MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Alternative Ornithology Mitigation Note - Permanent

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Prepared by:

RPS

Prepared for:

Morgan Offshore Wind Limited, Morecambe Offshore Windfarm Ltd

Contents

Tables

Figures

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.
Development Consent Order	An order made under the Planning Act 2008, as amended, granting development consent.
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.
Environmental Statement	The document presenting the results of the Environmental Impact Assessment process.
Intertidal area	The area between Mean High Water Springs and Mean Low Water Springs.
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).

Term	Meaning
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.
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 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 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.
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 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.
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

Acronyms

Acronym	Meaning
AEoI	Adverse Effects on Integrity
AOD	Above Ordnance Datum
CoCP	Code of Construction Practice
CoT	Project Commitment
CMS	Construction Method Statement
DCO	Development Consent Order
ES	Environmental Statement
ExA	Examining Authority
FLL	Functionally Linked Land
HAT	Highest Astronomical Tide
HRA	Habitats Regulations Assessment
HDD	Horizontal Directional Drilling
ISAA	Information to Support an Appropriate Assessment
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
NNR	National Nature Reserve
NSIP	Nationally Significant Infrastructure Project
PRoW	Public Rights of Way
RIES	Report on the Implications for European Sites
SAC	Special Areas of Conservation
SPA	Special Protection Area
SNCBs	Statutory Nature Conservation Bodies
SSSI	Sit of Special Scientific Interest

Units

Unit	Description
%	Percentage
km	Kilometres
m	Metres
nm	Nautical mile

1 Alternative Permanent Mitigation for Ornithology Technical Note

1.1 Purpose of the Note

1.1.1.1 The purpose of this note is to address comments raised by Natural England in its Deadline 7 submission (REP7-049) regarding the use of the onshore substation sites by SPA species, in particular golden plover. Natural England considers that the mitigation area south of Newton-with-Scales is needed to address the potential impacts on golden plover as a result of permanent habitat loss of functionally linked land (FLL). In the unlikely event that the south of Newton-with-Scales mitigation area cannot be delivered, Natural England '*would not be able to rule out AEoI for golden plover*'. Natural England also states that the mitigation area is required to address the permanent impacts on the overall waterbird assemblage associated with the SPA.

1.1.1.2 The Applicants do not agree with Natural England that the land at the onshore substation constitutes FLL or that the potential impacts of permanent habitat loss represent AEoI for non-breeding golden plover and have presented this position in its Comments on the Report of the Implications of European Sites (RIES) (see section 3.4.13 of REP6-175). The Applicants consider that the area south of Newton-with-Scales provides long term habitat mitigation to non-breeding waders (including golden plover) for the purpose of the Environmental Impact Assessment (EIA). Notwithstanding their position, the Applicants have, without prejudice, identified an alternative mitigation option (Crossens Outer and Banks Marsh) which would also avoid AEoI on non-breeding golden plover and EIA impacts on non-breeding waders.

1.1.1.3 The Applicants have continued to engage with Natural England to address the comments raised in their Deadline 7 submission (REP7-049).

1.1.1.4 This technical note should be read alongside the OEMP (Rev F07), which has been updated to include a without prejudice outline management plan (Appendix I) for delivery of alternative mitigation measures at Crossens Outer and Banks Marsh to address potential permanent impacts, and takes into consideration feedback received from Natural England to date.

1.2 Alternative permanent mitigation

1.2.1 Background information

1.2.1.1 This note considers alternative mitigation of potential permanent impacts caused by the displacement of birds due to habitat loss at the onshore substation sites.

1.2.1.2 The permanent mitigation area south of Newton-with-Scales is the Applicants' preferred option. The Applicants have described (in the Outline Wildlife Hazard Management Plan (REP7-034)) that the

mitigation measures will be implemented using an adaptive management approach supported by ongoing monitoring and an escalation process, to avoid an unacceptable increase in bird strike risk at Warton Aerodrome. Data was received from BAE Systems, which has allowed the Applicants to undertake the bird strike risk assessment for Warton Aerodrome and confirm that the approach in the Outline Wildlife Hazard Management Plan is acceptable. BAE is also carrying out their own bird strike risk assessment.

1.2.1.3 The south of Newton-with-Scales mitigation area is proposed to accommodate birds displaced at the onshore substation sites. The Applicants and Natural England agree that the purpose of the proposed mitigation areas at south of Newton-with-Scales and Lytham Moss is '*to provide habitat for species already within the area and Ribble SPA/Ramsar which have been potentially impacted or displaced from FLL habitat as a result of the Project, not to attract birds from elsewhere outside the SPA* (see Natural England's response to Q14 of the RIES (REP6-194)). However, BAE Systems and the DIO are concerned that the measures could increase bird numbers and has the potential to attract bird species not intended (in particular, gulls and other large potentially hazardous species).

1.2.1.4 As shown in the Applicants bird strike risk assessment (Appendix C of the oWHMP (S_D3_8 F05))) the measures south of Newton-with-Scales (and all other mitigation areas) will not lead to an unacceptable increase in bird strike. In all circumstances, with the deployment of monitoring, agreed trigger levels and both passive and active management measures the Applicants are confident that the risk of bird strike will not exceed existing levels. However, due to the ongoing objection by BAE Systems (as set out in their closing statement (REP7-055)) there remains some uncertainty surrounding the deliverability of mitigation in this area.

1.2.1.5 Therefore, the Applicants have outlined an alternative mitigation option, which would satisfy Natural England's concerns regarding the suitability of mitigation (noting the Applicants maintain that the project impact from permanent habitat loss does not represent AEoI for the non-breeding golden plover of the Ribble and Alt Estuaries SPA and Ramsar site due to the substations not being on FLL), and BAE Systems and DIO concerns regarding aviation safeguarding at Warton Aerodrome.

1.2.1.6 The type of measures that will be implemented at the south of Newton-with-Scales environmental mitigation area are described in Appendix B of the OEMP and a summary is provided in **Table 1.1** below. The location of the mitigation area south of Newton-with-Scales is shown on **Figure 1-1**. The measures that will be implemented at the alternative mitigation area (if required) are described in Appendix I of the OEMP and the location can be seen in **Figure 1-2**. A summary of the measures can be found in **Section 1.2.4**.

Table 1.1: Summary of the measures to be implemented at the south of Newton-with-Scales mitigation area

Mitigation Area	Summary of measures
Land south of Newton-with-Scales	**Species:** This mitigation area is specifically designed for: • Golden plover • Non-breeding waders **Size:** this mitigation area would permanently occupy approximately 30 ha of land south of Newton-with-Scales. **Measures:** Water management – Adding sluices to existing ditches to control and raise the water table to suit waders and wildfowl Enhancement of scrapes to suit waders and wildfowl Grassland management – Ensuring that there is a varied sward height to suit different waders and wildfowl Rush management- Ensuring that the rush cover is kept to no more than 30% of the area.

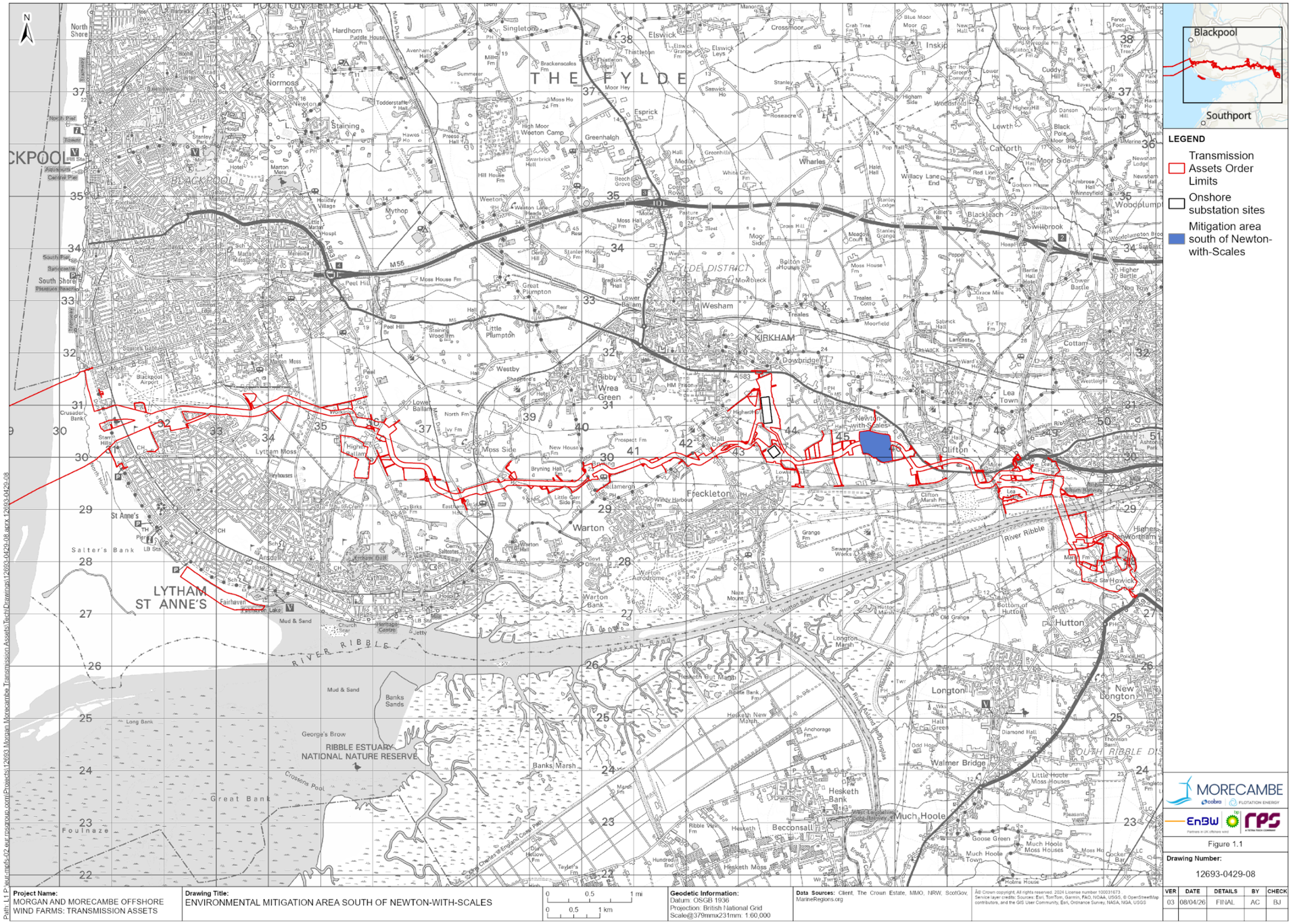

Figure 1-1: Environmental mitigation areas at south of Newton-with-Scales

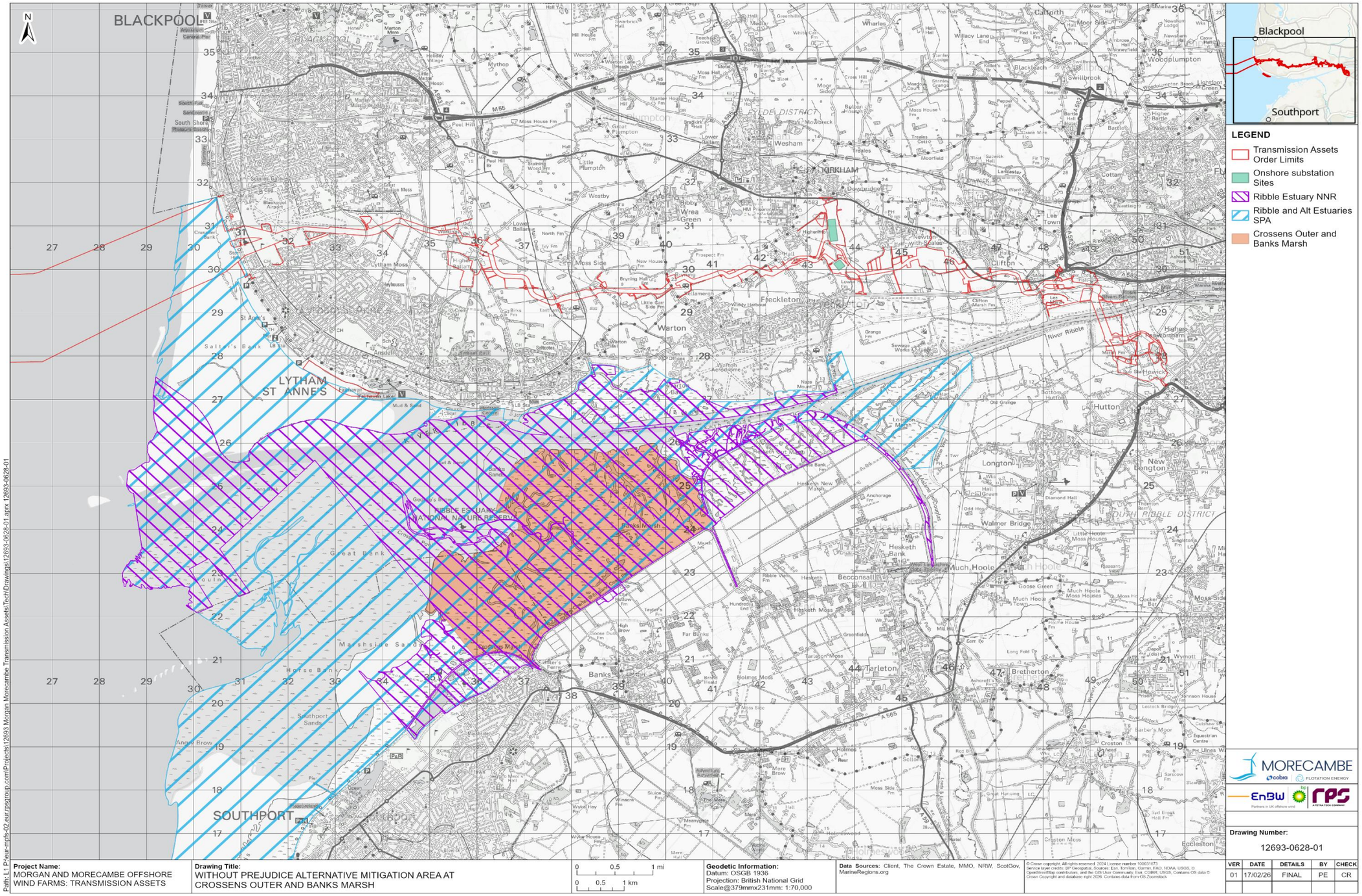

Figure 1-2: Without prejudice alternative mitigation area at Crossens Outer and Banks Marsh

1.2.2 Approach to Assessment

Magnitude of Potential Impact from the Transmission Assets Project

1.2.2.1 For clarity, the magnitude of potential impacts are separated into HRA and EIA level: (i) are measures required to reduce the risk of AEoI to the Ribble and Alt Estuaries SPA and Ramsar site, addressed through the Habitats Regulations Assessment (HRA-level mitigation); and (ii) are measures required to avoid or minimise significant adverse effects as assessed under the Environmental Impact Assessment (EIA-level mitigation).

Habitats Regulations Assessment

The threshold for FLL

1.2.2.2 This section reiterates the Applicants' closing statement in REP7-042. Effects on land beyond the SPA boundary will only constitute an AEoI if they are demonstrably linked to the SPA and essential to its functioning. There are a number of definitions from various Natural England reports:

- **Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions (NECR207)**

"*In the context of this report, 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*."

- **Identification of Functionally Linked Land supporting Special Protection Areas (SPAs) waterbirds in the North West of England (NECR361)**

"*For the purpose of this study, FLL is defined as: areas of land occurring within 20 km of an SPA, that are **regularly used** by **significant numbers** of qualifying bird species*."

- **Identification of Functionally Linked Land in the North West of England – Phase 2 (NECR483)**

"*Functionally linked land' (FLL) is a term often used to describe areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a Special Area of Conservation (SAC) / Special Protection Area (SPA)/ Ramsar site has been designated. These habitats are **frequently used** by SPA species and supports the functionality and integrity of the designated sites for these features*."

1.2.2.3 The common themes running through these definitions are that FLL is:

- Land beyond the boundary of a European site that supports a **significant number** of European site features.
- Land beyond the boundary of a European site that is **regularly used** by European site features.
- Land beyond the boundary of a European site that is **critical to maintain or restore** a protected population at favourable conservation status.

1.2.2.4 Significance in population terms typically considers whether the potential impact affects >1% of the current population (or the citation population for unfavourable features) of the European site but frequency of use is rarely defined. However, for potential impacts on an area outside the SPA to significantly affect a population within a European site, the population must regularly rely upon the area for behaviours essential to maintain a population (i.e., feeding or roosting). Many areas within the foraging ranges of a European site might be occasionally used for range of behaviours, but the threshold for FLL infers that a population would not be able to maintain its current population in the site without access to the resource. The use of 1% of the relevant population is therefore considered to be precautionary.

Project impacts

1.2.2.5 The potential impact from the Transmission Assets Project is very low and the Applicants' position is that this is below the threshold for AEoI to the Ribble and Alt Estuaries SPA and Ramsar site. Potential impacts were ruled out for all features based upon low numbers with the exception of non-breeding golden plover (see REP6-024).

1.2.2.6 As originally reported in Appendix F of the OEMP (REP6-115), **Table 1.2** shows that golden plover were recorded in numbers exceeding 1% of the current SPA population on a one-off peak count. Golden plover were only recorded on one of 14 survey visits. When the average of the two annual peak counts and the overall mean number of birds are considered, the result is however below 1% of the current SPA population, with only seven birds on average affected.

Table 1.2: Comparison between the recorded peaks, means, and frequencies and the citation and current population sizes.

Species	2022/23 peak	2023/24 peak	Overall peak	Mean peak	Mean	Frequency (%)
Number of birds						
Golden plover	0	104	104	52	7	7
% of citation						
Golden plover	0.00	2.89	2.89	1.45	0.19	7
% of current SPA population						
Golden plover	0.00	1.90	1.90	0.95	0.13	7

1.2.2.7 Although it is unknown how much of the available arable and pasture habitats within their 10 km foraging range the golden plover actually use, it is clear that the loss of grassland at the onshore substations is very small in comparison with other available pasture and arable habitats within 10 km (see **Table 1.3** and Appendix F of the OEMP (REP6-115))). This loss of 0.07% of habitat would affect an average of only 0.13% of the population and therefore represents a negligible impact and therefore no AEoI.

Table 1.3: The proportion of arable and pasture habitats within the 10 km foraging range of golden plover that are predicted to be permanently impacted

Species	Permanent loss at the substations (m^2)	Available farmland within 10 km (m^2)	Proportion lost (%)
Golden plover – 10km	223,500	317,248,436	**0.07**

1.2.2.8 Although the surveys at onshore substation sites recorded 104 golden plover on one occasion, this was not regular use (as demonstrated by the 14 surveys) meaning that the land is likely of low value for golden plover. Using definitions within Natural England reports, the availability of the onshore substation land is therefore not critical to maintain or restore the non-breeding golden plover population in the Ribble and Alt Estuaries SPA and Ramsar site.

1.2.2.9 Therefore, the conclusions of no AEoI reached in the ISAA are not dependent on the delivery of mitigation.

1.2.2.10 All golden plover predicted to be permanently impacted were recorded loafing; the onshore substation sites therefore do not constitute important foraging or roosting resources, and the birds can loaf in numerous alternative fields within the SPA vicinity (see Table 1.3).

1.2.2.11 Notwithstanding the Applicants' position with regard to no AEoI (as set out in REP7-042), if the Secretary of State were to conclude that an AEoI could not be ruled out, the Project would need to provide appropriate 'without prejudice' mitigation for an average of seven or more non-foraging golden plover between September and March inclusive, when golden plover are present in the area.

EIA impacts

1.2.2.12 The need for mitigation due to the permanent displacement from the onshore substation sites was identified during the EIA (F3.4 Volume 3, Chapter 4: Onshore and intertidal ornithology (APP-090)) for non-breeding waders as the area was occasionally used by low numbers of oystercatcher, lawing, golden plover, ruff, curlew and snipe (**Table 1.4).** These were assessed in the generic non-breeding wader species group for the EIA and as the EIA was not directed at the European site level,

they were not assessed against 1% of the SPA population (see HRA section above for SPA level impacts).

1.2.2.13 Without further mitigation, the EIA concluded a moderate adverse effect on non-breeding waders. With the mitigation area at land south of Newton-with-Scales applied, the residual effect is reduced to minor and is not significant for EIA purposes. Only lapwing, golden plover, curlew and snipe had average counts above one bird, so the mitigation was developed for those species (see **Table 1.4**). The oystercatcher and ruff were recorded so infrequently and in such low numbers that the potential impacts to these species were deemed to be negligible, although the proposed mitigations may provide benefits to these species.

1.2.2.14 Potential impacts for all other species groups and at other times of year were minor or lower without the need for additional mitigation. These impacts were therefore not significant in EIA terms and other receptors are not considered further for permanent impacts.

Table 1.4: All non-breeding waders present at the onshore substations

Species group	Species	2022/23 peak	2023/24 peak	Overall peak	Mean peak	Mean	Frequency (%)
Waders	Oystercatcher	2	0	2	1	0	7
	Lapwing	12	120	120	66	9	14
	Golden plover	0	104	104	52	7	7
	Ruff	2	0	2	1	0	7
	Curlew	0	4	4	2	1	14
	Snipe	28	1	28	15	2	14

The Applicants' position

1.2.2.15 The Applicants' position is that, due to the low frequency of use of the onshore substation sites by SPA features (i.e., golden plover), the area of land to be permanently lost does not meet the threshold of FLL as per the guidance noted above. Although it contained greater than 1% of the SPA population of a qualifying population (golden plover) on one occasion, this was not regular use (only recorded 7% of the time) and is therefore not critical to maintain or restore the non-breeding golden plover population in the Ribble and Alt Estuaries SPA and Ramsar site. However, the Applicants are committed to providing EIA level mitigation for adverse effects to non-breeding waders, including golden plover.

1.2.2.16 Notwithstanding the Applicants position, and in the event that the Secretary of State agrees with Natural England and cannot rule out AEoI on the Ribble and Alt Estuaries, the Applicants also present mitigation to rule out AEoI on a 'without prejudice' basis.

1.2.2.17 The following sections provide further evidence to assure Natural England and the Secretary of State that the alternative mitigation would

be suitable to avoid potential EIA-level impacts on non-breeding waders, including golden plover, and avoid AEoI on the Ribble and Alt Estuaries SPA and Ramsar site.

1.2.3 Methodology for identifying alternative mitigation

Purpose of the mitigation

1.2.3.1 As previously discussed, the purpose of the mitigation is to provide EIA level mitigation (and 'without prejudice' mitigation in the event that the Secretary of State cannot rule out AEoI) for low numbers of non-breeding waders, including golden plover.

1.2.3.2 As highlighted in **Table 1.4**Table 1.4 the EIA level mitigation needs to support, on average, at least nine lapwing, seven golden plover, one curlew and two snipe. In the case that the Secretary of State cannot rule out AEoI, this 'without prejudice' mitigation needs to support, on average, at least seven golden plover. This mitigation needs to be provided over the wintering period between September and March when these birds are present in the area.

1.2.3.3 The habitats being lost are improved and semi-improved grazed grassland.

1.2.3.4 The area being lost is 22.35 ha, although due to the low frequency with which birds used the area combined with the availability of other suitable habitat, it is not considered of critical value.

Screening

1.2.3.5 A screening process was undertaken to identify areas where appropriate mitigation could be delivered to satisfy concerns from both Natural England (with regard to effects on ornithological receptors) and BAE Systems and the DIO (with regard to concerns about potential increased risk of bird strike). The screening took account of:

- Habitats – The loss of grassland habitats that are occasionally used by small numbers of non-breeding waders including golden plover.
- Presence of birds at the site – In order to provide a direct benefit to the birds predicted to be impacted, the mitigation site must be demonstrably accessible to those birds.
- Distance from impact – The area must benefit the birds from the Ribble and Alt Estuaries SPA and Ramsar site.
- Distance from SPA – The area must be within the foraging range of the impacted birds, e.g., the non-breeding golden plover foraging range is assumed to be 10 km based upon the Natural England SSSI impact zone buffer distance (see **Table 1.5**).
- Distance from Warton Aerodrome – In order to satisfy BAE Systems and the DIO aviation concerns regarding bird strike risk, the mitigation should be as far away from Warton Aerodrome as possible and on the southern bank of the Ribble Estuary to avoid birds crossing the aerodromes flightpath.

- Therefore, to qualify as suitable mitigation, the area:
  - Must be within the foraging ranges for the non-breeding waders present (e.g., 10 km for golden plover).
  - Must contain, benefit or create habitats suitable to support the non-breeding wader assemblage that will be impacted.

1.2.3.6 The screening exercise identified potential measures to enhance habitat and reduce disturbance for non-breeding golden plover, lapwing, curlew and snipe on the southern bank of the estuary at Crossens Outer and Banks Marsh. This option was investigated further to determine bird distribution and the suitability of the proposed measures.

1.2.3.7 A further ten existing schemes were identified, however these were largely beyond connectivity for the golden plover of the Ribble and Alt Estuaries SPA, or contained habitats that were not suitable to support golden plover. These have therefore been screened out from further consideration at this stage.

1.2.3.8 Privately owned land parcels were not considered feasible as part of this screening process. The reasons behind this are:

- There are limited options within the existing Transmission Assets Order Limits where the same scale of mitigation as Newton-with-Scales could be applied, and the projects have no compulsory purchase powers beyond this boundary;
- BAE/DIO have indicated that only land to the south of the Ribble Estuary would be potentially considered as an acceptable alternative in aviation impact terms;
- Much of the privately owned land bordering the southern bank of the Ribble Estuary is Grade 1 or Grade 2 land in arable production. Removal of this land for ornithological mitigation would lead to loss of best and most versatile agricultural land ;
- The arable land to the south of the Ribble currently supports the Ribble and Alt Estuaries SPA pink-footed goose and whooper swan, converting this to pasture would likely cause a significant impact upon these features;
- Existing pasture already has the capacity to support golden plover so securing pasture will not increase their carrying capacity within the area. This point is alluded to in the supplementary conservation advice for golden plover in the Ribble and Alt Estuaries SPA (last updated by Natural England on 5 October 2023). This states that the evidence supports the feature being in good condition and/or currently un-impacted by anthropogenic activities in relation to the extent, distribution and availability of supporting habitat both within and outside of the SPA.

Evidence to support the selection of Crossens Outer and Banks Marsh

Presence of birds

1.2.3.9 To identify areas which are used by the non-breeding bird assemblage, work by Still *et al.* (2015) was reviewed and the location of roosts and abundance of birds in different regions (i.e. sectors) of the Ribble Estuary analysed.

- Lapwing - Figure 1-3 below shows the value of the area historically for lapwing with relevant sector 5-year averages of 864, 1,728, 5,435 and 284 respectively. This demonstrates that this was a key area for lapwing in the Ribble Estuary and whilst there is limited recent available data in the public domain, there is no evidence that the importance of this area has diminished over time. The Still *et al*. (2015) data indicates that up to seven high tide roosts are located within Crossens Outer and Banks Marsh for lapwing. Discussions with the Natural England NNR manager (30 January 2026) confirmed that high numbers of lapwing continue to use this area.

Figure 1-3: Lapwing 5-year abundance by sector (2007/08 – 2011/12) as taken from Still *et al.* (2015).

- Golden plover - Figure 1-4 below shows the value of the area historically for golden plover with relevant sector 5-year averages of 718, 1,186, 1,075 and 41 respectively. This demonstrates that this was a key area for golden plover in the Ribble Estuary and whilst there is limited recent available data in the public domain, there is no evidence that the importance of this area has diminished over time. The Still *et al*. (2015) data indicates that up to two high tide roosts are located within Crossens Outer and Banks Marsh for golden plover. Discussions with the Natural England NNR manager (30 January 2026) confirmed that high numbers of golden plover (regularly hundreds) continue to use this area.

Figure 1-4: Golden plover 5-year abundance by sector (2007/08 – 2011/12) as taken from Still *et al*. (2015).

- Curlew - Figure 1-5 below shows the value of the area historically for curlew with relevant sector 5-year averages of 59, 91, 321 and 4 respectively. This demonstrates that this was a key area for curlew in the Ribble Estuary and whilst there is limited recent data in the public domain, there is no evidence that the importance of this area has diminished over time. The Still *et al*. (2015) data indicates that one high tide roost is located within Crossens Outer and Banks Marsh for curlew. Discussions with the Natural England NNR manager (30 January 2026) confirmed that curlew continue to use this area.

Figure 1-5: Curlew 5-year abundance by sector (2007/08 – 2011/12) as taken from Still *et al.* (2015)

- Snipe – Still *et al*. (2015) did not report on snipe, and snipe are often under recorded by waterbird counts such as the WeBS core and low tide counts. However, it is likely that snipe are distributed at low densities throughout wet areas with tussocky grass long enough to provide cover[1], these conditions are found in the upper saltmarsh Discussions with the Natural England NNR manager (30 January 2026) confirmed that high numbers of snipe use this area.

Species ecology

Table 1.5: Species foraging range, foraging and roosting habitats during the non-breeding season.

Species	Foraging range	Diet	Foraging habitat	Roosting habitat
Lapwing	Unreported	Adult and larval insects (e.g. beetles), spiders, snails, earthworms[3]	Damp grassland, stubble and ploughed fields[4]	Scrapes and short grassland[4]
Golden plover	10 km[1]	Earthworms, cranefly (and larva), spiders, beetles[3]	Damp grassland, stubble and ploughed fields[4]	Scrapes and short grassland[4]
Curlew	15 km[2]	Estuarine invertebrates and earthworms in terrestrial fields[3]	Mudflats and coastal pasture / grassland.[5]	Pools in saltmarsh and coastal wet pasture or grassland.[5]
Snipe	Unreported	Larval insects, adult insects, earthworms, small crustaceans, small gastropods and spiders[3]	Upper reaches of estuaries and coastal meadows with long grass and damp soils[3]	Upper reaches of estuaries and coastal meadows with long grass and damp soils[3]

[1] Natural England, [2] Bowland Ecology (2023), [3] e.g., Birdlife International (2026), [4] Gillings & Fuller (1999), [5] Mander, *et al*. (2022)

Supplementary Advice on Conservation Objectives for Ribble and Alt Estuaries SPA

1.2.3.10 In addition to the screening criteria, the screening process looked at the Supplementary Advice on Conservation Objectives (SACO) and Site Improvement Plan (SIP) for the species impacted where applicable. This was to identify the mitigation measures that could have the greatest benefits and to tailor mitigation to directly benefit the potentially impacted species within the Ribble and Alt Estuaries SPA and Ramsar site.

1.2.3.11 As lapwing, curlew and snipe are not designated features, no supplementary advice exists so assumptions about their status in the

[1] Common Snipe Gallinago Gallinago Species Factsheet | BirdLife DataZone

area can only be inferred from population changes. **Figure 1-6:** shows the five-year trends for the impacted species. Golden plover and lapwing have increased and are in favourable condition, curlew declined but have since increased to 2017/18 to remain stable over the period. Snipe appear have declined but they are likely to be poorly recorded by the WeBS due to their cryptic nature.

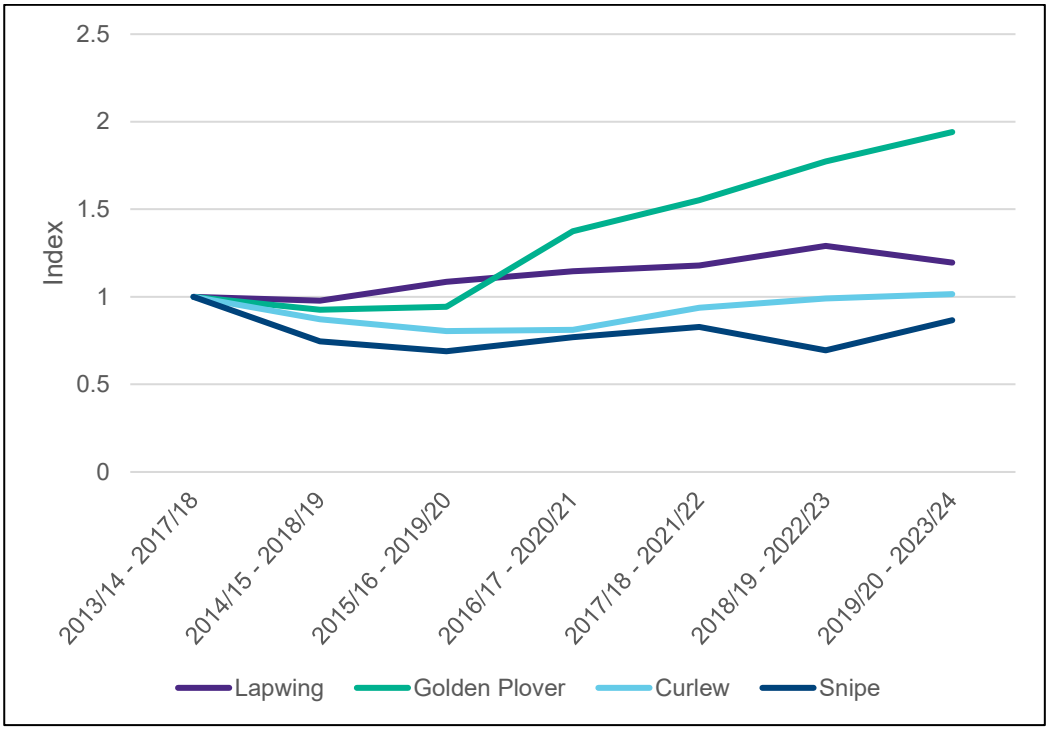

Figure 1-6: Indexed 5-year averages in the Ribble Estuary for the impacted species as taken from Calbrade, *et al.* (2025) data

1.2.3.12 As there are no data on the threats and impacts to lapwing, curlew, or snipe within the Ribble and Alt Estuaries SPA, golden plover has been used as a proxy. Golden plover often associates with lapwing and have similar foraging and roosting requirements.

1.2.3.13 The supplementary advice for golden plover has a number of attributes, targets and supporting notes. Although golden plover, and its attributes, are in favourable condition for most attributes, there is some uncertainty surrounding the impact of disturbance within the site, and habitat quality at roosting sites.

Table 1.6: Summary of the supplementary advice for the Ribble and Alt Estuaries SPA golden plover feature (as taken from Natural England's SACO on the designated sites viewer[2])

Attribute	Target
Disturbance caused by human activity	Restrict the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed
Supporting habitat: vegetation characteristics for roosting	Maintain a vegetation structure of key roost sites dominated by bare ground or a short sparsely-vegetated sward.

1.2.3.14 In addition, the Ribble Sefton Site Improvement Plan (SIP) written in 2014 identifies disturbance as a threat to golden plover (

1.2.3.15 **Table** 1.7). The SIP does not identify specific physical measures such as fencing to address this but instead education, investigation, research and monitoring. There are no specific recommendations for habitat enhancement measures for any of the habitats utilised by waterbirds such as roost sites.

Table 1.7: The Ribble Sefton Site Improvement Plan (as taken from Natural England's Access to Evidence[3])

Threats and pressures				
Priority and issue	**Pressure or threat**	**Features affected**	**Measure**	**Delivery bodies**

[2] Designated Sites View

[3] Site Improvement Plan: Sefton Ribble - SIP212

Threats and pressures				
6. Public access/disturbance	Threat	A037(NB) Bewick's Swan, A038(NB) Whooper Swan, A040(NB) Pink-footed Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A130(NB) Eurasian oystercatcher, A137(NB) Ringed Plover, **A140(NB) Golden Plover**, A141(NB) Grey Plover, A143(NB) Red knot, A144(NB) Sanderling, A149(NB) Dunlin, A151(B) Ruff, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A162(NB) Common redshank, A183(B) Lesser Black-backed Gull, A193(B) Common Tern, H2110 Shifting dunes, H2120 Shifting dunes with marram, H2130 Dune grassland, H2150 Coastal dune heathland, H2170 Dunes with creeping willow, H2190 Humid dune slacks, S1166 Great crested newt, S1395 Petalwort, Seabird assemblage, Waterbird assemblage	Raise public awareness via Landscape Partnership Scheme and the new Sefton Coastal Strategy	Natural England, Sefton Metropolitan Borough Council, Sefton Coast Partnership

1.2.3.16 In addition to meeting the screening criteria outlined above, this additional evidence suggests that meaningful benefits for the impacted non-breeding wader assemblage can be achieved through mitigation that improves roosting habitat and reduces recreational disturbance.

1.2.4 Permanent mitigation options

1.2.4.1 As with the temporary impacts, mitigation for potential permanent impacts now comprise several options. Option 1 (land south of Newton-with-Scales) is the preferred option: it was assessed in the DCO application, carried through the examination, and has been agreed with Natural England. Option 2 constitutes an alternative mitigation area, addressed in detail below.

Option 1 – South of Newton-with-Scales

1.2.4.2 The mitigation at the land south of Newton-with-Scales has already been discussed at length and agreed with Natural England. For further detail about the land south of Newton-with-Scales see Appendix B of the OEMP (REP6-115). As it has already been agreed as a mechanism to reduce the EIA level impacts to acceptable levels (and Natural England agree this would also rule out AEoI), this option is not discussed further in this document.

Option 2 – Crossens Outer and Banks Marsh

Overview

1.2.4.3 Crossens Outer and Banks Marsh forms part of the Ribble and Alt Estuary SPA and Ramsar, Ribble Estuary NNR and SSSI and is composed of large areas of saltmarsh on the southern bank of the Ribble Estuary. It stretches over a total area of 1,2109.09 hectares and includes the full range of saltmarsh habitats from pioneer saltmarsh at the lower limits to coastal grazing pasture above Highest Astronomical Tide (HAT).

1.2.4.4 There is a freshwater influence where the River Crossens enters the saltmarsh (around cattle compartment 1a). Lapwing and golden plover are concentrated in these upper saltmarsh areas, curlew occur throughout at low densities, and snipe favour the longer-grass areas that provide cover

1.2.4.5 Crossens Outer and Banks Marsh is managed by Natural England in collaboration with the RSPB and Lytham District Wildfowlers Association (LDWA); local farmers are invited to graze their cattle on the land each year. Grazing is undertaken from 4 May to 4 October subject to the tides. The size of the herd is up to 800 cows and is managed by the NNR team during this period. There is currently no fencing on the saltmarsh so the grazing is uncontrolled. This has resulted in some areas of the saltmarsh being overgrazed and other areas where the sward height is much longer.

1.2.4.6 The Applicants have held several meetings with the Reserve Manager at Crossens Outer and Banks Marsh to discuss and develop the potential options for mitigation at the site and these discussions have informed the proposals contained within this section.

1.2.4.7 Similarly to the land south of Newton with Scales the mitigation measures would reduce the potential EIA level impacts to acceptable levels and rule out AEoI.

Objectives of mitigation measures

1.2.4.8 The primary objective of the mitigation measures area is to provide permanent alternative habitat for non-breeding waders due to the permanent habitat loss at the onshore substations for lapwing, golden plover, curlew, and snipe. Although the mitigation is targeted at these species it is likely to benefit a far greater suite of waders within the Ribble and Alt Estuaries SPA and Ramsar site.

1.2.4.9 Whilst there is little detail in the literature on species specific conservation measures 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, saltmarsh and shallow scrape habitats during the non-breeding period. The short grassland and scrapes provide an open habitat which encourages many species of waterbirds to feel safe and provides roosting and loafing opportunities for birds. The aim in this area is to

improve habitats for roosting, loafing and foraging birds and reduce disturbance on the lapwing, golden plover, curlew and snipe that currently use this area and that may be impacted by the loss of land at the substations.

Measures

1.2.4.10 The mitigation measures comprise habitat improvements, interventions to reduce disturbance and improvements to a bird hide (not considered as a key mitigation measure but would form part of a package of measures to help aid the reserve with its monitoring). These measures are captured an outline management plan (Appendix I of the updated OEMP (Rev F07). An indicative plan of the measures at the Crossens Outer and Banks Marsh site can be seen in **Figure 1-7**.

Habitat improvements

Description

1.2.4.11 The proposal is to use fencing to divide cattle grazing on Crossens Outer and Banks Marsh into four discrete compartments so that grazing can be controlled and sward height heterogeneity increased. Currently the area is already grazed, however a lack of control over this has led to some areas being overgrazed and others under grazed creating sub-optimal habitat for non-breeding waders during the winter months.

1.2.4.12 Any fencing to be installed will be designed to be sensitive to the SSSI features and will not impede or damage the dynamic coastal processes of the saltmarsh (including sediment dynamics) and its sensitive vegetation. The fencing will be designed in close collaboration with the Natural England site team at the NNR with the necessary SSSI assents and other permissions sought as part of the detailed design of the proposals. The fencing will also be designed to make it easy to move cattle between the compartments (i.e. avoiding narrow gateways).

1.2.4.13 Many of the water troughs on the saltmarsh are not operational due damage and/or are not connected to a reliable water supply. This results in heavy cattle movements to the few areas where water is available and damage to the saltmarsh habitat. The existing water supply and limited distribution of functioning water troughs would also inhibit the success of the proposed rotational grazing system. Therefore, the proposed habitat improvement measures also include the installation of a new water supply pipeline and replace/repair/reinstate existing water troughs. The design and installation of the water supply pipeline and water troughs will be in accordance with the necessary SSSI assents.

Benefits

- Localised poaching
  - Repeated trampling of the ground by hooved animals can increase the amount of muddy and wet areas and increase feeding and roosting resources. It may be important to stock at high densities in small areas prior to the non-breeding season

in order to create areas of bare ground and provide optimal roosting conditions.

- Sward heterogeneity
  - Having different grass heights can give birds options for slightly taller or shorter grass heights, depending on their preference. The proposal would be to graze some areas short, as loafing and roosting lapwing and golden plover prefer grass heights below 10 cm (Gillings & Fuller, 1999), whilst snipe prefer longer grass heights (BirdLife International, 2026) where they can remain undetected. The areas to be kept short will be the upper saltmarsh habitats, such as those found around cattle compartment 1a, however the final grazing regime will be evidence based and will use the latest bird monitoring data from the site to inform grazing rotation to benefit the target species.
- Fertilisation
  - Low levels of organic (i.e., cattle with no pesticides) fertilisation can increase soil invertebrate diversity and abundance and bring soil invertebrates closer to the surface in localised patches. Ford *et al*. (2013) also found a high level of terrestrial invertebrate abundance and diversity on Crossens Outer and Banks Marsh, with many Coleoptera, Araneae and Tipulidae present (all of which are prey items for lapwing, golden plover, and snipe, see **Table 1.5**), which may benefit from either fertilisation or habitat heterogeneity.

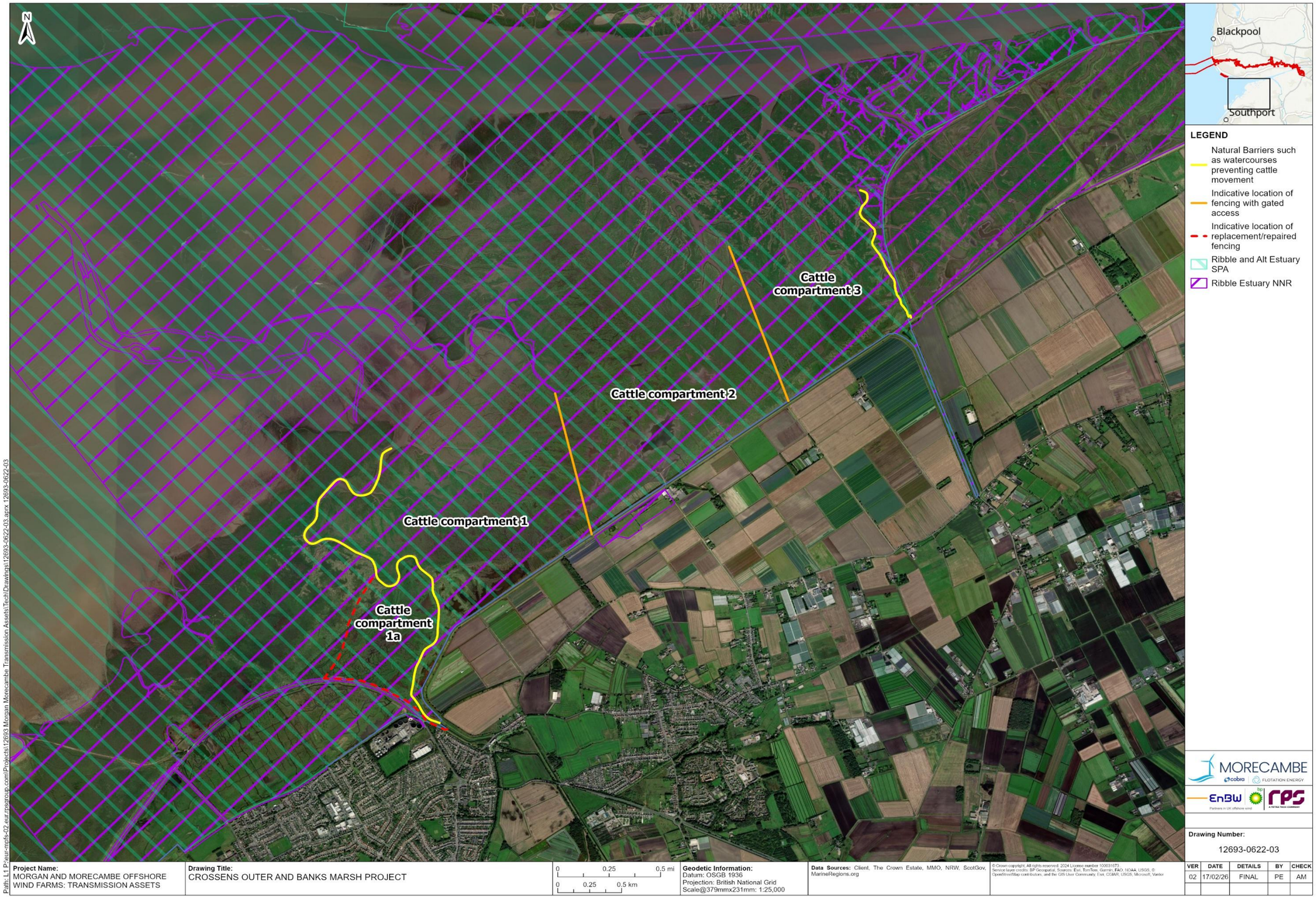

Figure 1-7: An indicative layout of the proposed measures at Crossens Outer and Banks Marsh

Reducing disturbance

Description

1.2.4.14 People are currently accessing the saltmarsh from Marine Drive for informal recreational purposes such as walking, dog walking, bird watching, etc. This is largely due to the lack of fencing and signage to explain the area forms part of a nature reserve and is not a public right of way. This unmanaged access results in disturbance to birds and other wildlife using the saltmarsh and potentially damages the sensitive saltmarsh habitats. It is proposed to replace the existing degraded fence delineating the saltmarsh boundary along Marine Drive. The replacement fence will prevent people from accessing the area and encourage them to use alternative areas. The design of the fencing will be appropriate for its purpose and the landscape setting.

1.2.4.1 Whilst no supplementary advice exists for lapwing, curlew or snipe as they are not site features, the Sefton Ribble Site Improvement Plan identifies recreational disturbance as the only current threat to golden plover.

Benefits

1.2.4.2 As has already been identified by Natural England, disturbance is a threat to non-breeding golden plover in the Ribble and Alt Estuaries SPA. The proposal aims to manage public access to sensitive saltmarsh areas where no public footpaths exist and will not impede public rights of way.

1.2.4.3 Reducing disturbance allows birds to focus on resting and/or feeding and reduces the energy lost from increased vigilance and evasion flights. Reductions in disturbance may lead to increases in their fitness and may reduce wintering mortality and increase breeding productivity if more healthy birds return to their breeding grounds (i.e. carry over effect). Reducing disturbance will provide non-breeding waders, including golden plover, with a safe, disturbance-free zone where they can carry out essential activities.

1.2.4.4 Although no data exists on whether recreational disturbance threatens the Ribble Estuary lapwing, curlew or snipe, this measure is likely to benefit a wide range of non-breeding and breeding waterbirds and it is known that lapwing, golden plover, curlew and snipe are present in the area where disturbance will be reduced. All waders are sensitive to disturbance, especially at roost sites.

Deliverability of alternative permanent mitigation

1.2.4.5 The measures have been included in the oOEMP (Appendix I) and secured via DCO Schedules 2A & 2B, Requirement 12 (Ecological Management Plan), but with an enforceable commitment to provide the necessary funding for the works. All measures, if deemed necessary, would be implemented prior to the start of works at the substation sites. The Applicants have been in positive discussions with Natural England NNR team who have been supportive of the proposals, as the

landowner and manager of Crossens Outer and Banks Marsh, regarding the implementation of the alternative mitigation measures. Whilst these discussions are ongoing, the Applicants consider there to be a viable route for delivery.

1.2.4.6 The detailed design will be undertaken by the Applicants in consultation with relevant stakeholders (including the Natural England NNR team, the RSPB, West Lancashire Council and Sefton Council). The design of the proposed measures will be in line with those set out in the Outline Management Plan for Crossens Outer and Banks Marsh (Appendix I of the OEMP (Rev F07)).

1.2.4.7 The Applicants will have overall responsibility for the delivery and implementation of the measures with support on the ground from the NNR management team.

1.2.4.8 These measures are considered additional to the standard management measures implemented within the SPA because:

- fencing of the saltmarsh and the replacement of water troughs to control grazing is not part of the current Site Improvement Plan (see paragraph 1.2.3.14) and there is no certainty that the measures will be implemented. The lack of controlled grazing means that the habitats are not being managed to their full potential for attracting and sustaining bird species;
- the measures aim to improve the habitats of golden plover, lapwing, curlew and snipe which are not the current target species of the NNR; and
- the replacement of dilapidated fencing at Marine Drive will address the wider objective of managing informal recreation on the sensitive saltmarsh habitats.

1.2.4.9 The Applicants consider that the measures proposed to improve upper saltmarsh habitat and reduce human disturbance will benefit a wide range of bird species, including golden plover and go beyond standard management measures currently implemented or planned to be implemented on site. Based on consultation to date, the Applicants understand that this is also the view of Natural England's NNR Site Management Team in respect of its operational conservation function.

1.2.4.10 The Applicants continue to engage with aviation stakeholders regarding bird strike risk. Based on discussions during the DCO examination process, the alternative permanent mitigation at Crossens Outer and Banks Marsh is likely to be an acceptable option with regards to bird strike risk given its location to the south of the Ribble Estuary. This option was briefly presented to both BAE and DIO. DIO were broadly supportive.

Additional measures

1.2.4.11 In addition to the mitigation measures described above the Applicants seek to provide the following measures:

- Erect educational signs along the stretch of Marine Drive where new fencing will be installed
- Repair the existing bird hide to aid the ongoing monitoring of Crossens Outer and Banks Marsh. The bird hide would allow for monitoring during inclement weather and be screened to reduce disturbance on birds.

1.2.4.12 These additional measures are not required to mitigate the potential impacts of permanent habitat loss from the onshore substation sites but relate to Natural England's wider objectives for the Crossens Outer and Banks Marsh. These measures could be secured via a separate agreement and funding mechanism.

1.2.5 Comparison of mitigation options

1.2.5.1 **Table 1.8** below highlights the similarities and differences between the area of potential impact and both mitigation options. Although there is a slight difference in habitats, the grazed upper saltmarsh habitats of Crossens Outer and Banks Marsh are of much greater importance for non-breeding waders than the onshore substation sites, and improvements to these areas are likely to bring benefits to many more birds than the small number predicted to be potentially impacted.

Table 1.8: Comparison of the onshore substations and proposed mitigation areas

Site	Sector	Habitats	Area (ha)	Bird presence
Onshore Substation sites	Total area	Improved and semi-improved grazed pasture	22.35	Non-breeding waders are present on average in single figures
Option 1. South of Newton-with-Scales mitigation site	Total area	Wet grassland, scrapes and rush pasture	30	Non-breeding waders are present on average in double figures
Option 2. Crossens Outer and Banks Marsh	Total area	Grazed saltmarsh, tidal and non-tidal	1210.09	Non-breeding waders are present on average in thousands
	Compartment 1a	Grazed upper saltmarsh	60.70	
	Compartment 1	Grazed saltmarsh, tidal and non-tidal	288.40	
	Compartment 2	Grazed saltmarsh, tidal and non-tidal	595.95	
	Compartment 3	Grazed saltmarsh, tidal and non-tidal	265.05	

1.2.6 Conclusion

- The Applicants disagree with Natural England that the loss of land at the substation sites represents AEoI on the Ribble and Alt Estuaries SPA and Ramsar site. However, the Applicants remain committed to providing permanent mitigation for small numbers of non-breeding waders for the loss of land at the onshore substation sites.
- The loss of land at the onshore substation sites affects very low numbers of non-breeding waders on sub-optimal improved and semi-improved grassland habitats. The Secretary of State can therefore be confident in reaching a conclusion of no AEoI.
- The Applicants have presented two mitigation options to demonstrate that, in the event that their preferred option (Option 1 – measures delivered on land south of Newton-with-Scales) is not deliverable, the Transmission Assets Project can still be delivered whilst meeting its commitments under the EIA regulations.
- The Applicants have also proposed that this mitigation is considered on a 'without prejudice' basis in the event that the Secretary of State concludes that permanent AEoI cannot be excluded for the Ribble and Alt Estuaries SPA and Ramsar site, either alone or in-combination.

1.3 References

BirdLife International (2026) IUCN Red List for birds. Downloaded from https://datazone.birdlife.org 04/02/2026

Gillings, S. and Fuller, R.J., (1999) Winter ecology of golden plovers and lapwings: a review and consideration of extensive survey methods. Thetford, UK: British Trust for Ornithology.

Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022) Disturbance DistancesReview: An updated literature review of disturbance distances of selected birdspecies. NatureScot Research Report 1283.

Liu, Y., Lu, Y., Chen, C., Zhang, G., Wang, Q., Xu, Z. and Wang, Z., (2018) Behavioural responses of the whooper swans Cygnus cygnus to human disturbance and their adaptability to the different habitats in the Rongcheng lagoon of China. *Ecohydrology*, *11*(7), p.e2013.

Mander, L., Nicholson, I., Green, R.M., Dodd, S.G., Forster, R.M. and Burton, N.H., (2022) Individual, sexual and temporal variation in the winter home range sizes of GPS-tagged Eurasian Curlews Numenius arquata. Bird Study, 69(1-2), pp.39-52.

Still, D.A., Calbrade, N.A.& Holt, S.A. (2015) Review and analysis of changes in waterbird use of the Mersey Estuary SPA, Mersey Narrows & North Wirral Foreshore pSPA and Ribble & Alt Estuaries SPA. Natural England Commissioned Report NECR173

Stroud, D.A., Bainbridge, I.P., Maddock, A., Anthony, S., Baker, H., Buxton, N., Chambers, D., Enlander, I., Hearn, R.D., Jennings, K.R, Mavor, R., Whitehead, S. & Wilson, J.D. – on behalf of the UK SPA & Ramsar Scientific Working Group (eds). 2016. The status of UK SPAs in the 2000s: the Third Network Review. JNCC, Peterborough.