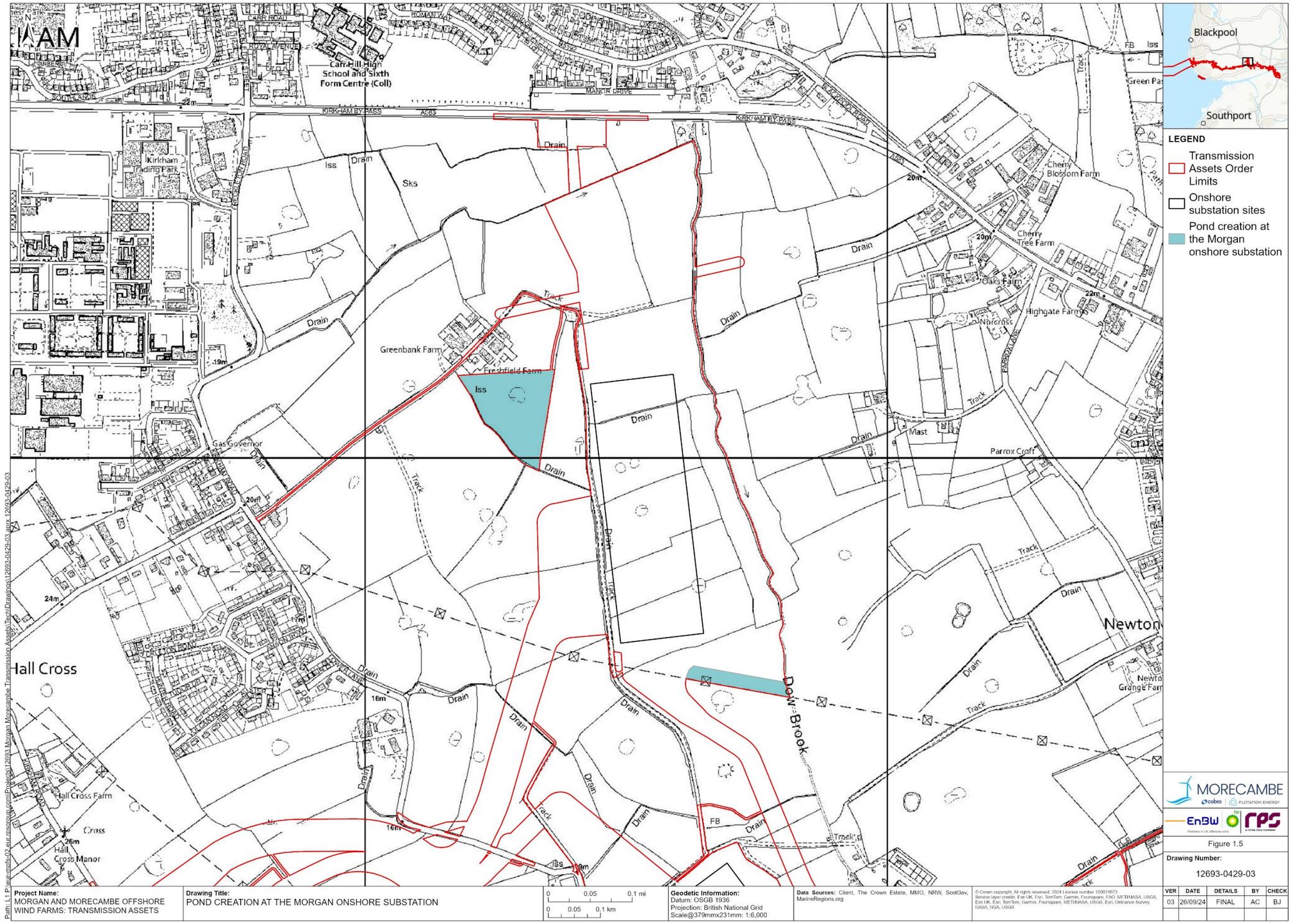

Figure 1.5: Pond creation at the Morgan onshore substation

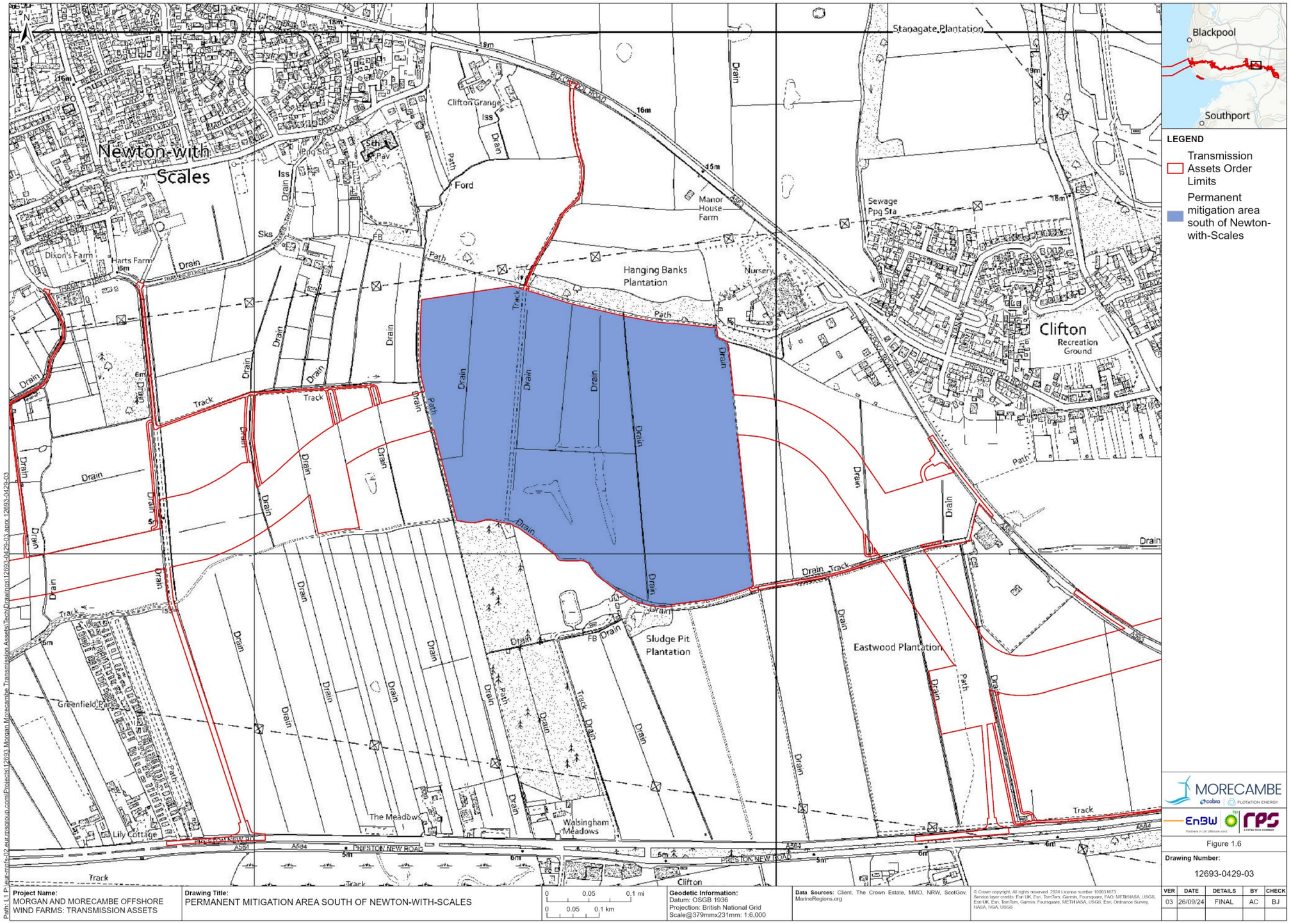

Figure 1.6: Permanent mitigation area south of Newton-with Scales

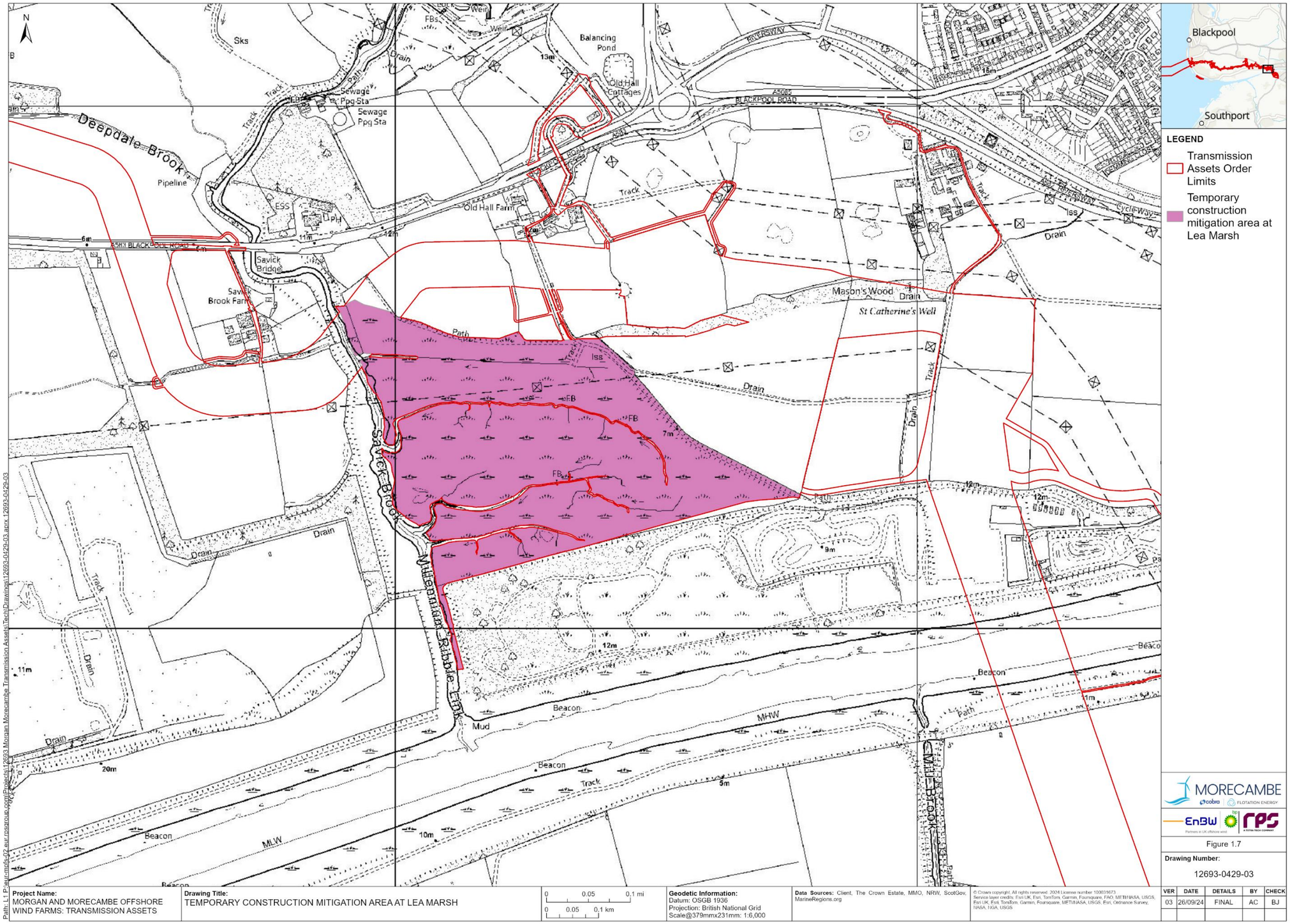

Figure 1.7: Temporary construction mitigation area at Lea Marsh

1.3.2 Aims of this OEMP

1.3.2.1 The aim of this OEMP is to ensure the protection and appropriate management of ecological receptors within the area to be affected by the Transmission Assets. Alongside adherence to legislative requirements relating to ecology and nature conservation and onshore and intertidal ornithology. Information in relation to enhancement is provided in **section 1.10** of this OEMP.

1.3.2.2 This OEMP has been drafted based on the findings of site surveys undertaken in 2023 and 2024. Further information regarding ecology and ornithological surveys can be found within Volume 3, Annexes 3.1 to 3.15 of the ES (document reference F3.3.1 to F3.3.15) and Volume 3. Annex 4.1 to 4.4 of the ES (document reference F3.4.1 to F3.4.4) of the ES respectively.

1.3.2.3 Prior to the commencement of construction, this OEMP will be updated following pre-construction surveys, where required and all relevant plans and ecological receptor locations will be included within the final EMP for Morgan OWL and Morecambe OWL respectively.

1.3.2.4 All commitments identified for the Transmission Assets are detailed in the Volume 1, Annex 5.3 Commitment register of the ES (document reference F1.5.3) and summarised within each topic chapter of the ES. The commitments of relevance to this OEMP, are set out in ~~**Table 1-1 below.**~~**Table 1.1** below. These will be included within and developed further as part of detailed EMP(s).

Table 1-1: Commitments relevant to this OEMP

Commitment number	Measure adopted	How the measure will be secured	Where is the commitment referenced within the document?
Embedded measures			
CoT13	Where hedgerows and/or trees require removal, this will be undertaken prior to topsoil removal. Sections of hedgerows and trees which are removed will be replaced using like for like hedgerow species.	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice); and Requirement 12 (Ecological Management Plan)	Section 1.7.2
CoT16	All vegetation requiring removal will be undertaken outside of the bird breeding season. If this is not reasonably practicable, the vegetation requiring removal will be subject to a nesting bird check by a suitably qualified ecological clerk of works. If nesting birds are present, the vegetation will not be removed until the young have fledged or the nest failed.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan); and Requirement 8 (Code of Construction Practice)	Section 1.6
CoT17	Where required, provision will be made for badger access in relevant construction areas, when work is not taking place in order to ensure normal movements as far as reasonably possible. Provision will be made to ensure avoiding the entrapment of any animals within relevant construction areas. Checks will be made prior to the start of any works to ensure no animals are trapped. Appropriate checks will be made as required by the ecological clerk of works.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan); and Requirement 8 (Code of Construction Practice)	Section 1.6
CoT28	Construction site lighting will only operate when required and will be positioned and directed to avoid unnecessary illumination to residential properties, sensitive ecological receptors and footpath users, and minimise glare to users of adjoining public highways. Construction site lighting will be designed in accordance with latest relevant available guidance and legislation and the details of the location, height, design and luminance of lighting to be used will be detailed within the Outline Construction Artificial Light Emissions Management Plan, as part of the Outline CoCP. The design of construction site lighting will accord with the details provided	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice); DCO Schedules 2A & 2B, Requirement 12 (Ecological management plan)	Section 1.6

Commitment number	Measure adopted	How the measure will be secured	Where is the commitment referenced within the document?
	in the Outline Code of Construction Practice (CoT35) and Outline Ecological Management Plan (CoT76).		
CoT31	Ponds identified during the route planning and site selection process have been avoided where possible. During construction any newly identified ponds will be avoided through micro-siting of the onshore export cable corridor and 400 kV grid connection cable corridor where reasonably practicable.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan)	Section 1.6.3
CoT92	The Applicants will join the Lancashire District Level Licensing scheme in relation to Great Crested Newts, as detailed within the Outline Ecological Management Plan.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan)	Section 1.5.3
Secondary mitigation			
CoT76	Detailed Ecological Management Plan(s) (EMP) will be developed in accordance with the Outline Ecological Management Plan (OEMP). The Outline Ecological Management Plan has been prepared and submitted as part of the application for development consent and includes but is not limited to pre-construction, construction and post-construction mitigation measures relating to habitats and protected or notable species, species mitigation licences and the role of the Ecological Clerk of Works (ECoW) where relevant. The Outline Ecological Management Plan also includes a Breeding Bird Protection Plan which will set out mitigation measures such as vegetation clearance in winter (e.g., hedgerows), pre-construction breeding bird survey, appropriate protection zones upon confirmation of nest building/breeding taking place of key protected or sensitive species. In addition to the Breeding Bird Protection Plan, the OEMP sets out species-specific mitigation plans for Important Ecological Features identified as part of the assessment. Detailed Ecological Management Plan(s) will include details of any long term mitigation and management measures relevant to onshore ecology and nature conservation and in relation to onshore and intertidal ornithology. This will include the management of ecological mitigation areas. The Detailed EMPs will be developed in consultation with the relevant statutory advisors and regulators.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan)	Section 1.2
CoT104	Detailed Ecological Management Plan(s) (EMP) will be developed in accordance with the Outline Ecological Management Plan (OEMP). The OEMP includes pre-construction, construction and post-construction and any long-term mitigation and management (where	DCO Schedules 2A & 2B, Requirement 12	Section 1.3.3

Commitment number	Measure adopted	How the measure will be secured	Where is the commitment referenced within the document?
	applicable). The OEMP includes, but is not limited to: habitats, hedgerows, birds, bats, badgers, otters, water voles, reptiles, terrestrial invertebrates, and other protected or notable species where relevant. The EMP(s) which will include details of any long-term mitigation and management measures relevant to onshore ecology and sites of particular sensitivity. The EMP(s) will be developed in consultation with the relevant stakeholders.	(Ecological management plan)	
CoT107	Where construction activities are undertaken along the onshore export cable corridor within areas of Functionally Linked Land (Lytham Moss Biological Heritage Site) in proximity to Higher Ballam and Lower Ballam, a mitigation area will be provided for supplementary feeding of pink-footed goose and whooper swan during the core wintering bird period (November to March, inclusive). The feeding may comprise retention of spoiled crop and/or the import of additional feed, as appropriate. In addition, scrapes will be provided for terrestrial wader features. This is detailed within the Outline Ecological Management Plan.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan)	Appendix B.2.5
CoT113	Where construction activities are undertaken within the Intertidal Infrastructure Area, mitigation measures will be provided at Fairhaven saltmarsh to reduce disturbance upon roosting wader features of Ribble and Alt Estuary SPA. This may comprise a combination of the employment of a warden, educational signage, and soft fencing. This is detailed within the Outline Ecological Management Plan.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan)	Appendix B.2.1
CoT120	To mitigate for potential permanent habitat loss associated with each of the Onshore Substations, mitigation areas south of Newton-with-Scales will be provided for waders and farmland birds. Measures within these areas may include measures, such as, the creation of scrapes and thickening of hedgerows. This is detailed within the Outline Ecological Management Plan. The final measures will be developed and agreed with the relevant stakeholders as a part of the detailed Ecological Management Plan(s) prior to construction.	DCO Schedules 2A & 2B, Requirement 12 (Ecological management plan)	Appendix B.2.2
CoT122	The Outline Ecological Management Plan will include details of proposed mitigation measures associated with the direct loss of any ponds within the Transmission Assets Order Limits. Replacement habitat will be provided for ponds considered to be of higher ecological value (e.g. of sufficient conservation interest to support communities of aquatic invertebrates, such as those ponds currently located within the permanent Morgan onshore substation area). Detailed Ecological Management Plan(s) will be developed in accordance with the Outline Ecological Management Plan.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan)	Appendix B.2.3 and B.2.4

Commitment number	Measure adopted	How the measure will be secured	Where is the commitment referenced within the document?
CoT127	To mitigate for potential disturbance to otters associated with the installation of onshore export cable corridors, a mitigation area in the home range of otter populations will be provided east of Savick Brook. Measures within these areas may include artificial holts and improvement of reed bed habitats. This is detailed within the Outline Ecological Management Plan. The final measures will be developed and agreed with the relevant stakeholders as a part of the detailed Ecological Management Plan(s) prior to construction.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan)	Appendix B.1
CoT128	An Outline Hydrogeological Risk Assessment will be prepared in relation to the crossing of Lytham St Annes ~~SSSI~~Dunes SSSI and St Annes Old Links Golf Course to mitigate potential impacts to the hydrologically dependant surface water features of the sand dune system~~.~~ and St Annes Old Links Golf Course abstraction borehole (ref:GWA_01. This will form part of the Outline Code of Construction Practice~~.~~. At detailed design stage, Hydrogeological Risk Assessment~~(~~(s)will be developed in accordance with the Outline Hydrogeological Risk Assessment. The hydrogeological risk assessment(s) will be informed by additional ground investigation information~~, where necessary~~. The scope of the ground investigation and ~~practicable~~groundwater monitoring will be agreed with the Environment Agency and Natural England. These assessment(s) will used to inform the detailed site-specific crossing design for the installation of the offshore export cables beneath Lytham St Annes ~~SSSI.~~ Dunes SSSI and St Annes Old Links Golf Course.	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice)	Section 1.6.4
CoT129	No construction activities at landfall on Lytham St Annes beach will be undertaken by the Morgan Offshore Wind Project and Morecambe Offshore Windfarm Limited between November and March (inclusive). This is to mitigate disturbance to foraging and roosting wader features of Ribble and Alt Estuary SPA and Ramsar site. This is detailed within the Outline Ecological Management Plan.	DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan)	Section 1.6.3

1.3.3 Relevant guidance

1.3.3.1 This OEMP has been prepared in accordance with the following guidance documents, where relevant:

- BS 42020: 2013 Biodiversity: Code of practice for planning and development (British Standards Institution, 2013); and
- Chartered Institute of Ecology and Environmental Management (CIEEM) Good Practice Guidance for Habitats and Species (CIEEM, 2021).

1.3.3.2 The OEMP is also informed by ecological guidance including:

- Guidance Note 8 Bats and artificial lighting. Bat Conservation Trust (2018)
- BS EN 12464-2: Light and lighting
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London
- UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Version 1.1. Chartered Institute of Ecology and Environmental Management
- Badger Protection: Best Practice for Developers, Ecologists and Planners (Wales) Badger Trust (2023).

1.4 Roles and responsibilities

1.4.1 Overview

1.4.1.1 The roles and responsibilities will be appointed by the Principal Contractor or the Applicants. All of the ecological work described in this OEMP will be undertaken under the guidance of the appointed Ecological Clerk of Works (ECoWs).

1.4.1.2 Site inductions and toolbox talks for all site workers will include reference to the requirements of the approved detailed EMP and CoCP.

1.4.2 Primary management

Applicants

1.4.2.1 The Applicants and their onshore project management teams will be responsible for coordinating the onshore and intertidal works, ensuring that the measures in the detailed EMP and CoCP are being implemented and giving necessary direction to Principal Contractor(s) (e.g., setting contractual obligations). The Principal Contractor(s) management team will be responsible for coordinating the works within each Principal Contractor(s) respective contracts.

1.4.3 Secondary management

Site manager

1.4.3.1 In relation to ecological and environmental management, the Site Manager will be responsible for:

- Maintaining the OEMP and detailed EMP(s) as working documents (such that any changes in the baseline conditions identified through pre-construction surveys can be captured and the mitigation/ EPS licence requirements updated as necessary);
- Ensuring environmental standards (including biosecurity protocols as set out in the Outline Biosecurity Protocol (document reference: J1.12)) are adhered to;
- Monitoring compliance with the detailed EMP(s) during construction;
- Responsible for the regular monitoring and inspections of construction work activities;
- Undertaking staff induction courses on environmental issues, with support from the dedicated Environmental Coordinator and environmental specialists; and,
- Recording the content and attendance for all site inductions and toolbox talk activities.

1.4.3.2 Responsibilities will also include managing the coordination between the environmental specialists and the engineering teams.

Environmental co-ordinator

1.4.3.3 The Environmental Co-ordinator will be responsible for the interface between the environmental specialists and engineers during onshore site preparation works and construction. They will have the primary responsibility for managing environmental issues through the construction and post-construction monitoring and for obtaining the relevant licences and consents.

Environmental manager

1.4.3.4 The Environmental Manager will be responsible for ensuring the delivery of the long term monitoring and management by employing suitability qualified and experienced staff to undertake the necessary works. The Environmental Manager will also be responsible for reporting back to stakeholders via the regular monitoring reports, and for ensuring that any remedial measures or changes to management/ monitoring are actioned. Incident reporting and response arrangements are also within the Environment Manager's remit.

1.4.4 Technical roles

Ecological clerk of works

1.4.4.1 Ecological Clerks of Works (ECoWs) will be appointed prior to the start of the onshore site preparation works to provide oversight and supervision where necessary, of any works potentially affecting ecological features to ensure all environmental commitments are met and compliance with the conditions of all licences and permits, including biosecurity protocols as set out in the Outline Biosecurity Protocol (document reference: J1.12).

1.4.4.2 It is likely that there will be a lead ECoW for each Project and several assistant ECoWs working under the direction of the lead ECoWs. The size of the ECoW teams will be appropriate to the construction activity taking place; the teams will receive regular briefings by the Site Manager to confirm their role.

1.4.4.3 The appointed ECoWs will be responsible for undertaking the following tasks:

- arranging all specialist environmental surveys;
- undertake regular environmental site inspections during the onshore site preparation works and construction works;
- supervise other works in sensitive areas as required e.g. including installation of the export cables at the landfall (see paragraph 1.6.3.24);
- managing the interface with recreational users at Fairhaven Saltmarsh (see Appendix B);
- assist (where deemed necessary the Principal Contractor or Transmission Assets Manager(s)) in delivering site inductions and toolbox talks (i.e. presentations and the dissemination of information to site personnel on ecological matters). All briefings will include reference to the requirements set out in the Ecological Management Plan and CoCP. The toolbox talks will include the general principles and area-specific environmental measures that must be implemented;
- the site-wide ecological requirements will be explained within these briefings. Additional toolbox talks may also be provided for each new area of works to ensure that area-specific requirements are fully understood and implemented;
- assist in reviewing Risk Assessments and Method Statements (RAMS); and
- notifying the Principal Contractor of any issues/breaches in the EMP and/or CoCP.

1.4.4.4 The ECoW may also undertake licensable works under an EPS mitigation licence where they are qualified and licenced to do so. Where the ECoW does not hold the appropriate licence, they may work under the supervision of the ecologist named in the mitigation licence

1.4.4.5 All site workers will be informed of the role of the ECoWs. Contact details for the ECoWs will be provided in the detailed EMP and will be made available to site workers and contractors as requested or required. A copy of the detailed EMP will be always kept on site and site workers will be made aware of its location and who to contact to obtain a copy.

1.4.4.6 Any known breaches of the requirements documented within the EMP will be reported to the ECoWs by the Principal Contractors, Site Managers or site workers (either directly or through the Site Managers) as soon as practicable.

1.4.4.7 Should it become evident to the ECoWs that a breach of the requirements of the EMP has occurred, the ECoWs will be responsible for reporting this breach to the responsible Environment Managers and Site Managers. Where necessary, the responsible Environmental Managers will report any breaches to the relevant authorities.

1.4.4.8 The ECoWs will be responsible for developing an appropriate ecology and nature conservation incident response plan for any breach of the EMP, should an ecology and nature conservation incident occur. These will not form part of the detailed EMPs but will be produced by the ECoW following an incident. The responsible Environmental Managers will ensure that any remedial measures proposed are communicated and where required, approved by relevant authorities. Where appropriate Natural England will be consulted with to obtain their agreement for any remedial measures that may be required, as will the Environment Agency specifically in relation to wetlands.

1.4.4.9 The EMP, which will be based on this OEMP, will be a live document and therefore regularly reviewed and updated by the ECoWs as appropriate. The ECoWs will be responsible for the reviewing and updating of the EMP, ensuring that all site personnel are aware of the current version as well as submitting amended versions to relevant Local Authorities for their re-approval. In instances where updates are made, and re-approved by relevant Local Authorities, the ECoWs will provide the Site Manager with details of any updates.

Named Ecologist

1.4.4.10 The Named Ecologist(s) is a professional ecological consultant who has satisfied Natural England that they have the relevant skills, knowledge and experience of the species concerned and is responsible for undertaking and/or overseeing the work undertaken in respect of the licensed species. The Named Ecologist will either provide references to prove they have sufficient experience working with the species in question or refer to previous mitigation licences held. They will support the ECoW(s) in implementing the EPS mitigation licences where required. The Named Ecologist will also be responsible for reporting back to Natural England on licensable works undertaken, within two weeks of the licence elapse date.

1.5 Onshore site preparation – pre-construction surveys

1.5.1 Introduction

1.5.1.1 This section of this OEMP describes the ecological and ornithological surveys that will be undertaken as part of the onshore site preparation works ahead of construction commencing in the vicinity of identified IEFs.

1.5.1.2 Due to the mobility of species and the period of time which will have lapsed between the pre-application surveys and the start of construction, all features surveyed during the pre-application survey effort, and any additional survey locations or features will be re-surveyed where necessary in accordance with the relevant industry guidance and methodology.

1.5.1.3 It is possible that additional IEFs may be recorded during pre-construction surveys that may be undertaken as onshore site preparation works. Where this occurs, the EMP and relevant mitigation strategy will be amended (where required) as soon as practicable. Where there is a significant update in terms of protected species and/or the need for updated/additional mitigation measures, further consultation with the relevant Local Authorities will be undertaken.

1.5.1.4 All pre-construction surveys described in this section will be undertaken by the ECoWs or otherwise appropriately experienced and, where necessary, licenced ecologist(s), who will be approved by the ECoWs and will work under the guidance of the ECoWs. All surveys will be carried out in accordance with biosecurity risk assessments and safe systems of works, which will be produced by the ECoWs prior to the commencement of the survey. **Table 1.2** provides further details of the indicative pre-construction surveys proposed, including timings and methodologies. All surveys will be undertaken by suitably experienced/licensed ecologists.

1.5.1.5 Due to the Applicants' commitment to apply to the Lancashire District Level Licensing scheme, in addition to the pre-application surveys already undertaken, no pre-construction surveys for Great Crested Newts are required for the Transmission Assets.

Table 1-.2: Indicative pre-construction surveys

Survey	Survey requirements	Survey guidance
Aquatic Invertebrates	One survey visit, which can take place any time of year, excluding winter months (i.e. December to February).	Pre-construction surveys using the rapid assessment methodology based on the Biological Monitoring Working Party (BMWP) system (BMWP, 1997) to sample watercourses and water bodies for aquatic invertebrates to identify the presence or likely absence of protected and notable species. Surveys will also follow guidelines set out in BS EN ISO 10870:2012: Water quality. Guidelines for the selection of sampling methods and devices for benthic macroinvertebrates in fresh waters (British Standards Institution, 2012) and Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation (Natural England, 2007).
Bat (preliminary bat roost inspection and tree climbing inspections)	Two survey visits, which can be undertaken from April to September, outside the bat hibernation season (i.e. October to March). Surveys must be completed at least 3 months prior to construction to allow for any EPS licensing if required	Preliminary bat roost inspection and tree climbing inspections undertaken in accordance with Bat Surveys for Professional Ecologists: Good Practice Guidelines 4th edition (Collins, 2023). Monthly monitoring in accordance with Bat Surveys for Professional Ecologists: Good Practice Guidelines 4th edition (Collins, 2023).
Bat (noctule roost at Penwortham)	Three emergence surveys to characterise roost usage in bat activity period spread across the period April to September (surveys must be completed at least 3 months prior to construction to allow for any EPS licensing (if required). Bat hibernation inspection in the winter preceding the commencement of construction (aerial inspection).	Bat surveys undertaken in accordance with Bat Surveys for Professional Ecologists: Good Practice Guidelines 4th edition (Collins, 2023).
Badger	One visit, which can be undertaken from February to April, when badgers are most active. Where required, [redacted] Survey must be at least 3 months prior to construction to allow for any Natural England licensing (if required).	Pre-construction surveys for badgers to be undertaken in accordance with Badger Protection: Best Practice Guidance for Developers, Ecologists and Planners (England) 2023 (Badger Trust, 2023).

Survey	Survey requirements	Survey guidance
Breeding birds	Providing that all vegetation has been removed prior to the breeding season, one visit will be made prior to construction starting.	The pre-construction surveys will encompass the area of proposed works, with an appropriate recommended disturbance buffer zone, as set out in Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022).
Breeding birds listed under Schedule 1 of the Wildlife and Countryside Act 198	In all areas where breeding Schedule 1 species were identified or are likely to occur, breeding bird surveys will be completed one year before construction starts. These surveys will be tailored for the species but will include surveys for barn owl, kingfisher and Cetti's warbler. Survey visits will vary from two for barn owl to six for Cetti's warbler.	The pre-construction surveys will encompass the area of proposed works, with an appropriate recommended disturbance buffer zone, as set out in Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022).
Wintering and migratory birds	Waterbird numbers and behaviours will be regularly recorded at the proposed mitigation areas at Lytham Moss and Newton-with-Scales.	The pre-construction surveys will encompass the mitigation area, with an appropriate recommended disturbance buffer zone, as set out in Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022).
Intertidal birds	Waterbird numbers and behaviours will be regularly recorded at the proposed mitigation area at Fairhaven Saltmarsh.	The pre-construction surveys will encompass the mitigation area, with an appropriate recommended disturbance buffer zone, as set out in Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022).
Fish and eel electric fishing	One survey visit, which can be undertaken from June to October.	The pre-construction surveys will be undertaken in accordance with electric fishing operations: equipment and working practices (Environment Agency, 2019).
Otter	Minimum of two survey visits (must be at least 3 months prior to construction to allow for any EPS licensing if required).	The pre-construction surveys will be undertaken in accordance with Ecology of the European Otter (Chanin, 2003).
Reptile	Seven survey visits, which can be undertaken from April to May and September to October.	The pre-construction surveys will be undertaken in accordance with Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation (Froglife, 1999) and Herpetofauna Workers' Manual. Joint Nature Conservation Committee, Peterborough (Gent and Gibson, 2003).
Terrestrial Invertebrates	One survey visit, which can take place any time of year, excluding winter months (i.e. December to February).	The pre-construction surveys will be undertaken using site-specific field surveys utilised a variety of search techniques, including sweep-netting, hand searching, spot searching and netting of flying insects. The surveys will utilise timed samples

Survey	Survey requirements	Survey guidance
		that follow methodologies defined in Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation (Drake *et al*., 2007) and Measuring Biological Diversity (Magurran, 2004).
Mill Brook Valley BHS	One survey visit to record botanical species assemblage of BHS grassland in the survey season preceding the commencement of construction (in June, July or August).	The survey will be undertaken by a competent botanical surveyor (FISC level 4 or above) and all botanical species will be recorded using the DAFOR scale (Dominant, Abundant, Frequent, Occasional or Rare) to establish a detailed species list baseline record. An updated UK Habitat Classification (UK Habs) survey will also be undertaken to record any variation in the grassland vegetation assemblage within the portion of the BHS impacted by construction.
Water vole	Two survey visits, which can be undertaken from April to September (must be at least 3 months prior to construction to allow for any Natural England licensing (if required).	The pre-construction surveys will be undertaken in accordance with The Water Vole Mitigation Handbook (Dean *et al*, 2016).

1.5.2 Habitats

Establishment of protective buffer zones

Overview

1.5.2.1 Where practicable, works-free protective buffer zones will be established around retained habitats of ecological or ornithological value, such as retained hedgerows, ditches and watercourses. Root Protection Areas around retained hedgerows and trees will be assessed by the ECoWs.

~~1.5.2.1~~1.1.1.1 ~~In order to minimise the likely impacts on ecological and ornithological IEFs, pre-construction studies will be carried out to update information on sensitive habitats to minimise potential impacts.~~

~~Protective buffer zones~~

1.5.2.2 ~~Works-free~~Where required, pre-construction surveys will be undertaken to confirm the location of the protective buffer zones ~~will~~. This may include trees within the Order Limits where surveys could not be undertaken in 2023 or 2024.

1.5.2.3 These buffer zones will be maintained throughout the construction works period and will prohibit the tracking of heavy vehicles, and the storage of vehicles, machinery, equipment and soils.

~~1.5.2.2~~1.1.1.1 ~~established~~The establishment of buffer zones around retained ~~habitats, where practicable. These buffer zones will be maintained throughout the construction works period and will prohibit the tracking of heavy vehicles, and the storage of vehicles, machinery, equipment and soils.~~

1.5.2.4 trees and hedgerows will be undertaken in accordance with the measures set out in the Outline Arboriculture Method Statement (S_D5_10).

Hedgerows

~~1.5.2.3~~1.5.2.5 The Hedgerow Regulations 1997 (The Hedgerow Regulations 1997) protect hedgerows meeting the criteria specified in the regulations from removal without the prior permission of the local authority, with additional protections for those defined as ”important”. It should be noted that where works to hedgerows are permitted under the consented Transmission Assets DCO these are exempt from protection under The Hedgerow Regulations 1997, however, their removal will be limited as far as is practicable and protective buffer zones will be established.

~~1.5.2.4~~1.5.2.6 Where practicable, buffer zones around hedgerows being retained will be at least 5 m in width. Additional buffer zones, where required, will be ascertained by a qualified arboriculturist and established around habitat features of value to protected species.

~~1.5.2.5~~1.5.2.7 Further detail with respect to hedgerows located within the Onshore Order Limits is provided in Volume 3, Annex 3.3: Phase 1 habitat, national vegetation classification and hedgerow survey technical report of the ES (document reference F3.3.3) and the Tree Preservation Order and Hedgerow Plan (document reference B18).

Retained woodland, mature broadleaved trees and veteran trees

~~1.5.2.6~~1.5.2.8 Wherever practicable, buffer zones surrounding retained mature broadleaved trees and the single veteran tree within the Onshore Order Limits will be 15 m in width or the width of the Root Protection Area (depending on which is the greater) as advised by an appropriately qualified surveyor.

~~1.5.2.7~~1.5.2.9 Further detail with respect to woodland and trees located within the Onshore Order Limits is provided in Volume 3, Annex 10.5: Tree Survey and arboricultural impact assessment of the ES (document reference F3.10.5) and the Tree Preservation Order and Hedgerow Plan (document reference B18).

Peat

1.5.2.10 No habitats were recorded within the Transmission Assets Order Limits (as documented within Volume 3 Annex 3.3: Phase 1 habitat, national vegetation classification and hedgerow survey technical report (APP-077)) that would be indicative of underlying deep peat deposits.

1.5.2.11 In the western end of the Transmission Assets Order Limits limited areas of peat resources may be present (as shown in Volume 3 Annex 6.1: Published agricultural land classification and soils data (APP-105) and Annex 6.2: Agricultural land classification survey results (APP-106)). Any peat resources will be managed in accordance with the hierarchy of mitigation measures as set out in section 1.9.6 of the Outline Soil Management Plan.

1.5.3 Protected or otherwise notable species

1.5.3.1 In order to minimise the likely impacts on ecological and ornithological IEFs, pre-construction studies will be carried out to update information on sensitive habitats to minimise potential impacts.

Aquatic invertebrates

~~1.5.3.1~~1.5.3.2 Four ponds of value for aquatic invertebrates, including i.e. Freshfield Farm Pond, North BHS and Freshfield Farm Pond, South BHS, will be permanently lost during construction of the Morgan onshore substation.

~~1.5.3.2~~1.5.3.3 As such, new ponds will be created to compensate for the loss of these ponds. The areas for the new pond creation are shown in **Figure 1.4** and **Figure 1.5** of this OEMP.

~~1.5.3.3~~1.5.3.4 The new ponds will be created to maximise their value for aquatic invertebrate assemblages. This is likely to include a mix of open water habitat, submerged and marginal vegetation.

Badger

~~1.5.3.4~~1.5.3.5 [redacted]

~~1.5.3.5~~1.5.3.6 [redacted]

~~1.5.3.6~~1.5.3.7 A suite of pre-construction surveys for badgers will be undertaken for suitable habitats located within the Onshore Order Limits. Due to the mobile nature of badgers, prior to the commencement of works in an area, a check of the Order Limits plus a 30 m buffer zone, will be undertaken by qualified ecologists in order to confirm whether there have been any changes to the site conditions recorded during the pre-application surveys as well as noting any [redacted]

~~1.5.3.7~~1.5.3.8 If the pre-construction surveys identify areas of key commuting value for badgers [redacted] which would be bisected by the construction corridor, warning signs will be installed and reduced speed limits for construction vehicles will be implemented to address increased risk of road traffic accidents with badgers.

~~1.5.3.8~~1.5.3.9 [redacted]

~~1.5.3.9~~1.5.3.10 A Natural England licence return form and report of the works undertaken will be completed by the ECoWs. A copy of this form and report will be provided to Natural England as soon as reasonably practicable and as prescribed under the conditions of the licence.

Bats

~~1.5.3.10~~1.5.3.11 All species of bats in the UK are fully protected under the Wildlife and Countryside Act (WCA, 1981) (as amended). All species are listed on Schedule 5 of the Act and are therefore subject to the provisions of Section 9. Section 9 makes it an offence to intentionally or recklessly kill, injure or take a bat; possess or control any live or dead specimen or anything derived from a bat; intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat; or intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for that purpose.

~~1.5.3.11~~1.5.3.12 Under the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations), it is an offence to deliberately capture, kill or disturb a bat; damage or destroy a breeding site or resting place of a bat; and keep, transport, sell or exchange, or offer for sale or exchange, a live or dead bat or any part of a bat.

~~1.5.3.12~~1.5.3.13 No known bat roosts will need to be closed under an European Protected Species Mitigation Licence. A noctule summer and hibernation tree roost, near the National Grid Penwortham Substation, was recorded in 2024. This roost is likely to be subject to disturbance impacts and may not be continued to be used by noctules (or other species of bats). As such a bat box suitable for breeding and hibernating noctule should be installed on retained trees further away which, will not be subject to continuous disturbance Impacts.

~~1.5.3.13~~1.5.3.14 A Daubenton's (*Myotis daubentonii*) maternity roost was identified just outside the Onshore Order Limits south of the Dow Brook where the access track to Morecambe Substation will cross the Dow brook. For the Morecambe substation mitigation, the installation of a suitably sized culvert in Dow Brook (in accordance with Bat Conservation Trust guidance) will ensure Daubenton's bat will be able to continue to use the brook as a flightline and foraging habitat. The final design of the mitigation will be refined and agreed with stakeholders post consent as part of the final EMP.

~~1.5.3.14~~1.5.3.15 All suitable trees and/or features suitable for supporting roosting bats located within 50 m of the Onshore Infrastructure Area that have been identified will be subject to further pre-construction surveys effort. These surveys will be undertaken within the appropriate survey window (April to September) and in accordance with relevant guidance (see **Table 1.2**) to ascertain the presence or likely absence of roosting bats.

~~1.5.3.15~~1.5.3.16 Furthermore, as bats use tree roosts intermittently, prior to the commencement of works, mature trees that require felling or pruning will be inspected by a suitably qualified and bat licenced ecologist (this may be the ECoWs if they hold the required qualifications) from ground-level. The suitability qualified and bat licenced ecologist will use a high-powered torch to locate potential roost sites and signs that could indicate the presence of roosting bats. These daytime surveys can be undertaken any time of year. However, where reasonably practicable, the surveys will be undertaken during the winter

months, when leaves and foliage are less likely to obscure features of potential value to bats.

~~1.5.3.16~~1.5.3.17 Should the ground-level, daytime inspection be inconclusive, then a climbing tree inspection will be undertaken, and an endoscope used to ascertain whether a bat roost is present. This type of survey will be undertaken by a licensed bat surveyor.

~~1.5.3.17~~1.5.3.18 Should the tree climbing daytime inspection surveys also prove inconclusive, trees that are assessed as having moderate or high potential to support roosting bats by a suitably qualified ecologist, will be subject to dusk emergence and/or dawn swarming surveys between May and September in order to confirm the presence of roosting bats, identify the species of bat present and determine the size of any roost. This is in accordance with guidelines produced by the Bat Conservation Trust (2016).

~~1.5.3.18~~1.5.3.19 A report of the survey findings and recommendations (including any licensing requirements) for construction will be produced by the suitability qualified and bat licenced ecologist and provided to the Environmental Managers and Site Managers. The report will be made available by the Environmental Managers to local authority and/or Natural England as requested or required, for example, if licenses are required.

~~1.5.3.19~~1.5.3.20 The felling or pruning of a tree containing a bat roost, or significant disturbance or obstruction to bats or their roost will require a Natural England development licence. The suitably qualified ecologist will be responsible for obtaining this licence if it is identified as being required.

~~1.5.3.20~~1.5.3.21 Any additional roosts identified by the pre-construction surveys will be assessed for potential impacts during construction and operation of the Transmission Assets. For example, tree pruning or management resulting in loss or disturbance of a roost, noise and light disturbance, and loss of foraging areas or flight lines, that could affect the roost.

~~1.5.3.21~~1.5.3.22 If the pre-construction surveys identify the presence of a bat roost, the suitably qualified and bat licenced ecologist will notify the Environmental Managers and Site Managers of the requirement to obtain a Natural England licence prior to the commencement of any works on the tree or feature in question, or within 15 m of the tree or feature. If construction is being undertaken within 15 m of a tree or feature that has been identified as potentially supporting roosting bats, construction lighting will be designed in accordance with the best Bats and Artificial Lighting at Night (BCT and ILP, 2023) and light fixtures will be directed away from the roost. For further details on construction lighting measures and mitigations refer to the Outline CoCP (document reference: J1).

~~1.5.3.22~~1.5.3.23 The suitably qualified and bat licenced ecologist will be responsible for ensuring that a Natural England development licence for bats is applied for, prior to the commencement of any works to a tree or feature that has been confirmed as supporting roosting bats. The

licence application will be informed by findings of the pre-construction surveys and will include a detailed method statement and mitigation strategy.

~~1.5.3.23~~1.5.3.24 Works on or within 15 m of a tree or feature containing a bat roost will commence only once a Natural England development licence has been obtained and will be undertaken in accordance with the requirements of the licence. Licenced works will be carried out under the watching brief of a Natural England bat licenced ecologist.

~~1.5.3.24~~1.5.3.25 A Natural England licence return form and report of the works undertaken will then be completed by the suitably qualified and bat licenced ecologist (i.e. the bat licence holder). A copy of this form and report will be provided to the Environmental Managers, Natural England and the local authority as soon as reasonably practicable, and as prescribed by the conditions of the Natural England development licence.

~~1.5.3.25~~1.5.3.26 The following pre-construction mitigation measures will be advised to the Site Manager by the ECoWs regarding commuting and/or foraging bats within the Onshore Order Limits.

- Where possible, hedgerow removal will be undertaken during the winter, to allow time for bat species to adjust. Furthermore, the length and width of hedgerow requiring removal will be minimised wherever possible.
- Where sections of hedgerow have been removed, moveable features will be employed on a nightly basis to ensure continuation of current commuting routes for commuting and/or foraging bats. These will be in line with standard guidance and requirements and will be of similar shape and size to the existing hedgerow. These will be moved into place at least one hour before dusk each day and removed no earlier than 30 minutes after dawn.
- Where existing habitats are located immediately outside any construction works areas, these areas will be retained and protected from damage where possible, using fencing.

Breeding Birds

~~1.5.3.26~~1.5.3.27 Birds are protected at a European level under the EC Directive on the Conservation of Wild Birds 1979 (79/409/EEC). This provides protection for wild birds against being deliberately killed, being taken from the wild, from their eggs being collected, from nest destruction and from being kept in captivity. Allowances are made for game birds. Specially protected birds are listed in Annex 1 of the Directive.

~~1.5.3.27~~1.5.3.28 All species of wild bird in the UK (other than a few pest species) are protected under Part 1 section 1(1) of the Wildlife and Countryside Act 1981 (WCA 1981) (as amended) against intentional or reckless killing, injuring or taking. Taking, damaging or destroying nests in use or being built, and taking or destroying eggs are also prohibited.

~~1.5.3.28~~1.5.3.29 In addition to general protection for birds, certain species are also afforded special protection and are listed in Schedule 1 of the WCA 1981 (as amended). These birds are either rare, endangered, declining or vulnerable.

~~1.5.3.29~~1.5.3.30 As breeding bird distribution may vary over time, targeted pre-construction survey updates for breeding birds will be required to establish the presence/absence of protected or notable breeding bird species.

~~1.5.3.30~~1.5.3.31 These surveys should take place a year prior to the commencement of construction and if protected or notable species are found to be present then appropriate working buffers will need to be instated and/or relevant mitigate licences put in place.

~~1.5.3.31~~1.5.3.32 The radius of these buffers would be determined on a species-by-species basis based on known disturbance distances from industry recognised literature, such as Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022).

~~1.5.3.32~~1.5.3.33 If species designated under Schedule 1 of the Wildlife and Countryside Act 1981 are identified during the pre-construction surveys, then there may be the requirement to apply to Natural England for a disturbance or destruction of nest licence. However, this will be decided on a case-by-case basis by Natural England.

~~1.5.3.33~~1.5.3.34 If an active bird's nest is identified within the works area, a 5 m buffer zone (as advised by the ECoWs) will be implemented during the construction works within this area. The ECoWs will inform the Site Manager as soon as practicable.

~~1.5.3.34~~1.5.3.35 If necessary, the ECoWs will attend the area of work to assess the most appropriate mitigation measures required to protect the nest. Protective measures may include the creation of a 5 m wide works-free buffer zone around the nest, which will be maintained until a suitably qualified ecologist confirms the young have fully fledged and left the nest.

~~1.5.3.35~~1.5.3.36 A record of findings and measures undertaken will be maintained by the Site Manager and provided to the Environmental Managers.

~~1.5.3.36~~1.5.3.37 Furthermore, should a Schedule 1 bird nest be encountered during works, then works will cease in that area and the ECoWs will be consulted prior to works resuming. If the nest is active (as determined by the ECoWs), Natural England will be consulted regarding appropriate mitigation. This is likely to consist of a species-specific buffer zone that will be subject to agreement with Natural England and the ECoWs. Works will not resume until after the young have fledged, and under the authorisation of a suitability qualified ecologist.

~~1.5.3.37~~1.5.3.38 Where vegetation and habitat needs to be cleared, this will be carried out outside of the breeding bird season and the areas where construction is planned will be made unattractive for returning breeding birds. During the breeding season, and for all areas where construction

is to take place, even where vegetation has been cleared, it will be the role of the ECoWs to carry out a pre-commencement nest check before construction can proceed.

~~1.5.3.38~~1.5.3.39 As explained in **section 1.1.2** above, several mitigation areas are proposed within the Onshore Order Limits. Those of relevance to breeding birds include the permanent mitigation area south of Newton-with-Scales.

~~1.5.3.39~~1.5.3.40 Wader scrapes (shallow depressions created in fields to benefit wading birds like lapwing and redshank) are proposed in the permanent mitigation area south of Newton-with-Scales. These wader scrapes will be created prior to the commencement of construction and outside of the core winter and breeding periods (i.e., between August and October).

Further information regarding each of the mitigation areas is provided in **Appendix B** of this OEMP.

Further details with regard to the measures that will be adopted for onshore site preparation works for breeding birds can be found in the Breeding Bird Protection Plan, which is provided in **Appendix C** of this OEMP.

Wintering and Migratory Birds

~~1.5.3.40~~1.5.3.41 Pre-application surveys for wintering and migratory birds have identified nationally important numbers of waterbirds, including pink footed goose, whooper swan, shelduck, and blacktailed godwit which have been found to be using functionally linked land (associated with Ribble and Alt Estuary SPA) along the Onshore Order Limits.

~~1.5.3.41~~1.5.3.42 As explained in **section 1.1.2** above, a Temporary construction mitigation area at Lytham Moss and the permanent mitigation area south of Newton-with-Scales have been identified and are associated reducing impacts on wintering and migratory birds. Full details of the species that this area aims to mitigate for and details of the proposed measures can be found in **Sections B.1, B.2.2** and **B.2.5**.

~~1.5.3.42~~1.5.3.43 Wader scrapes are proposed in the permanent mitigation area south of Newton-with-Scales. These wader scrapes will be created prior to the commencement of construction works and outside of the core winter and breeding periods (i.e., between August and October).

~~1.5.3.43~~1.5.3.44 Targeted pre-construction survey updates for wintering and migratory birds will be required to establish the baseline prior to finalising the mitigation plans in the detailed Ecological Management Plan(s).

~~1.5.3.44~~1.5.3.45 Surveys at Lytham Moss will follow two methodologies. Standard goose count methodologies will be undertaken at a frequency agreed with Natural England~~,~~ (and Blackpool Airport and BAE Systems/DIO as part of the detailed Wildlife Hazard Management Plan process) in order to inform the amount of feed that needs to be provided and any targets that need to be set. Surveys following a WeBS count

methodology will also be undertaken to provide a baseline for the temporary scrape creation.

~~1.5.3.45~~1.5.3.46 Surveys at Newton-with-Scales will follow a WeBS count methodology and will be undertaken to provide a baseline for the proposed habitat improvements at this site and inform any targets that need to be set. The frequency of these surveys is to be agreed with Natural England~~, Blackpool Airport and BAE Systems~~ as part of the detailed Ecological Management Plan(s). Blackpool Airport and BAE Systems/DIO will be consulted as part of the detailed Wildlife Hazard Management Plan process.

~~1.5.3.46~~1.5.3.47 Further information regarding these mitigation measures is provided in **Appendix B** of this OEMP.

Intertidal Birds

~~1.5.3.47~~1.5.3.48 As explained in **section 1.1.2** above, several mitigation areas are proposed within the Onshore Order Limits. Those of relevance to intertidal birds include the Permanent mitigation area at Fairhaven Saltmarsh.

~~1.5.3.48~~1.5.3.49 Mitigation measures within the Permanent mitigation area at Fairhaven Saltmarsh will need to be enacted at least two months prior to the commencement of construction work. Possible pre-construction mitigation measures proposed within the mitigation area at Fairhaven Saltmarsh comprise.

- Soft fencing
- Signage:
- Wardens:

~~1.5.3.49~~1.5.3.50 In order to inform the final plans and targets, ongoing monitoring of this site will be undertaken at a frequency agreed with Natural England, ~~Blackpool Airport and BAE Systems~~ as part of the detailed Ecological Management Plan(s). Blackpool Airport and BAE Systems/DIO will be consulted as part of detailed Wildlife Hazard Management Plan process. These surveys will be undertaken using a standard WeBS methodology.

~~1.5.3.50~~1.5.3.51 Further information regarding these mitigation measures and the species they are targeted at is provided in **Sections B.1** and **B.2.1** of this OEMP.

Great Crested Newts

~~1.5.3.51~~1.5.3.52 Pre-application surveys confirmed Great Crested Newts (GCN) (*Triturus cristatus)* to be present within and surrounding the Onshore Order Limits. The construction of Transmission Assets will result in the permanent loss of ponds which form part of the areas of GCN habitat, which are assumed to represent indicative metapopulations.

~~1.5.3.52~~1.5.3.53 However, as stated in CoT92 of the ES Volume 1, Annex 5.3: Commitments Register (document reference F1.5.3), the Applicants intends to apply for GCN District Level Licensing. As such, all ponds identified as suitable for supporting GCN to be lost during construction of the Transmission Assets would be suitably compensated via the creation of additional ponds.

~~1.5.3.53~~1.5.3.54 GCN habitat clearance to be undertaken pre-construction will include the following mitigation measures.

- In advance of any works, vegetation management must be undertaken to reduce the suitability for GCN, to discourage GCN from areas which will be soon stripped. Cut scrub and tall grass no lower than 150 mm; carefully remove arisings and leave habitat undisturbed for 48 hours.
- To be followed by directional vegetation clearance (avoiding wet weather during the active period) and soil stripping. The direction of working to be determined by the location of good newt habitat to be retained (starting furthest away from the favourable habitat and working towards it, to encourage GCN to disperse towards safe areas).
- This vegetation clearance can be undertaken during winter but no features offering potential places of shelter or refuge will be disturbed during the winter hibernation period, when amphibians are likely to be overwintering and are most vulnerable to disturbance.
- Vegetation management must be undertaken at the appropriate time of the year and in appropriate weather conditions, to avoid killing/injuring GCN.
- A licensed ecologist (or their accredited agent) must be present during all vegetation clearance works, which are considered to require advice and supervision.

~~1.5.3.54~~1.5.3.55 For the ponds located within the Order Limits, which will need to be drained or infilled during construction of the Transmission Assets, measures will be taken to reduce impacts to GCN.

~~1.5.3.55~~1.5.3.56 Draining or infilling of existing ponds suitable for GCN within the Onshore Order Limits (to be permanently or temporarily lost during construction) may only be undertaken between mid-September to early February (i.e. autumn/winter), to avoid sensitive breeding and hibernation periods for GCN. However, a pond which has ceased to hold water outside this period (i.e. spring/summer) would not be included under these restrictions. If there is a risk that GCN could use the substrate of the pond for hibernation, then a temperature restriction will apply during this period (i.e. temperatures not lower than 5 °C).

~~1.5.3.56~~1.5.3.57 Ponds that support (or are likely to support) GCN to be permanently or temporarily lost during construction, will be drained down during the autumn/winter period (where practicable), using a fine mesh filter, followed by hand and destructive searches of the pond bed and immediate surroundings to capture any animals present.

~~1.5.3.57~~1.5.3.58 If a GCN is located during construction, works in the area will be halted immediately and the ECoWs will be informed. To maintain the welfare of the GCN, a Natural England GCN licensed ecologist will attend the site to handle and where necessary, relocate any GCN to outside the exclusion fence line and provide further ecological advice as to the way forward and assess whether a Natural England licence is required or not. On-going clearance of habitat of potential value to GCN (i.e. hedgerows and scrub) within the surrounding 250 m area will be monitored. If any more GCN are located during construction in the area, site works will be halted immediately, and the GCN licensed ecologist and/or ECoWs will be informed. The ECoWs will inform the Site Managers and Environmental Managers as soon as practicable of the need to obtain a Natural England licence for GCN before works can recommence in the area

~~1.5.3.58~~1.5.3.59 The ECoWs will be responsible for applying for a Natural England development licence for GCN.

Fish and eel

~~1.5.3.59~~1.5.3.60 Infrequent records for protected and notable fish species were identified as documented in Volume 3, Annex 3.1: Onshore ecology desk study technical report (document reference F3.3.1) of the ES. Those identified related to Atlantic salmon, brown/sea trout, European eel, river lamprey and smelt between 2004 and 2016.

~~1.5.3.60~~1.5.3.61 As described in ES Volume 3, Annex 3.7: Fish and eel survey technical report of the ES (document reference F3.3.7), field surveys identified the presence of European eel within Dow Brook, Wrea Brook and Mill Brook which intersect the Onshore Order Limits. Fish species, including three-spined stickleback, flounder, roach, dace and chub have also been found during fish and eel surveys. As such, there is potential for eel and fish to be present within other watercourses and ditches.

~~1.5.3.61~~1.5.3.62 The Eels (England and Wales) Regulations 2009 allow the Environment Agency to implement measures for the recovery of eel stocks. Part 4 of the Regulations includes reference to construction and/or alteration of any obstruction to the passage of eels. As such, eel passes may be required where an obstruction to the passage of eels is created.

~~1.5.3.62~~1.5.3.63 Pre-construction surveys will be undertaken within the optimal survey period (June to October), for any watercourses and ditches likely to be affected during construction to determine the presence of protected fish species. These surveys would also be used to determine requirements for eel passes.

Otter

~~1.5.3.63~~1.5.3.64 As described in Volume 3, Annex 3.12: Otter survey technical report of the ES (document reference F3.3.12), pre-application surveys indicate that the home range of the breeding population of otter extends from Savick Brook, through Lea Marsh, across the River Ribble into Mill Brook and south to Penwortham.

~~1.5.3.64~~1.5.3.65 This area represents core habitat for the otter population, based on the density of field signs, but evidence of otter was also found throughout the Onshore Order Limits and surrounding area.

~~1.5.3.65~~1.5.3.66 Trenchless technologies will be used to install the 400 kV grid connection cable corridor beneath Lea Marsh BHS, Savick Brook and Mill Brook. These areas provide suitable habitat for otter. The trenchless construction would extend to approximately 80 m at the closest point from the boundary of the BHS, which is sufficient to avoid suitable direct habitat for loss for otter.

~~1.5.3.66~~1.5.3.67 Disturbance impacts within the core of the otter breeding range will be mitigated for through the provision of alternative habitat improved and enhanced for Otter at Lea Marsh, which will be of a sufficient distance from construction activities.

~~1.5.3.67~~1.5.3.68 The anticipated measures that are likely to be taken at Lea Marsh to mitigate for disturbance effects upon otters due to cable installation include:

- provision of artificial holts;
- improvement of reed beds; and
- INNS (Invasive Non-native Species) control

~~1.5.3.68~~1.5.3.69 Due to the mobility of otters and the period of time which will have lapsed between the preapplication surveys and the start of construction, a suite of pre-construction surveys for otters will be undertaken prior to the start of construction to determine the requirement for any Natural England licences.

~~1.5.3.69~~1.5.3.70 These surveys will be undertaken of all watercourses that have been assessed as providing optimal habitat to support otters. A Natural England licence is required for any works that would result in the loss or disturbance of an otter holt or resting place, or if any works are likely to cause significant disturbance or displacement of otters. In order to inform the EPS licence survey methods will include consideration of camera traps, for the otter holts and couches identified at Savick Brook to ascertain the level of use.

~~1.5.3.70~~1.5.3.71 If pre-construction surveys confirm the presence of a previously unidentified otter holt or resting place within the survey area, and if it is not practicable to micro-site working areas to include a 100 m works-free buffer zones, a Natural England development licence for otters will be obtained by the ECoWs prior to the commencement of works at the location for which the licence has been sought for. A licence application is likely to include the provision of a pre-construction artificial otter holt in a suitable location and at an appropriate distance from working areas. Where this is stipulated in the license, this will be adhered to, and all licensed works will be overseen by the ECoWs.

~~1.5.3.71~~1.5.3.72 A Natural England licence return form and report of the works undertaken will be completed by the licensed ecologist following the completion of works and approved by the ECoWs.

~~1.5.3.72~~1.5.3.73 A copy of this form and report will be provided to Transmission Assets Environmental Manager, Natural England and the local authority as soon as reasonably practicable and as prescribed under the conditions of the licence.

Reptiles

~~1.5.3.73~~1.5.3.74 Pre-application phase 1 habitat surveys identified areas of suitable reptile habitat (e.g. hedgerow bases and areas of scattered scrub/tall ruderals) within Onshore Order Limits. However, as described in Volume 3, Annex 3.8: Great crested newt and reptile survey technical report of the ES (document reference F3.3.8) no evidence of reptiles has been recorded.

~~1.5.3.74~~1.5.3.75 Areas of potential reptile habitat that require clearance, particularly areas associated with the onshore substations and temporary construction compounds, will be managed prior to the commencement of construction to deter or displace any reptiles which might be present from the working areas.

~~1.5.3.75~~1.5.3.76 Habitat management will involve the clearance of ground cover to create unfavourable conditions for reptiles. Scrub and tall grasses will be cut, to between 5 cm and 10 cm in height, and arisings will be removed from site.

~~1.5.3.76~~1.5.3.77 If habitat is required to be cleared during the reptile hibernation period (i.e. typically November to February inclusive, but dependent on local weather conditions), trees and scrub will be cut using brushcutters or chainsaws, to a height of approximately 30 cm above ground level, to minimise the potential for disturbance to root balls where hibernating reptiles may be located. Remaining rough grass cover will be mowed short (approximately 5 cm above ground level).

~~1.5.3.77~~1.5.3.78 Arisings will not be stacked on site as this could later provide a habitat feature of potential value to nesting birds, reptiles or other species. Instead, arisings will be removed from site.

~~1.5.3.78~~1.5.3.79 Areas subject to habitat clearance will be maintained in a condition not favoured by reptiles (i.e. with minimal ground cover) until the commencement of construction of works (e.g. through regular mowing of ground vegetation).

~~1.5.3.79~~1.5.3.80 All habitat clearance and management would be undertaken under the supervision and guidance of the ECoWs on site. In addition, a record of works will be maintained by the ECoWs and will be provided to Principal Contractors and the Site Managers. A copy of this record will be made available to the relevant Local Authorities on request.

Terrestrial invertebrates

~~1.5.3.80~~1.5.3.81 Pre-application phase 1 habitat surveys identified areas of suitable terrestrial invertebrate habitat (e.g. river margin and pond margin habitats and saltmarsh) within the Onshore Order Limits. In the surveys, widespread and generally common species were identified

(see Volume 3, Annex 3.6: Terrestrial invertebrate survey technical report of the ES (document reference F3.3.6)).

~~1.5.3.81~~1.5.3.82 If terrestrial invertebrates are encountered during the works, then the works will cease, and a suitably qualified ecologist contacted. They will assess the need for further mitigation measures including the requirement for a Natural England licence prior to works re-commencing. Construction works will be carried out in accordance with the requirements of the licence and under the guidance of the suitably qualified ecologist and, where necessary, an ecological watching brief.

Water vole

~~1.5.3.82~~1.5.3.83 During the 2023 and 2024 pre-application surveys, limited water vole field signs were recorded. Full survey results are provided in Volume 3 Annex 3.9: Water vole survey technical report of the ES (document reference F3.3.9). However, as described in Volume 3, Annex 3.1: Onshore ecology desk study technical report of the ES (document reference F3.3.1) several records of water voles were reported within the Onshore Order Limits.

~~1.5.3.83~~1.5.3.84 For the purposes of this OEMP, a precautionary approach has been adopted, and mitigation requirements have been determined assuming that water voles could be present within the Order Limits. However, if water voles are found to be absent from the development area at the time of construction, no translocation of water voles would be necessary.

~~1.5.3.84~~1.5.3.85 Pre-construction surveys will be undertaken to confirm the presence/absence of water voles along all ditches of potential value to water voles that would be affected during construction of the Transmission Assets.

~~1.5.3.85~~1.5.3.86 If water voles are encountered during the works, then the works will cease, and a suitably qualified ecologist contacted. They will assess the need for further mitigation measures including the requirement for a Natural England licence prior to works re-commencing. Construction works will be carried out in accordance with the requirements of the licence and under the guidance of the suitably qualified ecologist and, where necessary, an ecological watching brief.

1.6 Construction mitigation measures

1.6.1 Introduction

1.6.1.1 This section of this OEMP describes the ecological and ornithological mitigation measures adopted as part of the Transmission Assets that will be undertaken during construction to ensure the protection of notable habitats and species.

1.6.2 Construction mitigation measures

1.6.2.1 Construction of the Transmission Assets will be undertaken in accordance with the CoCP and supporting documentation. An Outline

CoCP (document reference J1) has been submitted with the DCO application for the Transmission Assets.

1.6.3 Habitat mitigation measures

Protective buffer zones

~~1.6.3.1~~1.1.1.1 ~~Where practicable, works-free protective buffer zones will be established around retained habitats of ecological or ornithological value, such as retained hedgerows, ditches and watercourses. Root Protection Areas around retained hedgerows and trees will be assessed by the ECoWs.~~

~~1.6.3.2~~1.6.3.1 All the protective buffer zones and Root Protection Areas described ~~under described~~ in **section 1.5.2** and **paragraphs 1.6.3.12** to **1.6.3.14**, will be maintained throughout the construction phase of the Transmission Assets. The tracking of heavy vehicles, and the storage and refuelling of vehicles, machinery, equipment, and soils would be prohibited from buffer zones during construction of the Transmission Assets.

~~1.6.3.3~~1.6.3.2 In addition, as described in **section 1.9** of this OEMP, the ECoWs will monitor adherence to the requirements of the buffer zones and will maintain a record of all findings and site checks undertaken.

~~1.6.3.4~~1.6.3.3 Should any breach of the requirements become evident, the ECoWs will inform the Environmental Manager. The ECoWs will inform the Site Manager of remedial measures required to be undertaken as soon as practicable to resolve the situation and minimise effects on ecology.

Trees and hedgerow removal methodology

~~1.6.3.5~~1.6.3.4 Any tree felling works and hedgerow clearance will be carried out in accordance with protected species requirements described in the sections below. Any soil storage areas will be located outside of tree protection zones as identified by the arboricultural survey and at least 5 m from retained hedgerows.

~~1.6.3.6~~1.6.3.5 All hedgerow removal works will comply with 'BS 5837: 2012 Trees in relation to design, demolition, and construction – Recommendations'.

~~1.6.3.7~~1.6.3.6 Removal of existing hedgerows within the construction works area will comprise cutting the hedgerows to ground level (or as close as possible), followed by excavation of root systems by a mechanical excavator during soil stripping. All woody arisings will be removed for offsite disposal with soft vegetation (e.g., field margins and hedgerow understory vegetation) flailed and left in-situ.

~~1.6.3.8~~1.6.3.7 Where hedgerow removal is proposed, works will be undertaken under ecological supervision by a suitably qualified ECoW.

~~1.6.3.9~~1.6.3.8 Hedgerow removal will be undertaken outside of the bird breeding season wherever possible (which is typically from March to

August inclusive). If hedgerows cannot be removed outside of the bird breeding season, a pre-construction check for nesting birds would be undertaken at most 48 hours in advance of vegetation removal, and any nests identified will be protected and left undisturbed until the young have fledged as outlined below in Appendix C

~~1.6.3.10~~1.6.3.9 Hedgerow removal will also be programmed for winter (November to February) where possible, to allow bats time to adjust to the change in their commuting habitat, prior to their maternity period. Hedgerows will be removed as close to the onset of works as possible and construction works will not commence after nights of poor weather (in case of bad weather roosts being used).

~~1.6.3.11~~1.6.3.10 The length of individual hedgerow sections to be removed will be reduced as far as reasonably practicable according to construction methods.

~~1.6.3.12~~1.6.3.11 Where it is necessary to remove sections of hedgerow for cable installation, all sections of hedgerow temporarily removed to enable construction will be replanted as soon as practicable, with regard to appropriate planting months.

Tree and Hedgerow retention and protection

~~1.6.3.13~~1.6.3.12 All hedgerows and trees retained within, or on the boundary of, the construction works area will be appropriately protected from damage during the construction works. A root protection area (RPA) is to be calculated, to ensure hedgerows and associated trees are not harmed by development activities. The British Standard (BS5837) defines the root protection area as ‘the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability’. All trees will be surveyed prior to any works taking place. An Arboricultural Consultant will be responsible for ensuring that all retained trees and Root Protection Areas (RPAs) are satisfactorily protected during construction. RPAs and tree protection measures will be implemented in accordance with the Arboriculture Method Statement (S_D5_10).

~~1.6.3.14~~1.6.3.13 This is to be calculated for single stem trees as a circle with a radius 12 times the stem diameter.

~~1.6.3.15~~1.6.3.14 Subject to landowner permissions, hedgerows that are important for foraging and commuting bats would be left to become overgrown either side of the section to be removed prior to the construction works being undertaken and where possible scrub / rough grassland margins will be left to develop. These retained hedgerows would be allowed to become overgrown, creating a taller and wider area of hedgerow which will provide a more obvious corridor for commuting bats to travel along using echolocation. This would be undertaken to improve the quality of the surrounding hedgerow as a resource for commuting and foraging bats.

Ditches and watercourses

~~1.6.3.16~~1.6.3.15 Where ditches are crossed by permanent infrastructure or where open cut trenching or temporary vehicular access across ditches is required, culverts with mammal ledges will be installed to provide a dry path for animals to use.

Ponds

~~1.6.3.17~~1.6.3.16 As noted in CoT31 (see Volume 1 Annex 5.3: Commitments Register (REP4-018)), ponds identified during the route planning and site selection process have been avoided where possible. During construction any newly identified ponds will be avoided through micro-siting of the onshore export cable corridor and 400 kV grid connection cable corridor where reasonably practicable.

Mill Brook Valley Biological Heritage Site

~~1.6.3.18~~1.6.3.17 During the onshore site preparation works, an appropriately experienced ECoW will undertake a site walkover to identify sensitive grassland habitats within Mill Brook Valley Biological Heritage Site (BHS). The results of the walkover will inform the micro-siting of the construction compounds to minimise impacts potential impacts to the BHS.

~~1.6.3.19~~1.6.3.18 A pre-construction survey of the grassland (including areas within the temporary construction compound, and adjacent to it for comparison) will be undertaken to record a detailed species-list for the grassland.

~~1.6.3.20~~1.6.3.19 Appropriate fencing and signage will be installed to ensure there is no accidental damage to the unaffected sections of the BHS adjacent to the construction compound, including an appropriate buffer to the retained trees (minimum 10 m to accommodate root protection areas).

~~1.6.3.21~~1.6.3.20 Topsoil and subsoil from the BHS grassland will be stored separately within the construction compound (in accordance with the Soil Management Plan (J1.7) and clearly marked with appropriate signage), to ensure that the seedbank is retained and to increase the likelihood of successful reinstatement of the grassland post-construction.

~~1.6.3.22~~1.6.3.21 ~~-~~ Post-construction monitoring will be undertaken to monitor re-establishment of the grassland, a detailed programme of which will be included in the revised EMP along with measures for remedial action where it was determined that the grassland was not successfully re-establishing.

~~1.6.3.23~~1.6.3.22 Weed wiping will be undertaken where necessary to control undesirable weed species such as docks and thistles.

Landfall

~~1.6.3.24~~1.6.3.23 No construction activities at landfall on Lytham St Annes beach will be undertaken by the Morgan Offshore Wind Project and Morecambe Offshore Windfarm Limited between November and March (inclusive). This is to mitigate disturbance to foraging and roosting wader features of Ribble and Alt Estuary SPA and Ramsar site (CoT129).

~~1.6.3.25 In addition to a seasonal restriction on works, consideration is being given by the Applicants to implementing a restriction on certain construction activities during the two-hour period before and after high water on tides at Blackpool which are equal to or exceeding 7.8 m (Chart Datum) during the passage months of April and October. The activities excluded from the restriction are cable burial using the marinized trenched and cable pull in. The Applicants will update this outline plan when discussions with Natural England are concluded on the need for this additional restriction.~~

~~1.6.3.26~~1.6.3.24 Other mitigation measures to be implemented at the landfall are:

- An ECoW will be strategically stationed at critical 'pinch points' where the public crosses the working corridor, advising visitors to avoid certain areas of the foreshore to ensure that birds have adequate space to feed during the construction work (October and April).
- Furthermore, ECoWs and wardens will play a vital role in educating the public at landfall and Fairhaven Saltmarsh about the potential risks recreational disturbance poses to sand lizards and birds, and the measures that can be implemented to mitigate these impacts.
- Visual screening will be provided at the temporary construction compound situated on Lytham St Annes beach during the months of October and April.
- Exclusion zones of 25 m will be established either side of cable pull in (year round).

Lytham St Annes Dunes SSSI

~~1.6.3.27~~1.6.3.25 An Outline Hydrogeological Risk Assessment has been prepared (S_D3_6_~~F02~~F03) in relation to the crossing of Lytham St Annes Dunes SSSI to mitigate potential impacts to the hydrologically dependant surface water features of the sand dune system. This forms part of the Outline Code of Construction Practice. At detailed design stage, Hydrogeological Risk Assessment (will be developed in accordance with the Outline Hydrogeological Risk Assessment). The hydrogeological risk assessment(s) will be informed by additional ground investigation information~~, where necessary~~. The scope of the ground investigation and ~~practicable~~groundwater monitoring will be agreed with the Environment Agency and Natural England. These assessment(s) will used to inform the detailed site-specific crossing

design for the installation of the offshore export cables beneath Lytham St Annes SSSI (CoT128).

1.6.4 Protected or otherwise notable species

1.6.4.1 Construction measures in respect of protected and notable species will be implemented in accordance with the EMP.

Badgers

1.6.4.2 [redacted]

1.6.4.3 [redacted] will be specified in the final EMPs, which will be developed in general accordance with the Outline EMP (document reference J6) submitted with the DCO application. In addition, in line with CoT17 (see Volume 1 Annex 5.3: Commitments Register (REP4-018)), where required provision will be made for badger access in relevant construction areas when work is not taking place in order to ensure normal movements as far as reasonably possible.

1.6.4.4 Heras fencing will be erected around all construction sites to deter badgers from the construction work areas.

1.6.4.5 In addition to Heras fencing surrounding the construction works, if badgers do manage to gain entry to where works are being carried out, the following further measures should be implemented daily.

- Any excavated holes to have a wooden board placed in them overnight to provide a means of escape should any badger accidentally enter the excavation.
- Any chemicals to be securely stored at night in a suitable locked container.
- To avoid attracting badgers into the works area, any food waste must be disposed of in appropriate bins or removed from site at the end of each day.

1.6.4.6 [redacted]

Bats

1.6.4.7 [redacted]

[redacted]

1.6.4.9 In line with CoT28 (see Volume 1 Annex 5.3: Commitments Register (REP4-018)) any potential construction lighting in nearby areas will be directed away from sensitive ecological receptors such as the roost site. Where possible the licensed ecologist will direct the installation of a woodcrete bat box in a suitable location on a mature tree located at least 30 m from the works area, so that any disturbed bat(s) can relocate to this area.

1.6.4.10 If the tree requires felling, a Natural England licence will be obtained prior to felling. Licences typically require felling to take place in/around October/November or March/April, to minimise the impact on any bats that might be present.

1.6.4.11 In the unlikely event of a 'missed' tree roost being accidentally felled or disturbed, the ECoWs will ensure that a Natural England bat licensed ecologist attends the site as soon as practicable. The bat licensed ecologist will ensure the section containing the roost is moved to a suitable safe and sheltered location, at least 30 m from the works area and away from any potential obstructions that could prevent the exit of bats which may still be present. If required, the bat licenced ecologist will capture and relocate any disturbed bat(s) to a suitable alternative roost site, such as the pre-installed bat roost box. Alternately, if considered necessary, the bat(s) will be taken to a Natural England licensed handler who can monitor its recovery prior to release.

1.6.4.12 A record of findings and measures undertaken to protect any disturbed roosting bats will be maintained by the ECoWs and provided to the Transmission Assets Environmental Manager. The ECoWs will inform Natural England of the event and measures undertaken as soon as practicable. If a Natural England licence is required to continue the works, the ECoWs will complete and submit an application, and works will not recommence until the licence has been granted. Works would then be carried out in accordance with the licence and as necessary, under the supervision of a Natural England bat licensed ecologist.

1.6.4.13 Within active construction areas, i.e., where removal of sections of hedgerows is required, moveable features will be employed on a nightly basis to ensure continuation of current commuting routes for commuting and/or foraging bats. This approach will only be applied to those hedgerows that have been recorded to provide high and moderate foraging/commuting habitat. These will be in line with standard guidance and requirements and will be a consistent shape and size to the existing hedgerow. These will be moved into place at least one hour before dusk each day and removed no earlier than 30 minutes after dawn.

1.6.4.14 Construction site lighting will only operate when required and will be positioned and directed to avoid unnecessary illumination to residential properties, sensitive ecological receptors and footpath users, and minimise glare to users of adjoining public highways. Construction site lighting will be designed in accordance with latest relevant available

guidance and legislation and the details of the location, height, design and luminance of lighting to be used will be detailed within the Outline Construction Artificial Light Emissions Management Plan, as part of the Outline CoCP (CoT28).

1.6.4.15 All necessary lighting shall be designed to minimise light scatter (kept near or below the horizontal) and in line with Guidance Note 8 – Bats and Artificial Lighting (ILP, 2023).

Fish and eel

1.6.4.16 As described in Volume 3, Annex 3.7: Fish and eel survey technical report of the ES (document reference F3.3.7), field surveys identified the presence of European eel within Dow Brook, Mill Brook and Wrea Brook, which intersect the Onshore Order Limits.

1.6.4.17 The Onshore Crossing Schedule of the ES Volume 1, Annex 3.2 (document reference F1.3.2) illustrates the areas where trenchless techniques will be utilised for the installation of the onshore export cable and 400 kV grid connection cable corridor.

1.6.4.18 Trenching work at smaller watercourses and ditches would not be undertaken at night and would include measures to avoid eels from becoming trapped (e.g. ramped ends of trenches).

GCN

1.6.4.19 As stated in CoT92, (see Volume 1, Annex 5.3: Commitments register of the ES (document reference F1.5.3)), GCN mitigation will be in line with the GCN District Level Licensing.

1.6.4.20 If any GCN exclusion fencing is installed prior to the commencement of construction works, this will be monitored throughout the construction phase to ensure that necessary repairs can be undertaken as soon as practicable. The Site Manager will be responsible for ensuring this is undertaken regularly.

1.6.4.21 If a GCN is located during construction, works in the area will be halted immediately and the ECoWs will be informed. To maintain the welfare of the GCN, a Natural England GCN licensed ecologist will attend the site to handle and where necessary, relocate any GCN to outside the exclusion fence line and provide further ecological advice as to the way forward and assess whether a Natural England licence is required or not. On-going clearance of habitat of potential value to GCN (i.e. hedgerows and scrub) within the surrounding 250 m area will be monitored. If any more GCN are located during construction in the area, site works will be halted immediately, and the GCN licensed ecologist and/or ECoWs will be informed. The ECoWs will inform the Site Managers and Environmental Managers as soon as practicable of the need to obtain a Natural England licence for GCN before works can recommence in the area.

1.6.4.22 The ECoWs will be responsible for applying for a Natural England development licence for GCN.

Otter

1.6.4.23 Based on the current survey information, the construction phase will not directly impact any otter holts or resting places given the implementation of trenchless techniques. However, given the close proximity of the works to the core otter breeding population, habitat works to Lea Marsh will be provided as an alternative undisturbed resting site for the otter population.

1.6.4.24 If working at night is undertaken within or adjacent to watercourses, any lighting will be focussed on working areas and directed away from the watercourse and other watercourses of potential value to otters. Lighting will be kept to a minimum, up to approximately 100 m from otter holts or other identified resting places.

Reptiles

1.6.4.25 Measures to reduce the impacts to reptiles during construction will involve the management of vegetation (e.g. strimming long grass) to discourage occupation by reptiles and the identification and removal of potential refugia and hibernacula (if present) prior to construction works taking place in the relevant areas. These works will be undertaken under the supervision of the ECoWs. The exact measures will be secured via the final EMP post consent, with agreement from relevant stakeholders.

1.6.4.26 The management of vegetation (by strimming or flailing) and removal of potential refugia should only be undertaken during the reptile active period of March to October and therefore may need to be carried out well in advance of construction in areas where work is scheduled to commence during the winter months. At least 24 hours will be left between vegetation management and construction works commencing in affected areas.

1.6.4.27 Due to the potential disturbance of sand lizard habitat at Lytham St. Annes Dunes caused by piling for the cofferdams, which are necessary for the construction of exit pits for the offshore export cables, the following measures are proposed:

- vibration generating equipment to be situated as far from the sand lizard habitat as is practicable to reduce energy transfer to the sand dunes;
- the minimum hammer energy necessary to perform the task to be used;
- cut-off trenches to be installed between the source of vibration and the habitat. These act in the same way as a noise barrier and interrupt the direct path of vibrations to a receiver; and
- adoption of a minimum distance between the sand dune habitat that cofferdam installation can occur will aid in minimising impacts at the dunes.

1.6.4.28 However, these measures remain indicative and will be further refined as part of the detailed EMPs and developed in consultation with the relevant Local Authorities.

Water vole

1.6.4.29 Checks for the presence of water vole will be carried out by the ECoWs prior to vegetation clearance. If the pre-construction surveys or ECoWs pre-clearance checks conclude the water vole is present and there is potential to affect watercourses and ditches, then the following mitigation measure would be implemented, where required:

- timing of works to avoid sensitive periods of the water vole life cycle;
- discouraging or, if necessary, removal of water vole from areas where there is risk of injury or death in advance; and
- minimising disturbance from light and human presence via temporary screening and potentially amending working hours.

Other mammals

1.6.4.30 Checks for the presence of hedgehogs, polecats, hares or other protected or notable species of mammals will be carried out by the ECoWs prior to vegetation clearance. If checks identify other mammals, additional mitigation measures will be implemented, and mitigation licences applied for as necessary.

Breeding birds

1.6.4.31 The ECoWs will be present to carry out final breeding bird checks prior to the commencement of construction works. In addition, the ECoWs will be responsible for ensuring that any established buffer zones around sensitive and/or protected species are maintained during constriction works. In addition, as noted in CoT16 where reasonably practicable all vegetation requiring removal will be undertaken outside of the bird breeding season (the season is defined as March to July/August) (see Volume 1 Annex 5.3: Commitments Register (REP4-018)). Further detailed regarding construction mitigation measures for breeding birds are provided in **Appendix C** of this OEMP.

Wintering and migratory birds

1.6.4.32 With regard to the Temporary construction mitigation area at Lytham Moss, supplementary feeding of pink-footed goose and whooper swan will take place during the core wintering bird period (November to March). The feeding will likely comprise retention of spoiled crop and/or the import of additional feed. This mitigation work will continue over the core winter period whilst construction is taking place and until all habitats that the wildfowl rely upon is restored. In addition, the scrapes created prior to construction taking place would continue throughout the construction phase until all disturbance has ceased and all relevant habitats have been restored. Full details of the species that this area

aims to mitigate for and details of the proposed measures can be found in **Sections B.1** and **B.2.5**.

1.6.4.33 Regular monitoring of bird numbers and behaviour will be undertaken as agreed by Natural England~~,~~ (and Blackpool Airport and BAE ~~systems~~Systems/DIO as part of the detailed Wildlife Hazard Management Plan process) (for survey details see **Section 1.5.3.45** and **1.5.3.46**).

Intertidal birds

1.6.4.34 With regard to the Permanent mitigation area at Fairhaven Saltmarsh, the pre-construction measures set out in **Section 1.5.3** of this OEMP would continue throughout the construction phase until all disturbance has ceased and relevant habitats have been restored. These measures are required to reduce impacts upon passage birds as well as wintering birds, and therefore should be in place at all times of the year, whilst construction activities are taking place within the Intertidal Infrastructure Area and the supratidal area of the Onshore Order Limits. In addition, at landfall, in order to mitigate disturbance to roosting wader features of the Ribble and Alt Estuary SPA and Ramsar site, no construction activities at landfall on Lytham St Annes beach will be undertaken by the Morgan Offshore Wind Project and Morecambe Offshore Windfarm Limited between November and March (inclusive) (See CoT129 in Volume 1 Annex 5.3: Commitments Register (REP4-018)). Full details of the species that this area aims to mitigate for and details of the proposed measures can be found in **Sections B.1** and **B.2.1**.

1.6.4.35 Regular monitoring of bird numbers and behaviour will be undertaken as agreed by Natural England~~,~~ (and Blackpool Airport and BAE ~~systems~~Systems/DIO as part of the detailed Wildlife Hazard Management Plan process) (for survey details see **Section 1.5.3.50**).

1.7 Post-construction mitigation measures

1.7.1 Introduction

1.7.1.1 This section of this OEMP describes the ecological and ornithological mitigation measures adopted as part of the Transmission Assets that will be undertaken as soon as practicable following the completion of construction works.

1.7.1.2 All post-construction works will be carried out under the guidance of the ECoWs. All post-construction monitoring surveys described in this section will be undertaken by the ECoWs or an otherwise appropriately experienced and where necessary, licensed ecologist(s), who will be pre-approved by the ECoWs and will work under the guidance of the ECoWs.

1.7.2 Habitats

1.7.2.1 Reinstatement of temporarily damaged or cleared terrestrial habitat will be carried out as soon as practicable following completion construction works.

1.7.2.2 Habitat reinstatement will comprise the replacement of stripped soils and the planting of native hedgerows, shrubs and trees, typical of the local area and of local provenance where possible (as stated in CoT13, see Volume 1 Annex 5.3: Commitments Register (REP4-018)).

1.7.2.3 Habitat reinstatement and new planting will be undertaken in accordance with the outline measures described in the OLMP (document reference J2). Details of the planting methodologies and plant species lists will be provided in the final LMP.

1.7.2.4 The ECoWs will be responsible for producing a report to confirm habitat reinstatement or enhancement requirements have been carried out in accordance with the requirements of EMP and Landscape Management Plan.

1.7.2.5 Operational access for monitoring and maintenance will only be permitted on designated routes that have been identified to minimise impacts on onshore biodiversity. This is particularly the case in non-statutory sites of importance for nature conservation, where access is, as for as possible on existing routes. As such impacts on habitats and the assemblages of plants and invertebrates the form the reasons for designation for these sites will be negligible.

1.7.3 Protected or otherwise notable species

1.7.3.1 Should any Natural England licences for protected species be required for construction works to be undertaken, the licence applications will include the necessary habitat restoration and measures required for the of the protected species that the licence applies to. These measures will consider requirements of the final LMP. However, should measures be required under a licence that are not included in the LMP, these will be carried out by landscape contractors working under the guidance of a suitably qualified ecologist and/or licence holder.

1.7.3.2 The suitably qualified ecologist and/or Natural England licence holder will be responsible for producing any required Natural England licence return forms and report of the works undertaken. A copy of the forms and reports will be provided to the Environmental Manager and relevant Local Authorities, including Natural England as soon as reasonably practicable and as prescribed under the conditions of the Natural England licence.

1.7.3.3 Regarding the permanent mitigation area south of Newton-with-Scales, any habitat creation or enhancement works would be undertaken outside of the breeding bird season (i.e. March to August inclusive), where possible, as to avoid impacts of disturbance on birds in the area.

Breeding and non-breeding birds ~~at~~south of Newton-with-Scales

1.7.3.4 Regular monitoring of bird numbers and behaviour will be undertaken as agreed by Natural England~~, Blackpool Airport and BAE systems~~ (for survey details see Section 1.5.3.44). Blackpool Airport and BAE Systems/DIO will be consulted as part of the detailed Wildlife Hazard Management Plan process. Full details of the species that this area aims to mitigate for and details of the proposed measures can be found in **Sections B.1** and **B.2.2**.

1.8 Long term management

1.8.1 Introduction

1.8.1.1 This section of this OEMP describes the mitigation measures for birds and onshore ecology adopted as part of the Transmission Assets that will be undertaken upon completion of the post-construction mitigation described above and shall be maintained during the operational phase.

1.8.2 Habitats

1.8.2.1 During the establishment phase (up to five years following the planting or spreading of seed) any failed plants will be replaced like-for-like as required to prevent any significant gaps in planting and as agreed with landowners. Once established, new planting will be managed in accordance with the measures set out in the LMP.

1.8.2.2 Reinstated or enhanced hedgerows will remain under the management control of the landowner.

1.8.2.3 Reinstated and enhanced watercourses and ditches will remain under the management control of the landowner and/or relevant Local Authorities.

1.8.3 Protected or otherwise notable species

1.8.3.1 Should any additional Natural England licences for protected species be required, the licence holders (e.g. ECoWs) will notify the Applicants and Principal Contractor of any additional survey and habitat requirements.

1.8.3.2 The Applicants will maintain a record of all ecology works completed, which will be provided to the relevant Local Aunties, including Natural England a as soon as practicable and as prescribed under the conditions of any Natural England licence.

1.8.3.3 With regard to the Permanent mitigation area at Fairhaven Saltmarsh, although this mitigation area would primarily be temporary (i.e. during construction of the Transmission Assets), the measures may also need to be implemented during the operation and maintenance phase of the Transmission Assets. This is to account for cable repair and reburial events proposed within the Intertidal Infrastructure Area.

1.8.3.4 With regard to the permanent mitigation areas south of Newton-with-Scales and the pond creation areas at the Morgan onshore substation and Moss side, the areas would be subject maintenance activities

1.8.3.5 The detailed maintenance activities required within the permanent mitigation areas during operation of the Transmission Assets would be agreed with the relevant Local Authorities as part of the ~~final~~detailed EMP.

1.9 Monitoring and reporting

1.9.1 Overview

1.9.1.1 This section of this OEMP provides details of the requirements for monitoring and reporting during pre-construction, construction and post construction of the Transmission Assets.

1.9.2 Monitoring

1.9.2.1 The ECoWs will be responsible for monitoring adherence to the requirements of the detailed EMP during pre-construction and construction of the Transmission Assets. Adherence to EMP will be monitored via weekly site inspections, where construction works remain underway; and/or weekly meetings with the Site Managers.

1.9.2.2 The ECoWs will maintain a record of these site inspections and meetings, which will be provided to the Site Manager and will be made available to the relevant Local Authorities, including Natural England as required (or if requested).

1.9.2.3 The ECoWs will regularly (at least once every two weeks) monitor adherence to the requirements of the protective buffer zones. Should any breach of these requirements become evident, the ECoWs will inform the Site Manager as soon as practicable. The ECoWs will inform the Site Manager of measures required to be undertaken as soon as practicable to rectify any potential impacts. If the breach is material, the ECoWs, Site Manager or Undertaker will then be responsible for notifying Natural England of any breaches to the buffer zones.

1.9.2.4 With respect to the mitigation areas at Fairhaven saltmarsh and Lytham Moss, further surveys would be undertaken to monitor the efficacy of these mitigation ~~area~~areas. Monitoring of the Permanent mitigation area at Fairhaven Saltmarsh and Lytham Moss would continue until all relevant habitats within the Onshore Order Limits have been restored post-construction.

1.9.2.5 With regard to the permanent mitigation area south of Newton-with-Scales, following completion of the baseline surveys, monitoring will take place up to five years after construction has finished to monitor the efficacy of this mitigation area.

1.9.3 Reporting

Onshore site preparation

1.9.3.1 The ECoWs will maintain a record of all onshore site preparation works undertaken as they relate to the protection of IEFs. In addition, The ECoWs will produce pre-construction survey reports, for the species below, although this list is not exhaustive and additional surveys may be required:

- Aquatic and terrestrial invertebrates;
- Badger;
- Bats;
- Breeding, wintering and migratory birds;
- Fish;
- Otter; and
- Water vole.

1.9.3.2 Pre-construction survey reports, including advice regarding implications for construction, will be provided to the appointed Site Manager and Undertaker. A copy will be made available to the relevant Local Authorities on request.

1.9.3.3 Should any Natural England development licences be required, the ECoWs will produce protected species licence applications which will be submitted to Natural England. Reports will support licence applications where required. The Undertaker reserves the right to review any application prior to submission but must not unreasonably delay its submission to the appropriate authority.

Construction

1.9.3.4 The ECoWs will maintain a record of all ecology works undertaken during the construction period, including any ecological watching briefs or protected species surveys and findings of any site visits. Reports will be provided to the Undertaker and the Site Manager and, where appropriate, the relevant Local Authorities, including Natural England.

1.9.3.5 The ECoWs will maintain a record of any breaches of the requirements of the EMP, and any measures undertaken to mitigate potential impacts of a breach. Records will be provided to the Undertaker, Site Manager and if necessary, the relevant Local Authorities and Natural England.

1.9.3.6 If any reasonable changes to the measures described in the EMP are considered necessary by the ECoWs to achieve the objectives and adhere to the timetable of suitable work periods requirements of the Plan (see **Appendix A**) and any relevant legislation, the ECoWs will produce a report of these proposed changes, detailing the reasons for them, and this report will be provided to the relevant Local Authorities, including Natural England for approval prior to the measures being carried out on site.

1.9.3.7 Should a protected species licence be required during the construction period, the ECoWs will be responsible for applying for a such a licence.

1.9.3.8 The ECoWs and/or licence holder will be responsible for producing any required Natural England licence return forms and report of the works undertaken. A copy of the forms and reports will be provided to the Undertaker and the relevant Local Authorities, including Natural as soon as practicable and as required under the conditions of the licence.

Post-construction

1.9.3.9 Should any licences be required, the ECoWs and/or Natural England licence holder will be responsible for producing and distributing any required licence return forms and report of the works undertaken as described above.

1.9.3.10 The ECoWs will be responsible for producing a report to confirm habitat reinstatement or enhancement requirements have been carried out in accordance with the EMP and the OLMP (document reference J2).

1.10 Further opportunities for enhancement

1.10.1.1 The Applicants intend to explore the opportunities for enhancement listed below, and these opportunities will be discussed with Natural England and other stakeholders, where appropriate, as the Transmission Assets progresses into the post consent phase. These early opportunities are currently being considered using the following criteria:

- ecological connectivity;
- spatial scale;
- deliverability / feasibility; and
- ecological efficacy.

1.10.1.2 The Applicants have identified a number of potential opportunities for enhancement, which include but are not limited to:

- supporting protected habitat improvements, restoration, connectivity and monitoring (e.g. ecological monitoring of habitats and physical interventions);
- safeguarding protected species (e.g. reducing predator predation); and
- green infrastructure measures such as community engagement and Public Rights of Way enhancements (e.g. interpretation materials; trails, walkways and cycleways).

1.10.1.3 Details regarding marine enhancement can be found in the Marine Enhancement Statement (document reference J12).

1.11 References

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Gent and Gibson (2003) Herpetofauna Workers' Manual. Joint Nature Conservation Committee, Peterborough. Available at: https://hub.jncc.gov.uk/assets/9d7da8c4-9d76-4b65-8263-6b925b3433a4 Accessed: September 2024.

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Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Version 1.1. Chartered Institute of Ecology and Environmental Management, Ampfield.

Appendix A: Indicative timetable

Sub-Optimal	Optimal

Indicative optimal timetable of required measures

Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Onshore site preparation												
Pre-construction breeding bird surveys												
Pre-construction non-breeding bird surveys												
Pre-construction disturbance survey of Fairhaven Saltmarsh												
Pre-construction vegetation clearance												
Surveys for roosting bats												
Surveys for hibernating bats												
Surveys for bat activity on hedgerows												
Installation of bat boxes												
Pre-construction Water Vole surveys												
Pre-construction Badger surveys												

Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pre-construction Otter surveys												
Botanical survey at Mill Brook Valley BHS												
Habitat management to deter reptiles and amphibians (including GCN)												
Uprooting habitat with potential for hibernating reptiles and amphibians (including GCN)												
Pond draining and infilling												
Pond Creation												
Natural England Licence Applications (should they be required)												
Installation of the measures at Fairhaven Saltmarsh												
Installation of scrapes at Lytham Moss												
Installation of scrapes and sluices at land south of Newton with Scales												
Construction												
ECoWs breeding bird checks												
Supplementary feeding of pink-footed goose and whooper swan at the arable fields at Lytham Moss												
Maintenance of the scrapes and wet grassland habitats at Lytham Moss												
Maintenance of the scrapes and wet grassland habitats at land south of Newton-with-Scales												

Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Measures to reduce disturbance at Fairhaven saltmarsh												
Monitoring of the bird mitigation areas as a requirement of the air safety birdstrike safeguarding ~~resposibilities~~responsibilities												
Installation of temporary flightlines for bats												
Post-construction												
Habitat creation at ~~land south of Newton with Scales~~onshore substations												
~~Habitat creation at onshore sub-stations~~Maintenance of the scrapes and wet grassland habitats at Newton-with-Scales												
Long term												
~~Habitat management~~Maintenance of the scrapes and ~~monitoring and~~wet grassland habitats at land south of Newton with Scales												
Maintenance of hedgerows and other habitats at land south of Newton with Scales												
Bat Boxes												
Replacement of failed plant during establishment period												

Appendix B: Mitigation areas

~~B.1.1~~B.1 Summary of mitigation areas and apportionment

Mititgation area	Mititgation summary	Relevant commitments	Apportionment
Onshore ecology and nature conservation			
Temporary construction mitigation area at Lea Marsh	**Purpose:** the purpose of this area is to mitigate impacts of disturbance and habitat loss on otters during construction of the Transmission Assets. Due to the level of overlap of impact (i.e. temporary habitat loss and displacement), the same area will be required to offset the impact from the Morgan and Morecambe onshore cable installation. **Size:** this Temporary construction mitigation area would occupy approximately 25 ha of land at Lea Marsh. The mitigation area is large enough to account for all impacts from the Transmission Assets on otter habitats and distribution, noting this is a wide ranging species. The specific detail of the measures and habitat management practices put in place would be refined with stakeholders post consent taking into account the findings of any pre-construction surveys and detailed design. The Temporary construction mitigation area at Lea Marsh area was selected based on the following factors. • Within the home range for of otter populations as identified in site specific surveys; • Close proximity to confirmed otter habitats which would be impacted, particularly around Savick Brook and surrounding areas; • Habitats present in the mitigation area are similar habitat to those used by otters in the wider area, so enhancement likely to be more straightforward.	CoT127	Morgan: 25 ha Morecambe: 25 ha

Mititgation area	Mititgation summary	Relevant commitments	Apportionment
	• Mitigation area is large enough to accommodate a wide ranging species and is proportionate to the impact (i.e. disturbance to local otter populations along Savick Brook and other waterbodies connected to the Ribble Estuary). **Duration:** this mitigation area would be required during construction of the Transmission Assets. **Measures:** see **Section B.2.6**.		
Pond creation at the Morgan onshore substation	**Purpose:** the purpose of this pond creation area is to compensate for the permanent loss of ponds and suitable aquatic invertebrate habitat, including Freshfield Farm Pond, North BHS and Freshfield Farm Pond, South BHS during construction the Morgan onshore substation. **Size:** the area proposed for pond creation would permanently occupy approximately 2.5 ha of land at the Morgan onshore substation. **Duration:** this mitigation area would be required during construction and operation of the Transmission Assets. **Measures:** see **Section B.2.4**.	CoT122	Morgan: 2.5 ha Morecambe: 0 ha
Pond creation at Moss Side at the Morecambe onshore substation	**Purpose:** the purpose of this pond creation area is to compensate for the permanent loss of ponds and suitable aquatic invertebrate habitat during construction of the onshore export cable corridor for Morecambe. **Size:** the area proposed for pond creation would permanently occupy approximately 0.8 ha of land at Moss side. **Duration:** this mitigation area would be required during construction and operation of the Transmission Assets. **Measures:** see **Section B.2.3**.	CoT122	Morgan: 0 ha Morecambe: 0.8 ha
Onshore and intertidal ornithology			
Permanent mitigation area at Fairhaven Saltmarsh	**Purpose:** the purpose of this area is to alleviate the impacts of disturbance and temporary habitat loss on passage intertidal waders during construction,	CoT113	Morgan: 36 ha Morecambe: 36 ha

Mititgation area	Mititgation summary	Relevant commitments	Apportionment
	operation and maintenance, and decommissioning of the Transmission Assets by reducing disturbance impacts at Fairhaven Saltmarsh. Species this mitigation area is specifically designed for are: • **Ringed plover** • **Dunlin** • **Sanderling** Other intertidal waders such as grey plover, redshank, oystercatcher, bar-tailed godwit, would also benefit. **Size:** this mitigation area would permanently occupy approximately 36 ha of land at Fairhaven Saltmarsh. **Duration:** this mitigation area would be required during construction, operation and maintenance, and decommissioning of the Transmission Assets. **Measures:** see **Section B.2.1**.		
Temporary construction mitigation area at Lytham Moss	**Purpose:** the purpose of this area is to mitigate impacts of temporary habitat loss and disturbance on geese, swans and waders during construction of the Transmission Assets. Due to the level of overlap of impact (primarily displacement caused by disturbance), the same area will be required to offset the impact from the Morgan and Morecambe onshore cable installation. Species this mitigation area is specifically designed for are: **Supplementary feeding** • **Pink-footed goose** • **Whooper swan** **Scrapes** • **Shelduck** • **Teal** • **Golden plover**	CoT107	Morgan: 26 ha Morecambe: 26 ha

Mititgation area	Mititgation summary	Relevant commitments	Apportionment
	• **Black-tailed godwit** • ~~Other terrestrial waders such as lapwing and curlew~~ **Size:** this mitigation area would temporarily occupy approximately 26 ha of land at Lytham Moss. This would be the maximum area required for mitigation of effects on functionally linked land and would be refined and microsited post consent, pending detailed design and stakeholder agreement (Natural England~~,~~) and Blackpool Airport and BAE Systems~~).~~/DIO as part of the detailed Wildlife Hazard Management Plan process. The area was identified based on a number of factors. • The location of the suitable arable fields in proximity to existing functionally linked land used by relevant species and adjacent fields already being used for similar mitigation purposes. • Location of the fields in close proximity to areas of functionally linked land affected by the project. • The size of the fields, with pink footed geese requiring fields of >6ha in size for foraging. • The mitigation area identified (i.e. 3 x fields of >6 ha in size) are large enough to provide adequate mitigation to reduce impacts on functionally linked land from the Transmission Assets. **Duration:** this mitigation area would be required during construction of the Transmission Assets. The mitigation would only be required during winter months during the years of construction (not required outside winter months so fields can be managed as normal). **Measures:** see **Section B.2.5**.		
Permanent mitigation area south of Newton-with-Scales	**Purpose:** the purpose of this area is to mitigate impacts of permanent habitat loss on non-breeding waders during the lifespan of the Transmission Assets. It would also be used to enhance the area for breeding waders, and breeding and	CoT120	Morgan: 19.5 ha Morecambe: 10.5ha

Mititgation area	Mititgation summary	Relevant commitments	Apportionment
	non-breeding wildfowl and farmland birds. Species this mitigation area is specifically designed for are: • **Golden plover (permanent loss)** • **Teal (temporary loss)** • **Black-tailed godwit (temporary loss)** • ~~Other terrestrial waders such as lapwing and curlew (temporary loss)~~ • ~~Other waterfowl such as wigeon (temporary loss)~~ This area will also offer enhancement for: • Breeding waders such as lapwing • Breeding farmland birds such as corn bunting, grey partridge and tree sparrow **Size:** this mitigation area would permanently occupy approximately 30 ha of land south of Newton-with-Scales. **Duration:** this mitigation area would be required during construction and operation of the Transmission Assets. **Measures:** see **Section B.2.2**.		

B.2 Management Measures for Mitigation Areas

B.2.1 Fairhaven Saltmarsh

B.2.1.1 Objectives

Fairhaven Saltmarsh is an existing high tide wader roost, and the area is also used for informal recreational activities. The area is exposed to disturbance from walkers and dogs frequently causing roosting birds to take flight leading to a potential loss of energy and time spent resting. The objective is to mitigate impacts of disturbance and temporary habitat loss on waders during construction, operation and maintenance, and decommissioning of the Transmission Assets by reducing disturbance impacts at Fairhaven Saltmarsh. This is to mitigate for potential impacts at the landfall on **ringed plover, dunlin and sanderling**, however this mitigation has the potential to benefit a far greater suite of intertidal waders including, but not limited to, oystercatcher, grey plover, knot, bar-tailed godwit, and redshank. As all these species currently use the site, any reduction in disturbance would be beneficial for all of these species. These measures aim to mitigate impacts on intertidal waders that currently use the area and that may be subject to residual impacts due to construction, and operation and maintenance works at the Landfall as part of the Transmission Assets.

B.2.1.2 Principles of Management Measures

The measures will focus on managing the interaction of the bird roost and the recreational users of Fairhaven Saltmarsh in conjunction with the Public Rights of Way Management Plan (AS0-48) and Communications Plan(s) (APP-194), secured under Requirement 8 of the draft DCO (REP1-008) Schedules 2A & 2B. The indicative timetable of when this area will be established and managed can be found in Appendix A. The design of these measures will be cognisant of case studies and guidance from experts in recreational disturbance and birds (e.g., Footprint Ecology). Measures that will be included at Fairhaven Saltmarsh will be informed by the findings of a site specific recreational disturbance survey of Fairhaven Saltmarsh and the surrounding area. This survey will identify the site-specific conditions and recreational pressures (e.g. type and frequency of recreational activities). The findings of the study will be used to inform the measures for managing recreational pressures on Fairhaven Saltmarsh and the following details included within the detailed Ecological Management Plan(s):

- Local education:
  - Details of which local groups the Applicants will work with, and how.
  - Information of what education material will be used, and what activities will be arranged including measures that will be put in place to ensure any educational material is correct and kept up to date.

- Wardening
  - How many wardens will be employed
  - When the wardens are on site at Fairhaven Saltmarsh (including lead in times prior to the commencement of landfall construction)

The measures will be developed further in consultation with Natural England and set out in the detailed EMP(s).

Management measures will be in place at least three months before construction activities taking place at the landfall to allow parties to effectively habituate and allow a soft start.

Soft fencing:

The installation of 'soft' fencing will be designed to discourage (rather than formally exclude) the public from accessing the mitigation area at Fairhaven Saltmarsh and would be designed so that views for the public would not be obstructed. An example of soft fencing would be short posts with rope strung between. The final extent and design of the soft fencing will be determined as part of the detailed EMP(s), but as a minimum it would be expected to run along the coast path at the top edge of the saltmarsh (see **Figure 1-8**). The soft fencing will be installed at least three months before the commencement of construction activities at the landfall. This means that preparations could begin as early as December for the spring migration and in June for the autumn migration. The soft fencing will remain in place until the construction work at the landfall is completed.

Signage:

Educational signage would be installed at suitable locations (see **Figure 1-8**) along the periphery of the mitigation area at Fairhaven Saltmarsh to inform the public of the value of the area for internationally and nationally important populations of waterbirds, whilst also advising people of simple ways that they can modify their recreational activities and behaviours to reduce disturbance on birds in the area. These educational signs will be supplemented by low level signage asking the public to modify their use of the area by keeping to paths e.g. 'Please keep off the Saltmarsh', keeping dogs on leads and to refrain from littering.

Local education

Education activities will be organised with local groups (e.g. dog walking groups) to help raise awareness of disturbance to the roosting birds and the negative impacts it will have. Visits to local primary schools can be beneficial and encourage support for the actions being taken.

Wardens:

Wardens will also be employed on site to further educate and advise the public with regard to requirements for the mitigation area at Fairhaven Saltmarsh. The wardens will be appropriately trained and experienced ECoWs. Given the increased likelihood of visitor interactions with roosting

birds around high tide, wardens will be strategically positioned approximately three hours before and after high tide. Warden interventions will be scheduled to coincide with the high-water period between 09:00 and 17:00 during the critical months for waders .

Monitoring

A monitoring strategy will be implemented to gather evidence on the effectiveness of the measures in reducing disturbance to birds and an adaptive management approach will be employed. Additionally, and in order to inform the final plans and targets, ongoing monitoring of the bird numbers and behaviours will be undertaken at a frequency agreed with Natural England~~,~~ of the detailed Ecological Management Plan(s). Blackpool Airport and BAE Systems/DIO will be consulted as part of the ~~Ecological~~detailed Wildlife Hazard Management Plan~~(s).~~ process. These surveys will be undertaken using a standard WeBS methodology with a suggested initial frequency of monthly counts, monitoring of the efficacy of the mitigation will also take place on a suggested monthly basis.


N
Blackpool
Southport
LEGEND
Transmission Assets Order Limits
Fairhaven Saltmarsh
Indicative signage locations
Indicative soft fencing
MORECAMBE
Figure 1
Drawing Number:
12693-0568-01
Project Name:
MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS
Drawing Title:
INDICATIVE LOCATION OF MITIGATION MEASURES AT FAIRHAVEN SALTMARSH
0 0.04 0.08 mi
0 0.04 0.08 km
Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid
Scale@379mmx231mm: 1:5,000
Data Sources:
MarineRegions.org
VER DATE DETAILS BY CHECK
02 05/06/25 FINAL AC CR

Figure 1.8: Indicative location of the mitigation measures at Fairhaven Saltmarsh

B.2.2 Land to the south of Newton-with-Scales

B.2.2.1 Objectives

The primary objective of the mitigation area is to provide permanent alternative habitat for non-breeding ~~**golden plover**~~waders due to the permanent habitat loss at the onshore substations. Additionally, it can also mitigate for temporary impacts within the onshore infrastructure area on teal ~~and **black-tailed godwit.**~~, black-tailed godwit and Shelduck (further detail on why this area has been chosen as mitigation for these species can be found in Appendix F). However, this mitigation has the potential to benefit a far greater suite of terrestrial waders and wildfowl including, but not limited to, wigeon, lapwing, ruff, redshank, curlew, etc.

Whilst there is little detail in the literature on species specific conservation measures that suit these species individually during the non-breeding season, it is recognised that many of these species have similar non-breeding habitat requirements and are all found in similar wet grassland and shallow scrape habitats during the non-breeding period. High water tables soften the soil and force soil invertebrates close to the surface which the waders take advantage of, whilst shallow scrapes provide habitat for dabbling ducks to feed in. The short grassland and scrapes also provide an open habitat which encourages many species of waterbirds to feel safe and provides roosting opportunities for birds and foraging opportunities for grass eating species such as wigeon. The aim in this area is to mirror the habitat available at Newton Marsh SSSI. Newton Marsh hosts all of these species successfully. These measures aim to mitigate impacts on waders and wildfowl that currently use this area and that may be subject to impacts due to construction works and the loss of land at the substations as part of the Transmission Assets.

B.2.2.2 Principles of Management Measures

The measures will focus on enhancing the existing habitat features for non-breeding waders. The indicative timetable of when this area will be established and managed can be found in Appendix A, the area will be set up in the post-breeding period when few non-breeding birds are present and all ground breeding birds have fledged with substantial management measures also taking place during this period, although low impact measures such as grazing can be enacted at any time of year. Mitigation will also be implemented to enhance the area for breeding waders, wildfowl, and farmland birds, and non-breeding wildfowl and farmland birds, which were also recorded in this area. The measures will be developed in consultation with Natural England and set out in the detailed EMP(s). The mitigations at this area are also described in Terrestrial waterbirds technical note (S_D4_17). Detail on the management measures for this area can also be found in Appendix F.

In designing the management of this area, the Applicants have taken advice from Natural England's Lowland Grassland Management Handbook (second edition, 2007). Specifically:

"Requirements of wintering wildfowl and waders

In general, these species require suitable disturbance-free roosts and/or feeding areas. Most species have a requirement for winter surface flooding or high water tables. Most species do not necessarily require semi-natural grassland swards.

- ***Surface-feeding or dabbling** require shallow, open water in pools and ditches and as a result of flooding (generally <25cm). They feed mainly on plant, especially seeds. Thus, presence of seed sources is beneficial.*
- ***Waders** feed on soil-dwelling invertebrates especially earthworms and require high water tables which provides soft, damp soil together with areas of shallow, open water where species such as redshank forage at the water's edge. Islands of non-flooded grassland are used as secure roosting sites. Sward heights of <10cm are generally preferred although snipe will forage in taller vegetation for concealment. Larger fields lacking tall boundary features and away from human disturbance are preferred (Milsom et al 1998)."*

Water management

Many non-breeding terrestrial waders and wildfowl are dependent upon wet grassland habitats during both the non-breeding and breeding seasons. The measures that will be implemented at Newton-with-Scales include rewetting and improving habitats for breeding and non-breeding waterbirds (i.e., wildfowl and waders). Wetting the grassland softens the ground and pushes soil invertebrates closer to the surface. Sluices allow the control of water levels within the site and will be used to maintain water levels in the scrapes. All ditches that are within the mitigation area will have sluices added and water levels will be monitored regularly and adjusted accordingly. 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.

Creation of scrapes.

Permanent scrapes (shallow depressions) suitable for roosting or loafing waders and wildfowl will be restored to provide habitat and supporting resources (see **Figure 1-9**). The final selection of the scrapes will be determined during detailed design and will be:

- Excluded from the onshore export cable corridor
- Located at least 50 m from hedges or tall trees
- Located away from buried archaeological features

- Located at an agreed standoff from existing underground utilities (including the Trans-Pennine Ethylene Pipeline (TPEP)) in accordance with relevant guidance
- Irregular shaped (to maximise the length edge habitat) and have a rough surface
- Graded sides to achieve a gentle slope from shallow margins (3 cm to 5cm deep) to a maximum depth of 45 cm
- At least three scrapes of 20 m^2 in each indicative scrape zone (as shown on **Figure 1.6**)
- The water levels in the scrapes will be controlled by the sluice system on the ditches.

The final selection of the scrapes will be confirmed following site surveys (e.g. trial trenching). Water levels will be maintained through the sluice system (see above~~).~~) with scrapes reprofiled during July/August if needed.


N
Blackpool
Southport
LEGEND
Transmission Assets Order Limits
Newton-with-Scales - permanent mitigation area
Morgan Permanent Environmental Works
Morecambe Permanent Environmental Works
Overhead Lines
Existing Pipelines
Existing Pipelines - 5m Buffer
Indicative Areas
Scrapes
Enhance existing seasonal ponds
Enhanced field margin
Existing hedgerows
Public Right of Way
MORECAMBE
Figure 5
Drawing Number:
12693-0568-01
Project Name:
MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS
Drawing Title:
INDICATIVE LOCATION OF MITIGATION MEASURES AT NEWTON-WITH-SCALES
Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid
Data Sources:
MarineRegions.org
VER
DATE
DETAILS
BY
CHECK
02
05/06/25
FINAL
AC
CR


N
Blackpool
Southport
LEGEND
Transmission Assets Order Limits
Newton-with-Scales - permanent mitigation area
Morgan Permanent Environmental Works
Morecambe Permanent Environmental Works
Overhead Lines
Existing Pipelines
Existing Pipelines - 50 m Buffer
Indicative Areas
Scrapes
Enhance existing seasonal ponds
Enhanced field margin
Existing hedgerows
Public Right of Way
MORECAMBE
Figure 5
Drawing Number:
12693-0568-04
Project Name:
MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS
Drawing Title:
INDICATIVE LOCATION OF MITIGATION MEASURES AT NEWTON-WITH-SCALES
0 0.03 0.05 mi
0 0.02 0.04 km
Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid
Scaled@375mm x 251mm: 1:3,000
Data Sources: Client, The Crown Estate, MMO, NRW, GeoBase, MarineRegions.org
VER DATE DETAILS BY CHECK
05 22/10/25 FINAL AC CR

Figure 1.9: Indicative location of mitigation measures at Newton-with-Scales

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 mowing; mowing will 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. Mowing will be rotational to ensure a mosaic of grassland habitats with compartments targeted as necessary to maintain a diverse sward~~. This~~ and allow enough areas with a shorter length over the winter (<10cm). Some areas of grass and rush around the water's edge will be allowed to go over to seed to provide winter food for **teal**. This regime will be regularly monitored and adjusted as necessary. In addition, muddy habitats which support invertebrates will be reinstated to support the inland feeding of Shelduck.

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 will be intermittently mowed 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 beneficial for non-breeding **teal**, lapwing, **golden plover**, curlew and **black-tailed godwit**, as well as other non-breeding and breeding waders.

Field margins

Measures will be implemented to improve existing field margins. A 6 m wide strip will be left at all field margins and will be excluded from mowing. Seed mixes will allow the establishment of permanent tall grasses and wildflowers to provide winter food for passerines and habitat to increase invertebrate diversity and abundance. The increase in invertebrates will provide food for breeding farmland birds and waders.

Hedgerows

Measures will also be implemented to enhance the existing boundary hedgerows. This will include 'gapping up' hedgerows with local native species and rotationally cutting every other year to maintain invertebrate diversity, hedgerow management will aim to keep the hedges short and thick as this ~~has been shown to be~~gives a greater line of sight which is more beneficial for wading birds. Planting of hedgerows will take into account required standoff distances from existing utilities. Pruning of hedgerows and trees will be undertaken to ensure that they do not exceed 4.5m and 5.5m in height respectively.

Monitoring

A detailed baseline will be collected prior to any construction taking place to inform of the final measures, 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. The methodologies for these pre-construction (baseline) and ongoing monitoring will follow standard waterbird survey methodologies (e.g., WeBS) with the frequency of surveys to be agreed in consultation with Natural England~~, Blackpool Airport, and BAE systems~~ as part of the detailed Ecological Management Plan(s). Blackpool Airport and BAE Systems/DIO will be consulted as part of the detailed Wildlife Hazard Management Plan process.

Regular monitoring of this area will be a requirement to inform the final design in the detailed Ecological Management Plan(s), and ongoing monitoring will record the success of the mitigation area. The purpose of this area is to mitigate for impacted birds, however large increases of additional birds (beyond those that are being mitigated for) may pose an unacceptable rise in risk to air safety at both Warton Aerodrome and Blackpool Airport. Therefore, whilst monitoring may inform the adjustment of management in the case that the mitigation area is failing, it may also inform any adjustments that are needed in the case that the mitigation area is too successful and is drawing in large numbers of birds from the wider area. Targets on the success of this area (both lower and upper limits) are to be agreed in consultation with Natural England~~, Blackpool Airport, and BAE systems~~ as part of the detailed Ecological Management Plan(s). Blackpool Airport and BAE Systems/DIO will be consulted as part of the detailed Wildlife Hazard Management Plan process.

These surveys will be undertaken using a standard WeBS methodology with a suggested initial frequency of monthly counts. Habitats will be monitored simultaneously and the efficacy of the mitigation and any adaptive management measures required will be informed by these data. There is a commitment to monitor this area for the lifetime of the project (30 years) to inform the long-term success. In addition, the detailed EMP(s) will confirm information regarding the organisation/group who will carry out the management and monitoring of implemented measures where necessary. .

B.2.3 Moss Side Pond

B.2.3.1 Objectives

The objective of the mitigation area is to create permanent replacement habitat for aquatic invertebrates at Woodside Pond.

B.2.3.2 Principles of Management Measures

The measures will focus on the creation of the replacement pond and marginal habitat for aquatic invertebrates. The measures will be developed in consultation with Natural England and set out in the detailed EMPs.

Creation of pond

Several small ponds are proposed in the indicative locations as shown in **Figure 1-10**. The design of the replacement ponds, including depth and coverage, will be set out in the detailed EMP(s). The pond will be designed, as far as possible, to have the characteristics of the pond (i.e., Woodside Pond) that will be lost. The ponds will be designed to discourage large flocking bird species, by being small and having marginal fringing vegetation to mirror the habitat attributes of existing farmland ponds within the landscape that do not attract flocks of large wading species.

Creation of marginal habitat

Areas of marginal habitat will be created around and within the replacement ponds. Where possible, marginal and aquatic plants will be translocated from Woodside Pond to 'seed' the replacement pond with aquatic vegetation. Care will be taken to ensure that no non-native invasive aquatic plant species are accidentally introduced (see **Figure 1-10**).


Blackpool
Southport
LEGEND
Transmission Assets Order Limits
Moss Side
Indicative Areas
Grassland
New ponds
Figure 3
Drawing Number:
12693-0568-01
Project Name:
MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS
Drawing Title:
INDICATIVE LOCATION OF MITIGATION MEASURES AT MOSS SIDE
Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid
Scale@379mmx231mm: 1:1,000
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BY
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05/08/25
FINAL
AC
CR

Figure 1-10: Indicative location of mitigation measures at Moss Side

B.2.4 Pond creation at Morgan Onshore Substation

B.2.4.1 Objectives

The objective of the mitigation area is to create permanent replacement habitat for aquatic invertebrates.

B.2.4.2 Principles of Management Measures

The measures will focus on the creation of replacement ponds and marginal habitat for aquatic invertebrates. The ponds will primarily replace the Freshfield Pond South BHS and Freshfield Pond North BHS and also take into account the other ponds in the locality that will be lost to the construction of Morgan Onshore Substation. The measures will be developed in consultation with Natural England and set out in the detailed EMPs.

Creation of ponds

Several small ponds are proposed in the indicative locations as shown on **Figure 1-11**. The design of the replacement ponds, including depth and coverage, will be set out in the detailed EMP(s). The ponds will be designed, as far as possible, to have the characteristics of those that will be lost. The ponds will be designed to discourage large flocking bird species.

Plant materials and substrates will be translocated from the Freshfield Pond South Biological Heritage Site (BHS) and Freshfield Pond North BHS.

Creation of marginal habitat

Where possible, marginal and aquatic plants will be translocated from the existing ponds 'seed' the pond with aquatic vegetation. Care will be taken to ensure that no non-native invasive aquatic plant species are accidentally introduced (see **Figure 1-11**).


N
Blackpool
Southport
LEGEND
Transmission Assets Order Limits
Onshore substation sites
Morgan Onshore Substation
Existing pond
Indicative Areas
Grassland
New ponds
MORECAMBE
Figure 4
Drawing Number:
12693-0568-01
Project Name:
MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS
Drawing Title:
INDICATIVE LOCATION OF MITIGATION MEASURES AT MORGAN ONSHORE SUBSTATION
Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid
Scale@379mmx231mm: 1:3,000
VER
DATE
DETAILS
BY
CHECK
02
05/09/25
FINAL
AC
CR

Figure 1-11: Indicative location of mitigation measures at Morgan Onshore Substation

B.2.5 Lytham Moss

B.2.5.1 Objectives

The objective of the mitigation area is to provide supplementary feeding and temporary food resources for **pink-footed geese** and **whooper swan** and habitat for foraging, loafing or roosting **shelduck, teal, golden plover and black-tailed godwit**~~.~~ (further detail on why this area has been chosen as mitigation for these species can be found in Appendix F). The supplementary feeding and temporary habitat will be provided during the core wintering bird period (November to March inclusive) where construction activities are undertaken along the onshore export cable corridor within areas of Functionally Linked Land (e.g., Lytham Moss Biological Heritage Site in proximity to Higher Ballam and Lower Ballam). The temporary habitat will be designed for foraging, loafing and roosting **shelduck**, **teal**, **golden plover** and **black-tailed godwit**. However, this mitigation has the potential to benefit a far greater suite of terrestrial waterbirds including, but not limited to, wigeon, lapwing, ruff, redshank, and curlew. These measures aim to mitigate impacts on waders and wildfowl that currently use this area and that may be subject to residual impacts due to construction works as part of the Transmission Assets.

The feeding may comprise retention of spoiled crop and/or the import of additional feed, as appropriate and targets are to be agreed with Natural England~~,~~. Blackpool Airport and BAE Systems/DIO will also be consulted as part of the ~~final~~ detailed ~~Ecological~~Wildlife Hazard Management Plan~~(s).~~ process.

B.2.5.2 Management Measures

The measures will focus on the creation of temporary scrapes and the provision of supplementary feeding for **pink footed geese** and **whooper swan**. The measures will be developed in consultation with Natural England. In addition, Blackpool Airport and BAE Systems ~~and set out in~~ /DIO will also be consulted as part of the detailed ~~EMPs.~~Wildlife Hazard Management Plan process. The indicative timetable of when this area will be established and managed can be found in Appendix A. The mitigations at this area are also described in Terrestrial waterbirds technical note (S_D4_17). Detail on the management measures for this area can also be found Appendix F.

In designing the management of this area, the Applicants have taken advice from Natural England's Lowland Grassland Management Handbook (second edition, 2007). Specifically:

"Requirements of wintering wildfowl and waders

In general, these species require suitable disturbance-free roosts and/or feeding areas. Most species have a requirement for winter surface flooding or

high water tables. Most species do not necessarily require semi-natural grassland swards.

- ***Grazing species such as swans, geese** require short (5cm-15cm), even grass swards which contain finer/less coarse grasses.*
- ***Surface-feeding or dabbling** require shallow, open water in pools and ditches and as a result of flooding (generally <25cm). They feed mainly on plant, especially seeds. Thus, presence of seed sources is beneficial.*
- ***Waders** feed on soil-dwelling invertebrates especially earthworms and require high water tables which provides soft, damp soil together with areas of shallow, open water where species such as redshank forage at the water's edge. Islands of non-flooded grassland are used as secure roosting sites. Sward heights of <10cm are generally preferred although snipe will forage in taller vegetation for concealment. Larger fields lacking tall boundary features and away from human disturbance are preferred (Milsom et al 1998)."*

Supplementary feeding

Supplementary feeding will be provided for **pink-footed geese** and **whooper swan** during the core wintering period (November to March inclusive) during the period of the construction activities. Supplementary feeding will comprise retained spoiled crop on arable land or the import of additional feed. Supplemental feeding will occur over a minimum area of one hectare within the designated zone (see **Figure 1-12**). Feeding targets are still to be agreed in consultation with Natural England~~,~~. Blackpool Airport and BAE ~~systems.~~ Systems/DIO will also be consulted as part of the detailed Wildlife Hazard Management Plan process.

However, an indicative approach to calculating the amount of food needed to mitigate impacts to pink-footed geese and whooper swan is set out in the ~~Table below. This uses the average number of birds present and takes daily energy requirements from the literature.~~**Appendix G**.

Many non-breeding terrestrial waders are dependent upon wet habitats during the non-breeding season. The measures that will be implemented at Lytham Moss include rewetting habitats. Wetting the grassland softens the ground and pushes soil invertebrates closer to the surface. Sluices allow the control of water levels within the site and will be used to maintain water levels in the scrapes. All ditches that are within the mitigation area will have sluices added and water levels will be monitored regularly and adjusted accordingly. This measure will benefit **shelduck**, **teal**, lapwing, **golden plover**, curlew and **black-tailed godwit**.

: 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	2,571	581,385	3,400	171.0
Whooper swan	41	3,332	10,323	3,400	3.4
Total	N/A	N/A	591,708	N/A	174.4

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

Using this approach, it is estimated that the geese and swans would require up to 174.4 kg of grain or similar per day. In order to maintain current risks to aircraft safety, this feed will be provided between November and March inclusive, so as to not attract additional autumn passage birds to overwinter within the Ribble Estuary. Food will be provided on a little and often basis e.g., 1.2 tonnes on a weekly (seven day) basis, which is equivalent to 20.9 tonnes over a single winter period

This is similar to the approach used by the adjacent Farmland Conservation Area.

Creation of scrapes

Temporary scrapes (shallow depressions) suitable for waders and wildfowl will be created to provide habitat during the autumn and winter period.

The location and design of the scrape will be determined during detailed design and will be:

- Located 30 m from hedges or tall trees
- Located away from buried archaeological features

- Irregular shaped (to maximise the length edge habitat) and have a rough surface
- Graded sides to achieve a gentle slope from shallow margins (3 cm to 5 cm deep) to a maximum depth of ~~50~~45 cm
- One scrape extending to approximately 200 m^2 in the indicative scrape zone (**Figure 1-12**)
- The final location of the scrapes will be confirmed following site surveys e.g., trial trenching.

The scrapes will provide safe foraging and roosting or loafing areas for waders such as **golden plover and black-tailed godwit,** and plenty of shallow water and muddy areas for **shelduck** and **teal**.

The scrapes will be created by controlling existing drainage thereby ensuring that they can be managed accordingly throughout, if reprofiling is needed then this will be carried out in August/September.

Short vegetation

This land is currently arable land. 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 as it provides safe roosting, loafing and foraging opportunities. As water levels will be high this will also provide foraging opportunities for **shelduck**. Grass heights will be maintained at below 10cm to suit waders and geese and swans. This level will be achieved before the winter period so that it remains low until spring.

Monitoring

Pre-construction surveys will collate a detailed baseline prior to any construction taking place. These surveys will record all waterbirds.

The purpose of this area is to mitigate for impacted birds, however large increases of additional birds (beyond those that are being mitigated for) may pose an unacceptable rise in risk to air safety at both Warton Aerodrome and Blackpool Airport. Therefore, regular weekly monitoring (during the winter months) will take place after the scrapes are created and whilst feeding is taking place. The monitoring will be a- requirement of the Wildlife Hazard Management Plan and will be used to assess the efficacy of the mitigation. The feeding targets will be subject to recalculation in ~~consultation~~response to bird count data; these will be discussed with Natural England~~,~~ Blackpool Airport and BAE Systems~~ in response to bird count data, the predicted levels~~/DIO will also be consulted as part of ~~construction disturbance in a given winter, and dynamic bird hazard assessment~~the detailed Wildlife Hazard Management Plan process.

These surveys will be undertaken using a standard WeBS methodology with a suggested initial frequency of weekly counts. Habitats will be monitored

simultaneously and the efficacy of the mitigation and any adaptive management measures required will be informed by these data.

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N
Blackpool
Southport
LEGEND
Transmission Assets Order Limits
Lytham Moss
Indicative Areas
Scrapes
Feeding area
Area targeted for feeding by geese and swans
Area targeted for temporary winter scrapes for non-foraging waders and wildfowl
Project Name:
MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS
Drawing Title:
INDICATIVE LOCATION OF MITIGATION MEASURES AT LYTHAM MOSS
0 0.03 0.05 mi
0 0.02 0.04 Km
Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid
Scale@379mmx231mm: 1:3,000
Data Sources: Client, the Crown Estate, MMO, NRW, ScotGov, MarineRegions.org
VER DATE DETAILS BY CHECK
02 05/06/25 FINAL AC CR
Figure 2
Drawing Number:
12693-0568-01

Figure 1-12: Indicative locations of temporary mitigation at Lytham Moss

B.2.6 Lea Marsh BHS

B.2.6.1 Objectives

The objective of the mitigation area is to provide temporary habitat for otter during the construction period.

B.2.6.2 Management Measures

The measures will focus on the creation of temporary habitat for otters within its home range but located away from the construction works. The measures will be developed in consultation with Natural England and set out in the detailed EMPs.

Meadow grassland regime

The grazing regime of the existing grassland areas will be modified to allow grassland to reach a longer sward height by reducing the annual livestock grazing density. Longer sward height will attract otters by providing a greater degree of cover; however, it will dissuade larger bird species from using the grassland (the field is currently noted to encourage loafing geese, lapwings and curlew). The reduction in grazing density and corresponding increase in sward height will also encourage the development of a more diverse sward by allowing grasses and forbs to flower and set seed. This grassland will be managed by ongoing grazing and/or a hay cut with the arisings removed, thereby ensuring that thatch does not build up.

Provision of otter holts and couches

The artificial otter holt will be located on a tributary of Savick Brook away from existing flood defences of the River Ribble (see **Figure 1-13**). The number and location of holts will be confirmed following pre construction surveys as detailed in **Table 1.2**.

Reed bed habitats

Existing reed bed habitats and ditches will be enhanced with the planting of marginal vegetation along the spurs of the tributaries as shown on **Figure 1-13**. Care will be taken to ensure that no non-native invasive marginal plant species are accidentally introduced. Reed beds will be monitored to ensure that they do not grow in area beyond baseline levels and will be managed accordingly.


N
Blackpool
Southport
LEGEND
Transmission Assets Order Limits
Lea Marsh West
Indicative Areas
Reedbed management and invasive species control
Artificial otter holt
Grazing regime management
Figure 6
Drawing Number:
12693-0568-01
Project Name:
MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS
Drawing Title:
INDICATIVE LOCATION OF MITIGATION MEASURES AT LEA MARSH WEST
Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid
Scale@37/9mmx231mm: 1:3,000
Data Sources: Client, The Crown Estate, MMO, NRW, Scottish MarineRegions.org
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Figure 1-13: Indicative location of mitigation measures at Lea Marsh BHS

Appendix C: Outline Breeding Bird Protection Plan

C.1 Background

The purpose of this Outline Breeding Bird Protection Plan is to present the mitigation measures proposed to avoid or reduce potential impacts to breeding birds, including their nests, eggs and dependent young during construction, operations and maintenance and decommissioning of the Transmission Assets. Therefore, the measures set out within this Breeding Bird Protection Plan ensure compliance with existing legislation protecting breeding birds.

All mitigation measures relating to breeding birds within the Onshore Order Limits, must be undertaken in accordance with the outline measures presented in this OEMP, including the Breeding Bird Protection Plan.

This Outline Breeding Bird Protection Plan has been prepared in accordance with relevant best practice and guidance, including: Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022) and A Field Guide to Monitoring Nests (Ferguson-Lees et al, 2011).

This Outline Breeding Bird Protection Plan has also been informed by the following documentation, where appropriate: Volume 3, Chapter 4: Onshore and intertidal ornithology of the ES (document reference F3.4); and Volume 3, Annex 4.1: Breeding birds technical report of the ES (document reference F3.4.1).

The terrestrial habitats identified within the Onshore Order Limits primarily consist of improved pasture used for grazing, and arable farming, with small patches of woodland and stretches of hedgerow. The land is low lying and frequently flooded during the winter months with seasonal ponds and scrapes in some areas. There are also numerous ditches bounding the fields some of which are fringed with reedbeds and a small amount of supratidal and sand dune habitats at the coast. Where the Onshore Order Limits crosses the River Ribble, and on some of the tributaries, the river is still tidal and there are limited patches of saltmarsh habitat.

C.1.1 Baseline characterisation

Information with respect to breeding birds within and surrounding the Onshore Order Limits was collected through a detailed desktop review of existing studies and data sets. Further information regarding the baseline data sources used are provided in Volume 3, Annex 4.1: Breeding birds technical report of the ES (document reference F3.4.1).

In addition to a desktop study, site-specific surveys were also undertaken in 2022 and 2023. These surveys aimed to characterise the distribution and abundance of breeding birds within the Onshore Order Limits. Further details

of the 2022 and 2023 breeding bird surveys are presented in Volume 3, Annex 4.1: Breeding birds technical report of the ES (document reference F3.4.1).

The 2022 site specific surveys identified a total of 40 species with a high or very high conservation status (Annex 1 species of the Birds Directive; Schedule 1 of the Wildlife and Countryside Act 1981; Section 41 of the Natural Environment and Rural Communities Act 2006 and BOCC5 UK red or amber listed species, or any named breeding feature of a nearby nationally or internationally designated site) which were found to be holding territory or displaying territorial behaviour within the onshore ornithology survey area (the Onshore Order Limits plus a 500m buffer).

During the breeding bird surveys completed in 2023, 49 species with a high or very high conservation status were found to be holding territory or displaying territorial behaviour within the onshore ornithology survey area.

The breeding bird assemblage was characterised as composing of mostly common and widespread birds of farmland and gardens. Lytham Moss and Howick Cross had breeding farmland birds such as tree sparrow, yellowhammer, corn bunting and grey partridge. Breeding lapwing and oystercatcher were found throughout the route in isolated patches. No rare breeding raptors were found however breeding barn owl are frequent throughout the area, other Schedule 1 breeding species included kingfisher and Cetti's warbler.

The nearby Newton Marsh Site of Special Scientific Interest (SSSI) holds a diverse breeding wader assemblage including black-tailed godwit, avocet, lapwing, redshank and little ringed plover. Teal and shoveler also known to breed there.

C.1.2 Predicted impacts

Breeding birds may be directly or indirectly disturbed and displaced during the construction, operations and maintenance and decommissioning phases of the Transmission Assets. There is the potential for birds at various stages of the breeding cycle (i.e. pairing, nest building, egg laying and chick rearing) to be disturbed either by the physical presence and/or noise disturbance associated with the construction works and the presence of machinery.

As explained in Volume 3, Chapter 4: Onshore and intertidal ornithology of the ES (document reference F3.4), construction and decommissioning of the Transmission Assets is likely to have the greatest potential for adverse effects with respect to breeding birds. Therefore, the measures detailed below will be implemented during the construction phase. In addition, as decommissioning works are likely to be similar in nature as construction activities, the mitigation described below will also be implemented during the decommissioning phase of the Transmission Assets.

Should significant operational maintenance works be required during the nesting bird season, or if any Schedule 1 species are suspected or confirmed to be breeding within recommended disturbance buffers, the mitigation measures detailed below will also be followed to protect breeding birds and ensure compliance with relevant legislation.

C.1.3 Onshore site preparation measures

C.1.3.1 Vegetation clearance

Any vegetation clearance required in advance of construction works will be carried out outside the breeding bird season (the breeding bird season runs from March to August inclusive) and in consultation with the ECoWs as other species may be also affected by vegetation clearance. Prior to vegetation clearance, the works area would be inspected by a suitably qualified ornithologist or the ECoWs on site. Cleared vegetation will be removed from the site or stored appropriately to ensure that it do not become occupied by nesting birds. It is recognised that some species may nest in built environments or on bare ground, therefore, in these areas an ECoW will carry out a pre-construction check for nesting birds within 48 hours of the commencement of works (see ~~C.1.3.3).~~C.1.3.3). If it is not possible to clear vegetation outside of the breeding bird season (e.g., due to weather or protected species constraints) then the ECoW will carry out a pre-clearance check within 48 hours of the commencement of clearance, all nests will be subject to protection if discovered (see ~~C.1.3.3 and C.1.4~~C.1.3.3 and C.1.4).

C.1.3.2 Pre-construction surveys of Schedule 1 species

Where Schedule 1 species are known or suspected to breed within the Onshore Order Limits (as identified during pre-application site surveys), pre-construction surveys will be carried out by a suitably qualified ornithologist during the bird breeding season (i.e. March to August inclusive) prior to the commencement of works to confirm if nesting Schedule 1 bird species are present. The pre-construction surveys will encompass the Onshore Order Limits plus an appropriate recommended disturbance buffer zone Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022).

C.1.3.3 Pre-construction checks for nesting birds

For all previously cleared areas, and areas where vegetation still persists, pre-construction checks for nesting birds within the Onshore Order Limits will be carried out within 48 hours of the commencement of works. Checks for nesting birds will be carried out within the construction works area to establish the likely presence/absence of nesting birds.

Pre-construction checks will be undertaken by a suitably experienced ornithologist and comprise a combination of site walkovers, vantage point surveys and vegetation searches. Pre-construction checks will be undertaken within the construction area, and the survey method will follow current best practices, such as A Field Guide to Monitoring Nests (Ferguson-Lees et al, 2011).

Prior to the commencement of construction, all relevant personnel will have a toolbox talk delivered to them by the ECoWs, fully briefing them about the potential impacts of the works on nesting birds. The toolbox talk will also include the relevant conservation status, legal protection, relevant method

statements and what actions should be taken if nesting birds are encountered or suspected to be present during the works.

If a bird nest is found or suspected to be present at any time, works will cease, and an emergency Bird Protection Zone (BPZ) will be installed. No construction works or vegetation clearance would be permitted in the BPZ until the ECoWs has confirmed that the breeding attempt has concluded. If a Schedule 1 species is found to be nesting and there is potential for disturbance, then an appropriate licence will be applied for from Natural England.

C.1.4 Bird Protection Zones (BPZs)

BPZs for Schedule 1 species will be based on the disturbance buffers recommended in Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022). The exact distance to be used will depend on the Schedule 1 species concerned. Non-schedule 1 species for which disturbance buffers are not available from the literature will be given a minimum BPZ of 10 m.

The BPZs will be established once nest building or breeding has been confirmed, either during pre-construction checks or during construction of the Transmission Assets. The BPZ must be adhered to by all contractors on site until the ECoWs has confirmed that the breeding attempt has concluded. No works will be permitted within the BPZ, including construction personnel or vehicles until the ECoWs has confirmed that the breeding attempt has concluded.

Critical works, which are unavoidable within BPZs, will be undertaken under supervision of the ECoWs and upon completion of a Protected Species Risk Assessment and carried out under an appropriate Schedule 1 licence obtained from Natural England, if appropriate. The Protected Species Risk Assessment will consider the bird species protected status, types of works to be undertaken and local topography/natural screening.

The BPZs may be reduced under special circumstances (e.g. existing baseline disturbance) and following consultation with Natural England. This will only be undertaken once the relevant mitigation requirements have been identified and agreed, and the ECoWs has carried out the Protected Species Risk Assessment.

If the ECoWs is not present and an active nest is identified by site personnel, an emergency BPZ (of a minimum of 10 m depending on the species identified) will be established by on site personnel. All works within the BPZ must cease as soon as it is safe to do so and the ECoWs will be contacted. No works will be carried out within that area until a nesting bird check has been undertaken, and appropriate mitigation has been identified by the ECoWs.

Appendix D: Summary of legislation

Summary of legislation relevant to protected or notable species

Species	Relevant legislation	Legislative requirements
Badgers	Protection of Badgers Act (1992).	Badgers Meles meles, [redacted]
Bats	Wildlife and Countryside Act 1981	All species of bats in the UK are fully protected under the Wildlife and Countryside Act 1981 (1981). All species are listed on Schedule 5 of the Act and are therefore protected by the provisions of Section 9. Section 9 establishes it is an offence to intentionally or recklessly kill, injure or take a bat; possess or control any live or dead specimen or anything derived from a bat; intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat; or intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for that purpose.
	Conservation of Habitats and Species Regulations 2017	Under the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations), it is an offence to deliberately capture, kill or disturb a bat; damage or destroy a breeding site or resting place of a bat; and keep, transport, sell or exchange, or offer for sale or exchange, alive or dead bat or any part of a bat.
	UK Biodiversity Action Plan	Soprano pipistrelles Soprano pipistrelles, noctules *Nyctalus noctula*, Bechstein's bats *Myotis bechsteinii*, brown long-eared bats *Plecotus auritus* and greater *Rhinolophus ferrumequinum* and lesser horseshoe bats *Rhinolophus hipposideros* are also listed as Priority Species under the UK Biodiversity Action Plan (UK BAP).
Birds	Wildlife and Countryside Act 1981	All wild birds, their nests and their eggs are protected under Part 1, Section 1 of the Wildlife and Countryside Act 1981. Subject to the provisions of Part 1, Section 1, the legislation makes it an offence to intentionally: kill, injure or take any wild bird (excluding certain specific game and other licence-controlled species); take, damage, destroy or otherwise interfere with the nest of any wild bird whilst it is in use or being built; obstruct or prevent any wild bird form using its nest; and take or destroy the egg of any wild bird. In addition, for birds listed on Schedule 1 of the Wildlife and Countryside Act 1981, it is also an offence to intentionally or recklessly: disturb any species listed under Schedule 1 whilst it is building a nest; disturb any Schedule 1 species while it is on or near a nest containing eggs or young; and disturb the dependent young of any Schedule 1 species.

Species	Relevant legislation	Legislative requirements
	Conservation of Habitats and Species Regulations 2017	The Conservation of Habitats and Species Regulations 2017 provides protection against deliberate disturbance of birds, particularly during the period of breeding and rearing. This refers specifically to disturbance levels that would affect delivery of the objectives of the Birds Directive.
GCN	Wildlife and Countryside Act 1981	Great crested newts, *Triturus cristatus* are protected under Section 9 of the Wildlife and Countryside Act 1981, which make it an offence to capture, kill, or disturb GCN; deliberately take or destroy GCN eggs, and damage or destroy GCN breeding sites intentionally or recklessly.
	Conservation of Habitats and Species Regulations 2017	This legislation, which retains the EU Habitats Directive in UK law, makes it an offence to deliberately capture, injure, kill, or disturb great crested newts. It also protects their breeding sites and resting places.
	Natural Environment and Rural Communities (NERC) Act 2006	Great crested newts are listed Species of Principal Importance (SPI) in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006, giving public bodies and local planning authorities a legal duty to have regard for conserving a SPI when exercising their duties.
Fish	Wildlife and Countryside Act 1981	This Act provides protection for certain fish species, such as the allis shad, twaite shad, vendace, whitefish, and Atlantic sturgeon. It is an offence to intentionally kill, injure, or take these fish. The Act also protects their habitats by making it illegal to damage or destroy structures or places used for shelter or protection.
	Conservation of Habitats and Species Regulations 2017	These regulations provide protection for certain fish species, such as the allis shad, twaite shad, houting and Atlantic sturgeon. It is an offence to intentionally kill, injure, or take these fish. The regulations also protects their habitats by making it illegal to damage or destroy structures or places used for shelter or protection.
	Salmon and Freshwater Fisheries Act 1975	This Act is a comprehensive piece of legislation aimed at protecting and managing salmon and freshwater fish populations in the UK. For example, prohibiting certain methods of taking fish, prohibiting the taking of fish during close seasons and close times to protect spawning and construction and maintenance of fish passes at barriers (e.g. weirs and dams) to ensure free movement of fish.
	Natural Environment and Rural Communities (NERC) Act 2006	Thirty-five marine and freshwater fish species are listed Species of Principal Importance (SPI) in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006, giving public bodies and local planning authorities a legal duty to have regard for conserving a SPI when exercising their duties.
Eel	The eels (England and Wales) Regulations 2009	These regulations implement measures for the recovery of European eel stocks. They require the installation of eel passes and screens at barriers and water intakes to facilitate safe migration. The Environment Agency and Natural Resources Wales have the authority to enforce these measures.
	Wildlife and Countryside Act 1981	Eels are not specifically listed in the schedules of the Wildlife and Countryside Act 1981. However, the Act provides general protections for wildlife and their habitats, which can indirectly benefit eel populations. For

Species	Relevant legislation	Legislative requirements
		example, it is an offence to intentionally or recklessly damage or destroy any structure or place that wild animals use for shelter or protection, which can include habitats used by eels.
Otter	Wildlife and Countryside Act 1981	Otter are listed in Schedule 5 of the Wildlife and Countryside Act 1981. As such, under Section 9 of this Act it is an offence to: intentionally or recklessly disturb an otter while it is occupying a structure or place, which it uses for that purpose; or obstruct access to a place of shelter or protection.
	Conservation of Habitats and Species Regulations 2017	Otter are listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017. This makes it an offence to: deliberately capture, injure or kill an otter; deliberately disturb an otter; or damage or destroy a breeding site or resting place of an otter.
	Natural Environment and Rural Communities (NERC) Act 2006	Otter are listed as a species of principal importance under Section 41 of this Act, which means their conservation must be taken into account by public bodies when performing their duties.
Water vole	Wildlife and Countryside Act 1981	Water vole are listed in Schedule 5 of the Wildlife and Countryside Act 1981. As such, under Section 9 of this Act it is an offence to: intentionally or recklessly disturb an otter while it is occupying a structure or place, which it uses for that purpose; or obstruct access to a place of shelter or protection.
	Natural Environment and Rural Communities (NERC) Act 2006	Water vole are listed as a species of principal importance under Section 41 of this Act, which means their conservation must be taken into account by public bodies when performing their duties.
Reptiles	Wildlife and Countryside Act 1981	All reptile species native to United Kingdom are protected under Section 9(1) and (5) of the Wildlife and Countryside Act 1981, which makes it an offence to intentionally or recklessly kill or injure, or to sell, barter, exchange, or transport reptiles or any part of them.
	Natural Environment and Rural Communities (NERC) Act 2006	Native species of reptile are listed as a species of principal importance under Section 41 of this Act, which means their conservation must be taken into account by public bodies when performing their duties.
Terrestrial invertebrates	Wildlife and Countryside Act 1981	Provides protection for many invertebrate species listed in Schedule 5. It is an offence to intentionally kill, injure, or take these invertebrates from the wild. Additionally, it is illegal to possess or control them (alive or dead), damage or destroy their habitats, or disturb them while they are in a place of shelter or protection1.
	~~Conservation of Habitats and Species Regulations 2017~~	~~This legislation, which incorporates the EU Habitats Directive into UK law, protects certain invertebrates as European Protected Species.~~

Species	Relevant legislation	Legislative requirements
	~~Natural Environment and Rural Communities (NERC) Act 2006~~	~~Some species of terrestrial invertebrates are listed under Section 41 of this Act as species of principal importance for biodiversity conservation in England. Public bodies must consider these species when performing their functions, ensuring that their conservation is taken into account.~~
~~Aquatic invertebrates~~	~~Wildlife and Countryside Act 1981~~	~~Provides protection for many invertebrate species listed in Schedule 5. It is an offence to intentionally kill, injure, or take these invertebrates from the wild. Additionally, it is illegal to possess or control them (alive or dead), damage or destroy their habitats, or disturb them while they are in a place of shelter or protection1.~~
	Conservation of Habitats and Species Regulations 2017	This legislation, which incorporates the EU Habitats Directive into UK law, protects certain invertebrates as European Protected Species.
	Natural Environment and Rural Communities (NERC) Act 2006	Some species of terrestrial invertebrates are listed under Section 41 of this Act as species of principal importance for biodiversity conservation in England. Public bodies must consider these species when performing their functions, ensuring that their conservation is taken into account.
Aquatic invertebrates	Wildlife and Countryside Act 1981	Provides protection for many invertebrate species listed in Schedule 5. It is an offence to intentionally kill, injure, or take these invertebrates from the wild. Additionally, it is illegal to possess or control them (alive or dead), damage or destroy their habitats, or disturb them while they are in a place of shelter or protection1.
	Conservation of Habitats and Species Regulations 2017	This legislation, which incorporates the EU Habitats Directive into UK law, protects certain invertebrates as European Protected Species.
	Natural Environment and Rural Communities (NERC) Act 2006	Some species of aquatic invertebrates are listed under Section 41 of this Act as species of principal importance for biodiversity conservation in England. Public bodies must consider these species when performing their functions, ensuring that their conservation is taken into account.

Appendix E: Outline Sand Lizard Mitigation Plan

Please refer to Outline Sand Lizard Mitigation Plan (S_D4_14

Appendix F: Terrestrial Waterbirds Note

Appendix F to the oEMP: Onshore Terrestrial Waterbird Note

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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	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. 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.
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	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. Also referred to in this report as the Transmission Assets, for ease of reading.
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	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. Also referred to in this report as the Offshore Order Limits, for ease of reading.
Transmission Assets Order Limits: Onshore	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). Also referred to in this report as the Onshore Order Limits, for ease of reading.

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) Comment		Where addressed in this document
RI_H6	Ribble and Alt Estuaries SPA/Ramsar – inadequate assessment of impacts on terrestrial waterbirds: 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. 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.	Section 2
RI_H7	Ribble & Alt Estuaries SPA – mitigation for terrestrial impacts/compensation 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. 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.	Section 4

NE Ref Appendix K1 - Risk and Issues Log (APP-093)	Comment	Where addressed in this document
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

This document has been updated at Deadline 6 to:

- Reflect the inclusion of shelduck as a species for which FLL exists.
- Amend the percentage of black-tailed godwit in comparison with the known populations (this does not make a material difference and was calculated correctly in E2.3 Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment Part Three – Special Protection Areas (SPA) and Ramsar Site assessments (APP-017).
- Provide further clarification on the purpose of the mitigation areas, i.e., what is needed for temporary and what is needed for permanent.
- Outline additional approaches that could be used to avoid and reduce impacts in the unlikely occurrence that one or both of the terrestrial mitigation areas becomes undeliverable.

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 assessment methodologies used for the EIA and HRA can be found in Section 4.10 of F3.4 Volume 3, Chapter 4: Onshore and intertidal ornithology (APP-090) and Section 1.4 of E2.3 Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment Part Three – Special Protection Areas (SPA) and Ramsar Site assessments (APP-017) respectively. The assessments and conclusions on site integrity for the Ribble and Alt Estuaries SPA and Ramsar can be found in Sections 1.6.3 and 1.6.4 of E2.3 Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment Part Three – Special Protection Areas (SPA) and Ramsar Site assessments (APP-017).

2.1.1.3 With the inclusion of mitigation areas at Lytham Moss and south of Newton-with-Scales to provide appropriate measures and thus reduce effects, the ISAA concluded No Adverse Effects on Integrity (AEoI) on the Ribble and Alt Estuary SPA and Ramsar as a result of temporary loss of supporting habitat and/or resource availability and disturbance and displacement from construction activities (see Table 2). In addition, the use of alternative avoidance measures, such as seasonal working and/or screening in sensitive areas, could also be used if the mitigation areas above are not available (for full details see Section 1.3.2 of the Outline Ecological Management Plan (J6/F06).

2.1.1.4 The area subject to permanent habitat loss is considerably smaller than that affected by temporary cable trenching and burial activities, being limited exclusively to the substation sites. The ISAA concluded that there would be No AEoI on the Ribble and Alt Estuaries SPA and Ramsar as a result of permanent loss of supporting habitat and/or resource availability. Mitigation measures are not required to support this conclusion as although golden plover were present in numbers exceeding 1% of the Ribble and Alt Estuary SPA and Ramsar, they were only present on one of 14 survey visits and the substation areas do not therefore appear to be functionally linked for golden plover (for full details see Section 2.3.7). In addition, the area to be impacted represents only a small proportion of their available foraging range. However, to reduce the residual effects on non-breeding waders, Environmental Impact Assessment (EIA) level mitigation is recommended at Newton-with-Scales (see Table 2).

2.1.1.5 The Applicants are committed to delivering the mitigation measures outlined within the Outline Ecological Management Plan at Lytham Moss and Newton-with-Scales. However, are aware of the concerns raised by aviation stakeholders. In the case that it is not possible to deliver one or both of these during the construction phase, alternative construction avoidance and reduction measures will be put in place to ensure that there are no AEoI. Should these be required these would be in the form of screening of works and seasonal working practices in sensitive areas with high numbers of birds. These have been identified using the ES data as Lytham Moss and Newton-with-Scales (see density maps Figure , Figure , Figure , Figure , and Figure). This will give the non-breeding SPA features safe disturbance free refuges throughout the duration of the construction phase (for location details see the Outline Ecological Management Plan, J6/F06). The different scenarios are set out in Table 2 below. After listening to the concerns of BAE and the DIO it is thought to be highly unlikely that only the Newton-with-Scales mitigation area can be delivered, therefore this scenario has not been considered.

Table 2: Summary of mitigation strategy and HRA conclusions

Scenario	Measures	Impact	Is the mitigation needed to conclude No AEoI
1.	Lytham Moss in combination with Newton-with-Scales	Temporary disturbance and habitat loss from the cable corridor	Yes
2.	Lytham Moss in combination with seasonal working and screening at Newton-with-Scales	Temporary disturbance and habitat loss from the cable corridor	Yes
3.	Seasonal working and screening at Lytham Moss and Newton-with-Scales	Temporary disturbance and habitat loss from the cable corridor	Yes
4.	Newton-with-Scales	Permanent habitat loss at the substations	No, only needed for EIA

2.1.1.6 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 Natural England's 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 3 to Table 15.

2.1.1.7 As the area impacted by permanent habitat loss (the substation sites) is considerably smaller, only a small subset of SPA and Ramsar features are predicted to be impacted. As golden plover were the sole species which were present in numbers exceeding 1% of the SPA population a

separate row for golden plover abundance at the substations is provided in Table 3.

2.1.1.8 In order to provide further clarity on what species rely on FLL within the area of temporary impacts, and to ensure that all species are provided for by the mitigation, the Applicants have presented in Table 3 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. Section 2.2 aims to examine these features in greater detail and to consider if FLL exists within the area of temporary impacts for each of these features in turn.

Table 3: 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 *Cygnus cygnus*	132	**72.5**	**18.6**	41	**22.6**	**5.8**
Pink-footed goose *Anser brachyrhynchus*	8,319	**70.7**	**14.9**	2,800	**23.8**	**7.2**
Shelduck *Tadorna tadorna*	374	**7.6**	**7.4**	87	**1.8**	**1.7**
Wigeon *Mareca penelope*	1,818	**2.1**	**3.6**	605	0.7	**1.2**
Teal *Anas crecca*	312	**4.4**	**3.6**	160	**2.2**	**1.9**
Golden plover (**all areas**) *Pluvialis apricaria*	381	**10.6**	**7.6**	135	**3.8**	**2.7**
Golden plover (**substations**)	104	**2.9**	**2.1**	11	0.3	0.2
Redshank *Tringa totanus*	61	**2.4**	**2.5**	15	0.6	0.6
Black-tailed godwit *Limosa limosa*	423	**33.2**	**9.4**	119	**9.4**	**2.6**

2.2 Consideration of Functionally Linked Land

2.2.1.1 The following section provides a summary on whether or not the substation locations are considered functionally linked land (FLL).

2.2.1.2 A general definition of FLL is provided from (NECR207, Chapman & Tyldesley, 2016)

"*… the term 'functional linkage' refers to the role or 'function' that land or sea beyond the boundary of a European site might fulfil in terms of supporting the populations for which the site was designated or classified. Such an area of land or sea is therefore 'linked' to the site in question because it provides a (potentially important) role in maintaining or restoring a protected population at favourable conservation status*."

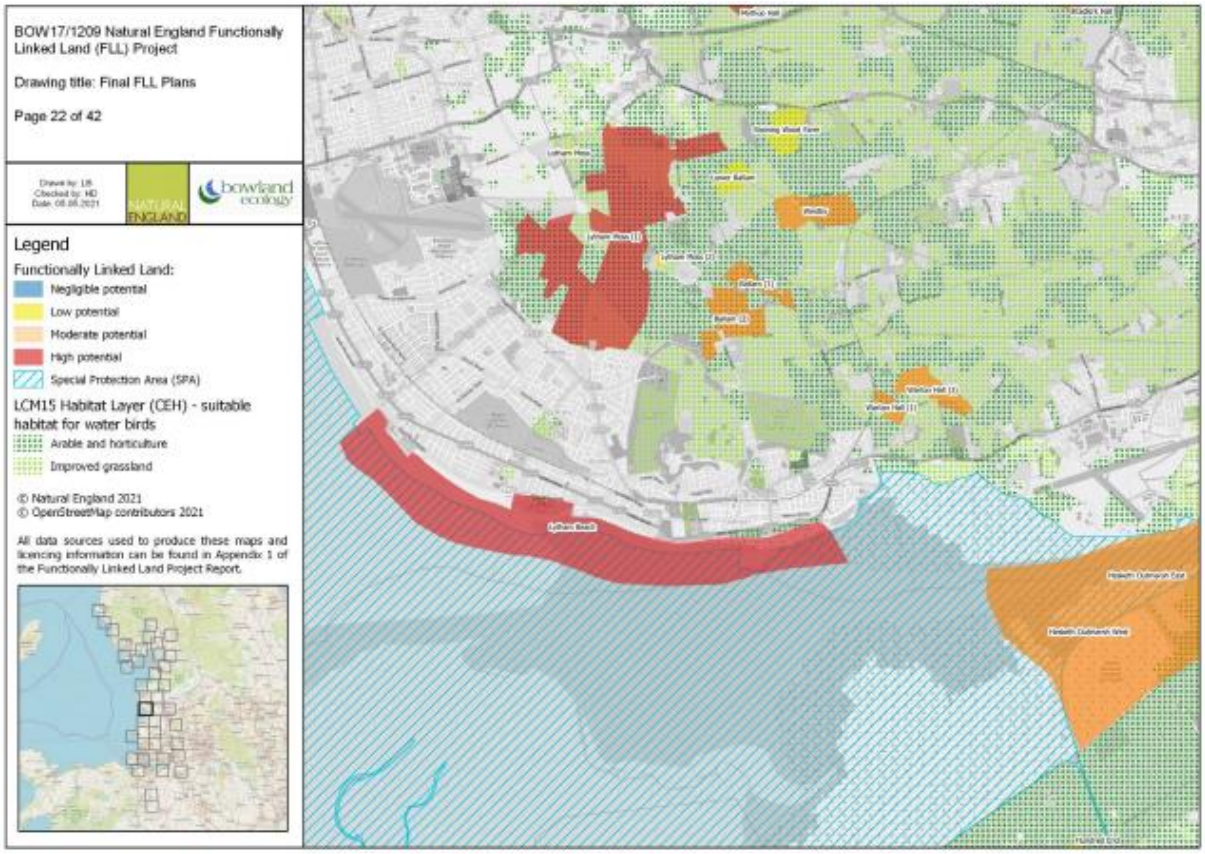
2.2.1.3 FLL in the northwest of England has been mapped for a Natural England report and is shown in Figure 2-1 (NECR361, Bowland Ecology, 2021) using the following parameters:

"an area should support at least 0.5% of the GB population of a qualifying species, or 1000 birds, to be considered FLL."

"Stroud et al. (2001) defined 'regular' as when a threshold is met in two thirds of the season for which adequate data are available."

2.2.1.4 The Applicants understanding is that Natural England's view is that the Bowland Ecology (2021) report does not represent all FLL, and that FLL should be determined on a case-by-case basis with the threshold for FLL set at 1% of the SPA population of a feature/s. This is the threshold that the Applicants used in the assessments and conclusions on site integrity for the Ribble and Alt Estuaries SPA and Ramsar in Sections 1.6.3 and 1.6.4 of E2.3 Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment Part Three – Special Protection Areas (SPA) and Ramsar Site assessments (APP-017). However, regularity of use must also be taken into consideration. There were 14 waterbird surveys in the non-breeding season with good coverage (see Figures 1.5 and 1.6 and Table 1.3 in F3.4.4 Volume 3, Annex 4.4: Onshore and intertidal ornithology survey methodologies (APP-095)), therefore using the Stroud, et al. (2001) definition of regularity this would equate to birds being present on two thirds of visits.

Figure 2-1: Functionally Linked Land in Fylde as mapped by Bowland Ecology (2021)



2.2.1.5 Therefore, consideration of FLL in this report uses:

- **Abundance** – Over 1% of the SPA population
- **Regularity** – Birds were present at numbers exceeding 1% of the SPA population on two thirds of survey visits.

2.2.1.6 The assessments account for an absolute worst-case scenario in which disturbance from construction is occurring simultaneously throughout the entire order limits at any one time during the non-breeding season. In reality this will not occur with disturbance instead being localised and occur in periods of relatively short duration.

2.3 Species accounts

2.3.1.1 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

2.3.1.2 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 20 below.

2.3.2 Whooper swan

Table 4: 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	7

2.3.2.1 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 4). The site-specific surveys recorded peaks in February during both 2022/23 and 2023/24 winters of over 120 birds (Figure).

2.3.2.2 Whooper swan are early to migrate with 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.

2.3.2.3 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). 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. The Applicants have proposed to mitigate for whooper swan in the Lytham Moss area (Section 4.2).

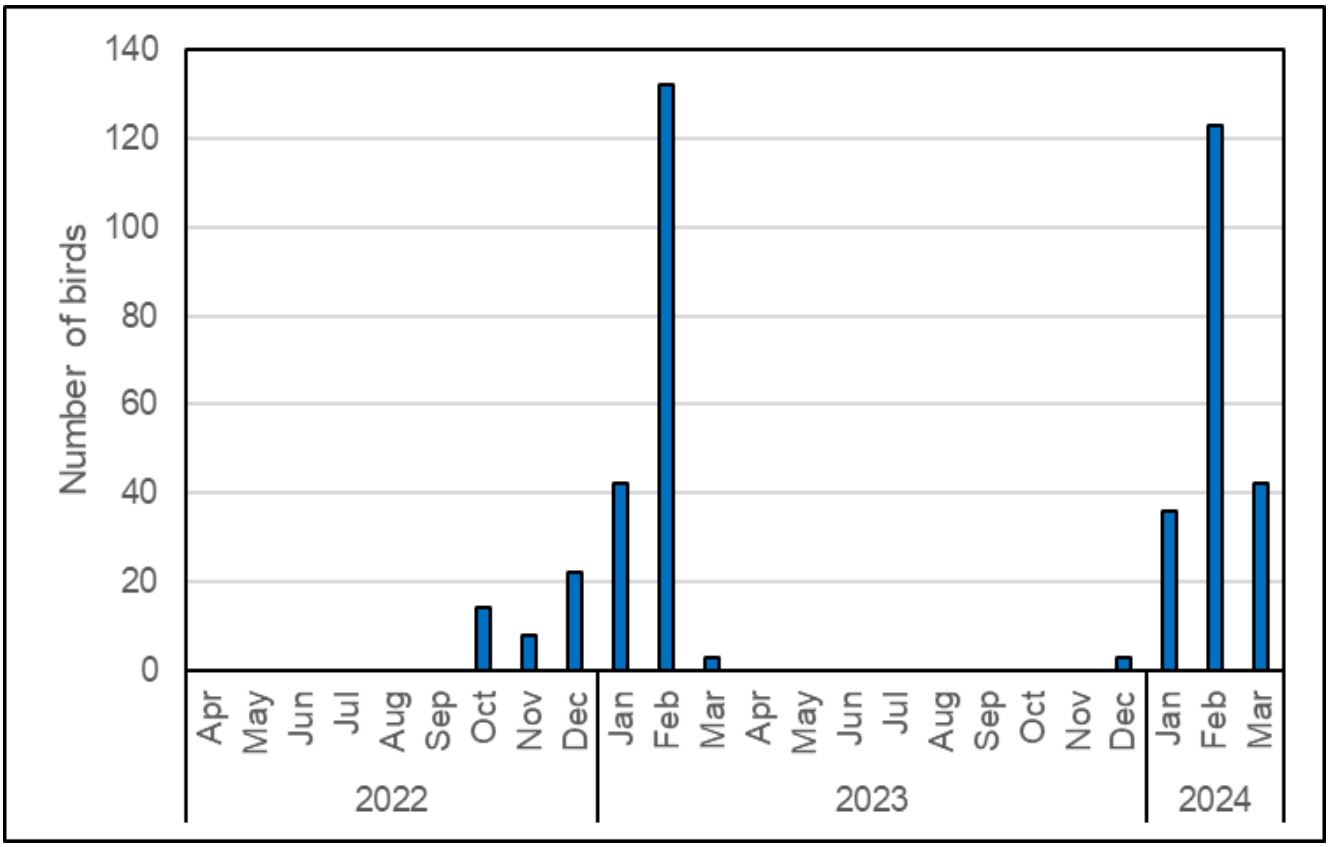


Figure 2-2: Monthly abundance of whooper swan within the onshore ornithology survey area

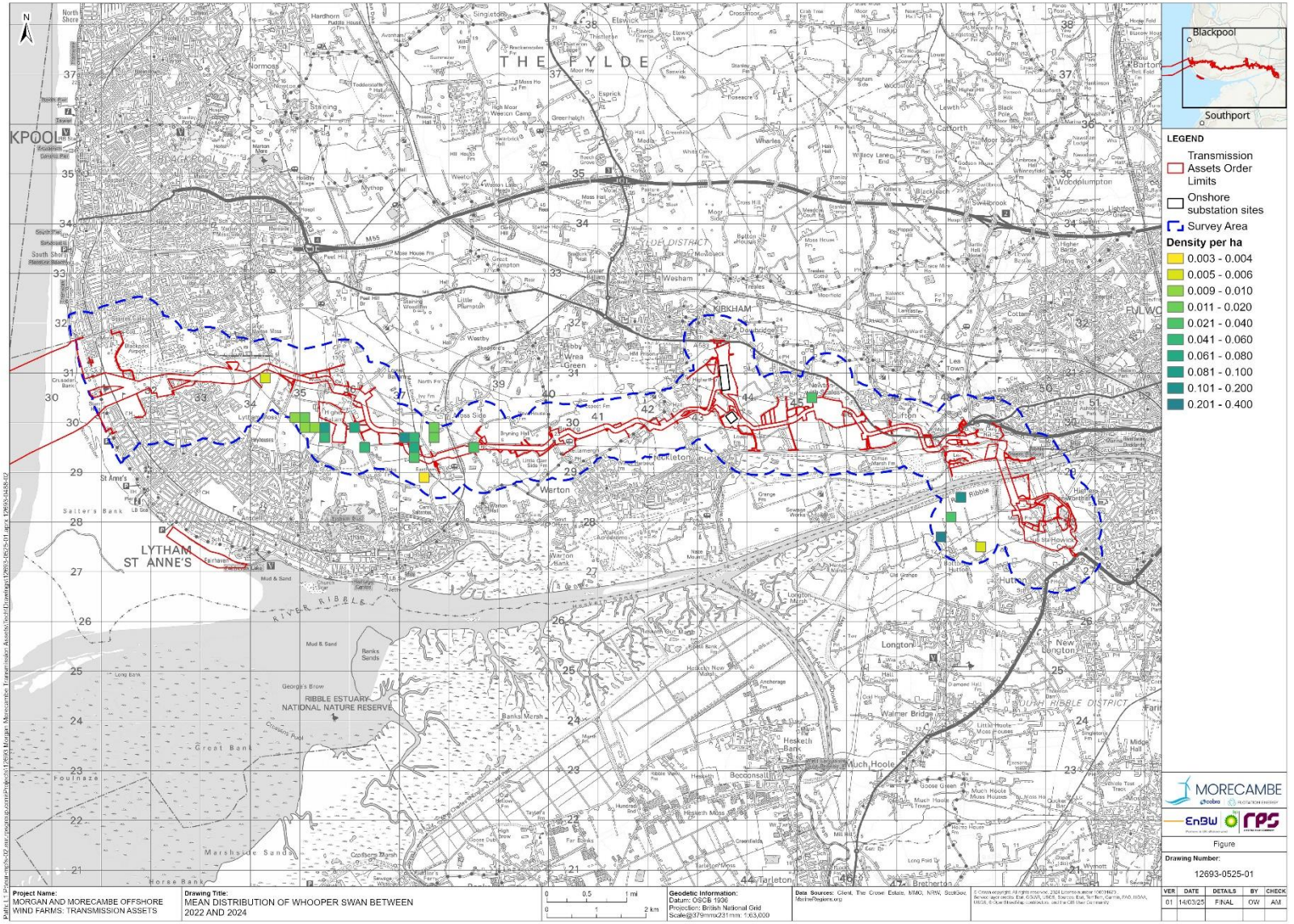


Figure 2-3: Whooper swan distribution along the survey corridor

2.3.3 Pink-footed goose

Table 5: 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

2.3.3.1 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 (

2.3.3.2 Figure with numbers declining sharply in March during both years.

2.3.3.3 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).

2.3.3.4 Most pink-footed goose sightings within the onshore survey area were made on arable land in autumn and winter with the majority of sightings either within, or within a few kilometres of Lytham Moss (Figure). 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 4.2).

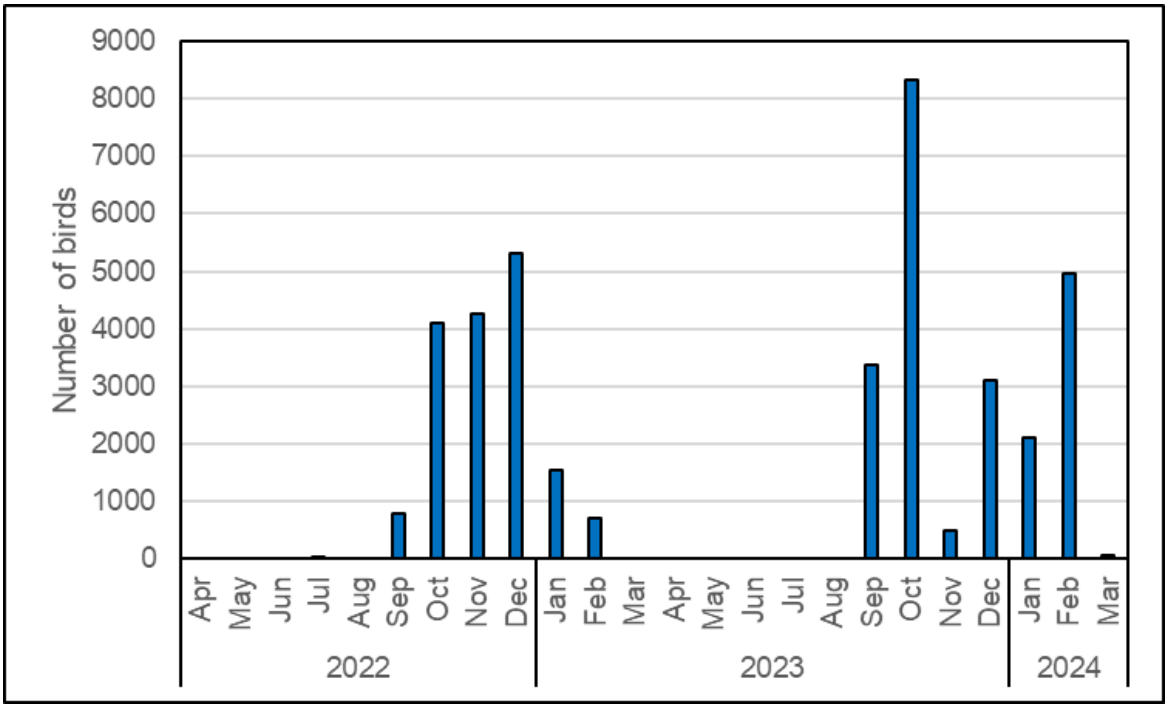


Figure 2-4: Monthly abundance of pink-footed goose within the onshore ornithology survey area

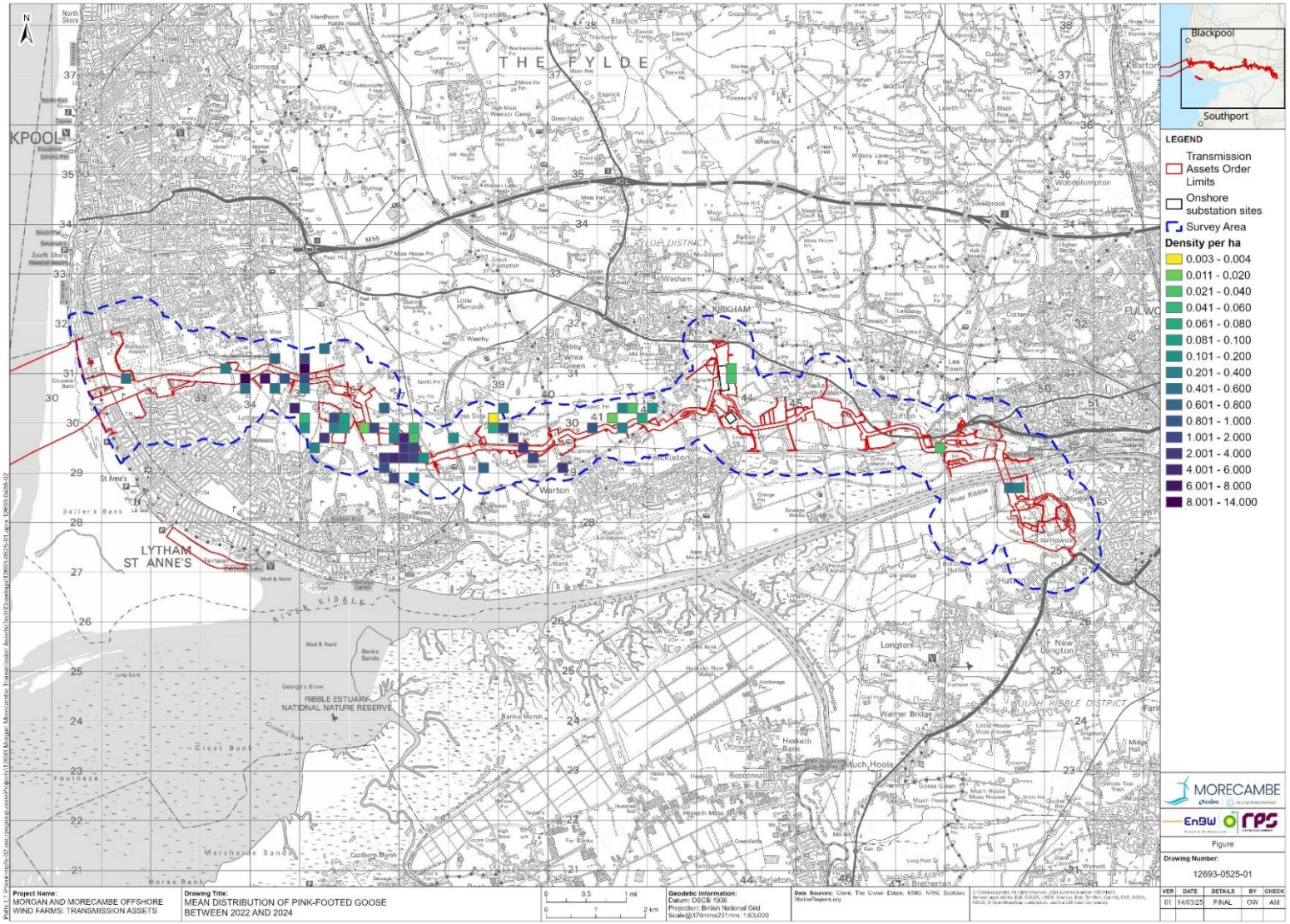


Figure 2-5: Pink-footed goose distribution along the survey corridor

2.3.4 Shelduck

Table 6: 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

2.3.4.1 Shelduck were present in numbers exceeding 1% of the citation or recent WeBS estimate for the Ribble and Alt Estuaries SPA (Table 6) during most months between January and May between 2022 and 2024 (Figure).

2.3.4.2 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 marine gastropods (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.

2.3.4.3 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 low impacts upon non-breeding shelduck during the terrestrial construction and operation phases of the project (e.g., onshore export cable installation and substation construction).

2.3.4.4 Following discussions with Natural England, the Applicants have agreed to include non-breeding shelduck among the species for which FLL is being considered in relation to temporary impacts. Despite their preference for feeding on marine gastropods in muddy estuarine habitats, it is evident that they also regularly use terrestrial habitats. Whether this is for non-foraging purposes or for foraging during exceptionally wet flood conditions remains unclear. To mitigate for the temporary impacts of habitat loss and disturbance during the construction period, the Applicants propose creating muddy pools at Lytham Moss and Newton-with-Scales (see Section 4.2).

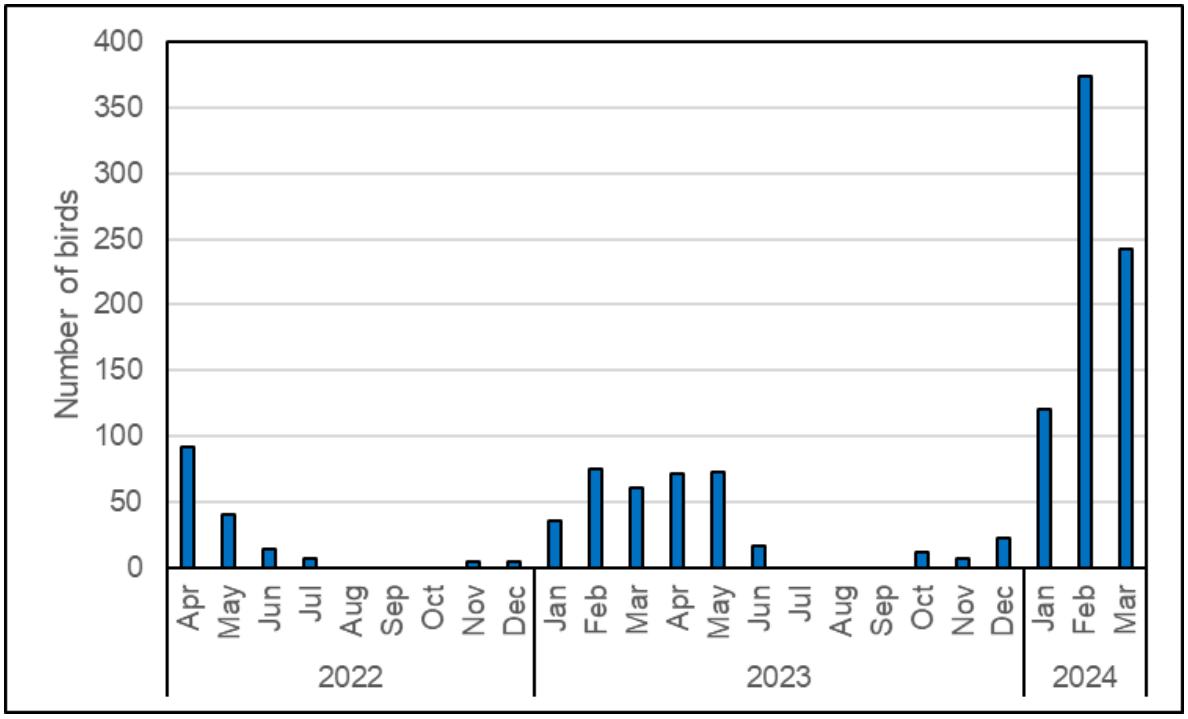


Figure 2-6: Monthly abundance of shelduck within the onshore ornithology survey area

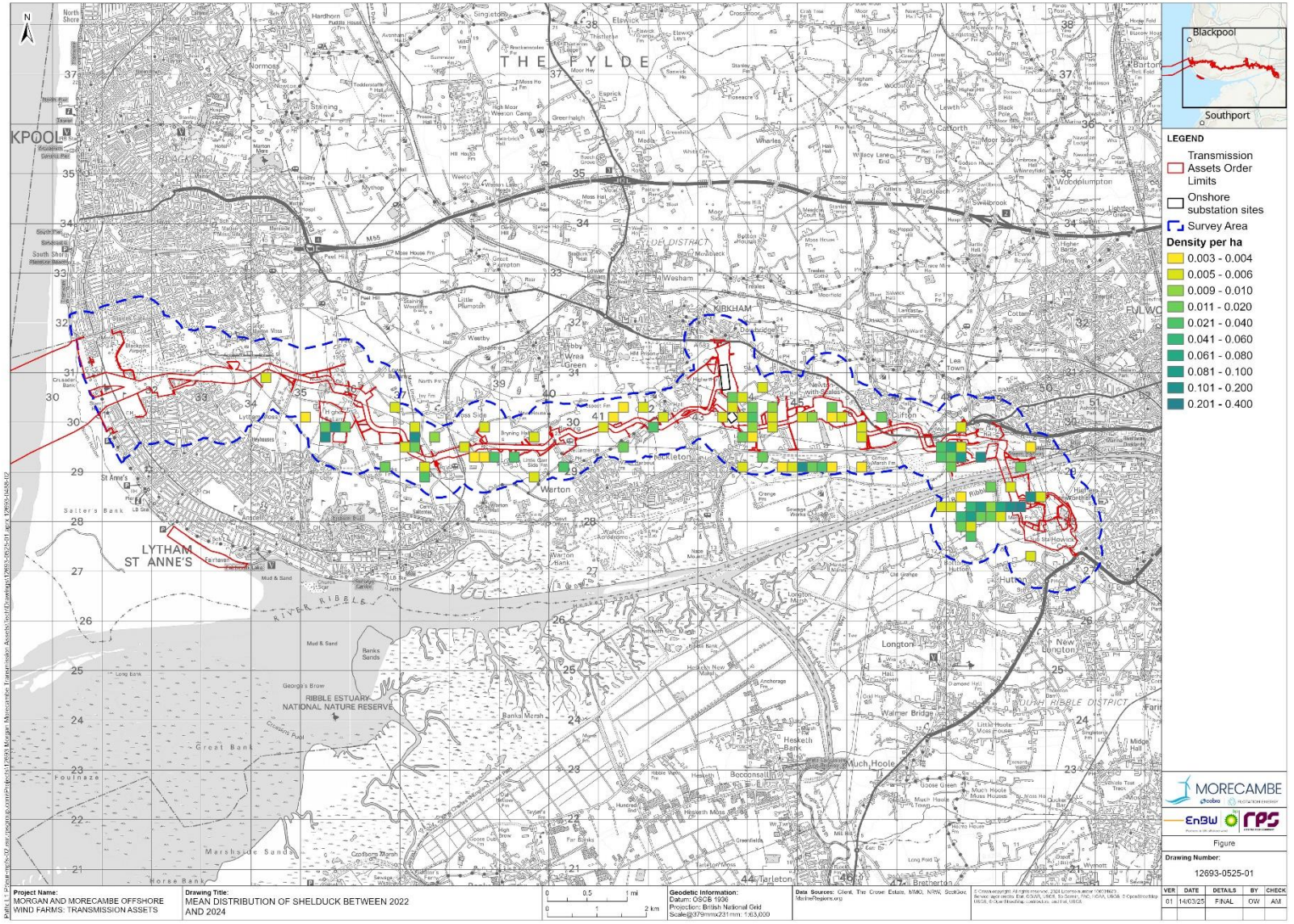


Figure 2-7: Shelduck distribution along the survey corridor

2.3.5 Wigeon

Table 7: 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

2.3.5.1 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 7) for the Ribble and Alt Estuaries SPA between October and March (Figure) 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). 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).

2.3.5.2 Table 8 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 4.3.2 will benefit wigeon.

Table 8: 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

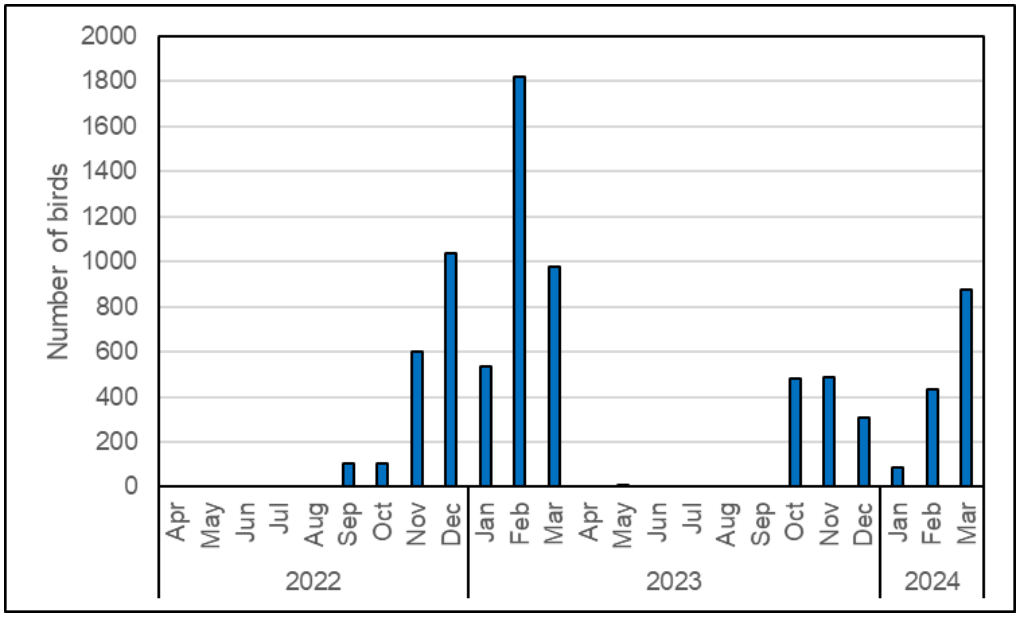


Figure 2-8: Monthly abundance of wigeon within the onshore ornithology survey area

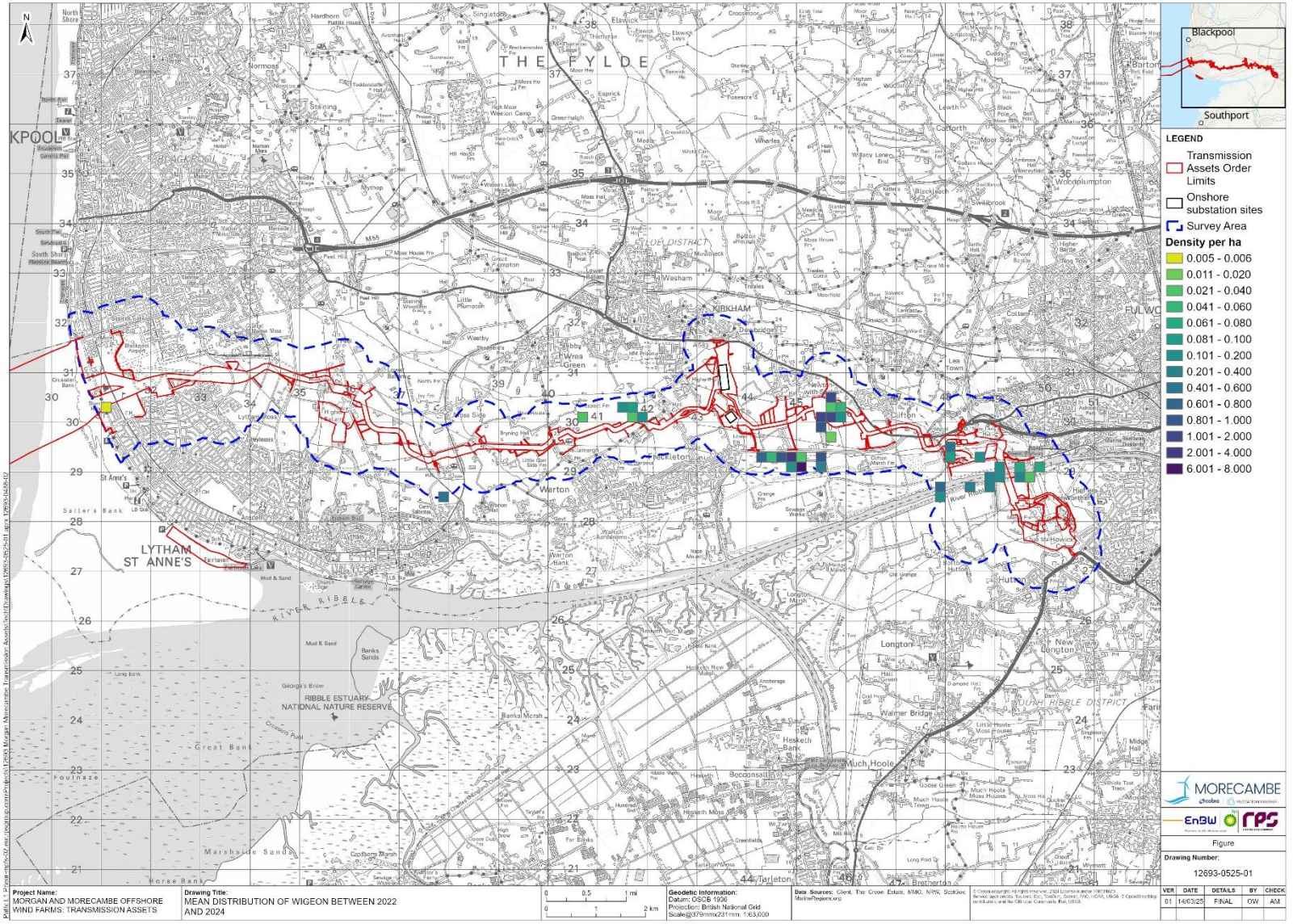


Figure 2-9: Wigeon distribution along the survey corridor

2.3.6 Teal

Table 9: 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

2.3.6.1 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 9) for the Ribble and Alt Estuaries SPA between September and March, 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)).

2.3.6.2 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), although unlike wigeon there were higher numbers of teal outside of Newton Marsh SSSI than there were within the SSSI (Table 10). 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, even though there will be no permanent adverse effects on teal (Section 4.3). The mitigation area at Lytham Moss and Newton-with-Scales is proposed to mitigate for the temporary impacts of habitat loss and disturbance during construction on teal (Section 4.3 and Appendix B.2.5 in the oEMP (J6/F06)).

Table 10: 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

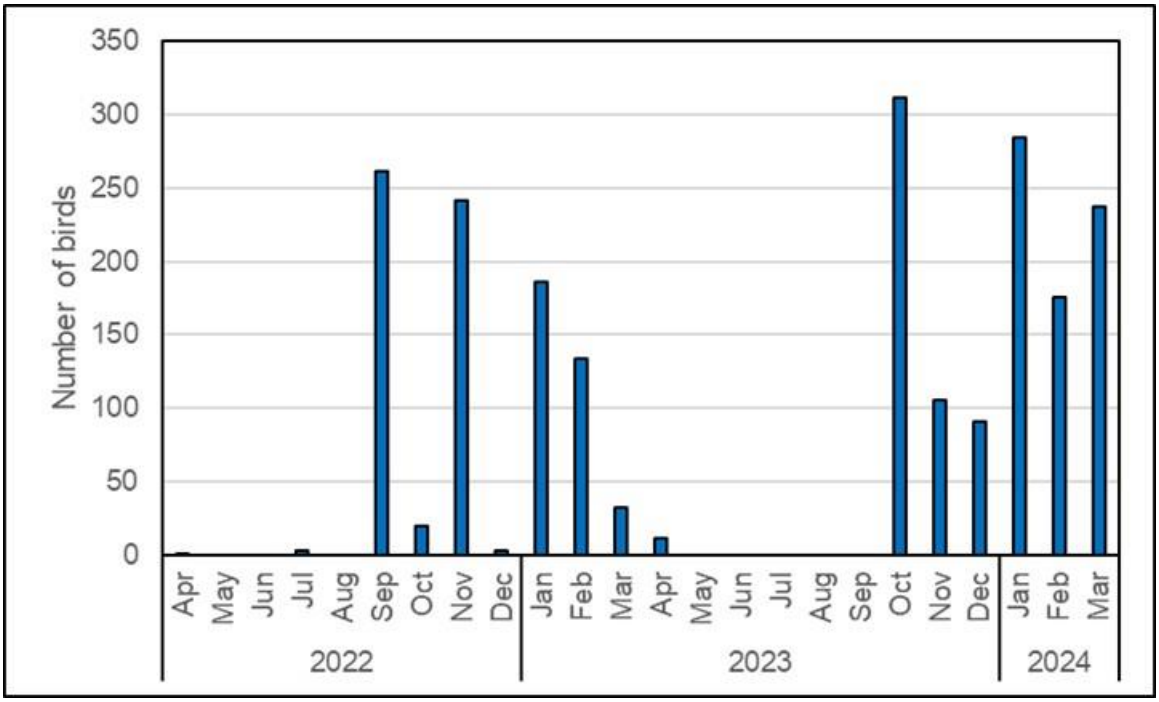


Figure 2-10: Monthly abundance of teal within the onshore ornithology survey area

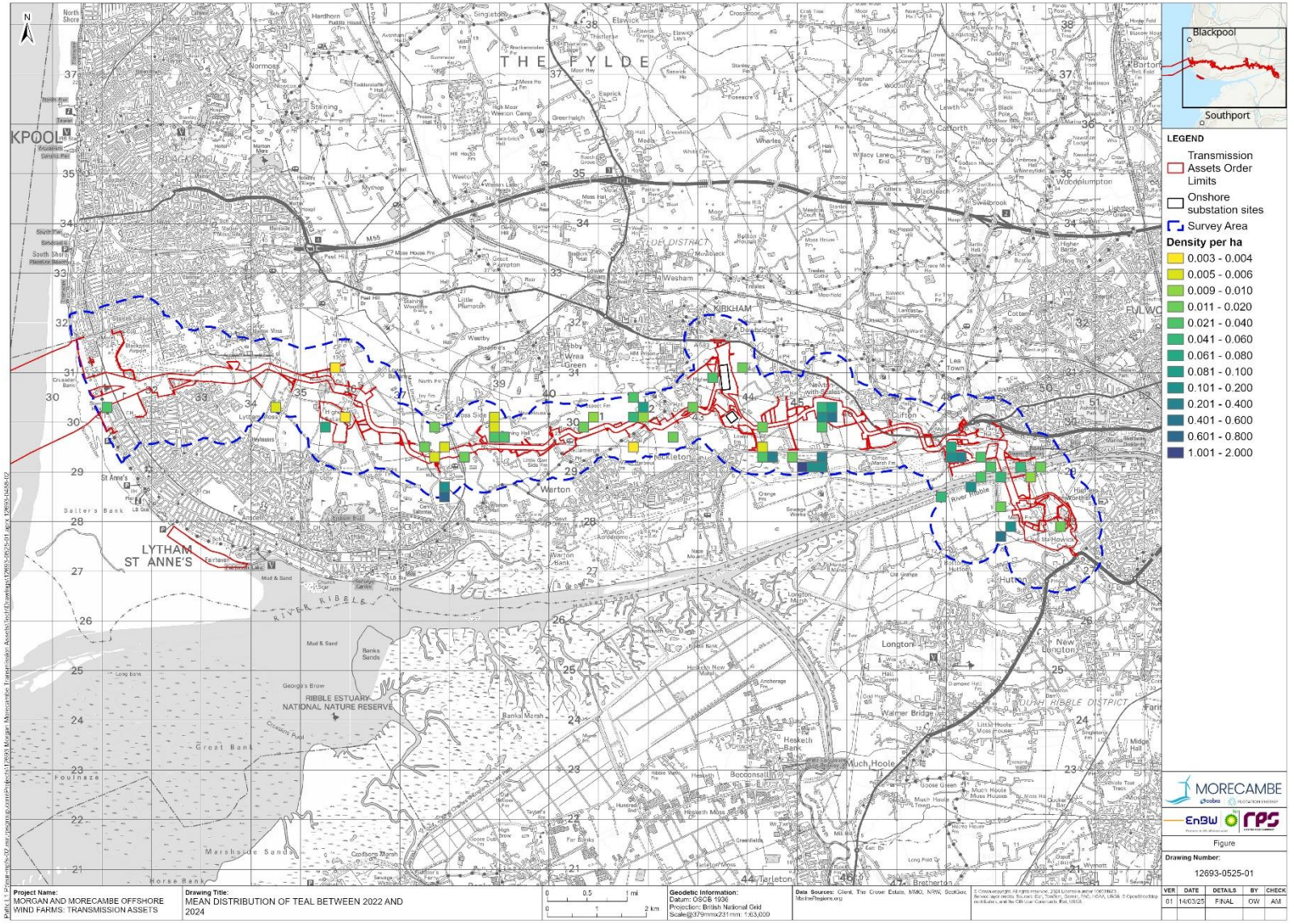


Figure 2-11: Teal distribution along the survey corridor

2.3.7 Golden plover

Table 11: 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

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

2.3.7.2 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 respectively. The permanent impact being mitigated for at Newton-with-Scales does not represent AEoI due to the infrequent use of the area. Golden plover were only present at the substation sites on one of 14 survey visits and when considering all birds that were recorded within the vicinity of the area of permanent habitat loss (i.e., a precautionary approach that includes birds that will not be directly affected but may be displaced by presence of the infrastructure) this equates to an average of only 11 birds or 0.3% of the SPA citation (Table 1112). Golden plover were therefore absent in 93% of survey effort, this strongly suggests the land is not predictably used by the species and therefore does not support the conclusion that the substation land contributes meaningfully to the conservation objectives of the Ribble and Alt Estuaries SPA and Ramsar that the species is associated with. Further to this the substations area represents only a small fraction of the foraging range available to birds on the Ribble and Alt Estuaries (approx. 0.07 to 0.08% of available pasture and arable within 10 km of their roost sites). Therefore, as it is clear that the substation land is not FLL, this mitigation is provided as an EIA requirement only to mitigate for residual effects upon non-breeding waders. The measures proposed at Lytham Moss and Newton-with-Scales are discussed in Sections 4.2 and 4.3 respectively.

Table 1112: Golden plover peak and mean counts at the area of permanent habitat loss at the substations

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
Substations	104	2.9	2.1	11	0.3	0.2

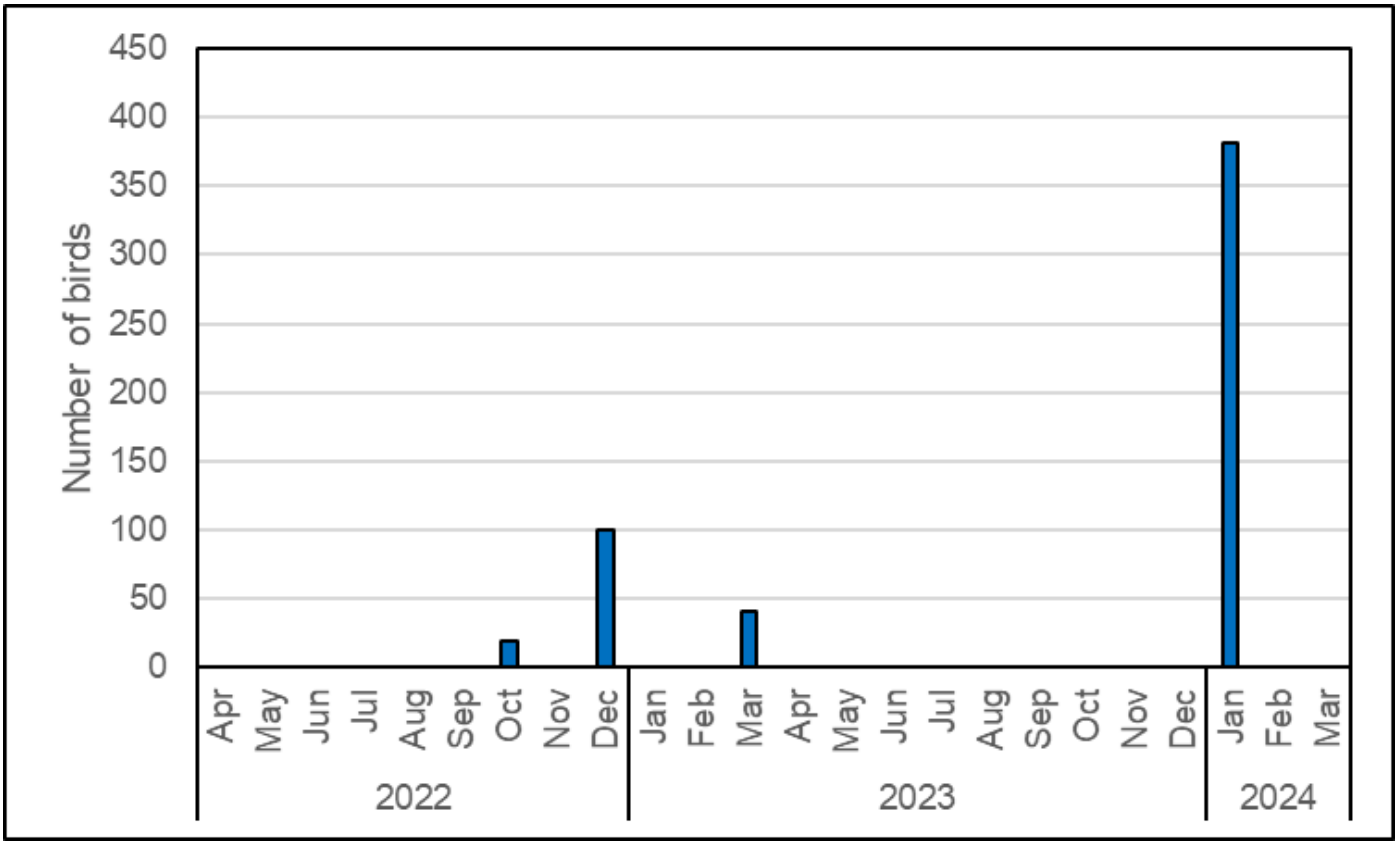


Figure 2-12: Monthly abundance of golden plover within the onshore ornithology survey area

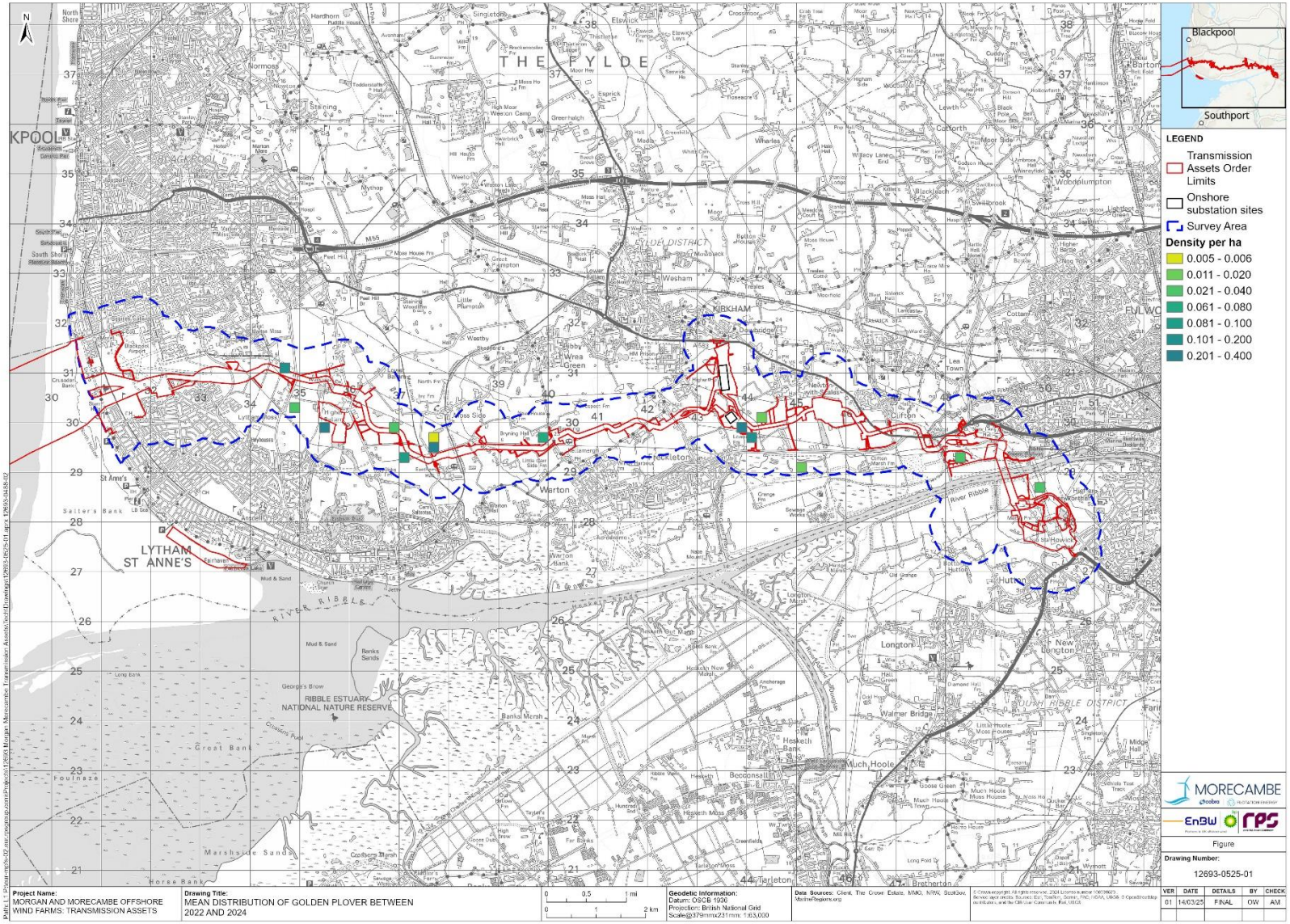


Figure 2-13: Golden plover distribution along the survey corridor

2.3.8 Redshank

Table 13: 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

2.3.8.1 Redshank were only present in numbers exceeding 1% of the citation or recent WeBS estimate (Table 13) for the Ribble and Alt Estuaries SPA in March 2024 (Figure), 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).

2.3.8.2 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

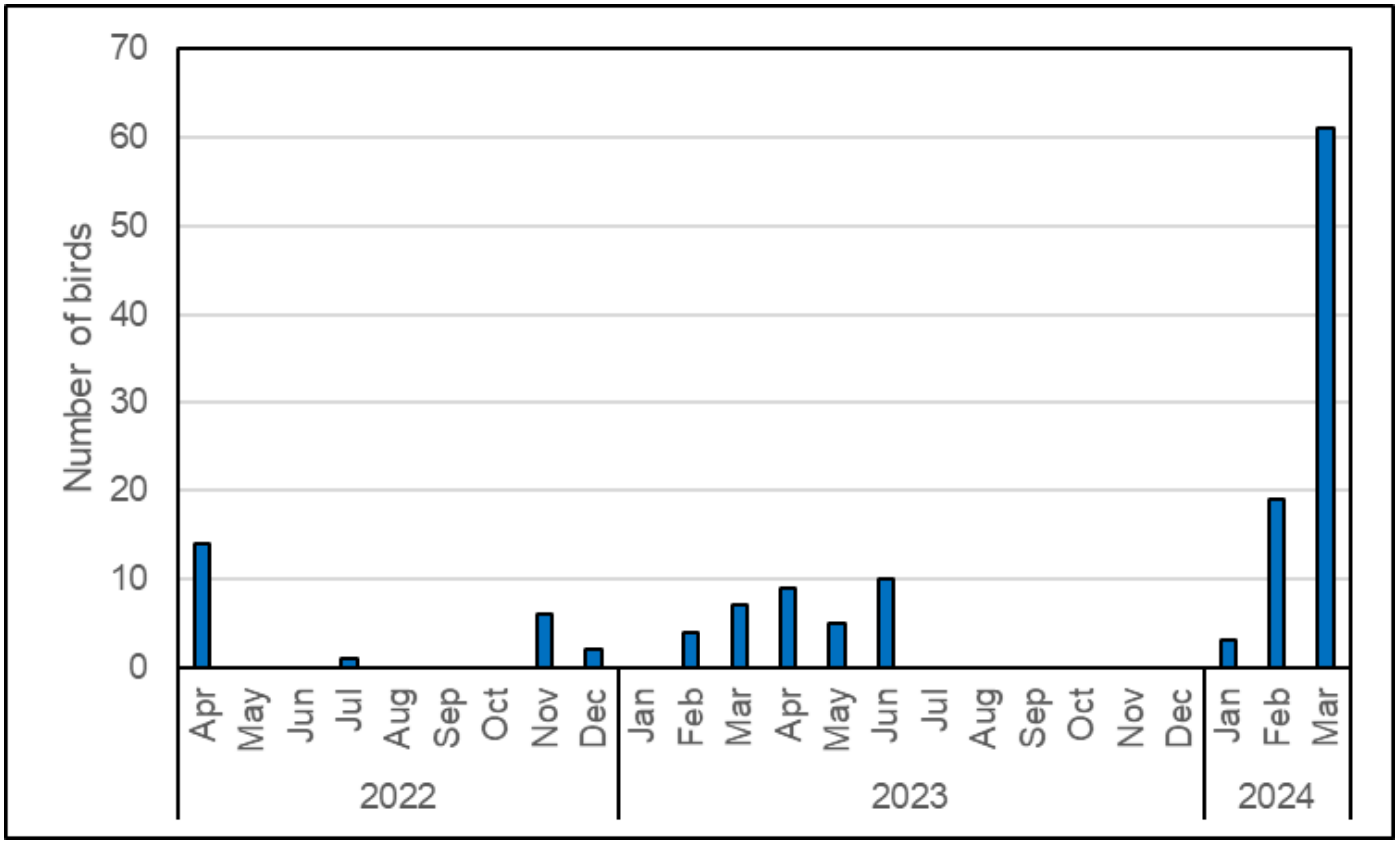


Figure 2-14: Monthly abundance of redshank within the onshore ornithology survey area

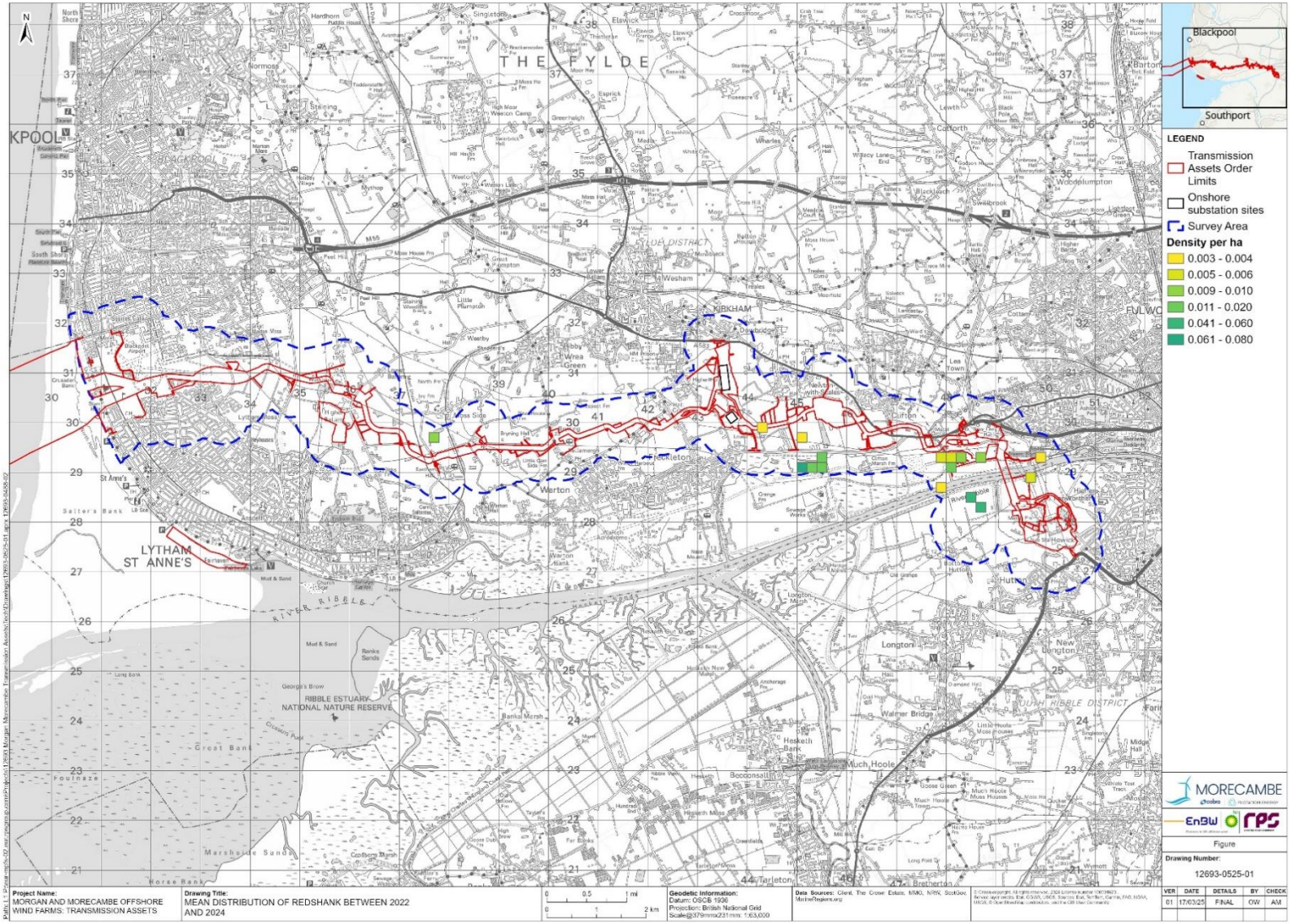


Figure 2-15: Redshank distribution along the survey corridor

2.3.9 Black-tailed godwit

Table 14: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

2.3.9.1 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). 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.

2.3.9.2 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 15). 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 4.3).

2.3.9.3 Mitigation for the temporary impacts of habitat loss and disturbance upon black-tailed godwit are to be provided at Lytham Moss. Although not needed to conclude No AEoI, the permanent mitigations at Newton-with-Scales will also provide long lasting benefits to non-breeding black-tailed godwit.

Table 15: 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	33.2	9.4	119	9.4	2.64
Newton Marsh SSSI	406	31.9	9.0	30	2.4	0.67
Onshore survey area (minus Newton Marsh SSSI)	93	7.3	2.1	46	3.6	1.01

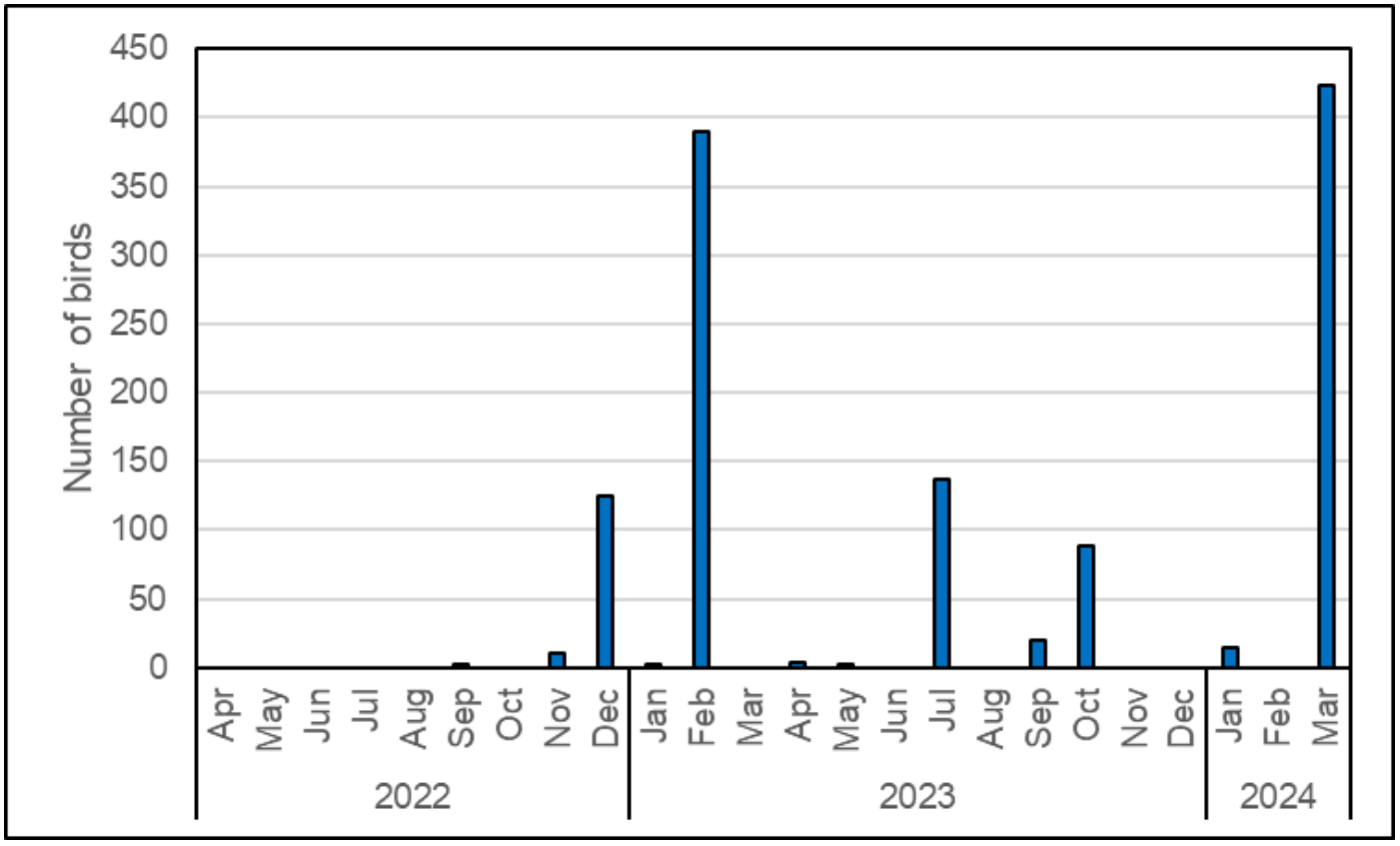


Figure 2-16: Monthly abundance of black-tailed godwit within the onshore ornithology survey area

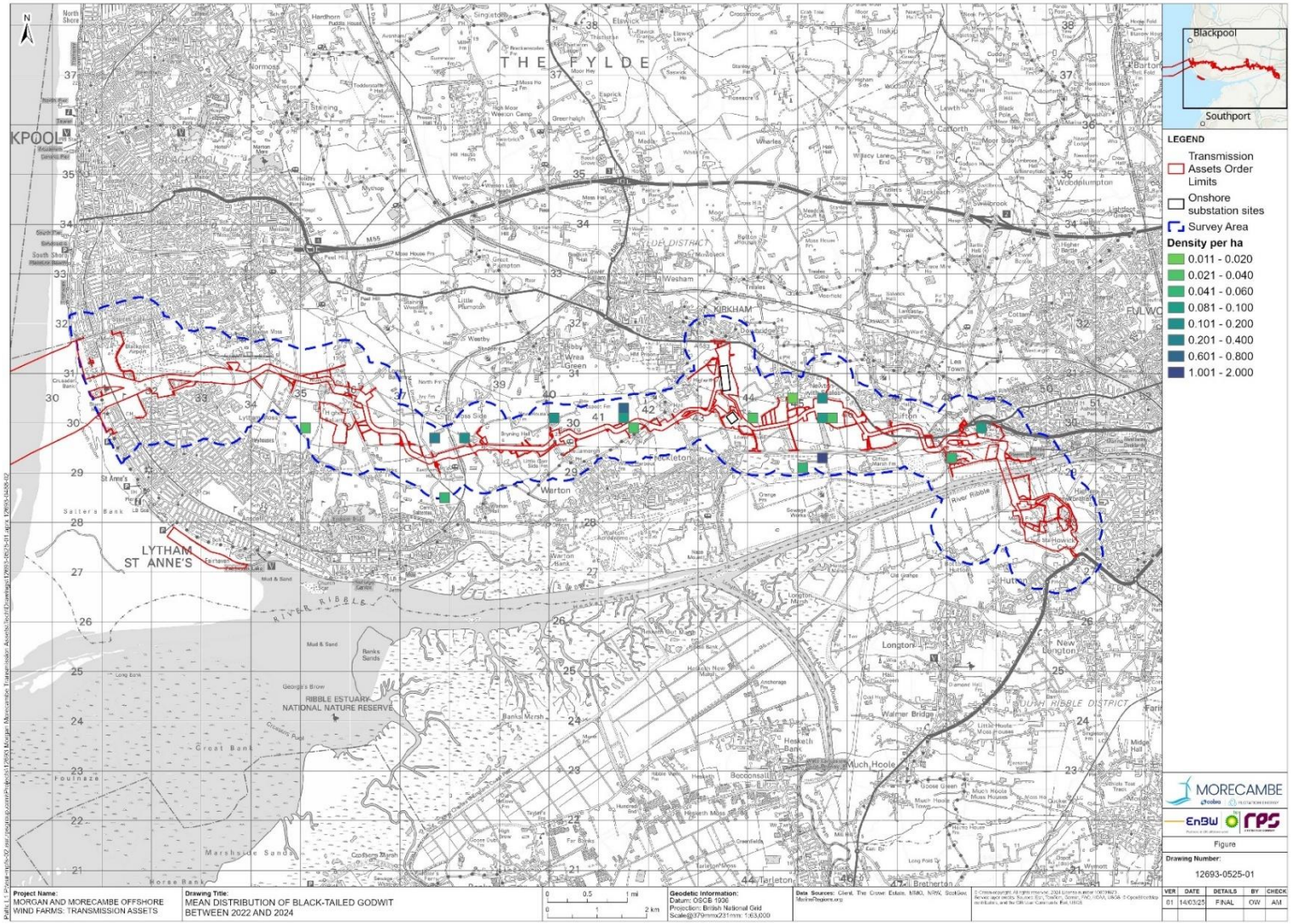


Figure 2-17: Black-tailed godwit distribution along the survey corridor

2.4 Functionally Linked Land summary

2.4.1.1 Table 14 below summarises those species that rely on Functionally Linked Land within the onshore survey area. 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.

2.4.1.2 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). As set out in Section 2.3.4, the Applicants do not believe that FLL is present for shelduck, however have included measures for shelduck in the proposed mitigation areas at the request of Natural England.

2.4.1.3 The Applicants found no evidence of FLL at the areas of permanent habitat loss. Although 104 golden plover were recorded, their presence was irregular and significant numbers were only recorded on one out of 14 survey visits.

2.4.1.4 The Applicants confirmed that the terrestrial habitats used by 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 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.

2.4.1.5 The Lytham Moss mitigation area will also benefit wigeon and other field feeding wader species such as redshank, curlew and lapwing. Additionally, the proposed permanent mitigation at Newton-with-Scales, although not required to reduce adverse effects on the integrity of the Ribble and Alt Estuaries SPA and Ramsar, will provide long-lasting benefits for teal, wigeon, golden plover, and black-tailed godwit.

Table 16: 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	Duration and impact	Justification	Is proposed mitigation suitable for this species	Location of mitigation – further information can be found in Table 22 and Table 23
Whooper swan	132	72.5	Yes	Temporary habitat loss and disturbance	Very high percentage of SPA population use the corridor, particularly around Lytham Moss	Yes	Lytham Moss (either in combination with Newton-with-Scales, or in combination with additional measures)
Pink-footed goose	8,319	70.7	Yes	Temporary habitat loss and disturbance	Very high percentage of SPA population use the corridor, particularly around Lytham Moss	Yes	Lytham Moss (either in combination with Newton-with-Scales, or in combination with additional measures)
Shelduck	374	7.6	Yes	Temporary habitat loss and disturbance	After discussion with Natural England this species is considered for FLL	Yes	Lytham Moss (either in combination with Newton-with-Scales, or in combination with additional measures)
Wigeon	1,818	2.1	No	Temporary habitat loss and disturbance	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	Temporary habitat loss and disturbance	4.4% of the SPA population using land within the corridor	Yes	Lytham Moss and/or Newton-with-Scales (or in combination with additional measures)
Golden plover	381	10.6	Yes	Temporary habitat loss and disturbance	10.6% of the SPA population using land within the corridor	Yes	Lytham Moss and/or Newton-with-Scales (or in combination with additional measures

Species	Peak count	% of SPA	Does this species rely on FLL in the corridor	Duration and impact	Justification	Is proposed mitigation suitable for this species	Location of mitigation – further information can be found in Table 22 and Table 23
Golden plover	104	2.9	No	Permanent habitat loss	Infrequent use (mean of 0.3% of the SPA population) and small proportion of potential foraging range impacted	Yes	N/A but Newton-with-Scales does mitigate for EIA and residual impacts
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/or Newton-with-Scales (or in combination with additional measures

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 17, Table 18, and the following paragraph sets out the SPA citation for the Ribble and Alt Estuaries SPA.

Table 17: 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 (*Philomachus pugnax)*	1 nest - breeding	Late 1980s count	9.1%
Common Tern (*Sterna Hirundo)*	182 pairs - breeding	Count at 1996	1.5%
Bewick's Swan Cygnus (*columbianus bewickii*)	276 individuals - wintering	5 year peak mean 1993/94 - 1997/98	3.9%
Whooper Swan (*Cygnus cygnus*)	182 individuals - wintering	5 year peak mean 1993/94 - 1997/98	3.3%
Golden Plover (*Pluvialis apricaria*)	3,598 individuals - wintering	5 year peak mean 1993/94 - 1997/98	1.4%
Bar-tailed Godwit (*Limosa lapponica)*	20,086 individuals - wintering	5 year peak mean 1993/94 - 1997/98	37.9%

Table 18: 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 Larus fuscus graellsii	1,800 pairs - breeding	Count as at 1993	1.5% Western Europe/ Med/W Africa
Ringed Plover Charadrius hiaticula	1,657 individuals - passage	5 year peak mean 1993 - 1997	3.3% Europe/ Northern Africa (win)
Sanderling Calidris alba	6,535 individuals - passage	5 year peak mean 1993 - 1997	6.5% E Atlantic/W&S Africa (win)
Redshank Tringa totanus	3,247 individuals - passage	5 year peak mean 1993 - 1997	2.2% Eastern Atlantic (wintering)
Pink-footed Goose Anser brachyrhynchus	11,764 individuals - wintering	5 year peak mean 1993/94 - 1997/98	5.2% E Greenland/ Iceland/UK
Shelduck Tadorna tadorna	4,925 individuals - wintering	5 year peak mean 1993/94 - 1997/98	1.6% Northwestern Europe
Wigeon Anas penelope	85,259 individuals - wintering	5 year peak mean 1993/94 - 1997/98	6.8% W Siberia & NW/NE Europe
Teal Anas crecca	7,157 individuals - wintering	5 year peak mean 1993/94 - 1997/98	1.8% Northwestern Europe
Pintail Anas acuta	2,731 individuals - wintering	5 year peak mean 1993/94 - 1997/98	4.6% Northwestern Europe
Oystercatcher Haematopus ostralegus	18,535 individuals - wintering	5 year peak mean 1993/94 - 1997/98	2.1% Europe & N/W Africa (win)
Grey Plover Pluvialis squatarola	9,355 individuals - wintering	5 year peak mean 1993/94 - 1997/98	6.2% Eastern Atlantic (wintering)
Knot Calidris canutus islandica	68,922 individuals - wintering	5 year peak mean 1993/94 - 1997/98	19.7% NE Can/Grl/ Iceland/NW Eur
Sanderling Calidris alba	2,882 individuals - wintering	5 year peak mean 1993/94 - 1997/98	2.9% E Atlantic/W&S Africa (win)
Dunlin Calidris alpina alpina	39,376 individuals - wintering	5 year peak mean 1993/94 - 1997/98	2.8% N Siberia/Europe/ W Africa
Black-tailed Godwit Limosa limosa islandica	1,273 individuals - wintering	5 year peak mean 1993/94 - 1997/98	1.8% Iceland (breeding)
Redshank Tringa totanus	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 19 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 19: 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 to conclude no AEoI	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.	The impact of permanent loss of supporting habitats – **Minor adverse**	The impact of permanent loss of supporting habitats – **Minor adverse**	No	No	Only 11 birds present at the onshore substation sites (see Table 1.69 of E2.3 Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment Part Three – Special Protection Areas (SPA) and Ramsar Site assessments (APP-017)	Specific mitigation is not required for the reason listed out the justification column.
					The temporary impact of habitat loss and resource availability – **Moderate adverse**	The temporary impact of habitat loss and resource availability – **Minor adverse**	Yes	Yes	High numbers of pink footed geese regularly in the vicinity of the cable corridor as noted in Section 2.2.3	Yes, either Scenario 1 or 3 (Table 2)
					Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – **Moderate adverse**	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 pollution caused by accidental spills/contaminant release - **Negligible**	No	No	Low magnitude of impact due to the mobile nature of the receptors and	Specific mitigation is not required for the reason listed out the

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed to conclude no AEoI	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
					The impact of spreading INNS - **Negligible**	The impact of spreading INNS - **Negligible**			construction method commitments: •Outline Pollution Prevention Plan – CoT04 •Outline Biosecurity Protocol – CoT73	justification column.
					The impact of habitat fragmentation and species isolation – **Negligible**	The impact of habitat fragmentation and species isolation – **Negligible**				
Mute swan	24	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.
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.	The impact of permanent loss of supporting habitats – **Minor adverse**	The impact of permanent loss of supporting habitats – **Minor adverse**	No	No	No birds present at the substations (see Table 1.69 of E2.3 Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment Part Three – Special Protection Areas (SPA) and Ramsar Site assessments (APP-017)	Specific mitigation is not required for the reason listed out the justification column.
					The temporary impact of habitat loss and resource availability – **Moderate adverse**	The temporary impact of habitat loss and resource availability – **Minor adverse**	Yes, for temporary construction impacts only.	Yes, for temporary construction impacts only.	High numbers of whooper swan regularly in the vicinity of the cable corridor as outlined in Section 2.3.2	Yes, either Scenario 1 or 3 (Table 2)
					Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – **Moderate adverse**	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 pollution caused by accidental spills/contaminant release - **Negligible**	No	No	Low magnitude of impact due to the mobile nature of the receptors and construction method commitments:	Specific mitigation is not required for the reason listed out the justification column.
					The impact of spreading INNS - **Negligible**	The impact of spreading INNS - **Negligible**				

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed to conclude no AEoI	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
					The impact of habitat fragmentation and species isolation – **Negligible**	The impact of habitat fragmentation and species isolation – **Negligible**			•Outline Pollution Prevention Plan – CoT04 •Outline Biosecurity Protocol – CoT73	
Shelduck	374	Yes	No adverse effects	Yes – within non breeding and breeding geese, ducks and swans.	The impact of permanent loss of supporting habitats – **Minor adverse**	The impact of permanent loss of supporting habitats – **Minor adverse**	No	No	No birds present at the substations (see Table 1.69 of E2.3 Habitats Regulations Assessment Stage 2 Information to Support an Appropriate Assessment Part Three – Special Protection Areas (SPA) and Ramsar Site assessments (APP-017)	Specific mitigation is not required for the reason listed out the justification column.
					The temporary impact of habitat loss and resource availability – **Moderate adverse**	The temporary impact of habitat loss and resource availability – **Minor adverse**	Yes, for temporary impacts only	Yes, for temporary impacts only	Following discussion with Natural England the Applicants have included shelduck within the suite of species for which FLL exists (see section 2.3.4)	Yes, either Scenario 1, 2 or 3 (Table 2)
					Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – **Moderate adverse**	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 pollution caused by accidental spills/contaminant release - **Negligible**	No	No	Low magnitude of impact due to the mobile nature of the receptors and construction method commitments: •Outline Pollution Prevention Plan – CoT04 •Outline Biosecurity Protocol – CoT73	Specific mitigation is not required for the reason listed out the justification column.
					The impact of spreading INNS - **Negligible**	The impact of spreading INNS - **Negligible**				
					The impact of habitat fragmentation and species isolation – **Negligible**	The impact of habitat fragmentation and species isolation – **Negligible**				
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	

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed to conclude no AEoI	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
Wigeon	1,647	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 present in low numbers outside of Newton Marsh SSSI as detailed in Section 2.3.5	Specific mitigation is not required for the reason listed out the justification column, however, the measures set out in Section 4.3.2 will provide 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	The Applicants have made a commitment (CoT120 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) to provide a temporary area at Lytham Moss for waders and wildfowl due to the temporary impact of habitat loss and resource availability and disturbance and displacement from construction activities. Measures within these areas may include the creation of scrapes, etc. 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 breeding and non-breeding geese, ducks and swans.	The impact of permanent loss of supporting habitats – **Minor adverse**	The impact of permanent loss of supporting habitats – **Minor adverse**	No	No	No birds present at the substationsT	Specific mitigation is not required for the reason listed out the justification column.
					The temporary impact of habitat loss and resource availability – **Moderate adverse**	The temporary impact of habitat loss and resource availability – **Minor adverse**	Yes, for temporary impacts only	Yes, for temporary impacts only	High numbers of birds regularly using the corridor (see Section 2.3.6)	Yes, either Scenario 1, 2 or 3 (Table 2)
					Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – **Moderate adverse**	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 pollution caused by accidental spills/contaminant release - **Negligible**	No	No	Low magnitude of impact due to the mobile nature of the receptors and construction method commitments: •Outline Pollution Prevention Plan – CoT04 •Outline Biosecurity Protocol – CoT73	Specific mitigation is not required for the reason listed out the justification column.
					The impact of spreading INNS - **Negligible**	The impact of spreading INNS - **Negligible**				
					The impact of habitat fragmentation and species isolation – **Negligible**	The impact of habitat fragmentation and species isolation – **Negligible**				

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed to conclude no AEoI	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
Goosander	4	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.
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 temporary impact of habitat loss and resource availability – **Minor adverse** 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**	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 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	Specific mitigation is not required for the reason listed out the justification column.
Moorhen	16	No not a named feature	N/A				N/A	No	Low numbers	Specific mitigation is not required for the reason listed out the justification column.
Coot	6	No not a named feature	N/A				N/A	No	Low numbers	Specific mitigation is not required for the reason listed out the justification column.
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		N/A	No	All birds were within Newton Marsh SSSI (see Figures 1.34 and 1.35 in F3.4.2 Volume 3, Annex 4.2: Wintering and	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 to conclude no AEoI	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
					species only occurring at Newton Marsh SSSI where there will be no effects.				migratory birds technical report – Part 1 of 2 (APP-092)	
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 impact of permanent loss of supporting habitats – Minor adverse	No	Yes, for residual effects	High numbers of birds	Yes, Scenario 4 (Table 2)
					The temporary impact of habitat loss and resource availability – **Moderate adverse**	The temporary impact of habitat loss and resource availability – Minor adverse		Yes, for residual effects		Yes, either Scenario 1, 2 or 3 (Table 2)
					Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – **Moderate adverse**	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 pollution caused by accidental spills/contaminant release - Negligible		No	Low magnitude of impact due to the mobile nature of the receptors and construction method commitments: •Outline Pollution Prevention Plan – CoT04 •Outline Biosecurity Protocol – CoT73	Specific mitigation is not required for the reason listed out the justification column.
					The impact of spreading INNS - **Negligible**	The impact of spreading INNS - Negligible				
					The impact of habitat fragmentation and species isolation – **Negligible**	The impact of habitat fragmentation and species isolation – Negligible				
Golden plover	381	Yes	The Applicants have made a commitment (CoT120 of Volume 1, Annex 5.3: Commitments Register of the ES (REP3-013) to provide a temporary area at Lytham Moss for waders and wildfowl due to the temporary impact of habitat loss and resource availability and disturbance and displacement from construction activities. Measures within these areas may include the creation of scrapes, etc. 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	Yes – within non-breeding waders	The impact of permanent loss of supporting habitats – **Moderate adverse**	The impact of permanent loss of supporting habitats – **Minor adverse**	No	Yes, for residual effects	Birds present at substations infrequently	Yes, Scenario 4 (Table 2)
					The temporary impact of habitat loss and resource availability – **Moderate adverse**	The temporary impact of habitat loss and resource availability – **Minor adverse**	Yes	Yes	High numbers of birds using the corridor on an annual basis see Section 2.3.7	Yes, either Scenario 1, 2 or 3 (Table 2)
					Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – **Moderate adverse**	Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – **Minor adverse**				

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed to conclude no AEoI	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
			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.		The impact of pollution caused by accidental spills/contaminant release - **Negligible**	The impact of pollution caused by accidental spills/contaminant release - **Negligible**	No	No	Low magnitude of impact due to the mobile nature of the receptors and construction method commitments: •Outline Pollution Prevention Plan – CoT04 •Outline Biosecurity Protocol – CoT73	Specific mitigation is not required for the reason listed out the justification column.
					The impact of spreading INNS - **Negligible**	The impact of spreading INNS - **Negligible**				
					The impact of habitat fragmentation and species isolation – **Negligible**	The impact of habitat fragmentation and species isolation – **Negligible**				
Grey plover	2	N/A for terrestrial impacts	N/A for terrestrial impacts	N/A for terrestrial impacts	N/A for terrestrial impacts		N/A	N/A	This species is an intertidal species in the non-breeding season, as such it will not be affected by impacts in terrestrial habitats	Specific mitigation is not required for the reason listed out the justification column.
Curlew	696	Yes, as assemblage	No adverse effects	Yes – Within breeding and non-breeding waders	The impact of permanent loss of supporting habitats – **Moderate adverse**	The impact of permanent loss of supporting habitats – **Minor adverse**	No	Yes, for residual effects	Birds present at substations infrequently and in low numbers	Yes, Scenario 4 (Table 2)
					The temporary impact of habitat loss and resource availability – **Moderate adverse**	The temporary impact of habitat loss and resource availability – **Minor adverse**		Yes	High numbers of birds using the corridor on an annual basis see Section 2.3.7	Yes, either Scenario 1, 2 or 3 (Table 2)
					Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – **Moderate adverse**	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 pollution caused by accidental spills/contaminant release - **Negligible**		No	Low magnitude of impact due to the mobile nature of the receptors and construction method commitments: •Outline Pollution Prevention Plan – CoT04 •Outline Biosecurity Protocol – CoT73	Specific mitigation is not required for the reason listed out the justification column.
					The impact of spreading INNS - **Negligible**	The impact of spreading INNS - **Negligible**				
					The impact of habitat fragmentation and species isolation – **Negligible**	The impact of habitat fragmentation and species isolation – **Negligible**				

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed to conclude no AEoI	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
Bar-tailed godwit	3	N/A for terrestrial impacts	N/A for terrestrial impacts	N/A for terrestrial impacts	N/A for terrestrial impacts		N/A	N/A	Unsuitable habitats and low numbers	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 a temporary area at Lytham Moss for waders and wildfowl due to the temporary impact of habitat loss and resource availability and disturbance and displacement from construction activities. Measures within these areas may include the creation of scrapes, etc. 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 breeding and non-breeding waders	The impact of permanent loss of supporting habitats – **Moderate adverse**	The impact of permanent loss of supporting habitats – **Minor adverse**	No	No	Low numbers	Specific mitigation is not required for the reason listed out the justification column.
					The temporary impact of habitat loss and resource availability – **Moderate adverse**	The temporary impact of habitat loss and resource availability – **Minor adverse**	Yes, for temporary impacts only	Yes, for temporary impacts only	High numbers of birds using the corridor on an annual basis see Section 2.3.9	Yes, either Scenario 1, 2 or 3 (Table 2)
					Disturbance and displacement from construction, decommissioning, and operation and maintenance activities – **Moderate adverse**	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 pollution caused by accidental spills/contaminant release - **Negligible**	No	No	Low magnitude of impact due to the mobile nature of the receptors and construction method commitments: •Outline Pollution Prevention Plan – CoT04 •Outline Biosecurity Protocol – CoT73	Specific mitigation is not required for the reason listed out the justification column.
					The impact of spreading INNS - **Negligible**	The impact of spreading INNS - **Negligible**				
					The impact of habitat fragmentation and species isolation – **Negligible**	The impact of habitat fragmentation and species isolation – **Negligible**				
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.

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed to conclude no AEoI	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
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	
Greensandpiper	1	No not a named feature	N/A				No	No	Low numbers	
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 2.3.8	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	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	Yes – within Breeding Gulls and Terns			N/A	No		
Lesser black-backed gull	176	No not a named feature	N/A	Yes – within Non-breeding Gulls and Terns			N/A	No		
Cormorant	6	Yes, as assemblage	No adverse effects	Yes – within non-breeding			No	No	Unsuitable habitats	

Non-breeding waterbirds	Peak count	Assessed in ISAA	Conclusion	Assessed in ES Volume 3, Chapter 4	Significance of effect *	Residual effect	Is mitigation needed to conclude no AEoI	Is mitigation applied in the ES	Justification	Is current terrestrial mitigation suitable for this species
Cattle egret	1	No not a named feature	N/A	Cormorants and shags	spills/contaminant release - **Negligible** The impact of spreading INNS - **Negligible** The impact of habitat fragmentation and species isolation – **Negligible**		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, storks and ibis			N/A	No	Low numbers	
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 19. 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

4.1.1.1 There are two proposed terrestrial mitigation areas, these are designed for different impacts and to fulfil different requirements. They can be split into:

- Temporary mitigation which is required to avoid AEoI caused by temporary habitat loss and disturbance during construction.
- Permanent mitigation which is required to address residual EIA impacts of permanent habitat loss.

4.1.1.2 These impacts are summarised in Table 20 below.

Table 20: A summary of the mitigation requirements required for terrestrial waterbirds

Impact	Duration	Species impacted	Area proposed	Needed to conclude No AEoI	EIA mitigation
Temporary loss of supporting habitat and/or resource availability	Temporary – during construction	Whooper swan Pink-footed goose Shelduck Teal Golden plover Black-tailed godwit	Lytham Moss (either in combination with Newton-with-Scales, or in combination with additional measures)	Yes	Yes
Disturbance and displacement from construction activities	Temporary – during construction	Whooper swan Pink-footed goose Shelduck Teal Golden plover Black-tailed godwit	Lytham Moss (either in combination with Newton-with-Scales, or in combination with additional measures)	Yes	Yes
Permanent loss of supporting habitat and/or resource availability	Permanent – during operation and maintenance	Non-breeding waders	Newton-with-Scales	No	Yes

4.2 Lytham Moss

4.2.1 Site Description

4.2.1.1 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).

4.2.1.2 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.

4.2.1.3 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.

4.2.1.4 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.

4.2.1.5 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)).

4.2.2 Proposed measures

4.2.2.1 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.

4.2.2.2 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

4.2.2.3 Table 21 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 aviation safeguarding duties, 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 (or other food source) 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 21: 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	257	581,385	3,400	171.0
Whooper swan	41	333	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)

4.2.2.5 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 shelduck, teal, golden plover and black-tailed godwit. Table 22 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:

4.2.2.6 **Seasonal scrapes and muddy pools** – 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.

4.2.2.7 **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 water table in this area (where practicable) will bring these soil invertebrates closer to the surface and make them easier to catch by wading birds.

Table 22: The proposed recipients of temporary HRA 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 19 for more detail				
	Whooper swan	See Table 19 for more detail				
	Teal	312	140	• Freshwater lakes, ponds, scrapes and estuaries	• Freshwater lakes, ponds, scrapes and estuaries	Seasonal scrapes
	Shelduck	374	87	• Intertidal habitats and flooded terrestrial habitats	• Freshwater lakes and ponds	Seasonal scrapes
	Golden plover	381	135	• Pasture • Arable	• Pasture • Arable • Freshwater lakes and ponds • Scrapes	Seasonal scrapes Short vegetation
	Black-tailed godwit	423	108	Pasture Arable Intertidal	Pasture Arable Freshwater lakes and ponds Scrapes Saltmarsh	Seasonal scrapes Short vegetation
Additional beneficiaries	Lapwing	2,081	360	• Pasture • Arable	• Pasture • Arable • Freshwater lakes and ponds • Scrapes	Scrapes Water management Grassland 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 at Lytham Moss
	Curlew	696	167	• Pasture • Arable • Intertidal	• Pasture • Arable • Freshwater lakes and ponds • Scrapes • Saltmarsh	Scrapes Water management Grassland management
	Redshank			• Pasture • Arable • Intertidal	• Pasture • Arable • Freshwater lakes and ponds • Scrapes • Saltmarsh	Scrapes Water management Grassland management

4.2.2.8 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.

4.3 Land south of Newton with Scales

4.3.1 Description

4.3.1.1 To mitigate for the residual effects from permanent loss of habitat at 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.

4.3.1.2 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)).

4.3.1.3 This area has been selected as 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).

4.3.2 Proposed measures

4.3.2.1 The proposed mitigation measures include the restoration of existing scrapes and controlling drainage to keep the area wet for longer to mitigate for permanent habitat loss (at the substation). 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 protect and enhance the site for long term benefits.

4.3.2.2 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:

4.3.2.3 **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 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 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 45cm is a beneficial depth for teal, wigeon and shoveler. At least three scrapes of 20m^2 each will be created in this area. The water levels in the scrapes will be controlled by the sluice system on the ditches.

4.3.2.4 **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.

4.3.2.5 **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.

4.3.2.6 **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, rush cover is to be reduced to one third of the field area (Working for Waders, 2020). Areas of rush surrounding ponds may favour teal, and scattered areas of rush are likely to beneficial for non-breeding teal, lapwing, golden plover, curlew and black-tailed godwit, as well as other non-breeding and breeding waders.

4.3.2.7 **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.

4.3.2.8 **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 23: The proposed beneficiaries of the permanent EIA 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
Residual impacts caused by permanent loss of habitat and/or resources	Golden plover	104	11	• Pasture • Arable	• Pasture • Arable • Freshwater lakes and ponds • Scrapes	Scrapes Water management Grassland management Rush management
	Non-breeding wildfowl and waders e.g., teal, golden plover, black-tailed godwit	N/A	N/A	• Pasture • Arable	• Pasture • Arable • Freshwater lakes and ponds • Scrapes	Scrapes Water management Grassland management Rush management

4.3.2.9 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.

4.4 Mitigation areas summary

4.4.1.1 Temporary mitigation to avoid AEoI on the Ribble and Alt Estuaries SPA and Ramsar has been identified at Lytham Moss (either in combination with Newton-with-Scales, or in combination with additional measures). The mitigation at Lytham Moss will:

- Provide additional feed to mitigate for the impacts upon pink-footed geese and whooper swan.
- Provide scrapes and wet habitats to mitigate impacts upon shelduck, teal, golden plover and black-tailed godwit.

4.4.1.2 Permanent EIA mitigation at Newton-with-Scales to alleviate residual long-term impacts upon non-breeding waders. This will:

- Restore existing scrapes and wet grassland habitats.to mitigate for the permanent loss of wet grassland habitats at the substations. This will provide long lasting benefits for species such as teal, golden plover and black-tailed godwit.

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Appendix G Supplementary Feeding Calculations

Supplementary feeding

Supplementary feeding will be provided for pink-footed geese and whooper swan during the core wintering period (November to March inclusive) during the period of the construction activities. Supplementary feeding will comprise retained spoiled crop on arable land or the import of additional feed. Supplemental feeding will occur over a minimum area of one hectare within the designated zone (see Figure 1-12). The feeding targets will be subject to recalculation in response to bird count data; these will be discussed with Natural England. Blackpool Airport and BAE Systems/DIO will also be consulted as part of the detailed Wildlife Hazard Management Plan process.

However, an indicative approach to calculating the amount of food needed to mitigate impacts to pink-footed geese and whooper swan is set out in the Appendix F below. This uses the average number of birds present and takes daily energy requirements from the literature.

Table 1.3: 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 geese	2,262	2,571	581,385	3,400	171.0
Whooper swan	41	3,332	10,323	3,400	3.4
Total	N/A	N/A	591,708	N/A	174.4

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

Using this approach, it is estimated that the geese and swans would require up to 174.4 kg of grain or similar per day. In order to maintain current risks to aircraft safety, this feed will be provided between November and March inclusive, so as to not attract additional autumn passage birds to overwinter within the Ribble Estuary. Food will be provided on a little and often basis e.g., 1.2 tonnes on a weekly (seven day) basis, which is equivalent to 20.9 tonnes over a single winter period

This is similar to the approach used by the adjacent Farmland Conservation Area.

Appendix H Strategy for delivery of onshore and intertidal ornithology mitigation

As described in section 1.3.1 the principal areas for mitigating onshore and intertidal ornithology impacts have been identified at Fairhaven Saltmarsh, Lytham Moss and south of Newton-with-Scales. The Applicants have provided a clarification in the Terrestrial Waterbird Note (Appendix F of this OEMP) to explain the rationale for the temporary mitigation areas at Lytham Moss and south of Newton-with-Scales specifically for the purposes of the Habitats Regulations Assessment to support the conclusion of no adverse effect on integrity (AEoI) on the Ribble and Alt Estuaries SPA and Ramsar from temporary habitat loss and disturbance associated with construction activities. In terms of permanent habitat loss associated with the onshore substations, the Terrestrial Waterbird Note explains that the land south of Newton-with-Scales is not required to conclude no AEoI, but is proposed for the purpose of the EIA. Further information is provided in sections 2.3.7 and 2.4 in Appendix F of this document.

In the unlikely event that it is not possible to deliver one of these temporary mitigation areas during the construction phase, the Applicants have identified alternative mitigation measures that would be applied to ensure that there is no AEoI. Should these alternative measures be required, these will be discussed and agreed with Natural England post consent via the detailed EMP(s) and may include the scenarios set out in Appendix F

- Screening of construction works during sensitive periods (e.g. October to March) in areas of high bird usage (e.g. south of Newton-with-Scales) to reduce noise and visual disturbance; and
- Seasonal working practices (restrictions between October and March) in sensitive areas with high numbers of birds to avoid any impact. These sensitive areas were identified using surveys reported in the Environmental Statement as Lytham Moss and Newton-with-Scales (see density maps in section 2.2 of the Terrestrial Waterbirds Note S_D4_17/F02). In the unlikely event that the identified mitigation areas cannot be delivered this will give the non-breeding SPA features safe disturbance free refuges throughout the construction phase.

While these alternative mitigation measures are less preferable than the current temporary mitigation areas at Lytham Moss and south of Newton-with-Scales for construction impacts (both from an overall ecological perspective and for efficient project construction), these are standard, recognised measures which will avoid and minimise the impacts and therefore no potential for an adverse effect on integrity.

Table 1.4: Summary of mitigation strategy and HRA conclusions

Scenario	Mitigation areas/measures	Impact being mitigated	Is the mitigation needed to conclude No AEoI
1.- Preferred option	Lytham Moss in combination with south of Newton-with-Scales	Temporary disturbance and habitat loss from the cable corridor	Yes
2.	Lytham Moss in combination with seasonal working and screening at land south of Newton-with-Scales	Temporary disturbance and habitat loss from the cable corridor	Yes
3.	Seasonal working and screening at Lytham Moss and land south of Newton-with-Scales	Temporary disturbance and habitat loss from the cable corridor	Yes