NORTH FALLS

*Offshore Wind Farm*

# ENVIRONMENTAL STATEMENT

## Chapter 24 Onshore Ornithology

| | |
|---|---|
| Document Reference: | 3.1.26 |
| Volume: | 3.1 |
| APFP Regulation: | 5(2)(a) |
| Date: | July 2024 |
| Revision: | 0 |

NORTH FALLS
Offshore Wind Farm

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|---|---|
| **Project** | North Falls Offshore Wind Farm |
| **Document Title** | Environmental Statement Chapter 24 Onshore Ornithology |
| **Document Reference** | 3.1.26 |
| **APFP Regulation** | 5(2)(a) |
| **Supplier** | Royal HaskoningDHV |
| **Supplier Document ID** | PB244-RHD-ES-ON-RP-ON-0208 |



| Revision | Date | Status/Reason for Issue | Originator | Checked | Approved |
|---|---|---|---|---|---|
| 0 | July 2024 | Submission | MacArthur Green | NFOW | NFOW |
| | | | | | |
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# Glossary of Acronyms

| | |
|---|---|
| BNG | Biodiversity Net Gain |
| BoCC | Birds of Conservation Concern |
| BPM | Best Practicable Means |
| BTO | British Trust for Ornithology |
| CEA | Cumulative Effects Assessment |
| CIEEM | Chartered Institute of Ecology and Environmental Management |
| CRoW | Countryside and Rights of Way Act |
| DCO | Development Consent Order |
| dDCO | Draft Development Consent Order |
| DESNZ | Department for Energy Security and Net Zero |
| ECoW | Ecological Clerk of Works |
| EIA | Environmental Impact Assessment |
| EMP | Ecological Management Plan |
| EN-1 | Overarching NPS for Energy |
| EN-3 | NPS for Renewable Energy Infrastructure |
| EN-5 | NPS for Electricity Networks Infrastructure |
| EPP | Evidence Plan Process |
| ES | Environmental Statement |
| ETG | Expert Topic Group |
| EU | European Union |
| FLL | Functionally Linked Land |
| HDD | Horizontal Directional Drilling |
| HRA | Habitats Regulations Assessment |
| IOFs | Important Ornithological Features |
| JNCC | Joint Nature Conservation Committee |
| LNR | Local Nature Reserve |
| MLWS | Mean Low Water Springs |
| NERC | Natural Environment and Rural Communities |
| NFOW | North Falls Offshore Wind Farm Limited |
| NPPF | National Planning Policy Framework |
| NPS | National Policy Statement |

| | |
|---|---|
| NNR | National Nature Reserve |
| OLEMS | Outline Landscape and Ecological Management Strategy |
| PEIR | Preliminary Environmental Information Report |
| PRoW | Public Right of Way |
| RIAA | Report to Inform Appropriate Assessment |
| RWE | RWE Renewables UK Swindon Limited |
| SNH | Scottish Natural Heritage |
| SPA | Special Protected Area |
| SSER | SSE Renewables Offshore Windfarm Holdings Limited |
| SSSI | Site of Specific Scientific Interest |
| TCC | Temporary Construction Compound |
| VEOWL | Five Estuaries Offshore Wind Farm Limited |
| WeBS | Wetland Bird Survey |
| ZoI | Zone of Influence |

# Glossary of Terminology

| | |
|---|---|
| Horizontal directional drill (HDD) | Trenchless technique to bring the offshore cables ashore at the landfall. The technique will also be used for installation of the onshore export cables at sensitive areas of the onshore cable route. |
| Haul road | The track along the onshore cable route used by construction traffic to access different sections of the onshore cable route. |
| Jointing bay | Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts. |
| Landfall | The location where the offshore cables come ashore. |
| Link boxes | Underground chambers or above ground cabinets next to the onshore export cables housing low voltage electrical earthing links. |
| National grid substation connection point | The grid connection location for the Project. National grid are proposing to construct new electrical infrastructure to allow the Project to connect to the grid, and this new infrastructure will be located at the national grid substation connection point. |
| Onshore cable route | Onshore route within which the onshore export cables and associated infrastructure would be located. |
| Onshore export cables | The cables which bring electricity from the offshore substation. These comprise High Voltage Alternative Currently (HVAC) cables and auxiliary cables, buried underground. |
| Onshore project area | The boundary within which all onshore infrastructure required for the Project will be located (i.e. landfall; onshore cable route, accesses, construction compounds; onshore substation and cables to the national grid substation). |
| Onshore substation | A compound containing electrical equipment required to transform and stabilise electricity generated by the Project so that it can be connected to the national grid. |
| Onshore substation works area | Area within which all temporary and permanent works associated within the onshore substation are located, including onshore substation, construction compound, access, landscaping, drainage and earthworks. |
| Temporary construction compound | Area set aside to facilitate construction of the onshore cable route. Will be located adjacent to the onshore cable route, with access to the highway where required. |
| The Applicant | North Falls Offshore Wind Farm Limited (NFOW). |
| The Project or ‘North Falls’ | North Falls Offshore Wind Farm, including all onshore and offshore infrastructure. |
| Transition joint bay | Underground structures that house the joints between the offshore export cables and the onshore export cables. |
| Trenchless crossing compound | Areas within the onshore cable route which will house trenchless crossing (e.g. HDD) entry or exit points. |

# 24 Onshore Ornithology

## 24.1 Introduction

1. This chapter of the Environmental Statement (ES) considers the likely significant effects of the North Falls offshore wind farm (hereafter 'the Project' or 'North Falls') on onshore ornithological features. The chapter provides a characterisation of the existing environment for the onshore project area, followed by an assessment of likely significant effects for the construction, operation and decommissioning phases of the Project.

2. The chapter has been written by MacArthur Green, with the assessment undertaken with specific reference to the relevant legislation and guidance, of which the principal policy documents with respect to Nationally Significant Infrastructure Projects are the National Policy Statements (NPS). Details of these and the methodology used for the Environmental Impact Assessment (EIA) and Cumulative Effects Assessment (CEA) are presented in Section 24.4.

3. The assessment should be read in conjunction with following linked chapters (Volume 3.1):

   - ES Chapter 21 Water Resources and Flood Risk (Document Reference: 3.1.23);
   - ES Chapter 22 Land Use and Agriculture (Document Reference: 3.1.24);
   - ES Chapter 23 Onshore Ecology (Document Reference: 3.1.25); and,
   - ES Chapter 26 Noise and Vibration (Document Reference: 3.1.28).

4. Additional information to support the onshore ornithology assessment can be found in the following appendices (Volume 3.3):

   - ES Appendix 24.1 Onshore Landfall Area: 2020/21 Non-breeding Bird Surveys Report (Document Reference: 3.3.40);
   - ES Appendix 24.2 CONFIDENTIAL Onshore Landfall Area: 2021 Breeding Bird Surveys Report (Document Reference: 3.3.41);
   - ES Appendix 24.3 Onshore Landfall Area: 2021/22 Non-breeding Bird Surveys Report (Document Reference: 3.3.42);
   - ES Appendix 24.4 CONFIDENTIAL Onshore Landfall Area: 2022 Breeding Bird Surveys Report (Document Reference: 3.3.43);
   - ES Appendix 24.5 Onshore Cable Route: Non-breeding Bird Surveys 2021/22 Report (Document Reference: 3.3.44);
   - ES Appendix 24.6 Onshore Cable Route: Non-breeding Bird Surveys 2022/23 Report (Document Reference: 3.3.45);
   - ES Appendix 24.7 MKA Ecology (2023): Breeding Bird Survey Baseline Report, Five Estuaries Offshore Wind Farm, Essex (Document Reference: 3.3.46); and,
   - ES Appendix 24.8 Ecology Resources (2022): Breeding Bird Survey Report, Five Estuaries Offshore Wind Farm Ltd (VEOWL) (Document Reference: 3.3.47).

## 24.2 Consultation

5. Consultation regarding onshore ornithology has been undertaken in line with the general process described in ES Chapter 6 EIA Methodology (Document Reference: 3.1.8). The key elements to date have included scoping, the ongoing technical consultation via the onshore ornithology Expert Topic Group (ETG), and comments received on the Preliminary Environmental Information Report (PEIR). This feedback received has been considered in preparing the ES. Table 24.1 provides a summary of how the consultation responses received to date have informed the approach that has been taken.

6. Full details of the consultation process are presented in the Consultation Report as part of the Development Consent Order (DCO) application.

**Table 24.1 Consultation responses**

| Consultee | Date / Document | Comment | Response / where addressed in the ES |
|---|---|---|---|
| Natural England | 16/08/2021<br>Scoping Opinion<br>Annex 3: Onshore comments | All surveys should be undertaken during optimum survey periods in line with Natural England species guidance.<br>The ES should present baseline onshore ornithology information gathered using appropriate methodologies agreed with Natural England. | Baseline surveys were undertaken regularly each month from September 2020 to March 2023, in line with appropriate guidance relevant to the survey type. Details of survey methodologies are found in Appendices 24.1 to 24.8 (Volume 3.3). |
| Essex County Council | 16/08/2021<br>Scoping Opinion p.3 | Concern is raised that the onshore implications of the Project are vague and un-proven at this time, as the submission itself does acknowledge. | The collection of baseline ornithological data has continued since the scoping report submission, and which is considered extensive across the onshore project area The presence and distribution of onshore ornithological features in relation to the Project is therefore well established and has informed the Project Design and the assessment presented herein. A summary of completed baseline study results is provided in Section 24.5. |
| Essex County Council | 16/08/2021<br>Scoping Opinion<br>Section 2.7 | We welcome the addition of Essex Field Club as a data source for records of protected, notable and invasive non-native species as recommended at the Onshore Ecology Expert Topic Group (ETG) meeting on 6 July. However, this data source still needs to be added for ornithological datasets. | All suitable data sources were considered for the production of the ES, however it was considered that for birds, primary source were the Essex Birdwatching Society and the British Trust for Ornithology. |
| Essex County Council | 16/08/2021<br>Scoping Opinion<br>Section 2.7 | We would welcome early sight of the over-wintering bird surveys to inform the scope of the project level Report to Inform an Appropriate Assessment (RIAA) in relation to any functionally linked land for the coastal Special Protection Area (SPA) & Ramsar sites particularly at Hamford Water. | Results of non-breeding season bird surveys within the landfall and onshore cable route and onshore substation were discussed during the ETG process and shared with the ETG in October 2023. The result are summarised in Section 24.5 and detailed in Appendices 24.1 and 24.3 to 24.6 (Volume 3.3). |
| Planning Inspectorate | 26/08/2021<br>Scoping Opinion<br>Para. 3.3.2 | Paragraph 86 of the Scoping Report (detailing the overarching assessment methodology for the EIA) states that study areas defined for each receptor are based on the Zone of Influence (ZoI) and relevant characteristics of the receptor (e.g. mobility / range). However, the Inspectorate notes that for many of the aspect chapters included, study areas and ZoIs have not been stated. Where this detail has been provided, it is not clear how these study areas relate to the extent of the impacts and likely significant effects associated with the Proposed Development, | Definitions of study areas relating to designated sites, breeding birds, non-breeding birds and cumulative effects are presented in Section 24.3.1.<br>Impacts are placed within the context of the relevant species or assemblage populations, for example those |

| Consultee | Date / Document | Comment | Response / where addressed in the ES |
|---|---|---|---|
| | | how they have been used to determine a ZoI, and what receptors have been identified within the ZoI. The ES should provide a robust justification as to how study areas have been defined and why the defined study areas are appropriate for assessing potential impacts. | relating to a Site of Special Scientific Interest (SSSI), or at a regional (Essex) level (Section 24.4.3). |
| Planning Inspectorate | 26/08/2021 Scoping Opinion Para. 3.3.6 | Figures presented in the ES and used to support the assessment should be legible and show all relevant information, including receptors considered in the assessment. The ES should include figures illustrating designated and non-designated ecological sites, including SSSIs and Impact Risk Zones where relevant. | ES Figures 24.1 to 24.26 (Document Reference: 3.2.20) present the results of baseline surveys showing target bird species observations within the context of the Project's onshore ornithology study area and designated sites. |
| Planning Inspectorate | 26/08/2021 Scoping Opinion Para. 3.3.9 | Specific receptors should be identified within the ES, alongside categorisation of their sensitivity and value. The inspectorate expects a transparent and reasoned approach to be applied to assigning receptor sensitivity to be defined and applied across the aspect chapters. | Determination of Important Ornithological Features (IOFs) to be considered in the assessment has been undertaken in a reasoned way, by evaluating each species' or assemblage's nature conservation importance and population trend to predict an overall level of sensitivity. Full details are presented in Section 24.4.3. |
| Planning Inspectorate | 26/08/2021 Scoping Opinion Para. 3.3.14 | The ES should include details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved. | These are included in the Assumptions and Limitations Section 24.4.6. No substantial limitations to the establishment of baseline or subsequent assessment were identified. |
| Planning Inspectorate | 26/08/2021 Scoping Opinion Para. 3.3.17 | Section 1.7.2 and Table 1.4 of the Scoping Report explains that an Evidence Plan Process (EPP) with specialist stakeholders commenced in 2021 to agree the 'detailed methodologies for data collection and undertaking the impact assessments' in respect of certain aspects to be scoped into the ES. This approach to agreeing the finer details of the assessment is welcomed. The Applicant should ensure that any agreements reached during EPP or other consultation process are evidenced within the ES. | Discussions as part of the EPP have been undertaken in relation to agreeing the onshore ornithology survey areas, scope of survey programme and methodology. This is referred to in the relevant Sections below (24.4 and 24.4). A system of data sharing with Five Estuaries Offshore Wind Farm (herein 'Five Estuaries') was agreed, and all survey methodology was consistent. |
| Planning Inspectorate | 26/08/2021 Scoping Opinion Para. 3.3.18 | Section 1.9.3 of the Scoping Report sets out the planning policy and legislation context for the Proposed Development. It would be beneficial for the aspect chapters of the ES to also include reference to aspect specific planning policy and | Relevant legislation and planning policy for onshore ornithology is presented in Section 24.4.1. |

| Consultee | Date / Document | Comment | Response / where addressed in the ES |
|---|---|---|---|
| | | legislation, where this has been used to inform the methodology used for assessment. | |
| Planning Inspectorate | 26/08/2021 Scoping Opinion Para. 3.3.20 | The Inspectorate notes that in a number of instances the potential for impacts to ecological receptors (including onshore ornithology) arising from the use of new lighting during the construction, operational and decommissioning phases of the Project are identified.<br>The ES should include a description of the expected lighting emissions, appropriate visual representations and an assessment of effects, where significant effects are likely to occur. The ES should include details of any measures proposed to mitigate significant effects, including the use of lighting controls, and how this would be secured within the DCO. | Potential impacts of lighting on ornithological features during construction are considered in Section 24.6.2.2 (construction disturbance) and during operation of the substation in Section 24.6.3. Good practice measures for lighting are set out in the Outline Code of Construction Practice (CoCP) (Document Reference: 7.13). |
| Planning Inspectorate | 26/08/2021 Scoping Opinion Para. 3.3.23 | Any mitigation relied upon for the purposes of the assessment should be explained in detail within the ES. The likely efficacy of the mitigation proposed should be explained with reference to residual effects. The ES should also address how any mitigation proposed is secured, with reference to specific dDCO [Draft DCO] requirements or other legally binding agreements. | Mitigation and enhancement measures have been considered as part of the assessment for each IOF and each impact to reach a residual level of significance of effect (Section 24.6). |
| Planning Inspectorate | 26/08/2021 Scoping Opinion Section 5.5 | Para 523 Impacts to designated sites - functionally-linked habitat.<br><br>The ES should assess indirect effects on European designated sites from impacts to functionally linked habitats. The study area for the assessment should be based on the extent of impacts (direct and indirect). | European designated sites (SPA and Ramsar sites) are assessed as part of the Habitats Regulations Assessment (HRA) Report to Inform Appropriate Assessment (RIAA) (Document Reference: 7.1.5). Component nationally designated SSSIs are assessed in this chapter, with qualifying features and non-breeding bird assemblages considered as IOFs where relevant (see Sections 24.5.1 for desk study and 24.6.1 for rationale for inclusion in detailed assessment).<br>The study area for consideration of designated sites has been based on the likely maximum extent of foraging range for qualifying features, or species of interest included in the SSSI citations (see Section 24.3.1 for study area). |

| Consultee | Date / Document | Comment | Response / where addressed in the ES |
|---|---|---|---|
| Planning Inspectorate | 26/08/2021<br>Scoping Opinion<br>Section 5.6 | Section 3.6.3 Potential impacts - habitat loss.<br>[The ES] …should include consideration of the impacts of temporary and long-term terrestrial habitat loss on Onshore Ornithology, including those qualifying features of onshore designations that may rely on terrestrial habitats for nesting, roosting, breeding, foraging, etc.<br>Where significant effects are likely to occur, the ES should consider not only the direct effects of habitat loss (i.e. on species mortality and abundance), but also consider the effective areas of habitats subject to disturbance and displacement effects (including from noise / vibration, lighting) …that may serve to diminish the functional size of sensitive and / or protected habitats. | Habitat loss during construction and operation has been considered as a potential impact for onshore ornithology – see Section 24.6.2.1.<br>Disturbance-displacement impacts have been considered for the construction period in Section 24.6.2.2, and during operation in Section 24.6.3. |
| Planning Inspectorate | 26/08/2021<br>Scoping Opinion | Section 3.6.3.2 Potential impacts during construction.<br>The ES should assess the risks associated with onshore construction techniques and excavations (including from any proposed boreholes/ trial pits, trenching, and trenchless techniques and the potential for such activities to give rise to significant effects on onshore ornithological receptors, including the potential for habitat contamination (e.g. via bentonite breakout). | Direct construction impacts (habitat loss) are considered in Section 24.6.2.1, with the extent of disturbance effects considered in Section 24.6.2.2 likely to be the furthest extent of indirect impacts on ornithological features. Indirect impacts, including bentonite breakout are considered in Impact 3: Indirect impacts due to habitat alteration (including smothering or contamination, including bentonite breakout associated with trenchless techniques), Section 24.6.2.3.<br>ES Chapter 23 Onshore Ecology (Document Reference: 3.1.25) considers the risks posed to SSSIs and the species they support arising from bentonite breakout. |
| Natural England | 08/10/2021<br>Email correspondence | We welcome the use of a 400m buffer to the survey area in the proposed survey methodology [for all bird surveys]. | Noted. |
| Natural England | 08/10/2021<br>Email correspondence | We note the completion of a desk study to inform the scope of the functionally linked land (FLL) survey, and welcome the inclusion of:<br>• Colne Estuary SPA/Ramsar/SSSI<br>• Stour and Orwell Estuaries SPA/Ramsar/SSSI<br>• Hamford Water SPA/Ramsar/SSSI | Noted. The desk study referred to is summarised in ES Appendix 24.5 (Document Reference: 3.3.44). |

| Consultee | Date / Document | Comment | Response / where addressed in the ES |
|---|---|---|---|
| | | • Holland Haven Marshes SSSI<br>• Cattawade Marshes SSSI<br>Natural England is content that Abberton Reservoir SPA and Ramsar and the Blackwater Estuary SPA and Ramsar are scoped out, due to the foraging ranges of designated features. | |
| Natural England | 25/10/2022<br>Email correspondence | Natural England's standard advice is that where there is the potential for Annex I SPA birds to be directly impacted by proposals, whether inside a designated site, or within FLL, two years of survey data is required. This allows for interannual variations to be considered in more depth. …Therefore, Natural England advises that the onus is on the Applicant to (a) clearly demonstrate that there is no functional linkage and no risk of adverse effects on FLL, and (b) to determine that they have sufficient information or evidence to exclude areas from surveys. | Two years of survey data have been gathered, in relation to functionally-linked land within the onshore project area (plus a 400m buffer). |
| Natural England | 14/07/2023<br>PEIR Response | We note that the Applicant is yet to undertake all required ecological surveys including those for bats and over-wintering birds.<br>We advise that a complete set of surveys are carried out according to our standing advice and industry standard guidance, and that the results are included within the ES. Including 24 months of ornithology data within areas of functional linked land to coastal Special Protection Areas (SPAs). Any potential impacts that emerge from these surveys will need to be identified and suitable mitigation provided where required. | The two-year baseline onshore ornithology survey programme commenced in September 2020 and was completed in March 2023. Details of survey methodology and results are presented in Volume 3.3, Appendices 23.1 to 23.8.<br>The results of the surveys form the basis of the assessment within this chapter, and the determination of embedded mitigation (Section 24.3.3) and additional mitigation (referred to throughout the assessment in Section 24.6). |
| Natural England | 14/07/2023<br>PEIR Response | Natural England advises that Horizontal Directional Drilling (HDD) exit pits and associated operations are not located within or immediately adjacent to Holland Haven Marshes SSSI. Survey information obtained to locate the works compound should be used to identify where the least damage and disturbance would be caused to flora and fauna associated with the SSSI. Suitable mitigation measures should be identified to avoid/minimise disturbance arising from noise and vibration, lighting, hydrological impacts, and pollution arising from 'breakout' of drilling fluid etc. These should be documented in the various mitigation plans proposed. We | The results of the baseline ornithology surveys have where available been used in the process of determining the location of temporary and permanent onshore infrastructure, as well as embedded mitigation requirements (Section 24.3.3). Of key concern was ensuring that construction activities do not impact upon the bird assemblage of Holland Haven Marshes SSSI, and there would be no direct habitat loss or disturbance within the SSSI (see assessment in Section 24.6). |

| Consultee | Date / Document | Comment | Response / where addressed in the ES |
|---|---|---|---|
| | | advise that and Ecological Clerk of Works should be part of any mitigation plan presented and present during the works. | |
| Natural England | 14/07/2023<br>PEIR Response | It is concluded [in PEIR Chapter 23: Onshore Ecology] that intertidal cable protection will act as additional groynes. However, no evidence is provided to support the overall conclusions nor any in combination impact assessment with Five Estuaries potential onshore connection as a separate project requiring cable protection. Natural England advise further evidence is provided as coastal defences along this length of coast are already impacting upon saltmarsh in Colne Estuary SSSI/SPA. Natural England also advises that all options to avoid potential additional impacts are explored in the first instance, including avoiding cable protection in this area entirely. | The location of the HDD drill exit will be below Mean Low Water Springs (MLWS), meaning that there will be no construction footprint, and therefore no cable protection required, within the intertidal area.<br>Intertidal impacts are assessed in ES Chapter 10 Benthic and Intertidal Ecology (Document Reference: 3.1.12). |
| Natural England | 14/07/2023<br>PEIR Response | Any requirement for works access across the foreshore, which is in proximity to Holland Haven Marshes SSSI, may give rise to significant adverse impacts (e.g., noise, lighting, visual disturbance) on the SSSI. | No foreshore access is required for the construction works relating to the onshore export cables, and so no impacts will occur on birds utilising the intertidal area. Potential noise, lighting and visual disturbance impacts on the SSSI are considered in relation to onshore construction works in Section 24.6. |
| Natural England | 14/07/2023<br>PEIR Response | In combination and cumulative effects with other projects, notably Five Estuaries and East Anglia GREEN [now Norwich to Tilbury], should be fully explored. | Both projects are considered in the CEA, Section 24.8. |
| Natural England | 14/07/2023<br>PEIR Response | Based on the assessment of the impacts on breeding birds from the onshore cable route, it appears that data for skylarks should be available, but impacts on them are not currently sufficiently assessed.<br>We advise that skylarks are included as a target species for onshore ornithology. | Skylark was scoped out of the assessment in the PEIR because, as a relatively abundant species, population level effects are considered very unlikely even under the worst-case scenario.<br>Upon request, the species has been scoped into the assessment here (see Section 24.6.1). No significant effects are predicted for this species, but it is considered as part of proposed enhancement measures which would benefit breeding and non-breeding birds. |

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| Natural England | 14/07/2023<br>PEIR Response | We note that further survey data will be provided for bats and non-breeding birds. We advise that the survey data should be provided when it is available, and the assessment updated. | All survey data collected over the two-year baseline survey period have been summarised in Section 24.5 and considered for assessment in Section 24.6. |
| Natural England | 14/07/2023<br>PEIR Response | We note that no nocturnal surveys have been provided for non-breeding birds.<br>We advise that consideration is given to carrying out nocturnal surveys using thermal imaging for species such as golden plover if night-time working will be required. | It is considered that nocturnal surveys are not required to be able to robustly assess the potential for impacts on birds that may be present during the hours of darkness, as presented within this Chapter.<br>The realistic worst-case scenario outlined in Table 24.4 states that 24-hour working may be required occasionally at the landfall and at other major HDD locations, but elsewhere, work would be limited to 07:00 to 19:00 from Monday to Saturday. It is therefore the case that the spatial extent of potentially disturbing works at night (due to HDD work, and likely occurring at a single location), would be very small. Some other construction works may extend into the hours of darkness during winter, but where required the temporal extent of these works would be very limited, and therefore potential disturbance to wintering birds also limited to short periods.<br>Any mitigation measures that would be deployed during the construction phase to minimise the risk of disturbance (see Section 24.3.3) would also apply to nocturnal working.<br>For the purposes of assessment it has been assumed that curlew, lapwing and golden plover may utilise agricultural land within the onshore project area for feeding or roosting during the night, potentially using different fields to those used during the day. It has also been considered that birds' use of fields may be different between years, in response to changes in field management from year to year. The assessment of construction disturbance therefore assumes that these species could use any |

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| | | | suitable fields within the onshore project area, not just the fields they were recorded using during daytime baseline surveys.<br>As it is assumed that birds may be disturbed during any works within potentially suitable habitat, regardless of the recorded distribution during the surveys, collecting nocturnal survey data would therefore not change the approach to assessment and consideration of the potential for significant effects.<br>It is added that due to generally accepted limitations in detecting and counting birds at night, it is unlikely that peak counts would be obtained during nocturnal surveys and upon which to undertake an assessment. A robust approach to assessment has therefore been undertaken, informed by daytime baseline surveys. It is considered that the collection of nocturnal data would not change the conclusions of assessment presented herein. |
| Natural England | 14/07/2023<br>PEIR Response | We note that the precise landfall location will be determined following PEIR. We also note that the Project has committed to HDD at landfall and the onshore drilling location will be set back approx. 400m from the coast. We do have concerns, however, regarding the consideration of noise, light and visual disturbance from the indicative landfall compound.<br>We are also concerned about potential in-combination impacts (with other projects such as Five Estuaries) to SPA birds and breeding birds using the SSSI. It is also not stated whether any works or access will be required on the foreshore or across the intertidal. This should be clarified, and further details provided.<br>Provide further details regarding the landfall compound location. Fully consider and assess any impacts to SPA birds that use the SSSI and potentially breeding birds. Furthermore, if works or access to the foreshore or intertidal zone are required, then further information should be provided, and potential impacts assessed. We also advise that potential in-combination effects due to the landfall compound and any intertidal works should be fully considered and assessed in the ES. | The location and extent of the landfall area has been refined since the PEIR (see ES Figure 24.2 (Document Reference: 3.2.20)). This has been designed to minimise risk of disturbance and other impacts on the part of the Holland Haven Marshes SSSI which is of greatest importance to the SSSI assemblage throughout the year, namely the lagoon and wetland area that located within the Holland Haven Local Nature Reserve (LNR). Potential disturbance impacts relating to landfall activities are assessed in Section 24.6.2.2.<br>In-combination impacts on SPAs are assessed in the RIAA (Document Reference: 7.1.5).<br>There would be no construction activities within the foreshore or intertidal areas, and as such, all related |

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| | | | potential impacts have been scoped out of the assessment. |
| Natural England | 14/07/2023<br>PEIR Response | The criteria for selection for target breeding bird species includes Red-listed species. Skylarks are listed but not considered a target species in the PEIR report (para 68) as it is suggested they are not inherently rare and are less sensitive.<br>Natural England advises that as well as being listed as a species of principal importance in Section 41 of the NERC Act, Skylark are considered a species in decline in Essex and their nesting habitat (arable farmland) will be impacted. We note that overwintering populations have been recorded in the corridor area, so there is likely to be nesting within this area. Therefore, we advise that they are sensitive to 'disturbance' and there is the potential for permanent loss of their habitat for substation(s). We advise that they are included as a target species. | In accordance with the advice provided, the potential for impacts upon skylark has been scoped into the assessment (see Section 24.6.1). Measures which would benefit breeding and non-breeding skylarks have also been proposed as part of the Project as detailed in the Outline Landscape and Ecological Management Strategy (OLEMS) (Document Reference: 7.14), which will form the basis of the Project's Ecological Management Plan (EMP) developed post-consent, secured by DCO Requirement. See also Section 24.3.3 for relevant mitigation for skylarks. |
| Natural England | 14/07/2023<br>PEIR Response | We note that there is no assessment of the use of the intertidal area by waterbirds in the Onshore Ornithology or the Offshore Ornithology reports. Birds were mapped in the area as part of the surveys, so it is unclear why this assessment has not been included.<br>We advise that reference is made to the potential impacts on birds using the intertidal and foreshore areas and that this is thoroughly assessed. | There would be no construction activities within the foreshore or intertidal areas, and as such, all related potential impacts can be scoped out of the assessment.<br>Bird activity recorded within the intertidal and foreshore areas was generally low, and due to the high background levels of human disturbance, mainly comprised species with lower sensitivities to disturbance such as gulls. |
| Natural England | 14/07/2023<br>PEIR Response | We note that the mitigation for vegetation clearance in the nesting season is following good practice i.e., surveying a maximum of 48 hours before the works take place.<br>It is stated that the survey will be conducted by an Ecological Clerk of Works (ECoW) and that there will be one ECoW for the project. Natural England seek confirmation that this person will this be a suitably qualified ECoW for nesting bird surveys. We also seek further consideration of all possible mitigation measures to ensure that all viable options have been thoroughly considered. | The role of the ECoW, if required, will be detailed within the Project's EMP secured by DCO Requirement. Should it be required, a suitably qualified ornithologist would also be appointed to conduct breeding bird checks.<br>Embedded and additional mitigation options are presented, and these have been refined since the PEIR due to the refinement of proposed layout and completion of baseline studies. |
| Natural England | 14/07/2023<br>PEIR Response | There is mitigation proposed which involves avoiding working in areas used by geese and waders in overwintering period. | The extent and duration of such restrictions would be determined by a risk assessment carried out by the ECoW and/or qualified ornithologist, but it is not considered likely |

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| | | We note this mitigation potentially conflicts with the mitigation to not undertake vegetation clearance in nesting season. We note the mitigation proposed will be further clarified when the cable corridor etc. is finalised. Natural England may have further comments at that stage. | that these would prohibit any works from taking place during the non-breeding season.<br>Any restrictions to potentially disturbing construction activities during the non-breeding season, as advised by the ECoW and/or qualified ornithologist, would most likely be restricted to key times and locations, for example a recorded roost site used at high tide by SPA birds. Indicative measures are provided within the OLEMS (Document Reference: 7.14) and see also Section 24.3.3 for embedded mitigation as well as *Additional Mitigation* sections within Section 24.6. |
| Natural England | 14/07/2023<br>PEIR Response | We note the avoidance of land within designated site boundaries, although we note that the onshore project area is in close proximity to Hamford Water SAC, SPA/Ramsar site (300m at closest point).<br>Consideration will therefore be required of impacts on Annex I birds that are utilising functionally linked land surrounding the SPA. As advised for all OWF Nationally Significant Infrastructure Projects (NSIPs) two years of data is required to support Applications to take account of interannual variation. | Since the PEIR, the proposed onshore cable route has been refined, based on a number of factors, including potential impacts on the Hamford Water SPA/Ramsar site bird assemblage. As such, the route would be a minimum of approximately 1km from the SPA at its closest point. At this distance, the potential for disturbance to birds utilising habitats within the designation boundary is highly unlikely (see Section 24.6.2.2).<br>Consideration has however been given to the potential impacts on SPA bird populations utilising FLL outside of the SPA, and what measures can be undertaken to minimise the risk of an adverse effect on the SPA (as detailed in the RIAA (Document Reference: 7.1.5)). The determination of impacts has been based on two years' worth of baseline survey data. |
| Natural England | 14/07/2023<br>PEIR Response | We note that the likely significant effects considered do not appear to include cable protection in the intertidal area. The offshore considerations go up to MLWS. If the Holland Haven Marshes SSSI is functionally linked to Hamford Water SPA/Ramsar, then the intertidal area has the potential to provide a feeding resource, so potential hard structures and working in that area should be considered. | There would be no construction works within the intertidal area, and so all potential impacts associated with birds in this location can be scoped out of the assessment. |

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| | | We advise that the potential for intertidal working (including any additional compound) and placement of rock changing the habitat conditions should be included in the screening process. | |
| Natural England | 14/07/2023<br>PEIR Response | Reference is included to Chapter 24- Onshore Ornithology and that embedded mitigation for onshore ornithology includes that monitoring will be carried out to 'ensure' no significant disturbance to overwintering birds. We note that no reference is included to avoiding (where possible) work in land identified as potentially important to Hamford Water SPA features during key periods of the non-breeding season or keeping hedgerows etc. for visual screening (Chapter 24, para 249-251). We note that this mitigation could conflict with embedded mitigation around not removing vegetation, which relates to ground nesting birds, in the nesting season.<br>We advise that any mitigation included in the chapters, should be included in the HRA where it relates to impacts on designated sites. This includes the mitigation included in chapter 24. | This has been considered above. In addition, it would be ensured that mitigation measures required for ecological or ornithological features would be complimentary with each other, and reference is made in this assessment of proposed ecological mitigation and enhancement measures. These are also considered in the RIAA (Document Reference: 7.1.5) as part of the HRA process. |
| Natural England | 14/07/2023<br>PEIR Response | We agree with the methodology that has been used to assess potential impact pathways to international notified features e.g. wintering and breeding birds. | Noted. See Section 24.4 for assessment methodology, which follows that previously detailed within the PEIR. |
| Natural England | 14/07/2023<br>PEIR Response | We agree that key impacts are:<br>Temporary loss of feeding habitat for wildfowl and waders which is functionally linked to SPA/Ramsar sites and permanent loss of feeding habitat at substation site.<br>Pollution entering watercourses connected to designated sites and functionally-linked land arising from 'breakout' incidents during HDD.<br>Light spill from artificial lighting during construction affecting ecology of the SAC Fisher's Estuarine Moth.<br>Operational lighting at substation site causing disturbance to SPA birds. | Noted. The impacts relating to ornithological features have been assessed accordingly in Section 24.6. |
| Natural England | 14/07/2023<br>PEIR Response | We advise that avoid, reduce and mitigation hierarchy will need to be implemented which includes (but not exclusively) the following: | This advice has been noted.<br>The planting of unsuitable crops is not considered to be necessary, because of the relatively small scale of |

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| | | Avoid construction works in functionally linked land during sensitive periods for Annex I birds<br>Explore collaborative working with Five Estuaries if both projects are impacting on functionally linked areas. We advise shared cable routing and/or installing ducting for both when the first project installs is explored.<br>Ecological Clerk of Works (EcoW) during construction. Noting this may need to be different people, depending on the specialism required to ensuring a suitably qualified EcoW is present.<br>Consideration of planting unsuitable crops in advance of construction in order to deter dark-bellied brent geese for the winters that construction will take place.<br>Agreed Landscape and Ecological Management Plan.<br>Agreed trenchless techniques Method Statement and 'Break-out' Contingency Plan.<br>Agreed Sensitive lighting scheme. | potential disturbance to geese, both spatially and temporally (see Section 24.6.2.2.5 for assessment of construction disturbance on non-breeding birds).<br>The establishment of unsuitable crops could also result in implications for re-establishing normal cropping cycles and therefore suitable crops for brent geese following the completion of construction activities.<br>A sensitive lighting scheme is not proposed, although good practice would be followed (see embedded mitigation in Table 24.5) and where the possibility of lighting disturbance is identified (in particular to Schedule 1 breeding species or SSSI/SPA assemblages), effort would be made to screen construction works if possible, as determined by the ECoW.<br>The onshore cable route has been identified in coordination with Five Estuaries and the ability for one project to lay ducting for the other project has been accommodate within the design envelope. |
| Natural England | 14/07/2023<br>PEIR Response | We agree with the plans and projects which have been identified for potential in-combination effects, namely Five Estuaries and Norwich to Tilbury. These are both subject to separate Development Consent Order (DCO) permissions which may or may not be granted to allow construction within the same timeframe and/or consecutive timeframes.<br>There would be less disturbance if Five Estuaries OWF and North Falls OWF construction activities took simultaneously along the same construction route. If they were to pursue individual connections, particularly in the same area, for example consecutively, this could lead to continual impacts over an elongated period.<br>We note that the grid connection is dependent on Norwich to Tilbury substation being constructed. | In-combination effects are considered in the RIAA (Document Reference: 7.1.5), but these projects have also been scoped into the cumulative assessment in Section 24.8).<br>The worst-case cumulative scenario for the construction of the Project and Five Estuaries has been assessed, which for onshore ornithology, is considered to be the sequential construction of the two projects, with a gap of at least three years between construction phases ('Scenario 3'). See Section 24.8 for further information. |

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| Natural England | 14/07/2023<br>PEIR Response | We note that there is embedded mitigation in relation to Holland Haven Marshes SSSI, which involves the use of trenchless techniques to avoid direct impacts from trenching across the SSSI.<br>We advise that it is essential that this mitigation is achievable and adhered to ensure there will be no temporary or permanent habitat loss within HHM SSSI. Please note that vehicle movement across the SSSI in support of the trenchless techniques should also be excluded with an alternative route found. Consideration will also need to be given to any drilling fluid (Bentonite) frac out. | The proposed mitigation in relation to the landfall HDD works would be adhered to, in order to avoid any direct impacts on the SSSI. For further details, see ES Chapter 5 Project Description (Document Reference: 3.1.7).<br>The risk of a bentonite 'frac out' affecting ornithological features is assessed in Section 24.6.2.3. |
| Natural England | 14/07/2023<br>PEIR Response | Holland Haven Marshes SSSI should be considered of high importance when taken as a whole. | The breeding and non-breeding assemblages of Holland Haven Marshes SSSI have been considered as single IOF, where appropriate, i.e. if predicted impacts are similar for all species. Where this occurs, the assessment of impacts is precautionary, being based on the species with the highest sensitivity to the impact (e.g. furthest disturbance distance). |
| Natural England | 14/07/2023<br>PEIR Response | We note that the extent of temporary habitat loss at the landfall area cannot yet be determined, and we are therefore unable to fully determine any direct impacts on the designated features of Holland Haven Marshes (HHM) SSSI. The indirect effects of trenchless techniques through Holland Haven Marshes SSSI identified include effects from HDD breakout and road traffic emissions.<br>We advise that indirect effects should also include noise, vibration, construction dust, human disturbance, lighting etc. | Temporary habitat loss within landfall area would be outside of Holland Haven Marshes SSSI – see ES Figure 24.2. Indirect disturbance and impacts due to HDD breakout are however assessed.<br>The design of the Project layout has been refined since the PEIR, taking into account sensitive habitats for ornithological features. This has included keeping landfall infrastructure away from the lagoon and wetland areas of Holland Haven Marshes SSSI where the highest bird counts were recorded (see ES Figure 24.2 (Document Reference: 3.2.20). |
| Natural England | 14/07/2023<br>PEIR Response | To ensure minimal disturbance to SSSI features during construction, there should be monitoring of wintering and breeding birds and other features during construction, which is agreed with NE prior to construction.<br>We advise that an Ecological Clerk of Works (EcoW) is instructed, and works are conducted based on an agreed SSSI Mitigation and Monitoring Plan. | Monitoring will take place throughout the year during the construction phase, focussing on key areas of sensitivity. A monitoring plan would be part of the EMP.<br>The monitoring would be undertaken by the appointed ECoW or suitably qualified ornithologist. |

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| Natural England | 14/07/2023<br>PEIR Response | Natural England highlight the potential for disturbance of Overwintering and breeding birds at the landfall at Holland Haven Marshes SSSI.<br>Wherever possible preparation and trenchless technique works should avoid sensitive periods for breeding and overwintering birds, if these cannot be avoided:<br>The location of the exit pits should be made unsuitable for nesting birds either through the use of bird scarers in the form of kites and/or vegetation clearance.<br>An Ecological Clerk of Works (ECOW) should undertake walk over surveys prior to and during construction to identify any nesting birds and implement an agreed protocol for implementing disturbance free buffer zones around active nests; screening/fencing of HDD pits and other working areas at landfall. | The design of the Project layout has been refined since the PEIR, taking into account sensitive habitats for ornithological features. This has included keeping landfall infrastructure away from the lagoon and wetland areas of Holland Haven Marshes SSSI where the highest bird counts were recorded (see ES Figure 24.2 (Document Reference: 3.2.20)).<br>Measures would be implemented during the construction phase to minimise the risk of any disturbance to breeding or non-breeding birds within the SSSI, which may include avoiding, or minimising work undertaken at sensitive times of the day and year.<br>If it is identified in advance that construction of infrastructure such as exit pits may overlap with the breeding season and carry a risk of impacting nesting birds, then deterrents or screening would be considered by the ECoW and monitored to ensure legal compliance with the Wildlife and Countryside Act 1981 (as amended).<br>Measures to avoid disturbance would be included in the EMP secured by DCO Requirement and would be enforced by the ECoW during the construction phase, which would cover the whole onshore project area. |
| Natural England | 14/07/2023<br>PEIR Response | Red-listed/priority farmland breeding birds, such as corn bunting, grey partridge, could be temporarily disturbed by construction.<br>We advise avoidance of important breeding locations, and adoption of suitable mitigation measures. For example (but not exclusively) the construction duration should be minimised in sensitive locations/times, alongside minimised disturbance due to lighting, noise etc. We advise farmland habitats should be reinstated as soon as possible, and all work carried out under EcoW supervision. Consideration should be given to how winter works might impact on breeding bird habitat for the following year. | These Red-listed species have been assessed and seen as priority breeding species for construction mitigation. These measures are outlined in the assessment section and include ECoW supervision and habitat reinstatement.<br>Habitat enhancement to benefit these Red-listed species is proposed for the onshore substation works area (see Section 24.6.2.1.1 ). |

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| | | We advise that Red-listed/priority birds may be permanently affected by loss of habitat due to substation construction.<br>We advise that suitable habitat for such species should be incorporated into the landscaping design scheme for substations. | |
| RSPB | 14/07/2023<br>PEIR Response | We note the aspiration to deliver a minimum of 10% biodiversity net gain (BNG) for the onshore elements of the project (PEIR Chapter 24, Table 24.5). The RSPB would welcome without prejudice discussions as an ecological stakeholder as to potential habitat and species projects for this, in advance of the submission of the Project's Environmental Statement. | Noted. The Project would be keen to discuss with RSPB the options for BNG post-consent once detailed design has taken place and clearer understanding of the potential BNG achievable has been determined. |
| RSPB | 14/07/2023<br>PEIR Response | We welcome the headline commitment to avoid direct impacts on Holland Haven SSSI (and buffer zone) by selecting a landfall outside the protected site and by using trenchless techniques. | Noted. |
| Little Bromley Parish Council (comments endorsed by Ardleigh Parish Council) | July 2023<br>PEIR Response | Little Bromley parish has a rich and varied wildlife population as identified by wildlife surveys. This includes many species of waterbirds and non-waterbirds. We are very close to the Stour Estuary SSSI and Ramsar site, and surveys indicate bird species present which are related to those sites..<br>The migratory bird route across East Anglia, the East Atlantic Flyway, has gained Government backing to bid to become a UNESCO World Heritage Site. Major developments such as planned by Five Estuaries, North Falls and national grid will have serious impact. Potential exists for protected or notable species to be impacted by construction activities either physically via permanent or temporary habitat loss or by inadvertent injury or killing or from disturbance via light, noise and human presence. There is potential for permanent habitat fragmentation and species isolation as a result of the substation construction and also from construction of the cable route. The substation construction will bring a permanent loss of an estimated 8Ha of habitat together with the additional loss of the temporary construction compound areas and the cable route during construction. | The importance of the onshore ornithology study area for breeding and non-breeding bird assemblages has been carefully considered in the Project design and assessment.<br>It is agreed that the potential exists for the impacts listed to occur to IOFs, and as such a range of mitigation measures is proposed to minimise the risk to species of key conservation concern, including migratory species which utilise wetlands that form part of the National Site Network in southeast England.<br>The impacts of habitat loss and fragmentation on breeding birds due to the onshore substation has been assessed accordingly, with appropriate mitigation and enhancement measures proposed. |
| Frinton & Walton Town Council | 13/06/2023<br>PEIR Response | The Government has made a tentative submission for all wetland sites on the east coast, the application was submitted in July 22 by the RSPB, WWT (Wetlands Wildlife Trust) and NT (National Trust), to UNESCO for consideration as a World Heritage Site. The Hamford Backwaters are considered to be the 2nd most | The importance of the onshore ornithology study area for breeding and non-breeding bird assemblages has been |

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| | | important site in Europe for over wintering birds. It is well known that pylons and overhead cables are not compatible with migrating birds. | carefully considered in the Project design and assessment.<br>A range of mitigation measures is proposed to minimise the risk to species of key conservation concern, including migratory species which utilise wetlands that form part of the SPA/Ramsar/SSSI network in southeast England, including Hamford Water. No pylons or overhead cables are included within the design envelope for North Falls. |
| Natural England | 10/10/2023<br>ETG Meeting | Skylarks and other nesting birds may hold up construction – would habitat be made unsuitable for nesting? | It is not proposed that any habitat would be made unsuitable for skylarks or other species prior to the breeding season. As outlined in Section 24.3.3, pre-construction checks for active nests would be made to ensure compliance with the Wildlife and Countryside Act (as amended). Suitable restrictions to construction activities would be determined by the ECoW, based on species and site-specific conditions. Schedule 1 licensing of ornithologists and/or ECoW would be obtained to ensure no disturbance to Schedule 1 breeding species. |
| Natural England | 08/12/2023<br>Discretionary Advice | We welcome the Onshore Cable Route Non-Breeding Bird Surveys Report (2022-23). We are content with the survey report in general. However, the survey results will need to be considered in the ES in terms of disturbance/displacement impacts from all parts of the project (and other relevant projects) on SPA birds. | Noted. These results form part of the baseline dataset used to describe the existing environment (Section 24.5) and have been used to assess disturbance and displacement impacts and determine mitigation measures as appropriate. The assessment of potential adverse effects on SPA birds is presented in the RIAA (Document Reference: 7.1.5). |
| Natural England | 08/12/2023<br>Discretionary Advice | Mitigation of 24-hour construction activities should be considered and the need for nocturnal surveys (e.g. golden plover). The mitigation hierarchy should also be applied to reduce impacts on SPA assemblage birds to acceptable levels. | The assumption of 24-hour construction activities associated with discrete trenchless technique works has been included as part of the realistic worst-case scenario (Table 24.4).<br>Nocturnal surveys were considered not to be necessary to establish a robust dataset of the existing environment, for |

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| | | | the reasons outlined in previous consultation with Natural England (see above).<br>The Project design process has followed the mitigation hierarchy and taken into account the distribution and abundance of ornithological features to produce a layout which is aimed to avoid or otherwise minimise the potential for significant effects. |
| Little Bromley Parish Council | 21/04/2024<br>Targeted consultation | Little Bromley has a rich and varied wildlife population as identified by wildlife surveys. This includes many species of waterbirds and non-waterbirds. We are very close to the Stour Estuary SSSI and Ramsar site, and surveys indicate bird species present which are related to those sites.<br>The migratory bird route across East Anglia, the East Atlantic Flyway, has gained Government backing to bid to become a UNESCO World Heritage Site. | The importance of the onshore ornithology study area for breeding and non-breeding bird assemblages has been carefully considered in the Project design and assessment.<br>A range of mitigation measures is proposed to minimise the risk to species of key conservation concern, including migratory species which utilise wetlands that form part of the SPA/Ramsar/SSSI network in southeast England.<br>The assessment of potential adverse effects on SPA and Ramsar qualifying features is presented in the RIAA (Document Reference: 7.1.5). |
| Natural England | 21/04/2024<br>Targeted consultation | We have reviewed the Addendum to the PEIR and accompanying targeted consultation documents and reiterate our earlier concerns at PEIR (May 2023) regarding potential disturbance to Holland Haven Marshes SSSI during construction. In particular, we note the proximity of the Temporary Construction Compound (TCC) to the SSSI and advise that suitable mitigation measures should be identified to avoid/minimise disturbance arising from noise and vibration, lighting, hydrological impacts, and pollution arising from a potential 'breakout' of drilling fluid etc. These measures should be documented in the mitigation plan. | Embedded mitigation relating to the TCC and landfall, which is in proximity to Holland Haven Marshes SSSI, is summarised in Table 24.5, and would form part of the final Environmental Management Plan.<br>Suitable screening would be erected for the duration of trenchless work at landfall, around the landfall compound, in order to reduce the likelihood of visual or noise disturbance to birds utilising Holland Haven Marshes SSSI and adjoining land.<br>An Outline Horizontal Directional Drill Method Statement and Contingency Plan has been submitted as part of the Project's DCO application (Document Reference: 7.15). This will provide assurance that reasonable steps will be |

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| | | | taken to minimise the risk of effects upon interest features of the Holland Haven Marshes SSSI as a result of a bentonite (an inert clay) 'break-out' during the landfall HDD beneath the SSSI and will include provision of an ECoW during landfall HDD. |

## 24.3 Scope

### 24.3.1 Study and survey areas

7. A detailed description of the onshore Project components is provided in ES Chapter 5 Project Description (Document Reference: 3.1.7).

8. The main onshore components of the Project, which collectively comprise the onshore project area, are:

   - Landfall;
   - Onshore cable route (and associated works); and
   - Onshore substation.

9. The study areas for onshore ornithology were agreed with stakeholders as part of the EPP on 24 August 2021 and are set out in Table 24.2 and shown in ES Figures 24.1 and 24.2 (Document Reference: 3.2.20). These are based on the extent of the onshore project area and its Project components, within which relevant impacts would be concentrated. Based on scientific evidence (e.g., Ruddock and Whitfield, 2007; Goodship & Furness, 2022) and professional judgement, the onshore ornithology study area includes a 400m buffer around the onshore project area, which is considered to be the uppermost spatial extent of potential disturbance-displacement impacts associated with any ornithological feature assessed in this ES chapter. The actual extent of potential impacts is likely to be species-specific, with some species experiencing smaller extents of potential impact than 400m from source.

10. For determining possible connectivity with designated sites, a larger 10km study area was used based on the maximum extents of foraging range for any SPA or SSSI species present within the onshore project area. In this case, the relevant species are white-fronted goose, which commonly forages up to 8km (Scottish Natural Heritage (SNH), 2018) and lapwing and golden plover which may make movements between fields 10km apart (Gillings & Fuller, 1999).

**Table 24.2 Study areas for onshore ornithology receptors**

| Ornithological Feature | Study area |
|---|---|
| Statutory designated sites | Designated sites that are located within, and up to 10km from, the onshore ornithology study area. This buffer is to take into consideration the maximum extent of foraging range for any SPA or SSSI species present within the onshore project area. |
| Breeding birds | Within and up to 400m of the onshore project area. |
| Non-breeding birds | Within and up to 400m of the onshore project area. |
| Cumulative assessment | Within 10km of the onshore project area. |

11. The survey areas (i.e., the areas where baseline field surveys were undertaken) have generally been based on a similar assumption of a 400m buffer around the planned onshore project area at the time of survey. Changes to survey areas have been required due to the onshore project area being refined during the course of the ornithology surveys and due to land access limitations at the time

of the surveys. Project refinements during the course of the ornithology field survey programme has resulted in some surveys being undertaken within larger areas that are now excluded from the onshore project area, but results have been included here for completeness. The data collected are therefore considered to be sufficient and relevant for the purposes of assessment.

12. Since non-breeding birds in particular may be mobile during survey periods, the landfall survey area (centred around Holland Haven Marshes SSSI) was demarcated into five manageable compartments (Compartments A-E), which are distinct geographical areas based on habitat type/field boundaries, and largely visible at the same time. This allowed peak counts per species, per survey to be made consistently within each Compartment. Compartments are shown on ES Figure 24.2 (Document Reference: 3.2.20) and referred to throughout the report.

13. Table 24.3 summarises the survey programme for each season and onshore Project component covered, as discussed with consultees through the EPP.

**Table 24.3 Spatial and temporal coverage of ornithology surveys**

| Survey Type | Onshore Project Component(s) covered | Focus of coverage | Survey period |
|---|---|---|---|
| Non-breeding bird surveys | Landfall (ES Figure 24.2 (Document Reference: 3.2.20)) | Holland Haven Marshes SSSI and surrounding coastal, wetland and agricultural habitats | October 2020 to March 2021<br>October 2021 to March 2022 |
| Breeding bird surveys | Landfall (ES Figure 24.2 (Document Reference: 3.2.20)) | | April to July 2021<br>April to July 2022 |
| Passage surveys | Landfall (ES Figure 24.2 (Document Reference: 3.2.20)) | | September 2020*<br>August and September 2021<br>August and September 2022 |
| Non-breeding bird surveys | Onshore cable route and onshore substation works area<br>(ES Figure 24.1 (Document Reference: 3.2.20)) | Functionally-linked land associated with nearby designated sites, in particular agricultural and wetland habitats used by species assemblages. | September 2021* to March 2022<br>October 2022 to March 2023 |
| Breeding bird surveys | Onshore cable route and onshore substation works area<br>(ES Figure 24.1 (Document Reference: 3.2.20)) | Habitats suitable for species of higher conservation value, e.g. wetlands, field margins. | April to August 2022 |

** Reconnaissance visit – records obtained during these visits are considered in results.*

### 24.3.2 Realistic worst-case scenario

14. The final design of the Project will be confirmed through detailed engineering design studies that will be undertaken post-consent. In order to provide a precautionary but robust impact assessment at this stage of the development process, realistic worst-case scenarios have been defined in terms of the likely significant effects that may arise. This approach to EIA, referred to as the Rochdale Envelope, is common practice for developments of this nature, as set out in Planning Inspectorate Advice Note Nine (2018). The Rochdale Envelope for a project outlines the realistic worst-case scenario for each individual impact, so that it can be safely assumed that all other scenarios within the design envelope will have less impact. Further details are provided in ES Chapter 6 EIA Methodology (Document Reference: 3.1.8).

15. The realistic worst-case scenarios relating to impacts scoped into the EIA for the onshore ornithology assessment are summarised in Table 24.4. These are based on Project parameters described in ES Chapter 5 Project Description (Document Reference: 3.1.7), which provides further details regarding specific activities and their durations.

16. The main grid connection options considered in the ES are outlined below:

- Option 1: Onshore electrical connection at a national grid substation connection point within the Tendring peninsula of Essex, with a Project alone onshore cable route and onshore substation infrastructure;
- Option 2: Onshore electrical connection at a national grid connection point within the Tendring peninsula of Essex, sharing an onshore cable route and onshore duct installation (but with separate onshore export cables) and co-locating separate Project onshore substation infrastructure with Five Estuaries; or
- Option 3: Offshore electrical connection, provided by a third party.

17. Grid connection Option 2 is considered the realistic worst-case scenario adopted for the assessment of impacts to ornithology features, because the build out requires four sets of cable ducts and associated joint bays to be installed, impacting upon the largest footprint of the three grid connection options.

18. Under Option 2, the Project's onshore infrastructure comprises the following elements:

- Landfall, where the offshore export cables are brought ashore;
- Onshore cable route, which includes space for temporary works for the installation of cable ducts and buried onshore export cables, including areas for temporary construction compounds (TCCs), construction and operation and maintenance accesses (including Bentley Road improvement works);
- Onshore substation, proposed to be located west of Little Bromley;
- Onshore substation works area, which includes land required for temporary construction, export cables, means of access, drainage, landscaping and environmental mitigation for the onshore substation;

- The search area for the East Anglia Connection Node (EACN) (the Project's national grid connection point), within which will be located the Project's national grid substation connection works.

19. Collectively, the footprint of the Project's onshore infrastructure is referred to herein as the 'onshore project area', and is shown on ES Figure 5.2 (Document Reference: 3.2.3). The Project's onshore infrastructure outlined above is proposed to be located entirely within the Tendring peninsula of Essex.

**Table 24.4 Realistic worst-case scenarios of effects arising from development of North Falls alone – Option 2 (installation of ducts for a second project).**

| Element of the Project infrastructure | Parameter | Notes |
|---|---|---|
| **Construction** | | |
| Impacts relating to the landfall | 'Landfall' refers to the area between MLWS and location at which the offshore export cables are brought ashore and connected to the onshore export cables within transition joint bays. Cable ducts to house the cables are proposed to be installed at landfall using HDD methodology.<br>Landfall HDD (temporary works) physical parameters:<br>Maximum No. of Transition Joint Bays (TJB) = 2<br>Individual TJB dimensions / permanent landtake = 4 x 15m<br>Maximum indicative HDD spacing onshore = 40m<br>Maximum HDD depth = 20m<br>Maximum indicative length of HDD = 1.1 km<br>HDD temporary works area = 75 x 150m<br>Drill exit location = subtidal exit below MHWS (up to 8m depth) | Duration includes compound establishment, HDD, transition bays, and reinstatement. |
| | Duration:<br>13 months (of which HDD = 6 months)<br>HDD to include 24 hour / 7 days working where required. | |
| Impacts relating to the onshore cable route | Onshore cable route, between 72 – 130m wide and including space for temporary works for the installation of cable ducts and the installation of onshore export cables, including areas for temporary construction compounds (TCCs), construction and operation and maintenance accesses.<br><br>Cable route construction physical parameters:<br>Route length = up to 24km<br>Jointing bays = Up to 192 (approximately every 500m) buried below ground | Overall duration includes establishing / reinstating temporary construction compounds (TCCs) and haul roads, cable installation (trench excavation, duct installation, cable jointing), trenchless techniques (includes compound establishment and reinstatement). |

| Element of the Project infrastructure | Parameter | Notes |
|---|---|---|
| | Joint bay dimensions = 4 x 15m<br>Maximum cable trench depth = 2m<br>Minimum cable burial depth = 0.9m<br>Indicative cable route width = 72m (open cut trenching), 90m (trenchless crossings), 130m (complex trenchless crossings)<br>Cable construction compound dimensions = 150 x 150m (main) to 100 x 100m (satellite)<br>Number of temporary construction compounds (est.) = 11<br>No. of trenches = 4<br>Cable trench dimensions = 3.75 – 1.2 x 2m (tapered top to bottom)<br>Haul road width = 6m wide road, 10m wide total including verges, drainage and passing places.<br>Haul road spacing at passing places = 500m<br>Hedge replanting restrictions = shrubs max 5m high within 6m of each cable centre i.e. 37m swathe in which only shrubs can be planted. | |
| | Trenchless crossings physical parameters:<br>Maximum width of buried cable = 130m<br>HDD compound dimensions = 75 x 150m | |
| | Durations:<br>Bentley road improvement works = 6 – 9 months<br>Cable route works = 18 – 27 months<br>Cable installation = 12 months<br>Major HDD (each location) = 8 months (of which HDD = 4 months)<br>Minor HDD crossings = 2 months | |

| Element of the Project infrastructure | Parameter | Notes |
|---|---|---|
| | Major HDD crossings to include 24 hour / 7 days working where required. | |
| Impacts relating to the onshore substation | This refers to the onshore substation, proposed to be located west of Little Bromley; and onshore substation works area, which includes land required for temporary construction, incoming and outgoing export cables access, drainage, landscaping, environmental mitigation.<br>Onshore substation (temporary works) physical parameters:<br>Indicative area of the AIS substation = 280 x 210m<br>Construction compound footprint = 250 x 150m | |
| | Durations:<br>Onshore substation construction duration = 21 – 27 months. | |
| Impacts relating to the national grid substation connection works | Works within the search area for the East Anglia Connection Node (EACN) (the Project's national grid substation connection point).<br>National grid have identified a search area within which they anticipate their new substation will be located. This is the hatched highlighted area illustrated on ES Figure 5.2 (Document Reference: 3.2.3), within the North Falls onshore project area. At this stage national grid have not confirmed the proposed location of the substation within this search area, nor any information regarding the parameters of the substation. The assessment is therefore based on a realistic worst-case scenario using data collected for the Project.<br>Works delivered by North Falls to connect to the national grid (the 'national grid substation connection works') are anticipated to include:<br>400kV cable installation works between the onshore substation and the national grid substation connection point, as described above.<br>Installation of new equipment within the national grid substation connection point, which may include: | |

| Element of the Project infrastructure | Parameter | Notes |
|---|---|---|
| | Cable sealing ends, surge arrestors, earth switch, disconnectors, circuit breakers, current transformers, voltage transformers, busbars.<br>All enabling works / platform constructed by national grid. | |
| Impacts relating to Bentley Road improvement works | The upgrade works entail the following:<br>Improvements to the turn-off from the A120;<br>Widening of the carriageway to 6.5m along the length of Bentley Road from the A120 to the new construction access to the west off Bentley Road;<br>Creation of a new, temporary segregated non-motorised user route along the length of Bentley Road from the A120 to the new construction access to the west off Bentley Road (if required).<br>These works are proposed to be serviced using TCCs already required for the onshore cable route. | |
| **Operation** | | |
| Impacts relating to the onshore cable route | Cable route operational physical parameters:<br>No. of link boxes = up to 96<br>Link box footprint (per box) = 0.6 x 1 x 1.5m<br>Cross-sectional area of buried cement-bound sand = 0.6m$^2$ | |
| Impacts relating to the onshore substation | Onshore substation physical parameters:<br>Permanent substation footprint = 280 x 210m<br>Maximum structure height = 18m (lightning rods)<br>Maximum equipment height = 13m (switchgear)<br>Maximum building height = 7m$^2$ | The onshore substation would not be manned; however access would be required periodically for routine maintenance activities. Normal operating conditions would not require lighting at the onshore substation, although low level movement detecting security lighting may be utilised for health and safety purposes. Temporary lighting during working hours would be provided during maintenance activities only. Further details are provided within the Outline Code of Construction Practice (OCoCP) (Document Reference: 7.13).<br>Low level continuous noise emissions would also be generated by the onshore substation during operation. |

| Element of the Project infrastructure | Parameter | Notes |
|---|---|---|
| **Decommissioning** | | |
| No final decision has yet been made regarding the final decommissioning policy for the onshore Project infrastructure including landfall, onshore cable route, 400kV cable route and onshore substation. It is also recognised that legislation and industry good practice change over time. However, it is likely that the onshore Project equipment, including the cable, will be removed, reused, or recycled where practicable and the transition bays and cable ducts being left in place. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator. It is anticipated that for the purposes of a worst case scenario, the impacts will be no greater than those identified for the construction phase. | | |

### 24.3.3 Summary of mitigation embedded in the design

20. This section outlines the embedded mitigation relevant to the onshore ornithology assessment, which has been incorporated into the Project design (Table 24.5). Where additional mitigation measures are proposed, these are detailed in the impact assessment (Section 24.6), where applicable.

**Table 24.5 Embedded mitigation measures.**

| Parameter | Mitigation measures embedded into North Falls design |
|---|---|
| Ecological Management Plan | NFOW is a joint venture between SSE Renewables Offshore Windfarm Holdings Limited (SSER) and RWE Renewables UK Swindon Limited (RWE). Prior to works commencing, NFOW will prepare a final EMP setting out full details of the ecological mitigation measures which will be adhered to during the Project's construction. This will include:<br>• A programme of works;<br>• A list of roles and responsibilities for ecological mitigation, including the role of an ECoW, and any suitably qualified ornithologist;<br>• A plan showing ecological and ornithological constraints;<br>• Full details of good industry practice mitigation in relation to all species and habitats affected by the Project;<br>• Full details of any Project-specific mitigation identified within this chapter, including habitat creation or species-specific mitigation programmes. Any such programmes will be accompanied by mitigation layout plans as applicable;<br>• If considered necessary, a list of Schedule 1 bird species' licences and site consents required to facilitate construction;<br>• Habitat reinstatement method statements for all habitats proposed to be reinstated following the completion of construction (including grassland, hedgerows, watercourses, arable crops and arable field margins – see below).<br>• Any associated standalone mitigation plans, e.g., Bird Disturbance Management Plan (or similar).<br>As part of the Project's DCO application, the OLEMS (Document Reference: 7.14) sets out the ecological and ornithological mitigation requirements identified within the ES that must be incorporated into the EMP for delivery during the Project's construction phase.<br>The OLEMS acts as the single source for all ecological and ornithological mitigation measures proposed within the ES. |
| Good practice Measures | The EMP will include details of good practice for minimising impact to notable habitats and legally protected and notable species, including (but not limited to) the following:<br>• Avoid sensitive times of the year for construction activities, including:<br>○ Avoid undertaking vegetation removal during the bird nesting season (March – August inclusive, although weather dependent) where practicable. Where this cannot be achieved, a pre-construction check of all nesting habitat is required no more than 48 hours prior to removal. Should a nest be found, a buffer zone (minimum 5m, species-dependent) around the nest must be created, and no works must be undertaken within the buffer zone until the young have fledged and/or nest is no longer active. For Schedule 1 listed bird species, further mitigation measures may be required to avoid disturbance to breeding adults, as advised by the ECoW or ornithological expert.<br>• Undertaking pre-construction checks of all habitats identified of being of conservation importance prior to works, to ensure that the ecological/ornithological constraints identified prior to consent have not changed.<br>• Ensuring security lighting used during construction adheres as far as practicable to accepted lighting guidance: |

| Parameter | Mitigation measures embedded into North Falls design |
|---|---|
| | ○ Ensure lighting is cowled and angled downwards and does not shine directly on sensitive habitats;<br>○ Ensure lighting is motion activated to minimise unnecessary lighting;<br>• Ensuring good practice pollution prevention measures are adhered to at all times to minimise the risk of pollutant release to sensitive habitats (see also ES Chapter 21 Water Resources and Flood Risk (Document Reference: 3.1.23)).<br>• Best Practicable Means (BPM) to be employed during construction to limit dust, odour, and exhaust emissions during construction works, to reduce likely significant effects upon air quality-sensitive habitat (see ES Chapter 20 Onshore Air Quality (Document Reference: 3.1.22)).<br>• All habitats temporarily disturbed during construction are reinstated in full where practicable upon completion of construction. |
| Mitigation by site selection | The onshore project area and onshore substation location have been defined following an extensive site selection process, which has sought to take account of environmental, engineering, planning and land requirements to seek to identify and avoid where practicable sensitive environmental features. The site selection process is described in detail in ES Chapter 4 Site Selection and Assessment of Alternatives (Document Reference: 3.1.6). The site selection process has included consideration of the following ecological and ornithological criteria as part of the process:<br>• Avoidance of statutory and non-statutory designated sites for conservation and associated buffer zones for indirect effects, as far as practicable;<br>• Where practicable, avoidance of FLL which has been identified as being of relatively higher importance for SPA qualifying features;<br>• Avoidance of ancient woodland and associated buffer zones for indirect effects, as far as practicable;<br>• Avoidance of UK Habitats of Principal Importance (UKHPI) as far as practicable;<br>• Avoidance of habitat potentially suitable for supporting legally protected and notable species as far as practicable;<br>As part of this process, the onshore project area presented in ES Chapter 5 Project Description (Document Reference: 3.1.7) does not overlap with any European sites designated for nature conservation nor ancient woodlands. The onshore project area does cross Holland Haven Marshes SSSI. However, the SSSI will be crossed using HDD techniques thereby avoiding any direct impacts on habitats (see below). During route refinements, the location of the crossing was carefully selected to avoid sensitive parts of Holland Haven Marshes SSSI for the breeding and non-breeding bird assemblages, e.g., the lagoon and adjacent wetland areas. |
| Mitigation by construction method selection | North Falls has committed to seeking to use trenchless techniques (e.g., HDD) where practicable at all key sensitive linear features, including the following:<br>• All 'important' hedgerows;<br>• Main Rivers and watercourses;<br>• Veteran trees;<br>• Woodland UKHPI;<br>• Ponds UKHPI.<br>At this stage in the Project's design trenchless techniques cannot be committed to at all locations, where the engineering feasibility of using such techniques needs further assessment before it can be confirmed. The list of techniques being considered at each crossing is described in ES Chapter 5 Project Description (Document Reference: 3.1.7), ES Appendix 5.1 Crossing Schedule (Document Reference: 3.3.2). |
| | At all trenched watercourse crossings, good industry practice measures will be in place to minimise disturbance of the beds, banks and downstream habitats (see ES Chapter 21 Water Resources and Flood Risk (Document Reference: 3.1.23). Where temporary dams are used: |

| Parameter | Mitigation measures embedded into North Falls design |
|---|---|
| | • The onshore export cables would typically be a minimum of 3 m below the channel bed (dependent on local geology and geomorphological risks). This would avoid exposure during periods of higher energy flow when the bed could be mobilised. This depth takes into consideration anticipated climate-change related changes in fluvial flows and erosion that will occur over time;<br>• The amount of time that temporary dams or flumes are in place will be kept to a reasonably practicable minimum;<br>• Flumes or pumps would be adequately sized to ensure that flows downstream are maintained whilst minimising upstream impoundment;<br>• Scour protection would also be used to protect the river bed downstream of the dam from high energy flow at the outlets of flumes and pumps;<br>• If a diversion channel is required, geotextiles or similar techniques will be used to line the channel and prevent sediment entering the watercourse;<br>• Vegetation would not be removed from the banks unless necessary to undertake the works, in which case removal would be restricted to the smallest practicable footprint;<br>• Channel bed and banks would be sympathetically reinstated (e.g. by replacing re-sectioned banks with more natural profiles that are typical of the natural geomorphology of the watercourse); and<br>• Prior to dewatering the area between the temporary dams, a fish rescue would be undertaken. |
| HDD Method Statement and Draft Contingency Plan | As advised by Natural England during the EPP, an HDD Method Statement and Draft Contingency Plan (Document Reference: 7.15) has been submitted with the Project's DCO application. This outline plan sets out the steps will be taken to minimise the risk of effects upon interest features of the Holland Haven Marshes SSSI as a result of a bentonite, an inert clay, 'breakout' during the landfall HDD beneath the SSSI, including the provision of an ECoW during landfall HDD. It details both the measures proposed to reduce the risk of a breakout occurring, and the contingency plans steps to reduce the extent of the breakout and to clean up the spill should it occur. In summary, these steps include:<br>• Pre-drilling ground conditions assessment and hydrofracture modelling to target formations with lower risk of breakout;<br>• Use of drill casing in softer, surface deposits;<br>• Constant fluid monitoring during drilling, so that a breakout can be identified as soon as it occurs;<br>• Provision of appropriate spill management supplies and staff training on breakout management on site;<br>• Process of containment and spill removal once a spill has been identified.<br>Please refer to the Outline Horizontal Directional Drill Method Statement and Contingency Plan (Document Reference: 7.15) for full details of the measures proposed. |
| Mitigation by design | NFOW has committed to reduce the onshore cable route working width to 30m at hedgerow crossings where open cut trenching is proposed, to minimise the amount of hedgerow removal required. This will be achieved by not including the topsoil/subsoil storage bunds in the onshore cable route working width at hedgerow crossings. Hedgerows will be replanted in situ following construction but note that canopy tree species cannot be replanted within 6m of the buried cables, which will restrict tree planting for a 37m swathe during hedgerow reinstatement (as the maximum width of |

| Parameter | Mitigation measures embedded into North Falls design |
|---|---|
| | hedgerow removal is 30m, in practice this restriction will only apply for a maximum 30m swathe).<br><br>Hedgerow planting would be undertaken in the first winter season following construction.<br><br>Suitable screening would be erected for the duration of HDD work at landfall, around the landfall compound, in order to reduce the likelihood of visual or noise disturbance to birds utilising Holland Haven Marshes SSSI and adjoining land. Further information will be included within the EMP developed post-consent, secured by DCO Requirement.<br><br>To avoid potentially significant disturbance effects to SSSI/SPA qualifying features using functionally-linked land within the onshore project area, suitable temporary screening may be erected around any other discrete locations of importance for birds (for example a particular agricultural reservoir used by green sandpipers), for the duration of onshore works within a specified area of possible disturbance, as determined by an ECoW or suitably qualified ornithologist (where required). The requirements for restrictions would be informed by pre-construction surveys and may be seasonal, and therefore screening would only be erected should nearby works overlap with key periods for birds recorded utilising such locations. |
| Habitat reinstatement | As noted above, where practicable all habitats subject to temporary disturbance during construction, will be reinstated in full following the completion of construction. The specific details of the reinstatement will be set out within the EMP for each habitat. The following core principles for habitat reinstatement would be included within the EMP:<br><br>**Grassland habitats**<br><br>All topsoil stripped in grassland areas would be stored separately and reinstated following the completion of construction. Topsoil storage would be subject to a Soil Management Plan (secured by DCO Requirement), which would also detail measures for soil storage and handling. Grassland reseeding would be undertaken using a local seed mix, to be agreed in advance with Natural England and Essex Wildlife Trust.<br><br>Where practicable, harvesting a green hay crop from the grassland areas being lost will be carried out, for use as seed on the reinstatement and compensation areas. Where practicable the salvage of turves from grasslands areas being lost will be carried out for re-use on the reinstatement and compensation areas.<br><br>**Trees and hedgerows**<br><br>As advised by Essex County Council during the EPP, all tree and shrub planting undertaken by NFOW will be subject to an up to 10-year after care period.<br><br>As advised by Natural England during the EPP, all hedgerows within the onshore project area not removed for construction to be allowed, where practicable, to thicken up during construction and operation to facilitate use as feeding and commuting corridors for wildlife.<br><br>All reinstated hedgerows will be replanted using locally important and native species, as advised by Essex Wildlife Trust. Pre-planting will be carried out where practicable within the onshore substation works area so hedgerows and trees can establish as close as possible to the time of initial habitat loss.<br><br>**Arable field margins**<br><br>Efforts will be made to reinstate this habitat, in consultation with Essex Wildlife Trust and the local landowner, to ensure the optimum benefits can be gained from each margin affected. Prior to construction, the arable field margins will be re-surveyed to assess their conservation value. Attempts will then be made to ensure habitat |

| Parameter | Mitigation measures embedded into North Falls design |
|---|---|
| | reinstatement takes the form of one of the following (Joint Nature Conservation Committee (JNCC, 2008f):<br>• Cultivated, low-input margins (land managed specifically to create habitat for rare annual arable plants);<br>• Margins sown to provide seed for wild birds (margins or blocks sown with plants that are allowed to set seed and which remain in place over the winter);<br>• Margins sown with wildflowers or agricultural legumes and managed to allow flowering to provide pollen and nectar resources for invertebrates;<br>• Margins providing permanent, grass strips with mixtures of tussocky and fine-leaved grasses.<br>The precise nature of the reinstatement will be based on agreement with landowners made post-consent and detailed in the final EMP.<br>Effort would also be made to determine whether it is possible to create suitable habitat for turtle doves, e.g., tall scrub and dense hedgerow, taking into consideration current good practice advice from sources such as Operation Turtle Dove.<br>All planned mitigation will be site-specific and seek to provide maximum benefit for the local environment. |
| Biodiversity Net Gain (BNG) | NFOW is exploring opportunities to deliver biodiversity net gain for the onshore elements of the Project. The biodiversity net gain delivered would be determined following completion of the latest version of the Defra Biodiversity Metric (currently version 4.0), an indicative version of which has been provided as part of the DCO application (Document Reference: 7.22). As part of this, environmental enhancement is proposed to be included within the onshore substation landscaping design, an outline version of which is provided in ES Figure 30.1.6 (Document Reference: 3.2.26). |

## 24.4 Assessment methodology

### 24.4.1 Legislation, guidance and policy

#### *24.4.1.1 National Policy Statements*

21. The assessment of likely significant effects upon onshore ornithological features has been made with specific reference to the relevant legislation and guidance, of which the principal policy documents with respect to the Nationally Significant Infrastructure Projects (NSIPS) are the NPS.

22. Those NPSs relevant to the Project are:

- Overarching NPS for Energy (EN-1) (Department for Energy Security and Net Zero (DESNZ) November 2023a);
- NPS for Renewable Energy Infrastructure (EN-3) (DESNZ, 2023b); and
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2023c).

23. The specific assessment requirements for onshore ornithology, as detailed in the NPS, are summarised in Table 24.6 together with an indication of the section of the ES chapter where each is addressed.

**Table 24.6 NPS assessment requirements.**

| NPS Requirement | NPS Reference | ES Reference |
|---|---|---|
| **Overarching NPS for Energy (EN-1)** | | |
| 'Where the development is subject to EIA, the applicant should ensure that the ES clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance (including those outside England), on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats.<br>The applicant should provide environmental information proportionate to the infrastructure where EIA is not required to help the Secretary of State consider thoroughly the likely significant effects of a proposed project.' | Sections 5.4.17 and 5.4.18 | Potential impacts on internationally, nationally and locally designated sites with ornithological features, and on other species identified as being of principal importance for the conservation of biodiversity are considered in Section 24.6. |
| 'The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.' | Section 5.4.19 | Embedded mitigation measures are provided in Section 24.3.3 and where applicable, additional mitigation measures are outlined in Section 24.6. |
| '…the design process should embed opportunities for nature inclusive design. Energy infrastructure projects have the potential to deliver significant benefits and enhancements beyond Biodiversity Net Gain, which result in wider environmental gains.' | Section 5.4.21 | Site selection decisions and embedded mitigation measures have sought to minimise impacts to features of biodiversity, including birds.<br>Embedded mitigation measures are provided in Section 24.3.3 and where applicable, further mitigation measures are outlined in Section 24.6. |
| 'Many SSSIs are also designated as sites of international importance and will be protected accordingly. Those that are not, or those features of SSSIs not covered by an international designation, should be given a high degree of protection. Most National Nature Reserves are notified as SSSIs.' | Section 5.4.7 | Designated sites are presented in Section 24.5.1. Note that SPAs are considered in the Project's HRA Screening Report and RIAA (Document Reference: 7.1.5), published alongside this ES.<br>Site selection decisions have been made to seek to minimise impacts to interest features within designated sites. |
| 'Development on land within or outside a SSSI, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits (including need) of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of SSSIs.' | Section 5.4.8 | Designated sites are presented in Section 24.5.1.<br>Site selection decisions have been made to seek to minimise impacts to interest features of designated sites, including the avoidance of a construction footprint within the Holland Haven Marshes SSSI, and all other designated sites. |
| 'Sites of regional and local biodiversity and geological interest, which include Regionally Important Geological Sites, Local Nature | Section 5.4.12 | Designated sites are presented in Section 24.5.1. |

| NPS Requirement | NPS Reference | ES Reference |
|---|---|---|
| Reserves and Local Wildlife Sites, are areas of substantive nature conservation value and make an important contribution to ecological networks and nature's recovery. They can also provide wider benefits including public access (where agreed), climate mitigation and helping to tackle air pollution.<br>National planning policy expects plans to identify and map Local Wildlife Sites, and to include policies that not only secure their protection from harm or loss but also help to enhance them and their connection to wider ecological networks. | | Site selection decisions have been made to seek to minimise impacts to interest features of designated sites, including the avoidance of a construction footprint within the Holland Haven LNR, and all other designated sites. |
| 'Many individual species receive statutory protection under a range of legislative provisions. Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales, as well as for their continued benefit for climate mitigation and adaptation and thereby requiring conservation action.' | Section 5.4.16 | Baseline information on the presence and distribution of Schedule 1 species and other target species of higher conservation value within the onshore project area is provided in Section 24.5 and the outcome of the assessment process is provided in Section 24.6. |
| Applicants should include appropriate avoidance, mitigation, compensation and enhancement measures as an integral part of the proposed development. In particular, the applicant should demonstrate that:<br>• during construction, they will seek to ensure that activities will be confined to the minimum areas required for the works<br>• the timing of construction has been planned to avoid or limit disturbance<br>• during construction and operation good practice will be followed to ensure that risk of disturbance or damage to species or habitats is minimised, including as a consequence of transport access arrangements<br>• habitats will, where practicable, be restored after construction works have finished • opportunities will be taken to enhance existing habitats rather than replace them, and where practicable, create new habitats of value within the site landscaping proposals. Where habitat creation is required as mitigation, compensation, or enhancement, the location and quality will be of key importance. In this regard habitat creation should be focused on areas where the most ecological and ecosystems benefits can be realised.<br>• mitigations required as a result of legal protection of habitats or species will be complied with. | Section 5.4.35 | Embedded mitigation measures are presented in Section 24.3.3. Mitigation measures associated with potential impacts are presented in Section 24.6. |
| **NPS for Renewable Energy Infrastructure (EN-3)** | | |
| 'Proposals for renewable energy infrastructure should demonstrate good design in respect of | Section 2.4.2 | Project design has avoided sensitive features where practicable. Embedded |

| NPS Requirement | NPS Reference | ES Reference |
|---|---|---|
| landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology.' | | mitigation measures are presented in Section 24.3.3 and further mitigation measures are set out in Section 24.6. |
| 'Ecological monitoring is likely to be appropriate during the construction and operational phases to identify the actual impact so that, where appropriate, adverse effects can then be mitigated and to enable further useful information to be published relevant to future projects.' | Section 2.6.71 | Monitoring during construction is set out in Sections 24.3.3 and 24.7 and further mitigation measures are set out in Section 24.6. |
| 'There may be some instances where it would be more harmful to the ecology of the site to remove elements of the development, such as the access tracks or underground cabling, than to retain them.' | Section 2.7.15 | Decommissioning is discussed in Section 24.6.4. |
| **NPS for Electricity Networks Infrastructure (EN-5)** | | |
| 'The applicant will need to consider whether the proposed line will cause such problems at any point along its length and take this into consideration in the preparation of the EIA and ES (see Section 4.2 of EN-1).<br>Particular consideration should be given to feeding and hunting grounds, migration corridors and breeding grounds.' | Section 2.95 to 2.96 | Embedded mitigation measures are presented in Section 24.3.3. Mitigation measures associated with potential impacts are presented in Section 24.6. |

#### *24.4.1.2 Other legislation, policy and guidance*

24. In addition to the NPS, the following additional key pieces of legislation, policy and guidance have also been referred to during assessment and preparation of this chapter:

- The Council Directive 2009/147/EC on the Conservation of Wild Birds ('the Birds Directive');
- The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora ('the Habitats Directive');
- The Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations 2017');
- Wildlife and Countryside Act 1981 (as amended);
- Natural Environment and Rural Communities (NERC) Act 2006;
- Marine and Coastal Access Act 2009;
- The Commons Act 2006;
- Countryside and Rights of Way Act 2000 (CRoW);
- National Planning Policy Framework (NPPF);
- HM Government (2011) The Natural Environment White Paper, The Natural Choice: securing the value of nature; and,

- Defra (2011) Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services.

25. Further detail is provided in ES Chapter 3 Policy and Legislative Context (Document Reference: 3.1.5).

### 24.4.2 Data sources

#### *24.4.2.1 Site specific*

26. To provide information on the baseline bird assemblage on which the impact assessment is based, a range of ornithological field surveys were conducted within the onshore project area between September 2020 to March 2023.

27. Apart from where stated below, these surveys were undertaken by MacArthur Green twice each month within the whole survey area applicable at the time of survey (where access permitted), and comprised:

- Non-breeding season walkover surveys covering the landfall from September to March in 2020-21 and October to March in 2021-22;
- Non-breeding season walkover surveys covering the onshore cable route and onshore substation works area from October to March 2021-22 and 2022-23;
- Autumn post-breeding and passage walkovers covering the landfall in August and September 2021 and 2022 (once per month);
- Breeding bird surveys covering the landfall from April to July 2021 and 2022; and
- Monthly breeding bird surveys covering the onshore cable route and onshore substation works area from April to August 2022, including hobby vantage point surveys, turtle dove surveys and barn owl nest/roost surveys (undertaken by MKA Ecology and Ecology Resources on behalf of the Five Estuaries project).

28. The scope and methodology of these surveys were discussed with the Onshore Ecology and Ornithology ETG during consultation as part of the EPP.

29. Detailed methods for each survey programme are presented in Appendices 24.1 to 24.8 (Volume 3.3).

30. Target species for breeding bird surveys included all those of high conservation concern listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), Annex I of the European Union (EU) Birds Directive, all nearby SPA and SSSI qualifying features and/or rare, Red-listed species in the Birds of Conservation Concern (BoCC) (Eaton *et al*. 2015, superseded by Stanbury *et al*. 2021). For MacArthur Green surveys, only tally counts were made of all other more common species to allow surveyors to concentrate effort on recording presence of target species.

31. Target species for non-breeding season surveys included all wildfowl, wader and raptor species, although any other species of high conservation concern were also recorded. In some cases, seabirds were recorded from land, but these were not considered as target species unless they were recorded utilising the

survey area. Tally counts were made of these and all other more common species.

#### *24.4.2.2 Other available sources*

32. To inform the scope and methods of the ornithological surveys, the following desk-based data were obtained (Table 24.7):

**Table 24.7 Other available data and information sources.**

| Data source | Data Set | Spatial Coverage | Year |
|---|---|---|---|
| Natural England, Joint Nature Conservancy Council (JNCC) and MAGIC websites | Statutory designated sites (SPA, Ramsar, SSSI, LNR, National Nature Reserve (NNR)). | Within 10km of the onshore project area. | 2020 (prior to surveys) and 2024 |
| British Trust for Ornithology (BTO) Wetland Bird Survey (WeBS) | Monthly Core Counts for target non-breeding species | Core Count sectors:<br>Holland Marshes and those associated with Hamford Water, Stour Estuary and Colne Estuary | 2017/18 to 2021/22 (variable coverage depending on sector) |
| Essex Birdwatching Society website | Casual records and distribution maps | Various locations across Essex | Various up to 2024 |

### 24.4.3 Impact assessment methodology

33. ES Chapter 6 EIA Methodology (Document Reference: 3.1.8) explains the general impact assessment methodology applied to the Project. The following sections here describe the methods used to assess the likely significant effects on onshore ornithology through the process of an evaluation of sensitivity (a combination of nature conservation importance and regional conservation status) and magnitude of impact on ornithological features for each identified impact.

34. The assessment methodology that has been applied in relation to onshore ornithology is based on the '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine'*, version 1.2 (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018), and in the absence of similar guidance published for England, NatureScot's guidance on '*Assessing the significance of impacts on bird populations from onshore wind farms guidance'* (SNH, 2018), which contains many aspects on assessment mechanisms that are relevant to the Project. The methodology was consulted on with stakeholders through the ETG process.

35. The evaluation for onshore ornithological features involves the following process:

- Identifying the potential impacts of the Project;
- Considering the likelihood of occurrence of potential impacts;
- Defining the nature conservation importance and conservation status of the bird populations present to establish an overall level of sensitivity;
- Establishing the magnitude of the likely impact (considering extent, duration and reversibility);

- Using the above information, to reach an evidence-based judgement as to whether or not the resultant effect is significant with respect to the EIA Regulations;
- If a potential effect is determined to be significant, suggesting measures to mitigate or compensate the effect where required;
- Considering opportunities for enhancement where appropriate; and
- Confirming residual effects after mitigation, compensation or enhancement are considered.

36. Each of these steps are set out in the remainder of this section.

#### *24.4.3.1 Definitions*

37. The CIEEM guidelines (2018) aim to predict the residual effects of an impact on IOFs, either directly or indirectly, once all the appropriate mitigation has been implemented.

38. For each potential impact, the assessment identifies IOFs recorded within onshore ornithology study area which are sensitive to that impact and implements a systematic approach to understanding the impact pathways and the level of impacts (i.e., magnitude) on given IOFs. The definitions of sensitivity and magnitude for the purpose of the onshore ornithology assessment are provided in Table 24.8.

##### 24.4.3.1.1 Sensitivity

39. Determination of the level of sensitivity of a feature is based on a combination of the feature's nature conservation importance and its reference population conservation status, described in the sections below. Overall sensitivity level is driven primarily by nature conservation importance, but is influenced by conservation status, e.g. if a medium sensitivity species' population is in unfavourable condition, this would raise the sensitivity to 'medium-high'.

**Table 24.8 Definition of nature conservation importance for ornithological features.**

| Importance | Definition |
|---|---|
| **High** | Populations receiving protection as a feature of an SPA, Ramsar Site, SSSI or which would otherwise qualify under selection guidelines.<br>Species present in nationally important numbers (>1% national breeding population). |
| **Medium** | The presence of breeding species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).<br>The presence of species listed in Annex 1 of the Birds Directive (but population does not meet the designation criteria under selection guidelines).<br>The presence of target species individual(s) noted on the latest BoCC Red list due to their inherent rareness in the UK (<300 breeding pairs, or <900 wintering individuals), but not in numbers reaching national importance.<br>Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the Project (not in numbers reaching national importance).<br>Species present in regionally important numbers (>1% regional breeding population).<br>Species listed as occurring within a NNR or LNR. |
| **Low** | All other species' populations not covered by the above categories. |

40. Target species taken forward for assessment in Section 24.6 are recorded species of Medium or High nature conservation importance (or otherwise requested by consultees, see Table 24.1) and are considered as the IOFs.

41. The concept of conservation status of a species has been defined by CIEEM (2018) guidance as "*the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area*."

42. The guidance further states that "*When assessing potential effects on conservation status, the known or likely background trends and variations in status should be taken into account. The level of ecological resilience or likely level of ecological conditions that would allow the population of a species or area of habitat to continue to exist at a given level, or continue to increase along an existing trend or reduce a decreasing trend, should also be estimated.*"

43. In the absence of similar guidance published for England, NatureScot good practice guidance in the assessment of onshore wind farms (SNH, 2018) suggests that conservation status is considered 'favourable' under the following circumstances:

- *"Population dynamics indicate that the species is maintaining itself on a long-term basis as a viable component of its habitats;*
- *The natural range of the species is not being reduced, nor is likely to be reduced for the foreseeable future; and*
- *There is (and probably will continue to be) a sufficiently large habitat to maintain its population on a long-term basis".*

44. The guidance further recommends that "*An impact should therefore be judged as of concern where it would adversely affect the existing favourable conservation status of a species or prevent a species from recovering to favourable conservation status*".

45. In the case of breeding species populations not associated with designated sites, the relevant scale for assessment is considered to be the regional (Essex) population, unless there is a more appropriate geographical population extent, e.g. for reintroduced species. For wintering or migratory species, the national UK population is often considered to be the relevant scale for determining impacts on the conservation status and this approach is applied here unless noted, for example when assessing impacts on specific designated sites.

#### 24.4.3.1.2 Magnitude

46. An impact is defined as a change of a particular magnitude to the abundance and/or distribution of a population as a result of the Project. Impacts can be adverse, neutral or beneficial.

47. Impacts are judged in terms of extent of impact on a given species' population, and its duration. There are five levels of extent impacts, and three durations of temporal impacts as detailed in Table 24.9 and Table 24.10 respectively.

48. In determining the magnitude of impacts, the resilience of a population to recover from temporary adverse conditions is considered in respect of each potentially affected population (its reversibility, as per CIEEM, 2018 guidance).

**Table 24.9 Definition of extent of impacts for onshore ornithology**

| Magnitude | Definition |
|---|---|
| **Very High** | Total/near total loss of a bird population due to mortality or displacement. Total/near total loss of productivity in a bird population due to disturbance. . |
| **High** | Major reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. |
| **Medium** | Partial reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. |
| **Low** | Small but discernible reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. |
| **Negligible** | Very slight reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Reduction barely discernible, approximating to the "no change" situation. |

**Table 24.10 Definition of temporal impacts for onshore ornithology**

| Duration | Definition |
|---|---|
| **Long-term** | Impacts which occur over more than two breeding or wintering seasons. |
| **Medium-term** | Impacts which occur over one to two breeding or wintering seasons, i.e. typically impacts which occur over a matter of months or up to two years. |
| **Short-term** | Impacts which at most occur over up to one breeding or wintering season, i.e. typically impacts which occur over a matter of days, weeks or months. |

#### *24.4.3.2 Significance of effect*

49. The significance of the effect is determined through a standard method of assessment based on a review of evidence and professional judgement, considering both sensitivity of IOF, and magnitude of impact (based on extent and duration) as detailed in Table 24.11 and Table 24.12.

50. Should major or moderate effects be identified within the assessment, these would be regarded within this chapter as significant. Should the assessment indicate any likely significant effect, mitigation measures would be identified, where possible, in consultation with the regulatory authorities and relevant stakeholders. The aim of mitigation measures is to avoid or reduce the overall significance of effect to determine a residual effect upon a given receptor.

**Table 24.11 Significance of effect matrix.**

| | | Adverse magnitude | | | Beneficial magnitude | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | High | Medium | Low | Negligible | Negligible | Low | Medium | High |
| Sensitivity | High | Major | Major | Moderate | Minor | Minor | Moderate | Major | Major |
| | Medium | Major | Moderate | Minor | Minor | Minor | Minor | Moderate | Major |
| | Low | Moderate | Minor | Negligible | Negligible | Negligible | Minor | Minor | Moderate |
| | Negligible | Minor | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible | Minor |

**Table 24.12 Definition of effect significance.**

| Significance | Definition |
|---|---|
| **Major** | Very large or large change in feature condition, both adverse or beneficial, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or could result in exceedance of statutory objectives and / or breaches of legislation. |
| **Moderate** | Intermediate change in feature condition, which are likely to be important considerations at a local level. |
| **Minor** | Small change in feature condition, which may be raised as local issues but are unlikely to be important in the decision-making process. |
| **Negligible** | No discernible change in feature condition. |
| **No change** | No impact, therefore, no change in feature condition. |

### 24.4.4 Cumulative effects assessment methodology

51. The CEA considers other plans, projects and activities that may result in significant effects in-combination with the Project.

52. For onshore ornithology, these activities may include other major infrastructure projects, including cable and utilities installation, road and rail or coastal developments.

53. The CEA is split into two sections (further detail is given in Section 24.8):

- the first describing a detailed CEA covering effects predicted to arise from development of Five Estuaries and North Falls; and,
- the second, detailing effects predicted to arise from the development Five Estuaries, North Falls and other projects.

54. Full details on the approach to CEA used within this chapter are set out in ES Chapter 6 EIA Methodology (Document Reference: 3.1.8).

55. As with the assessment of adverse effects on integrity due to the Project alone, cumulative effects on the integrity of any SPA or Ramsar site are considered within the RIAA (Document Reference: 7.1.5) as part of an in-combination assessment for each effect.

### 24.4.5 Transboundary effects assessment methodology

56. There are no transboundary effects with regards to onshore ornithology as the onshore development area is not sited in proximity to any international boundaries. Transboundary effects are therefore scoped out of this assessment and are not considered further.

### 24.4.6 Assumptions and limitations

57. There can often be varying degrees of uncertainty over the sensitivity or magnitude of impacts as a result of limited information. A precautionary approach is therefore adopted where the response of a population to an impact is uncertain.

#### *24.4.6.1 Landfall area surveys*

58. In general, during baseline surveys spatial coverage of the landfall survey area was considered to be good, with largely unrestricted access agreed beforehand with landowners. Where some access restrictions were in place (generally in small land parcels), or features such as large arable fields prevented exhaustive coverage on foot, vantage points generally offered sufficient coverage of these areas so that breeding attempts of any target species are unlikely to have been missed.

#### *24.4.6.2 Onshore cable route and onshore substation works area surveys*

59. During the early stages of the 2021-22 non-breeding season, refinements to the onshore project area meant that there were some differences from the survey area used from late November 2021 onwards, with changes made before the surveys in early November and again before surveys in late November (mapping areas were therefore also slightly different as a result). These amendments were relatively minor in extent, and it is not considered that any part of the final onshore ornithology study area was omitted. It is however possible that there may be slight over or underestimates of tally counts of non-target species in these visits due to differences in survey area. Again, these are considered to be minor and do not affect the impact assessment conclusions.

60. Survey coverage during the 2021-22 non-breeding season and 2022 breeding season was considered sufficient to establish an accurate record of the abundance and distribution of target species. In some cases, direct land access was not permitted, however due to the flat nature of most of the survey area, much of it could be scanned from regularly spaced vantage points from permitted access. Coverage was also good due to Public Rights of Way (PRoWs) and public road networks.

61. In the southern half of the onshore cable route, breeding surveys commenced in early May 2022, and although April breeding behaviour was missed, this start date is in line with survey guidance published by BTO (2018) and is not therefore considered to be a constraint to assessment.

#### *24.4.6.3 Skylark*

62. Skylark was considered as a target species during 2022 breeding bird surveys within the onshore cable route and substation works area, but not included on the list of target species during landfall surveys, where tally counts of individuals were instead made for each Compartment during every survey. During the second non-breeding season skylarks were not recorded within the onshore cable route and substation study area because it was considered that their abundance and frequency would reduce the ability of surveyors to record other more sensitive non-breeding target species present. PEIR consultation recommended the inclusion of skylark as an IOF (see Table 24.1) and therefore the species has been assessed based on the information available. These data are considered to be sufficient to carry out a robust assessment of impacts.

## 24.5 Existing environment

### 24.5.1 Designated sites for nature conservation

63. Designated sites with ornithological qualifying features that are located within the 10km study area are presented in Table 24.13 and shown in ES Figure 24.1 (Document Reference: 3.2.20). Table 24.13 also provides a summary of the qualifying features and noted interests of these designated sites.

**Table 24.13 Designated sites for nature conservation summary**

| Designated site name | Distance from onshore project area | Designation | Qualifying Interests / Features |
|---|---|---|---|
| Holland Haven Marshes | 0m (overlaps with landfall) | SSSI and LNR | Holland Haven Marshes is designated as an area of reclaimed estuarine saltmarsh and freshwater marsh, with habitats of conservation importance. Birds are not notified features of the SSSI but considered as "additional interest" in the SSSI citation. The citation states that hen harrier and short-eared owl hunt over the marshes in winter, whilst the flooded low ways attract waders and wildfowl. These may include wigeon (typically 1,000, max. 6,500), teal (several hundred), pintail (max. 35), shoveler (max. 20), pochard (max. 10), ruff (max. 90) and snipe. A count of 900 snipe in March 1988 represented a record number of this species in Essex. Several hundred brent geese graze the marshes in winter, and there are regular wintering flocks of twite (max. 160) and Lapland bunting (max. 70). The concrete wall immediately adjacent to the sea wall is the major area in Essex for wintering purple sandpipers, with 10 to 15 birds in most years. In summer, the marsh supports a typical range of breeding birds, including skylark, meadow pipit and yellow wagtail, with reed warblers in the dykes and ringed plover behind the sea wall. During the spring and autumn migration, spotted redshank, black-tailed godwit, whimbrel, green and common sandpipers are seen regularly on passage. |
| Hamford Water | 800m | SPA | Qualifies under Article 4.1 of the EU Birds Directive by supporting:<br>• During the breeding season:<br>  ○ Little tern–breeding (Eastern Atlantic) -2.3% of the UK breeding population.<br>• Over winter:<br>  ○ Avocet–breeding (Western Europe/Western Mediterranean) -25% of the UK population.<br>Qualifies under Article 4.2 of the EU Birds Directive by supporting over winter:<br>  ○ Teal (North-western Europe) -2.7% of the population in UK 5 year peak mean 1991/92-1995/96;<br>  ○ Dark-bellied brent goose (Western Siberia/Western Europe) -2.3% of the population 5 year peak mean 1991/92-1995/96;<br>  ○ Ringed plover (Europe/Northern Africa -wintering) -1.1% of the population 5 year peak mean 1991/92-1995/96;<br>  ○ Black-tailed godwit (Iceland -breeding) -1.7% of the population 5 year peak mean 1991/92-1995/96;<br>  ○ Grey plover (Eastern Atlantic -wintering) -7.5% of the population in UK 5 year peak mean 1991/92-1995/96;<br>  ○ Shelduck (North-western Europe) -2.2% of the population in UK 5 year peak mean 1991/92-1995/96; and<br>  ○ Redshank (Eastern Atlantic -wintering) -0.8% of the population 5 year peak mean 1991/92-1995/96. |

| Designated site name | Distance from onshore project area | Designation | Qualifying Interests / Features |
|---|---|---|---|
| | | Ramsar | Qualifies under Criterion 6 (A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird):<br>• Species with peak counts in spring/autumn:<br>○ Ringed plover (Europe/Northwest Africa)<br>○ Common redshank<br>○ Species with peak counts in winter:<br>○ Dark-bellied brent goose<br>○ Black-tailed godwit, (Iceland/W Europe)<br>○ Grey plover (E Atlantic/W Africa -wintering) |
| | | SSSI | The site is of international importance for breeding little terns and wintering dark-bellied brent geese, wildfowl and waders, and of national importance for many other bird species.<br>The citation for the site states that the mudflats support approximately six thousand brent geese which over-winter in Hamford Water. Five other species winter in internationally important numbers – shelduck, teal, grey plover, black-tailed godwit and sanderling. In addition, six species – wigeon, pintail, ringed plover, curlew, redshank and dunlin – reach levels of national importance, together with important numbers of Bewick's swan, knot and turnstone. The open areas of water attract many species of dabbling and diving duck including mallard, goldeneye and eider. In very severe winter weather Hamford Water can shelter tens of thousands of duck, especially wigeon. There are also important autumn and spring passage populations of lapwing, ringed plover, golden plover and grey plover, curlew, bar-tailed godwit, black-tailed godwit and sanderling. There are major roosts of grey and ringed plover at Pewit Island, Stone Marsh, Middle Beach, and of curlew, redshank and godwits at Kirby Creek and on Horsey Island. Birds of prey, including short-eared owls, hen harriers and marsh harriers, are attracted to the area and merlin have frequently been recorded. There is a black-headed gull colony on the breached and eroded seawall of Garnham's Island. |
| | | NNR | The site is classified as a coastal embayment that has been formed due to a natural dip in the underlying geology of the area. The bird life that this variety of habitats attracts is outstanding, especially the waders and waterfowl that can be seen in winter. |
| | 3.32km | SPA | Qualifies under Article 4.1 of the EU Birds Directive by supporting:<br>During the breeding season: |

| Designated site name | Distance from onshore project area | Designation | Qualifying Interests / Features |
|---|---|---|---|
| Stour and Orwell Estuaries | | | Avocet (Western Europe/Western Mediterranean -breeding) –3.6% of the UK breeding population, 5-year peak mean 1996-2000.<br>Qualifies under Article 4.2 of the EU Birds Directive by supporting:<br>• Over winter:<br>○ Pintail (North-western Europe) -1.2% of the population, 5-year peak mean 1995/96-1999/2000.<br>○ Dark-bellied brent goose (Western Siberia/Western Europe) -1.2% of the population, 5-year peak mean 1995/96-1999/2000.<br>○ Dunlin *Calidris* (Northern Siberia/Europe/Western Africa) -1.4% of the population, 5-year peak mean 1995/96-1999/2000.<br>○ Dunlin (North-eastern Canada/Greenland/Iceland/Northwestern Europe) -1.3% of the population, 5-year peak mean 1995/96-1999/2000.<br>○ Black-tailed godwit (Iceland -breeding) –7.3% of the population, 5-year peak mean 1995/96-1999/2000.<br>○ Grey plover (Eastern Atlantic -wintering) –1.3% of the population, 5-year peak mean 1995/96-1999/2000.<br>○ Redshank (Eastern Atlantic -wintering) –2.8% of the population, 5-year peak mean 1995/96-1999/2000.<br>• On passage:<br>○ Redshank (Eastern Atlantic -wintering) –2% of the population, 5-year peak mean 1995/96-1999/2000.<br>Qualifies under Article 4.2 of the EU Birds Directive by supporting an internationally important assemblage of birds:<br>• Over winter:<br>○ 63,017 waterfowl (5 year peak mean 1991/92-1995/96): great crested grebe, cormorant, dark-bellied brent goose, shelduck, wigeon, gadwall, pintail, goldeneye, ringed plover, grey plover, lapwing, dunlin, black-tailed godwit, curlew, redshank, turnstone. |
| | | Ramsar | Qualifies under Criterion 5 (A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds):<br>• 63,017 waterfowl (5 year peak mean 1998/99-2002/2003)<br>Qualifies under Criterion 6 (A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird):<br>Species with peak counts in winter:<br>• Black-tailed godwit (Iceland/W Europe)<br>• Common redshank<br>• Dark-bellied brent goose, |

| Designated site name | Distance from onshore project area | Designation | Qualifying Interests / Features |
|---|---|---|---|
| | | | • Dunlin (W Siberia/W Europe)<br>• Grey plover (E Atlantic/W Africa -wintering)<br>• Red knot (W & Southern Africa) |
| Stour Estuary | 3.32km | SSSI | The Stour Estuary is nationally important for 13 species of wintering waterfowl and 3 species on autumn passage. |
| Cattawade Marshes | 3.16km | SSSI | The grazing marshes with associated open water and fen habitats are of major importance for the diversity of their breeding bird community, which includes species that have become uncommon throughout lowland Britain because of habitat loss. The site has benefited from a sympathetic management regime aimed at enhancing the ornithological interest. The marshes are also of value as a complement to the adjacent Stour Estuary SSSI where breeding habitats for birds are relatively scarce. |
| Wrabness | 4.32km | LNR | The reserve is located on the southern bank of the River Stour between Manningtree and Harwich, and is a mixture of unimproved grassland, wooded areas and marshland with extensive intertidal mudflats and saltmarsh. In the spring, nightingales can be heard. |
| Upper Colne Marshes | 7.67km | SSSI | Birds are considered as being of additional interest. Breeding birds on the site include redshank *Tringa totanus*, lapwing *Vanellus vanellus*, shelduck *Tadorna tadorna*, reed bunting *Emberiza schoeniclus* and reed and sedge warblers *Acrocephalus scirpaceus and A. schoenobaenus*. Many other species use the marshes for winter feeding and during migration, including waders and wildfowl on the undisturbed mudflats at the mouth of the Roman River. Barn owls *Tyto alba* and kestrels *Falco tinnunculus* regularly hunt over the grazing marshes, a reflection of the richness of the habitat for small mammals. |
| Colne Estuary | 7.75km | SPA | Qualifies under Article 4.1 of the EU Birds Directive by supporting:<br>• During the breeding season:<br>  ○ Little tern (Eastern Atlantic – breeding) at least 1.6% of the GB breeding population 5 year mean, 1992-1996<br>• Over winter:<br>  ○ Hen harrier up to 2.5% of the GB population No count period specified.<br>Qualifies under Article 4.2 of the EU Birds Directive by supporting:<br>• During the breeding season:<br>  ○ Pochard (North-western/North-eastern Europe) up to 6% of the population in Great Britain 5 year mean, 1987-1991<br>  ○ Ringed plover (Europe/Northern Africa – wintering) up to 1.6% of the population in Great Britain 5 year mean, 1987-1991 |

| Designated site name | Distance from onshore project area | Designation | Qualifying Interests / Features |
|---|---|---|---|
| | | | • Over winter:<br>  ○ Brent goose Branta (Western Siberia/Western Europe) 1.6% of the population 5 year peak mean 1991/92-1995/96<br>  ○ Redshank (Eastern Atlantic – wintering) 1.2% of the population 5 year peak mean 1991/92-1995/96<br>• Qualifies under Article 4.2 of the EU Birds Directive by supporting an internationally important assemblage of birds over winter:<br>  ○ 38600 waterfowl (5 year peak mean 1991/92-1995/96) Including: brent goose Branta, redshank |
| | | SSSI | The saltmarsh and intertidal mud, with Mersea Flats forming the largest continuous area, provide extensive feeding areas for internationally important numbers of brent geese and black-tailed godwit. Nationally important numbers of redshank, dunlin, sanderling, ringed and grey plovers are also present together with significant numbers of shelduck and goldeneye. The grazing marsh at East Mersea and the Geedon Saltings are important feeding areas for brent geese, and the latter also contains the main high tide roost for waders.<br>Breeding birds include whinchats in the more scrubby areas, bearded tits in the reed-beds and pochard in pools dominated by sea clubrush. Predatory birds including barn owls, short-eared owls and hen harriers frequently hunt along the seawalls in winter. |
| | | Ramsar | Assemblages of international importance:<br>• Species with peak counts in winter:<br>  ○ 32041 waterfowl (5-year peak mean 1998/99-2002/2003)<br>Ramsar criterion 6 – species/populations occurring at levels of international importance. Qualifying Species/populations (as identified at designation):<br>• Species with peak counts in winter:<br>  ○ Dark-bellied brent goose, Branta, 3165 individuals, representing an average of 1.4% of the population (5 year peak mean 1998/9-2002/3)<br>  ○ Common redshank, 1624 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9-2002/3)<br>• Species/populations identified subsequent to designation for possible future consideration under criterion 6. Species with peak counts in winter:<br>  ○ Black-tailed godwit, Iceland/W Europe 402 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3) |

| Designated site name | Distance from onshore project area | Designation | Qualifying Interests / Features |
|---|---|---|---|
| Roman River | 9.20km | SSSI | Birds are considered as being of additional interest. Nearly 70 species of birds regularly nest within the site. Notable breeding species of the wooded areas include hawfinch, tree pipit and a large population of nightingales. The meadows and marshes support breeding shelduck, lapwing, snipe, redshank and yellow wagtail. |

### 24.5.2 Field survey results

64. The following paragraphs present a summary of abundance and distribution of target breeding and non-breeding species that were recorded during baseline onshore ornithology surveys within the onshore project area from September 2020 to March 2023. For further details of survey results, including full species lists, see Appendices 24.1 to 24.8 (Volume 3.3).

65. The description of the existing environment is separated into breeding and non-breeding season activity, and where appropriate, between landfall, and onshore cable route and onshore substation works area.

#### *24.5.2.1 Breeding birds*

66. Breeding bird surveys were undertaken in the landfall area in 2021 and 2022. The onshore cable route and onshore substation works area was covered in 2022 only. ES Figures 24.3, 24.4, 24.21 to 24.24, and Confidential Figures 24.25 and 24.26 (Document Reference: 3.2.20) provide an illustration of distribution of breeding target breeding species, as described below.

67. The landfall is located within Compartment E (Frinton Golf Course) of the landfall survey area (see ES Figure 24.2, Document Reference: 3.2.20), and the onshore cable route then passes through the north of Compartment C (Great Holland).

##### 24.5.2.1.1 Avocet

Landfall

68. Avocet is a Schedule 1 breeding species and Amber-listed BoCC. The species is present within Holland Haven Marshes SSSI (Compartment D) throughout the winter and birds were confirmed as breeding on the lagoon (central point of breeding area shown on ES Figures 24.3 and 24.4, Document Reference: 3.2.20). Up to 39 individuals were present during any count in the landfall area in 2021, which are all likely to comprise breeding birds. A similar peak of 40 individuals was recorded in 2022.

Onshore cable route and onshore substation works area

69. There were no records of avocet outside of Holland Haven Marshes SSSI in 2022, and in general no suitable habitat exists within these parts of the onshore project area.

##### 24.5.2.1.2 Barn owl

Landfall

70. Barn owl is a Schedule 1 breeding species and is resident within the survey area. Pairs were confirmed as breeding at three locations around the landfall in 2021, and also in 2022 (Confidential ES Figure 24.25, Document Reference: 3.2.20). Barn owls are likely to forage over farmland within the onshore ornithology study area, in particular along areas of field margins, rough grassland or marshy grassland.

Onshore cable route and onshore substation works area

71. Two likely breeding attempts were recorded within the onshore cable route survey area in 2022 (see Confidential ES Figure 24.26, Document Reference:

3.2.20 for locations). One observation was of an adult with recently fledged chicks close by, and the second comprised a pole-mounted owl box which was unoccupied at the time of inspection but appeared to have been in use by the species in spring 2022.

#### 24.5.2.1.3 Cetti's warbler

Landfall

72. Cetti's warbler is a Schedule 1 species and was a common breeder across the landfall survey area, with a total of 26 territories recorded in 2021, and approximately 25 territories in 2022 (Figures 24.3 and 24.4, Document Reference: 3.2.20). Breeding activity began early, in February at some of the sites. Most territories were recorded within Compartment B, particularly within suitable marshy and wetland habitats along and near Holland Brook. Most other territories were recorded in the parts of Holland Haven Marshes SSSI nearer the coast, in Compartments D and E.

Onshore cable route and onshore substation works area

73. There were no records of Cetti's warbler outside of the landfall area in 2022.

#### 24.5.2.1.4 Corn bunting

Landfall

74. A total of 11 corn bunting (Red-listed BoCC with large national decline) territories were recorded in 2021, with the majority recorded in arable habitat within Compartment E. Single territories were also recorded in Compartments C and D. In 2022, the maximum survey count was 13 singing males, and is taken as a minimum estimate of territories. Most territories were again within Compartment E. As a ground nesting species, nest sites are likely to be found within cereal fields, rough grassland or field margins within the survey area.

Onshore cable route and onshore substation works area

75. Corn buntings were associated with the most open areas of the onshore ornithology study area, where extensive expanses of arable farmland are not broken up by woodland or wooded hedgerows. The main concentration of territorial males recorded in 2022 was in the north of the onshore cable route between Bentley Road and the onshore substation works area (ES Figure 24.21, Document Reference: 3.2.20). Corn buntings were relatively uncommon along the remainder of the onshore ornithology study area.

#### 24.5.2.1.5 Grey partridge

Landfall

76. Grey partridge is a Red-listed breeding species which has suffered a large national decline in numbers. The number of adult and young autumn grey partridges counted by Partridge Count Scheme sites in Essex in 2014 was 169[1]. No birds were recorded during breeding bird surveys but an incidental record of

[1] https://www.eadt.co.uk/news/business/21657581.grey-partridges-on-rise-suffolk-essex-farms/

an apparent breeding attempt within Compartment A in 2021 was provided by a local landowner. Birds are likely to nest among tall vegetation found along field margins or other suitable farmland habitats.

Onshore cable route and onshore substation works area

77. The breeding bird surveys in 2022 recorded a single instance of a pair flushed from fields to the west of the onshore substation works area (ES Figure 24.23, Document Reference: 3.2.20), suggesting possible breeding onsite.

#### 24.5.2.1.6 Hobby

Landfall

78. No hobby records during the breeding season.

Onshore cable route and onshore substation works area

79. Hobby is a widespread breeding migrant occurring throughout southern and central Britain which is included on Schedule 1 of the Wildlife and Countryside Act (1981), as amended. In Essex, the population at the end of the 20th century was estimated to be 30-50 summering pairs (Wood, 2007).

80. In 2022, two hobby breeding attempts took place within the northern half of the onshore ornithology study area (see Confidential ES Figure 24.26, Document Reference: 3.2.20). Vantage point surveys in August confirmed successful breeding at one nest (HY_1) with at least one well-grown juvenile calling. At the second nest site (HY_2), four juveniles were confirmed to have fledged and left the nest.

81. Further south, one individual adult was recorded hunting north of Thorpe Road however, no breeding evidence was recorded.

#### 24.5.2.1.7 Lapwing

Landfall

82. Lapwing is Red-listed due to large national declines in breeding numbers. The species is present within the survey area throughout the year, although in 2021, single breeding attempts were recorded in Compartments B, C and D, and post-fledging flocks of up to 12 birds were recorded in July in Compartment B, as well as in lower numbers in C and D. Breeding numbers in 2022 were similarly low, with perhaps 3-4 breeding attempts in similar areas. Lapwings nest on bare or sparsely vegetated open ground, and within the survey area were recorded within wet grassland in the SSSI, and arable land.

Onshore cable route and onshore substation works area

83. In 2022, lapwing individuals were recorded in suitable habitat on two occasions in the southern half of the onshore ornithology study area, but there was no breeding evidence.

#### 24.5.2.1.8 Marsh harrier

Landfall

84. Marsh harrier is a Schedule 1 breeding species and is Amber-listed. A single adult female was observed within a particular area of arable land in Compartment C on separate surveys in 2021 and 2022. Although breeding was

not observed in either year, it is possible that this may represent a future potential breeding territory.

Onshore cable route and onshore substation works area

85. No evidence of breeding was recorded although two observations of a male bird were made to the south of the onshore substation works area in 2022 (ES Figure 24.24, Document Reference: 3.2.20), with one individual seen to catch a skylark.

#### 24.5.2.1.9 Quail

86. Quail is a scarce summer visitor which occurs in fluctuating numbers in arable crops and grassland, primarily in southern England. It is protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and is included on the BoCC Amber List.

Landfall

87. There were no observations of quail within the landfall area over the course of surveys.

Onshore cable route and substation works area

88. Quail were only recorded in June 2022 in the northern half of the onshore ornithology study area (ES Figure 24.23, Document Reference: 3.2.20). These were primarily in a large linseed field, where a minimum of three, possibly five birds were singing. A further singing bird was recorded on the same visit in a separate field to the southeast. It is unclear whether the absence of further records meant that these were migrant individuals that did not remain to breed, or whether they stopped calling after nesting commenced, at which point they would have become difficult to detect.

#### 24.5.2.1.10 Red Kite

89. Red kite is a Schedule 1 listed species, and is Green listed.

Landfall

90. No records during the breeding season.

Onshore cable route and onshore substation works area

91. There were only two records of red kite in the northern half of the onshore ornithology study area in 2022, but no breeding evidence was recorded.

92. Individual birds were also recorded on two surveys foraging in suitable breeding habitat near Thorpe-le-Soken. Again, no breeding evidence was recorded.

#### 24.5.2.1.11 Redshank

Landfall

93. Redshank is Amber-listed on the BoCC. Birds are present within Holland Haven Marshes SSSI all year round and were found to be breeding in small numbers there in 2021. A total of up to six individuals were present on any one survey, with breeding confirmed at one area in Holland Haven Marshes (ES Figure 24.3 (Document Reference: 3.2.20)). A single breeding attempt was also recorded there in 2022, with recently fledged young recorded in June.

Onshore cable route and onshore substation works area

94. No redshank records outside of Holland Haven Marshes SSSI during the 2022 breeding season.

#### 24.5.2.1.12 Yellow wagtail

Landfall

95. Yellow wagtail is a Red-listed BoCC. A small number of breeding attempts were considered likely within the landfall survey area, with breeding behaviour recorded in arable farmland in Compartments A, C and E (ES Figures 24.3 and 24.4 (Document Reference: 3.2.20). In 2022 birds were recorded at four locations in April but there were only two further records, at different locations, throughout the remainder of the season, suggesting local breeding may have been unsuccessful. Territories were most often found in large fields away from tall vegetation and field margins.

Onshore cable route and onshore substation works area

96. In 2022, yellow wagtails were present in low numbers in arable fields across the northern half of the onshore ornithology study area, with some fields being more favoured than others (ES Figure 24.23 (Document Reference: 3.2.20)). Some of the records earlier in the season may have related to migrant birds that did not stay to breed, however at least four breeding pairs were estimated by surveyors. Of note was a male of the continental race *Motacilla flava flava* holding territory and potentially nesting with a female of the British race *M f flavissima*.

97. The species was much less common in the southern half of the onshore cable route, with individuals recorded on three occasions foraging in farmland habitat close to ditches and streams.

#### 24.5.2.1.13 Skylark

Landfall

98. Skylark is Red-listed on the BoCC. The species is common in the survey area and was recorded on each survey visit and in every Compartment, with up to six territories located within Holland Haven Marshes (Compartment D) and up to 27 territories in Compartment E recorded on any survey in 2021. A maximum of 56 territories was recorded across the whole survey area on any survey in 2021. In 2022, a peak count of 89 territories was recorded across the survey area, up to 32 of which were in Compartment E and up to 24 in Compartment C.

Onshore cable route and onshore substation works area

99. Singing skylarks were abundant in arable farmland across the onshore ornithology study area in 2022.

100. Within the northern half of the onshore ornithology study area, a minimum of 76 territories was estimated, and in the southern half there was a peak count of 60 individuals during any single survey.

#### 24.5.2.1.14 Other Holland Haven Marshes SSSI species

101. Although not a primary reason for designation, the Holland Haven Marshes SSSI citation does refer to the presence of breeding passerine species, including meadow pipit and reed warbler. These species were not considered to be target species during the breeding bird surveys, as they are not inherently rare, and likely to be less sensitive to disturbance than non-passerines. Tally counts per Compartment were however made during each survey in 2021 and 2022 (see Annex B of Appendices 24.2 and 24.5, Volume 3.3).

102. Meadow pipits were present in lower numbers, and territories were mainly located within Holland Haven Marshes, with a peak survey count of eight territories.

103. Reed warblers were recorded within every Compartment, with Compartments D and E holding the highest numbers of breeding territories. A peak total of 21 territories across the whole survey area was recorded in May and June 2021, with a peak of 34 territories in early July 2022.

104. The Holland Haven Marshes SSSI citation also mentions that ringed plovers may breed there, but the species was not recorded during 2021 surveys, and in 2022 a small number of records of migrating/summering birds were made.

105. One herring gull (Red-listed) pair was observed on a nest at Holland Haven Marshes in 2022.

### *24.5.2.2 Non-breeding birds*

106. Non-breeding bird surveys were undertaken in the landfall area in 2020-2021 and 2021-2022. The onshore cable route and onshore substation works area was surveyed in the 2021-2022 and 2022-2023 non-breeding seasons. ES Figures 24.5 to 24.20 (Document Reference: 3.2.20) provide an indication of distribution of target non-breeding species, and their relative abundance, as described below.

107. A description of the existing environment within the landfall area (incorporating the Holland Haven Marshes SSSI), and the onshore cable route and onshore substation works area are provided separately, due to differing habitats and differing planned construction methods.

#### 24.5.2.2.1 Landfall area

108. During the Year 2 2021-22 non-breeding survey period a total of 142 species were recorded within the survey area (refer to Annex A of ES Appendix 24.3 (Document Reference: 3.3.42) for species list). This was an increase from 113 species recorded in the Year 1 2020-21 non-breeding season. Of the species recorded in Year 2, 61 were considered to be target species (wildfowl, waders, raptors and rare BoCC Red-listed species), up from 52 in Year 1.

109. The distribution and flock sizes of target species and species groups across the landfall area are presented in ES Figure 24.5 (brent goose and European white-fronted goose), ES Figure 24.6 (other goose species), ES Figure 24.7 (all duck species combined) and ES Figure 24.8 (all wader species combined) (Document Reference: 3.2.20). In general, these species have been grouped

based on similar habitat requirements and behaviour and similar levels of conservation status.

110. The landfall is located within Compartment E (Frinton Golf Course) of the landfall survey area (see ES Figure 24.2 (Document Reference: 3.2.20), and the onshore cable route then passes through the north of Compartment C (Great Holland).

111. A summary of peak counts recorded for each target species within all Compartments A-E in Year 1 and Year 2 is presented in Table 24.14. This represents the largest single count of a species during any survey within a particular Compartment. It should be noted that it is possible that the same individuals were recorded in two or more Compartments, and therefore population estimates for the whole survey area cannot be ascertained by summing peak counts within all Compartments. Counts are presented together with1% thresholds for determining counts of national (GB) or international importance, as presented within the most recent WeBS Report (Woodward *et al.*, 2024). Where counts exceed thresholds, this is highlighted within the table. The detailed results obtained from each survey, separated into each of the five Compartments (A-E) are presented in tables in Annex B of Appendices 24.1 and 24.3 (Volume 3.3).

**Table 24.14 Target species peak counts (individuals) per landfall Compartment (Cpt) during Year 1 (2020-21) and Year 2 (2021-22) non-breeding seasons. *Where species counts exceeded WeBS 1% thresholds for assessment of national (GB) or international importance (where threshold is >1 individual) this has been highlighted. NS = not surveyed.***

| Species | Cpt A Little Clacton | | Cpt B Holland Brook | | Cpt C Great Holland | | Cpt D Holland Marshes | | Cpt E Frinton Golf C. | | GB Threshold | International Threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | | |
| Avocet | | | | | | | 42 | 37 | | | 87 | 940 |
| Barn owl | 2 | | 1 | | | | 1 | 1 | | | - | - |
| Bearded tit | | | | | | | 2 | | | | - | - |
| Bar-tailed godwit | | | | | | | | 1 | | | 500 | 1,500 |
| Black-tailed godwit (*islandica*) | | | | 16 | | | 5 | 21 | | | 390 | 1,110 |
| Dark-bellied brent goose | | | | | | 1,100 | 110 | 100 | 770 | 14 | 980 | 2,100 |
| Canada goose | | | 34 | 20 | 1 | 1 | 28 | 15 | | 2 | - | - |
| Canada x greylag goose hybrid | | | 1 | 3 | 7 | 2 | 7 | 4 | | | - | - |
| Cetti's warbler | 1 | | 2 | 1 | 1 | | 6 | 2 | 1 | | - | - |
| Common sandpiper | | | | | | | | 11 | | 5 | 1 | 12,000 |
| Common tern | | | | | | | | 10 | | | - | 1,800 |
| Coot | 2 | | 1 | 1 | | | | | | | 2,000 | 15,550 |
| Cormorant | | 2 | 5 | 7 | 1 | 4 | 96 | 232 | 1 | 52 | - | - |
| Corn bunting | | | | | | 20 | | 1 | 5 | 12 | - | - |
| Curlew | | 20 | | 39 | | | 53 | 54 | 6 | 4 | 1,200 | 7,600 |
| Dartford warbler | | | | | | | 1 | 1 | | 1 | - | - |
| Dunlin | | | | | | | 2 | 6 | | 2 | 3,400 | 13,300 |

| Species | Cpt A Little Clacton | | Cpt B Holland Brook | | Cpt C Great Holland | | Cpt D Holland Marshes | | Cpt E Frinton Golf C. | | GB Threshold | International Threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | | |
| Egyptian goose | | | | 2 | | | | | | | - | - |
| European W-f goose (*albifrons*) | 101 | | | | 101 | 5 | 50 | 40 | | 1 | 21 | 12,000 |
| Firecrest | | | | | | | 1 | | | | - | - |
| Gadwall | 4 | | 7 | 18 | | | 4 | 7 | | | 310 | 1,200 |
| Garganey | | | | | | 2 | | | | | - | 13,400 |
| Golden plover | | | 1 | 32 | 100 | 65 | | | 27 | | 4,000 | 9,300 |
| Great crested grebe | | | | | | | 2 | 3 | | | 170 | 6,300 |
| Great white egret | | | 1 | | | | 1 | | | | 1 | 780 |
| Green sandpiper | | | 1 | | | | 1 | 1 | | | 3 | 20,000 |
| Grey plover | | | | | | | | 3 | | 4 | 330 | 2,000 |
| Greylag goose | 25 | | 45 | 107 | 220 | 201 | 223 | 238 | 1 | | 910 | 980 |
| Hen harrier | | | | | | | | 1 | | | - | - |
| Hobby | | | | | | | | 1 | | | - | - |
| Kingfisher | | | | | | | 1 | 1 | | | - | - |
| Knot | | | | | | | | 1 | | | 2,600 | 5,300 |
| Lapwing | | | | 66 | 252 | 890 | 137 | 120 | 250 | 36 | 6,200 | 20,000 |
| Little egret | | | | 1 | | | 2 | 2 | | | 110 | 1,100 |
| Little grebe | 1 | | 1 | 4 | | | 3 | 1 | | | 150 | 4,700 |
| Little owl | 1 | 2 | 1 | | | | | | 2 | | - | - |
| Little stint | | | | | | | | 1 | | | 1 | 3,000 |

| Species | Cpt A Little Clacton | | Cpt B Holland Brook | | Cpt C Great Holland | | Cpt D Holland Marshes | | Cpt E Frinton Golf C. | | GB Threshold | International Threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | | |
| Mallard | 15 | 5 | 13 | 22 | 1 | 15 | 19 | 16 | 16 | 44 | 6,700 | 20,000 |
| Marsh harrier | 1 | | | 1 | | | | 1 | | | - | - |
| Merlin | | | | | | | 1 | | | | - | - |
| Moorhen | 3 | 3 | 13 | 25 | 2 | 2 | 4 | 8 | 11 | 11 | 3,000 | 20,000 |
| Mute swan | 2 | 1 | 6 | 12 | 8 | 6 | 7 | 4 | | 2 | 500 | 500 |
| Oystercatcher | 1 | | 2 | 5 | | | 6 | 22 | 3 | 20 | 2,900 | 8,200 |
| Pale-bellied brent (hrota) | | | | | | 1 | | | | | - | - |
| Peregrine | 1 | | | 1 | | | 1 | 2 | 1 | 2 | - | - |
| Pink-footed goose | | | | | | | 2 | | | | 5,100 | 5,400 |
| Pintail | 32 | | 8 | | | | 3 | 16 | | 8 | 200 | 600 |
| Purple sandpiper | | | | | | | 7 | 12 | | 4 | 97 | 110 |
| Red kite | | | | | | 1 | | | | | - | - |
| Redshank | | | | | | | 5 | 3 | | | 940 | 2,400 |
| Ruff | | | | | | | 1 | 4 | | | 9 | 20,000 |
| Sanderling | | | | | | | | 1 | | 4 | 200 | 2,000 |
| Sandwich tern | | | | | | | | 45 | | 1 | 1 | 1,700 |
| Shag | | | | | | | 1 | | | | 1,100 | 2,000 |
| Shelduck | 8 | 5 | 11 | 3 | | 3 | 19 | 13 | | | 470 | 2,500 |
| Short-eared owl | | | | | | | 1 | 1 | | 1 | - | - |
| Shoveler | | 8 | 3 | 14 | 4 | | 38 | 29 | | | 190 | 650 |
| Skylark | 0 | NS | 4 | NS | 18 | NS | 9 | NS | 85 | NS | - | - |

| Species | Cpt A Little Clacton | | Cpt B Holland Brook | | Cpt C Great Holland | | Cpt D Holland Marshes | | Cpt E Frinton Golf C. | | GB Threshold | International Threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 | | |
| Snipe | | | 3 | 2 | | 5 | 22 | 18 | | | 10,000 | 20,000 |
| Teal | 45 | 61 | 305 | 136 | 30 | | 216 | 324 | 76 | 2 | 4,300 | 5,000 |
| Tufted duck | 4 | | | 7 | | 3 | | | | | 1,300 | 8,900 |
| Tundra bean goose | | | | | | | 2 | | | | 3 | 5,500 |
| Turnstone | | | | | | | 7 | 8 | | 8 | 400 | 1,400 |
| Water rail | | | | | 1 | | 1 | 1 | | | - | 6,400 |
| Whimbrel | | | | | | | | 2 | | | 1 | 6,700 |
| Wigeon | 120 | | 115 | 120 | 16 | | 288 | 370 | 200 | 30 | 4,500 | 14,000 |
| Wood sandpiper | | | | | | | | 1 | | | - | 18,000 |
| Woodcock | 1 | | | | | | | | 1 | 1 | 14,000 | 20,000 |
| Yellow wagtail | | | | | | | | 1 | 1 | 3 | - | - |

### Compartment A: Little Clacton

112. The Little Clacton Compartment comprises mainly flat arable farmland to the west of Holland Haven Marshes SSSI and is bordered by commercial and residential areas to the south and west.

113. Numbers of geese and waders were relatively low in both years, compared to those Compartments nearer to Holland Haven Marshes, although a peak count of 101 white-fronted geese was recorded in a field towards the north of the Compartment in December 2020 (ES Figure 24.5 (Document Reference: 3.2.20)).

114. There were also notable counts of teal (45 individuals), pintail (32 individuals) and wigeon (120 individuals) made to the north of the Compartment near the small reservoir, in mid-February 2021 (ES Figure 24.7 (Document Reference: 3.2.20)). There was a peak count of 20 curlew in late March 2022, but otherwise in Year 2, peak curlew counts were fewer than ten individuals. In Year 2 peak counts of wildfowl were lower, and species such as white-fronted goose and wigeon were absent.

### Compartment B: Holland Brook

115. Compartment B is centred around Holland Brook which leads into Holland Haven Marshes and forms part of the SSSI. The marsh and wetland habitats of Holland Brook have an extensive ditch system and are surrounded by arable farmland with a few small agricultural reservoirs.

116. Results presented in Table 24.14 and ES Figure 24.7 (Document Reference: 3.2.20) show that the Compartment is regularly used by duck species including teal (peak count of 305 individuals) and wigeon (120), as well as pintail, gadwall, shelduck, shoveler and mallard in smaller numbers. Canada goose and greylag goose were also regularly recorded, with flocks of over 100 greylags through the winter in Year 2 (ES Figure 24.6 (Document Reference: 3.2.20)).

117. In Year 2 more waders were recorded than the previous year, albeit sporadically, rather than consistently through the non-breeding season. Black-tailed godwit (peak of 16 individuals), curlew (39), golden plover (32), lapwing (66), oystercatcher (5) and snipe (2) were present.

118. Barn owl and little owl were present in Year 1, and marsh harrier and peregrine were recorded on occasion.

### Compartment C: Great Holland

119. Compartment C comprises an extent of flat, intensively managed arable farmland of generally large field sizes. There are two agricultural reservoirs present within the site.

120. Species diversity was relatively low within this Compartment, with a total of 19 species recorded across all non-breeding season surveys (Table 24.14).

121. Notable were the counts of over 1,000 brent geese in December 2021, which exceeded the threshold for importance at a national level (Table 24.14). The flock was recorded on a winter wheat field in mid-December, although the birds frequently took flight for short distances. On the following day the flock was also exceptionally mobile but spent parts of the day on the sea off Holland Haven as well as returning to Dairy House Farm occasionally. In late December the flock

was again on winter wheat just north of Holland Haven Marshes SSSI. This flock was disturbed by industry used bird scarers, and after taking flight the flock stayed within the bounds of Compartment C but was scattered.

122. A count of 101 white-fronted geese was made in early December 2020 (the same flock that was recorded in Compartment A). White-fronted geese were present on only one occasion in Year 2, with five individuals recorded in early January 2022.

123. Up to 220 greylag geese present in Year 1, and a peak of over 200 greylag geese was recorded in November 2021, but the species' presence was intermittent.

124. Relatively large flocks of waders were occasionally recorded in stubble fields, with up to 252 lapwings in early January 2021, with a peak flock size of 890 individuals recorded in early December 2021. A peak flock size of 100 golden plovers was recorded in early December 2020.

125. Corn buntings were recorded occasionally in flocks, with a peak count of 20 individuals in October 2021.

### Compartment D: Holland Marshes

126. Compartment D forms the main part of the Holland Haven Marshes SSSI and comprises areas of reclaimed estuarine saltmarsh and freshwater marsh. The Compartment is bisected by Holland Brook and contains a network of ditches, to produce a variety of suitable habitats for birds.

127. The Compartment is the most species-rich within the landfall area, with a total of 58 species recorded during the non-breeding survey periods.

128. Brent geese were sometimes present (up to 248 birds), and flocks of white-fronted geese (up to 50 birds) were recorded in both years, which exceeded the threshold for national importance. Greylag geese were also regularly recorded in relatively large numbers, with a peak of 238 birds in Year 2. Two tundra bean geese were recorded on one occasion in Year 1.

129. Three other species were recorded in peak numbers on autumn passage which exceeded their national thresholds: common sandpiper (11 individuals), whimbrel (2 individuals) and Sandwich tern (45 individuals).

130. Ducks were present in relatively large numbers within the Compartment and just off the coast, with high counts of teal (up to 324 individuals), wigeon (288), shoveler (38) and shelduck (19) (ES Figure 24.7 (Document Reference: 3.2.20).

131. The Compartment is notable for its diverse wader assemblage, with avocet present from February onwards (up to 42 individuals), and curlew, snipe and lapwing present in good numbers throughout the winter. Purple sandpipers (up to 12 individuals) were recorded beside the sea wall. Other wader species present in smaller numbers were black-tailed godwit, dunlin, green sandpiper, redshank, ruff and turnstone. No golden plovers were recorded within the Compartment.

132. In late December 2020, due to the lagoon being frozen over, wildfowl that normally frequent this area were recorded either on Holland Brook (teal) or on the sea (wigeon).

133. The marshes were occasionally used by barn owl, hen harrier, hobby, merlin, peregrine and short-eared owl.

134. Also notable was the presence of Schedule 1 species bearded tit, Cetti's warbler and Dartford warbler.

Compartment E: Frinton Golf Course

135. Compartment E contains part of the Holland Haven Marshes SSSI which is comprised of Frinton Golf Course and rough grassland and scrub close to the sea. To the north of the SSSI and golf course is a series of large, intensively managed arable fields.

136. Although species diversity was relatively low in this area compared to adjacent Compartment D, there were some notable counts in Year 1 including a peak of 770 Brent geese and a peak of 250 lapwing using fields to the north of the SSSI on occasion. The area of SSSI within the golf course appears to be of relatively low importance for wintering birds compared to Holland Haven Marshes. A count of five common sandpipers on autumn passage did, however, exceed national importance level.

137. Other notable species observed were corn bunting, skylark and yellow wagtail utilising stubble fields, and Cetti's warbler was also present.

#### 24.5.2.2.2 Onshore cable route and onshore substation works area

138. Overall, the onshore ornithology study area hosts a relatively wide range of wader, wildfowl and raptor species during the non-breeding season. A total of 111 species was recorded during the 2021-22 surveys, compared to 106 species recorded in 2022-23. Full species lists and breakdowns of peak tallies counts per mapping area, and peak total survey count are presented in Annex A of Appendices 24.5 and 24.6 (Volume 3.3).

139. Of these species, a total of 51 were considered to be target species in 2021-22, with 54 target species recorded in 2022-23. Table 24.15 and Table 24.16 below summarise the total counts per survey, and peak count for these target species.

140. Species diversity is reasonably consistent across the survey area, with the northwest around Little Bromley, and land near to Hamford Water hosting the most species.

141. The only wildfowl or wader species that was present in sufficient numbers to exceed the BTO WeBS Report's 1% species population threshold used to determine national (Great Britain) importance of wetlands[2] was green sandpiper, when counts of up to eight individuals within the survey area exceeded the Great British threshold (3 individuals) on four surveys. Notable numbers of some species were also recorded and may be of importance at a regional (Essex) level. These include reasonably high peak counts in the core winter months of golden plover, lapwing and curlew, and feeding flocks of corn bunting.

[2] see https://www.bto.org/our-science/projects/wetland-bird-survey/data/species-threshold-levels

142. The sections below describe the temporal and spatial distribution, and abundance of the target species recorded during surveys.

**Table 24.15 Target species monthly counts (individuals) within onshore cable route and onshore substation works area survey area in 2021-22.** ***Where species counts met (if >1) or exceeded GB threshold this has been highlighted.***

| Species | Sep* | Early Oct | Late Oct | Early Nov | Late Nov | Early Dec | Late Dec | Early Jan | Late Jan | Early Feb | Late Feb | Early Mar | Late Mar | Peak Count | GB threshold | International threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Avocet | | | | | 1 | | | | | | | | | 1 | 87 | 940 |
| Barn Owl | | | 1 | 2 | 1 | | | 1 | 1 | | | | | 2 | - | - |
| Black-tailed Godwit (*islandica*) | | | | | | 1 | | | | | | | | 1 | 390 | 1110 |
| Brent Goose (*bernicla*) | | | | 124 | | | | | | | | | | 124 | 980 | 2100 |
| Canada Goose | | | 3 | 352 | | 32 | 49 | 5 | 6 | 10 | 4 | 2 | 8 | 352 | - | - |
| Cetti's Warbler | | 1 | | | | | | | | | | | | 1 | - | - |
| Coot | 1 | 98 | 24 | 8 | 14 | 10 | 26 | 27 | 15 | 32 | 25 | 16 | 22 | 98 | 2000 | 15550 |
| Cormorant | 1 | 16 | 41 | 4 | 9 | 25 | 13 | 7 | 6 | 9 | 16 | 9 | 2 | 41 | - | - |
| Corn Bunting | 1 | | 12 | 74 | 37 | 83 | 86 | 59 | 51 | 43 | 15 | 22 | 43 | 86 | - | - |
| Curlew | | | 6 | 30 | 84 | 82 | 13 | 10 | 11 | 45 | 24 | 5 | 14 | 84 | 1200 | 7600 |
| Egyptian Goose | | 2 | 61 | 77 | 53 | 93 | 99 | 26 | 92 | 17 | | 2 | 10 | 99 | - | - |
| Gadwall | | 8 | 2 | | 8 | | 44 | 19 | 3 | 25 | 20 | 9 | 2 | 44 | 310 | 1200 |
| Garganey | | | | | | | | | | | | | 3 | 3 | - | 13400 |
| Golden Plover | 4 | 1 | | | 39 | 30 | 48 | 484 | 87 | 5 | | | | 484 | 4000 | 9300 |
| Great Crested Grebe | 1 | 6 | 4 | | | | | | | | 1 | 2 | 1 | 6 | 170 | 6300 |
| Great Egret | | | | | 1 | 1 | 1 | 1 | | 1 | 1 | | | 1 | 1 | 780 |
| Green Sandpiper | | | | 2 | 4 | 1 | 8 | 1 | 5 | 1 | 3 | 1 | 6 | 8 | 3 | 20000 |
| Grey Heron | | 2 | 5 | 4 | 4 | 4 | 2 | 3 | 2 | 3 | 3 | | 2 | 5 | 450 | 5000 |
| Grey Partridge | | | | | | | | | 3 | 5 | | | 7 | 7 | - | - |

| Species | Sep* | Early Oct | Late Oct | Early Nov | Late Nov | Early Dec | Late Dec | Early Jan | Late Jan | Early Feb | Late Feb | Early Mar | Late Mar | Peak Count | GB threshold | International threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grey Plover | | | | | 2 | | | | 1 | 5 | | | | 5 | 330 | 2000 |
| Greylag goose | 95 | 220 | 400 | 10 | 10 | 12 | 62 | 16 | 280 | 25 | 6 | 29 | 12 | 400 | 910 | 980 |
| Hen harrier | | | | | | 1 | | | | | | | | 1 | - | - |
| Kestrel | 4 | 6 | 16 | 10 | 12 | 12 | 13 | 16 | 15 | 18 | 14 | 7 | 15 | 18 | - | - |
| Kingfisher | | | 1 | 3 | 1 | 1 | | 1 | | 1 | | | | 3 | - | - |
| Lapwing | | | 17 | 6 | 282 | 155 | 1044 | 1628 | 102 | 212 | 11 | 12 | 10 | 1628 | 6200 | 20000 |
| Little Egret | | 2 | 2 | 5 | 3 | 6 | 2 | 4 | 2 | 2 | 1 | 1 | 1 | 6 | 110 | 1100 |
| Little Grebe | 1 | 2 | 8 | 2 | 4 | 3 | 4 | 3 | 6 | 8 | 4 | 7 | 7 | 8 | 150 | 4700 |
| Little Owl | 1 | 1 | 1 | | 2 | | 2 | | | 2 | | 1 | 4 | 4 | - | - |
| Mallard | 12 | 30 | 59 | 59 | 55 | 74 | 103 | 86 | 73 | 42 | 46 | 25 | 55 | 103 | 6700 | 20000 |
| Mandarin Duck | | | | | | | 1 | | | | | | | 1 | - | - |
| Marsh Harrier | 1 | 2 | 2 | 1 | | 1 | | | | 6 | 2 | | | 6 | - | - |
| Merlin | | | | | | 2 | 1 | | | 1 | | | | 2 | - | - |
| Moorhen | 1 | 1 | 10 | 8 | 13 | 10 | 23 | 18 | 17 | 28 | 12 | 16 | 19 | 28 | 3000 | 20000 |
| Mute Swan | | 2 | 7 | 7 | 8 | | 5 | 7 | 14 | 19 | 6 | 3 | 10 | 19 | 500 | 500 |
| Oystercatcher | | | | | | | | | 1 | | | 2 | 1 | 2 | 2900 | 8200 |
| Peregrine Falcon | | 1 | 4 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | | | 1 | 4 | - | - |
| Pochard | | | | | | | 3 | | | | 2 | | | 3 | 230 | 2000 |
| Red Kite | | | | | | | | | | 5 | 1 | 1 | | 5 | - | - |
| Redshank | | 2 | | 4 | 5 | 10 | 4 | | 5 | 5 | 3 | 2 | 3 | 10 | 940 | 2400 |
| Ruff | | | | | | 1 | 3 | | | | | | | 3 | 9 | 20000 |

| Species | Sep* | Early Oct | Late Oct | Early Nov | Late Nov | Early Dec | Late Dec | Early Jan | Late Jan | Early Feb | Late Feb | Early Mar | Late Mar | Peak Count | GB threshold | International threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shelduck | | | | | | | 17 | 2 | | | | 15 | 7 | 17 | 470 | 2500 |
| Shoveler | | 4 | 6 | | 2 | | 24 | 3 | 8 | 11 | 3 | 4 | 4 | 24 | 190 | 650 |
| Skylark | 38 | 117 | 551 | 234 | 767 | 455 | 180 | 311 | 398 | 890 | 188 | 144 | 395 | 890 | - | - |
| Snipe | | | | | 2 | 3 | 2 | 1 | 3 | | 1 | | | 3 | 10000 | 20000 |
| Spoonbill | | 1 | | | | | | | | | | | | 1 | 1 | 160 |
| Tawny Owl | | | | | | 1 | | | 1 | 1 | 1 | | 1 | 1 | - | - |
| Teal | 1 | 6 | 12 | 15 | 64 | 22 | 83 | 46 | 137 | 84 | 40 | 20 | 23 | 137 | 4300 | 5000 |
| Tufted Duck | | 22 | 2 | 14 | 2 | | 11 | 8 | 3 | 29 | 28 | 18 | 35 | 35 | 1300 | 8900 |
| Water Rail | | | | | | 1 | | | | | | | | 1 | - | 6400 |
| Wigeon | 1 | 57 | 53 | | | | 36 | 11 | | | 25 | | | 57 | 4500 | 14000 |
| Woodcock | | | | 2 | | 1 | | 2 | 1 | 2 | | 1 | 3 | 3 | 14000 | 20000 |
| Woodlark | | | 2 | | | | | | | | | | | 2 | - | - |

* September 2021 survey was a reconnaissance visit and so some species may be under-recorded.

**Table 24.16 Target species monthly counts (individuals) within onshore cable route and onshore substation works area survey area in 2022-23.** ***Where species counts met (if >1) or exceeded GB threshold this has been highlighted.***

| Species | Early Oct | Late Oct | Early Nov | Late Nov | Early Dec | Late Dec | Early Jan | Late Jan | Early Feb | Late Feb | Early Mar | Late Mar | Peak Count | GB threshold | International threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Avocet | | | | | | 1 | | 1 | | | | 5 | 5 | 87 | 940 |
| Barn Owl | | | | | | | | 1 | | | | | 1 | - | - |
| Black-tailed Godwit | 16 | 1 | | 5 | 61 | 195 | 77 | 73 | 19 | 4 | | | 195 | 390 | 1100 |
| Brent Goose (*bernicla*) | | | 40 | 65 | 113 | 148 | 160 | 138 | 350 | 68 | 25 | | 350 | 980 | 2100 |
| Buzzard | 25 | 29 | 8 | 12 | 14 | 12 | 12 | 12 | 22 | 9 | 11 | 24 | 29 | - | - |
| Canada Goose | 8 | 160 | | | | | | | | | 2 | 1 | 160 | - | - |
| Cetti's Warbler | | | | | | | | | | 1 | | | 1 | - | - |
| Coot | | 2 | 2 | 4 | 2 | 1 | 2 | 5 | 11 | 13 | 15 | 14 | 15 | 2000 | 15550 |
| Cormorant | 7 | 8 | 2 | 141 | 51 | 3 | 2 | 2 | | 2 | 1 | | 141 | - | - |
| Corn Bunting | | 12 | 2 | 3 | 39 | 57 | 58 | 59 | 14 | 2 | 18 | 6 | 59 | - | - |
| Curlew | 62 | 3 | 8 | 19 | 126 | 282 | 38 | 127 | 17 | 30 | 58 | 7 | 282 | 1200 | 7600 |
| Dunlin | | | 64 | | 165 | 607 | 234 | 123 | 13 | | | 96 | 607 | 3400 | 13300 |
| Egyptian Goose | | | | | | | 2 | 6 | 2 | | 1 | 2 | 6 | - | - |
| Gadwall | 3 | 4 | | 2 | 1 | 11 | 33 | 26 | 40 | 63 | 2 | | 63 | 310 | 1200 |
| Golden Plover | | | 2 | | 156 | 101 | 21 | 104 | 850 | | 150 | 22 | 850 | 4000 | 9300 |
| Goosander | | | | | | | | | 1 | | | | 1 | 150 | 2100 |
| Great Crested Grebe | 1 | | | | | | | | 1 | | 3 | 5 | 5 | 170 | 6300 |
| Great Egret | 8 | | | | | | | | | | | | 8 | 1 | 780 |
| Green Sandpiper | | | | 1 | | | 3 | 2 | | | | | 3 | 3 | 20000 |
| Greenshank | 1 | | | | | | | | | | | | 1 | 8 | 3300 |
| Grey Heron | 3 | 4 | 3 | 2 | 4 | 2 | 2 | 3 | 2 | 1 | | 1 | 4 | 450 | 5000 |

| Species | Early Oct | Late Oct | Early Nov | Late Nov | Early Dec | Late Dec | Early Jan | Late Jan | Early Feb | Late Feb | Early Mar | Late Mar | Peak Count | GB threshold | International threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grey Plover | | 1 | | 4 | 21 | 38 | 18 | 17 | 7 | 4 | 4 | 4 | 38 | 330 | 2000 |
| Greylag goose | 204 | 10 | | | | 39 | | 2 | 126 | | 20 | 8 | 204 | 910 | 980 |
| Jack Snipe | | | | | | | | | 1 | | | | 1 | 1000 | 20000 |
| Kestrel | 12 | 14 | 3 | 10 | 13 | 9 | 12 | 9 | 13 | 3 | 6 | 13 | 14 | - | - |
| Kingfisher | 1 | | 1 | | 1 | | | | | | | | 1 | - | - |
| Knot | | | | | | | | 12 | | | 23 | | 23 | 2600 | 5300 |
| Lapwing | 68 | 36 | 205 | 139 | 207 | 288 | 241 | 668 | 471 | 40 | | | 668 | 6200 | 20000 |
| Little Egret | 18 | 1 | 4 | 4 | 5 | 1 | 2 | 5 | 5 | 2 | 3 | 2 | 18 | 110 | 1100 |
| Little Grebe | 6 | 5 | 4 | 5 | 5 | 2 | 2 | 5 | 3 | 5 | 3 | 6 | 6 | 150 | 4700 |
| Mallard | 9 | 107 | 62 | 77 | 67 | 64 | 53 | 24 | 38 | 59 | 58 | 48 | 107 | 6700 | 20000 |
| Mandarin Duck | | | | | | | | | | 1 | | | 1 | - | - |
| Marsh Harrier | 2 | 2 | | 2 | 3 | 3 | 1 | 2 | 3 | | 3 | 4 | 4 | - | - |
| Merlin | | | | | | | | 1 | | | | | 1 | - | - |
| Moorhen | 8 | 33 | 15 | 24 | 16 | 21 | 10 | 9 | 14 | 17 | 11 | 8 | 33 | 3000 | 20000 |
| Mute Swan | 4 | 2 | | 2 | 4 | 2 | | 8 | 4 | 5 | 3 | 4 | 8 | 500 | 500 |
| Oystercatcher | | | | 18 | 5 | 21 | 28 | 32 | 25 | 26 | 11 | 34 | 34 | 2900 | 8200 |
| Peregrine | | | | | | 1 | | 1 | | | | | 1 | - | - |
| Pintail | 4 | | | | | | | | | | 2 | | 4 | 200 | 600 |
| Pochard | | | | | | | | | | | 2 | | 2 | 230 | 2000 |
| Red Kite | 1 | 2 | 1 | 1 | 3 | | 2 | 2 | 7 | | | 1 | 7 | - | - |
| Redshank | 45 | 2 | | 15 | 36 | 80 | 37 | 16 | 32 | 34 | 16 | 29 | 80 | 940 | 2400 |
| Ringed Plover | 2 | | | | | | | | | | | | 2 | 420 | 540 |

| Species | Early Oct | Late Oct | Early Nov | Late Nov | Early Dec | Late Dec | Early Jan | Late Jan | Early Feb | Late Feb | Early Mar | Late Mar | Peak Count | GB threshold | International threshold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shelduck | 27 | 5 | 10 | 22 | 23 | 29 | 16 | 2 | 13 | 1 | 12 | 23 | 29 | 470 | 2500 |
| Shoveler | 4 | | | | | | | 15 | | 5 | | | 15 | 190 | 650 |
| Skylark | 94 | 96 | 36 | 86 | 64 | 94 | 42 | 158 | 116 | 44 | 60 | 30 | 158 | - | - |
| Snipe | 1 | | | 2 | | 1 | | | | 5 | 2 | | 5 | 10000 | 20000 |
| Sparrowhawk | 3 | 6 | | 3 | 1 | 3 | 1 | 2 | | 2 | 2 | 2 | 6 | - | - |
| Spotted Redshank | 1 | | | | | | | | | | | | 1 | 1 | 1000 |
| Tawny Owl | | | | | | | | | 1 | | | | 1 | - | - |
| Teal | 75 | 31 | 142 | 39 | 67 | 108 | 100 | 126 | 94 | 64 | 10 | 3 | 142 | 4300 | 5000 |
| Tufted Duck | | | | 1 | 10 | 2 | | 51 | 66 | 29 | 25 | 11 | 66 | 1300 | 8900 |
| Turnstone | | | | | | | 18 | 1 | | 2 | 6 | | 18 | 400 | 1400 |
| Wigeon | 50 | | | 165 | 45 | 138 | 48 | 78 | 32 | 5 | 230 | | 230 | 4500 | 14000 |
| Woodcock | | | | | | | | | | | | 1 | 1 | 14000 | 20000 |

### Geese

143. In 2021-22, brent geese were largely absent from the survey area during the non-breeding season, but during the 2022-23 their presence was more regular, being recorded on every survey from November to March. Flocks were observed mainly within and adjacent to Hamford Water SPA (ES Figure 24.9 (Document Reference: 3.2.20)), peaking at 350 individuals in February.

144. No European white-fronted geese were recorded during surveys in either year, despite some presence observed within the cable landfall to the south during the winter (see Section 24.5.2.2.1).

145. Greylag geese, and non-native Canada and Egyptian geese were commonly recorded, mainly to the north of the onshore cable route survey area. In 2021-22, a peak count of 400 greylag geese was recorded in late October (maximum flock size of 381 individuals in the southwest) and the species was present throughout the non-breeding season. Up to 352 and 99 individuals of Canada goose and Egyptian goose respectively were recorded during any one survey.

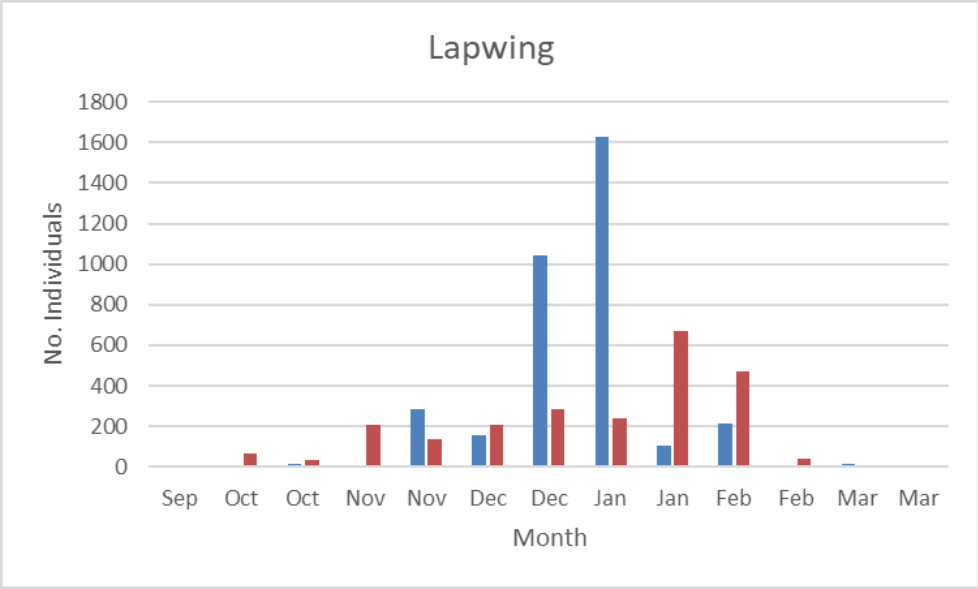
146. In 2022-23, a peak flock count of 172 greylag geese was recorded in October and the species was present throughout the non-breeding season. Flocks of up to 92 Canada geese were recorded during any one survey.

147. The fields around Stacie's Farm, over 2km north of the onshore cable route, appear to be relatively important for geese and the waterbodies present in this area may be used by roosting birds. Away from this area the site usage is more sporadic with no real concentrations or regular activity, although the agricultural land near Hamford Water may be more frequently used.

### Lapwing

148. In 2021-22, lapwings were present within the survey area from late October onwards, although there was a clear peak in numbers in midwinter with total counts of over 1,000 individuals in late December and early January (see Graph 1 Total counts of lapwing individuals per survey during 2021-22 (blue) and 2022-23 (red) for lapwing counts during each survey). The largest flocks and highest frequency of observations were recorded near Hamford Water around Quay Farm, Beaumont Hall and Barker's Farm (ES Figure 24.10 (Document Reference: 3.2.20)), with the largest flock of 1,250 individuals being an overspill from a flock of approximately 2,300 individuals in a field outside of the survey area to the north.

149. Other areas frequented by smaller numbers of lapwing were in the north just south of Lawford and in the south near the cable landfall area. Birds were recorded within winter wheat, stubble fields and on two occasions roosting in ploughed fields in the north of the survey area. There were also a number of incidences where surveyors noted that lapwings were disturbed by walkers, bird scarers and wildfowling.



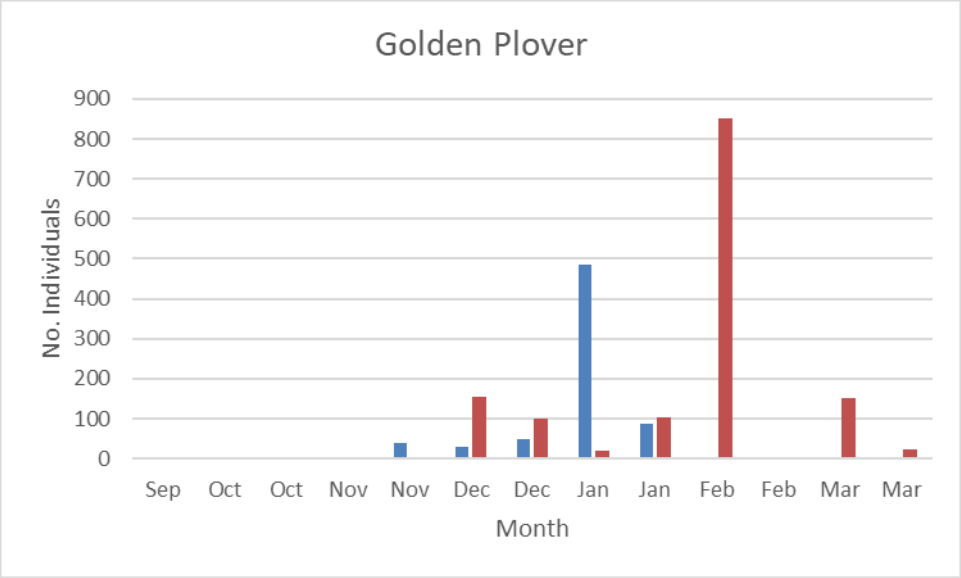

**Graph 1 Total counts of lapwing individuals per survey during 2021-22 (blue) and 2022-23 (red) onshore cable route and onshore substation works area survey area surveys**

150. In 2022-23, lapwings were present within the survey area from October to February, and similar to 2021-22 there was a clear, albeit lower, peak in numbers in midwinter, with total counts of up to 668 individuals in late January (Graph 1, above). The largest flocks, and highest frequency of observations, were again recorded near Hamford Water SPA (ES Figure 24.12 (Document Reference: 3.2.20)). Other areas frequented by smaller numbers of lapwing were in the north at Horsley Cross and near Little Bromley. Most birds were recorded on arable farmland.

### Golden plover

151. Like lapwing, golden plover numbers in 2021-22 had a midwinter peak in early January, albeit in smaller numbers (survey peak of 484 individuals). See Graph 2 for the temporal distribution of observations throughout the survey period. The peak flock size recorded was 375 individuals which was combined with the aforementioned lapwing flock at Quay Farm near Hamford Water SPA (ES Figure 24.10 (Document Reference: 3.2.20)) and was also an overspill from a larger flock of 1,880 individuals to the north of the survey area.

152. Golden plovers were generally found in similar areas to lapwing, close to Hamford Water, or within the northern part of the survey area. Birds were recorded feeding in winter wheat and stubble fields and in the north, roosting in stubble and grass fields.




**Graph 2 Total counts of golden plover individuals per survey during 2021-22 (blue) and 2022-23 (red) onshore cable route and onshore substation works area survey area surveys**

153. In 2022-23, golden plover numbers had a midwinter peak in early February, with a peak flock size of 850 individuals flushed from fields near Hamford Water SPA (ES Figure 24.12 (Document Reference: 3.2.20)). As in 2021-22, most records were near Hamford Water SPA, but elsewhere golden plovers were less common, with records in the south of the survey area at Great Holland, and further north at Horsley Cross.

### Curlew

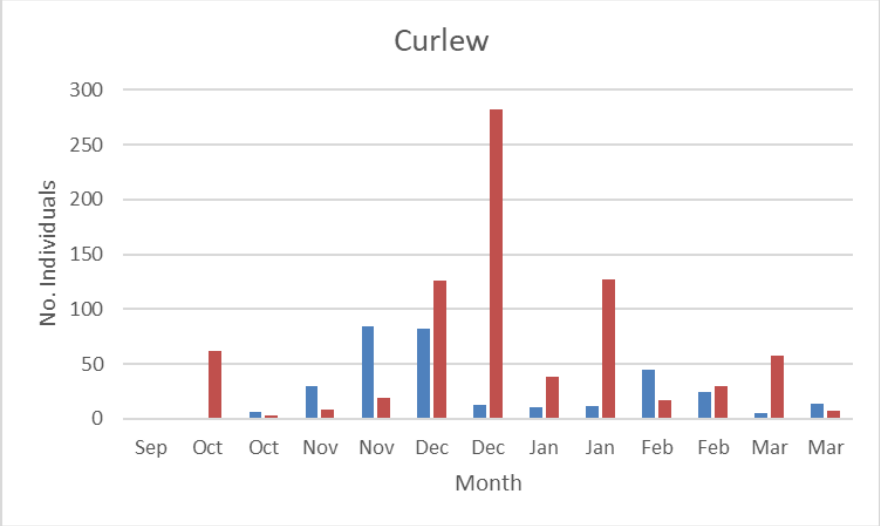
154. In 2021-22, curlew numbers were smaller than lapwing and golden plover, with a peak of 84 and 82 individuals within the survey area in late November and early December respectively (see Graph 3 for temporal distribution of observations). Birds were most commonly recorded feeding in stubble fields relatively near Hamford Water in the centre of the survey area and towards the cable landfall area in the south. However, they were notably absent in the north of the survey area (ES Figure 24.10 (Document Reference: 3.2.20)).

155. In 2022-23 there was a higher peak count of 282 individuals within the survey area in late December. Birds were most commonly recorded around Hamford Water SPA which is used as a roost site. Away from the SPA, birds were recorded in lower numbers on arable and grassland fields, in the south at Great Holland, and in smaller numbers around Thorpe Green.

### Other waders

156. In 2021-22 and 2022-23, records of other wader species were mainly made in the area around Beaumont Quay, adjacent to Hamford Water to the east of the central part of the survey area (ES Figure 24.11 (Document Reference: 3.2.20)). These birds, which are likely to form part of the assemblage of the Hamford Water SSSI, included relatively small numbers of a variety of species such as avocet, grey plover, redshank, green sandpiper, avocet, black-tailed godwit, ruff and snipe. Larger flocks of up to 560 dunlin were also present in 2022-23 (this species was not recorded during 2021-22 surveys).

157. There was also a small concentration of waders found in the north, particularly c.2km north of the onshore cable route around Stacie's Farm, including regular records of up to three green sandpipers (meeting the BTO WeBS threshold for national importance) feeding around the edges of a waterbodies. Observations of two and four green sandpipers were also made by reservoirs to the northeast of Thorpe-le-Soken.




**Graph 3 Total counts of curlew individuals per survey during 2021-22 (blue) and 2022-23 (red) onshore cable route and onshore substation works area survey area surveys**

### Ducks

158. The main concentrations of duck species were found in similar locations to waders, namely at the edge of Hamford Water SPA and on waterbodies around Stacie's Farm in the north. Ducks were also associated with waterbodies throughout the rest of the survey area, including those to the northeast of Thorpe-le-Soken, near Tendring, Goose Green and on Holland Brook in the south (ES Figures 24.15 and 24.16 (Document Reference: 3.2.20)).

159. Species found in largest numbers were mallard, teal and wigeon. Other species recorded included shelduck close to Hamford Water, shoveler (mainly in the north) and gadwall across the survey area.

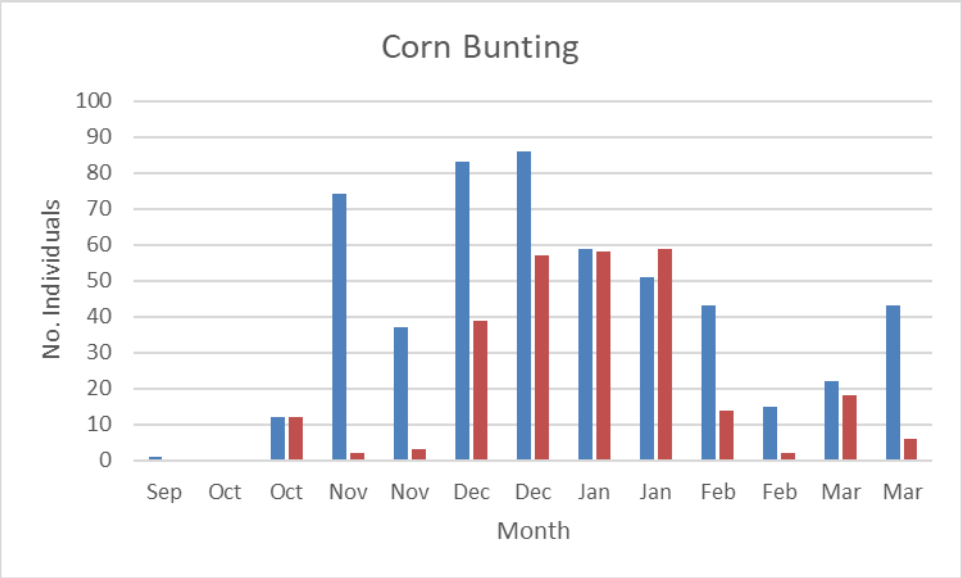
### Raptors and owls

160. Raptor and owl species were frequently recorded during surveys, mainly flying over or hunting within the survey area (Confidential ES Figure 24.17 (Document

Reference: 3.2.20)). Marsh harrier and peregrine falcon were more regularly recorded, with up to six and four observations respectively within the survey area during one survey. Barn owls and little owls were recorded near farms in the northern half of the survey area and both species are likely to breed in the vicinity.

### Corn bunting

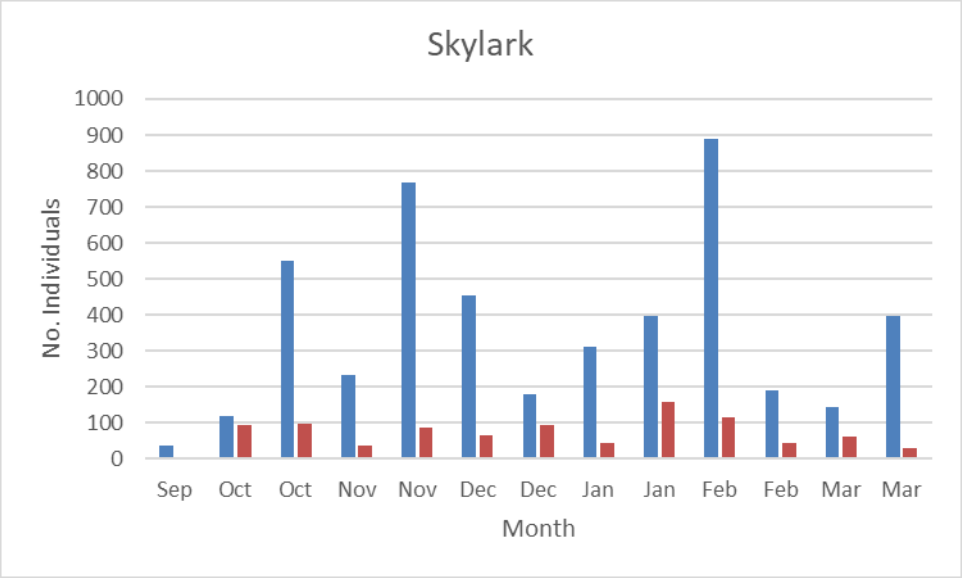
161. Corn buntings were regularly recorded in similar flock sizes and distribution in both non-breeding seasons. Flocks of up to 46 individuals were observed throughout the winter periods, with a peak single survey count of 86 individuals across the survey area in late December 2021 (Graph 4). Birds were recorded feeding in ploughed, weedy or stubble fields and game cover crops, as well as on wires, trees and hedges. Flocks were recorded mainly in two parts of the survey area: in the north around Little Bromley and New Hall and in the south near Great Holland (ES Figures 24.19 and 24.20 (Document Reference: 3.2.20)).




**Graph 4 Total counts of corn bunting individuals per survey during 2021-22 (blue) and 2022-23 (red) onshore cable route and onshore substation works area survey area surveys**

### Skylark

162. Skylarks are present within the survey area throughout the non-breeding season, with highest numbers recorded in the northern part of the onshore ornithology study area. Peak survey count was 890 individuals in early February 2022 (Graph 6). The species was not systematically surveyed during the 2022-23 non-breeding season to provide a greater opportunity for surveyors to record less frequent species of higher conservation value. Nevertheless, the data show that the species was again present during the whole survey period.




**Graph 5 Total counts of skylark individuals per survey during 2021-22 (blue) and 2022-23 (red) onshore cable route and onshore substation works area survey area surveys**

### Other species

163. Other notable species in 2021-22 included a number of grey partridge records in the northwest corner of the survey area (up to seven individuals, ES Figure 24.14 (Document Reference: 3.2.20)), woodlark near Thorpe-le-Soken and kingfishers associated with waterbodies throughout the survey area.

164. Grey partridge and woodlark were not recorded during surveys in 2022-23.

#### 24.5.2.2.3 Migratory birds

165. Surveys continued year-round to pick up any additional observations of migratory birds using the survey area. A number of higher conservation status species were recorded during migratory surveys in the landfall area, which were either non-breeders, or no breeding activity could be confirmed. In general, numbers of migratory waterbirds appear to be relatively low compared to those recorded over winter. A summary of their presence follows:

- Small numbers of migratory waders including black-tailed godwit, curlew, golden plover, little ringed plover, greenshank, ruff, turnstone, wood sandpiper and purple sandpiper were recorded within wetland areas at Holland Haven Marshes SSSI in April and May 2021. These were non-breeding individuals.
- A count of 63 migratory whimbrel was recorded within Compartment E in early May 2021.
- A maximum count of 41 curlew, 42 avocet and 24 golden plover was made in Compartment D during spring migration in 2022.
- Small numbers of summering non-breeding Mediterranean gulls were recorded within all Compartments, with a peak of seven birds in Compartment B in April 2021.

- Very small numbers of Sandwich tern were recorded in Holland Haven Marshes SSSI in April and June 2021, but no breeding evidence.
- During the autumn migratory period in August and September, notable records included 45 Sandwich terns in Compartment D, and over 900 swallows in Compartments D and E in 2021. Over 600 swallows were recorded in 2022.

### 24.5.3 Future trends in baseline conditions

166. In the event that the Project is not developed, an assessment of the future conditions for onshore ornithology has been carried out and is described within this section.

167. With no development, baseline conditions will continue to change following natural trends and increasing influence from climate change. The likely impacts of climate change on bird species in the UK has been outlined in Pearce-Higgins (2021), with a general conclusion that many populations are already being adversely affected, although some southern species and widespread resident species are increasing in response to warmer temperatures.

168. The UK's approach to managing biodiversity loss was set by *Biodiversity 2020: a strategy for England's wildlife and ecosystem services* (Defra, 2011). The policies set out under this strategy seek to reverse these declining trends. Data are still being gathered to determine success of these measures, however for the time being it appears that existing population trends for the species present within the onshore ornithology study area may continue. Therefore, it is assumed that the ornithological baseline within the onshore ornithology study area will continue to change over time as measures to try and manage the decline in species populations continue to occur concurrently to natural changes in the environment.

169. The degree of environmental change in the 'no development' scenario therefore depends upon local land management practices, local and wider scale biodiversity management success, climate change trends, and naturally occurring changes outside of anthropogenic influence.

170. The non-breeding bird assemblage is dominated by wildfowl and wader species. Pearce-Higgins (2021) states migratory birds such as these may be particularly exposed to climate change. Impacts at different stages of their migratory journey, from breeding grounds, stopover locations and wintering destinations, may disrupt dependencies between them.

171. Pearce-Higgins (2021) found that across all 85 UK waterbird species studied there is a balance of population increases and decreases, although with evidence of negative impacts of climate change on 17 species, compared to positive impacts on six species. One quarter of waterbird species are regarded as vulnerable to climate change, whilst one fifth may benefit, including those whose populations are sensitive to cold winter weather such as lapwing or with southerly distributions such as avocet.

172. Pearce-Higgins (2021) states that after the impact of agricultural intensification, which is responsible for the widespread declines in farmland birds, climate

change is regarded as the second-most important driver of breeding population changes since the 1970s. In this respect, farmland breeding birds present such as corn bunting and grey partridge may be particularly vulnerable to changes, whereas historically more southern species such as Cetti's warblers are judged to be benefitting greatly from climate change with their colonisation and population increases driven by warmer winter temperatures.

173. Where an IOF is known to be experiencing baseline natural trends that are relevant to this impact assessment, this is noted below.

## 24.6 Assessment of significance

### 24.6.1 Scoped-in Important Ornithological Features

174. The assessment of significance of likely impacts on IOFs will be applied to those 'scoped-in' species of Medium or High nature conservation importance that are known to be present within the onshore ornithology study area, as confirmed through survey results and desk studies outlined in Section 24.5 above.

175. For breeding species, IOFs are determined to be those target species (see Section 24.4.2), which exhibited evidence of breeding within the onshore ornithology study area through territorial or nesting-related behaviour.

176. The following target species are therefore considered to be IOFs during the breeding season, although it should be noted that where a species is resident, impacts to an IOF during the non-breeding season are also accounted for in the assessment:

- Barn owl;
- Cetti's warbler;
- Corn bunting;
- Grey partridge;
- Hobby (breeding season only);
- Quail (breeding season only);
- Skylark; and
- Yellow wagtail (breeding season only).

177. Additionally, although bird species are not notified features of the Holland Haven Marshes SSSI, they are considered as "additional interest" in the SSSI citation. The Holland Haven Marshes SSSI breeding bird assemblage is therefore also treated as a single IOF and includes breeding target species such as avocet, lapwing and redshank, albeit some of these species are unlikely to be found within the onshore ornithology study area due to a lack of suitable habitat.

178. The non-breeding season IOFs are considered to be:

- Target species where peak counts reached WeBS report thresholds for national (Great Britain) importance[3] within the onshore ornithology study area (Table 24.14, Table 24.15 and Table 24.16). These are: **dark-bellied brent goose**, **European white-fronted goose** and **green sandpiper**;
- Wader species most regularly recorded during surveys that are Annex I listed, or Red-listed species, and are known to forage widely and utilise inland habitats in winter, including those found within the onshore project area. These are **lapwing, curlew** and **golden plover**;
- **Holland Haven Marshes SSSI non-breeding bird assemblage**. Generally, this will be treated as a single IOF, but any impacts on individual species will be highlighted where they may result in a significant effect at a wider population level (regional or national).

179. Additionally, connectivity with the onshore ornithology study area may exist for some non-breeding species from **Hamford Water SSSI, Stour Estuary SSSI** and **Colne Estuary SSSI** and these populations will be highlighted where relevant.

180. A summary of scoped-in IOFs with their nature conservation importance (Table 24.8) is presented in Table 24.17.

**Table 24.17 Scoped-in IOFs and their sensitivity.**

| Species | Season | Conservation Status | Nature Conservation Importance | Conservation Trend (Essex[4]) | Sensitivity |
|---|---|---|---|---|---|
| **Barn Owl** | Breeding & non-breeding | Schedule 1; BoCC Green | Medium | Local resident, primarily in low lying coastal areas. | Medium |
| **Cetti's warbler** | Breeding & non-breeding | Schedule 1; BoCC Green | Medium | Locally common and increasing breeding resident. | Medium |
| **Corn bunting** | Breeding & non-breeding | BoCC Red, species may be present in regionally important numbers (>1% regional breeding population). | Medium | Declining resident. | Medium-high |
| **Grey partridge** | Breeding & non-breeding | BoCC Red, species may be present in regionally important numbers (>1% | Medium | Much declined now scarce resident. | Medium-high |

[3] This excludes species where the exceeded threshold for national importance is one individual (i.e., common sandpiper, whimbrel and Sandwich tern, which were recorded infrequently in relatively low numbers).

[4] https://www.ebws.org.uk/essex-bird-list

| Species | Season | Conservation Status | Nature Conservation Importance | Conservation Trend (Essex[4]) | Sensitivity |
|---|---|---|---|---|---|
| | | regional breeding population). | | | |
| **Hobby** | Breeding | Schedule 1; BoCC Green | Medium | Uncommon breeder but widespread summer visitor and passage migrant. | Medium |
| **Quail** | Breeding | Schedule 1; BoCC Amber | Medium | Scarce summer visitor and passage migrant, subject to influxes. | Medium |
| **Skylark** | Breeding & non-breeding | BoCC Red, species listed as present within SSSI. | Medium | Common resident, passage migrant and winter visitor. | Low-medium |
| **Yellow wagtail** | Breeding | BoCC Red, species may be present in regionally important numbers (>1% regional breeding population). | Medium | Declining summer visitor. | Medium-high |
| **Dark-bellied brent goose** | Non-breeding | Counts of national importance, Annex 1, SPA species, SSSI species, BoCC Amber, | High | Very common winter visitor and passage migrant. | Medium-high |
| **European white-fronted goose** | Non-breeding | Counts of national importance, SSSI species, BoCC Red, | High | Winter visitor and passage migrant in variable numbers. | High |
| **Green sandpiper** | Non-breeding | Counts of national importance, Schedule 1, BoCC Amber | High | Common passage migrant and much increased winter visitor. | Medium-high |
| **Lapwing** | Non-breeding | BoCC Red, species may be present in regionally important numbers (>1% regional wintering population). | Medium | Declining breeding population. Numerous passage migrant and winter visitor. | Medium |
| **Curlew** | Non-breeding | BoCC Red, species may be present in regionally important numbers (>1% regional wintering population). | Medium | Common passage migrant and winter visitor. | Medium |

| Species | Season | Conservation Status | Nature Conservation Importance | Conservation Trend (Essex[4]) | Sensitivity |
|---|---|---|---|---|---|
| **Golden Plover** | Non-breeding | Annex I; BoCC Green | Medium | Common passage migrant and winter visitor. | Medium |
| **Holland Haven Marshes SSSI assemblage** | Breeding & non-breeding | SSSI and LNR | High | Unknown | High |
| **Hamford Water SSSI assemblage** | Non-breeding | SSSI (SPA and Ramsar site) | High | Unknown | High |
| **Stour Estuary SSSI assemblage** | Non-breeding | SSSI (SPA and Ramsar site) | High | Unknown | High |
| **Colne Estuary SSSI assemblage** | Non-breeding | SSSI (SPA and Ramsar site) | High | Unknown | High |

181. All other target species and designated sites have been scoped out of the assessment due to lack of breeding, low levels of activity and/or low importance of the onshore project area for these species, or a lack of potential connectivity in the case of other designated sites. In these cases, the likelihood of an unmitigated significant effect at a population is sufficiently low as to warrant their exclusion from assessment. In some cases, whilst a target species has not been considered as an IOF in its own right, it may form part of an SSSI assemblage, and has therefore been included in the assessment.

182. Species which are qualifying SPA figures (dark-belied brent goose, as per Table 24.17) have been included within the assessment as IOFs, and assigned a high nature conversation importance status. Impacts on SPAs and Ramsar sites are considered as part of the HRA process presented in the RIAA (Document Reference: 7.1.5).

### 24.6.2 Likely significant effects during construction

183. The following sections describe the impacts upon those IOFs determined in Section 24.6.1 that have the potential to arise during the construction phase of the Project. The assessment follows the methodology set out in Section 24.4.3 and is based on the worst-case scenarios set out in Table 24.4. It includes the incorporation of embedded mitigation and Project commitments set out in Section 24.3.3

184. The key aspects of the construction phase with respect to the IOFs are identified as construction works (and supporting activities) associated with the HDD at landfall, trenching and cable installation along the onshore cable route, and construction of the onshore substation and national grid substation connection. There is the potential for:

- Direct impacts where land used by IOFs and the footprint of the proposed works overlap, leading to loss or fragmentation of habitat (Impact 1: Habitat Loss), which could be short- to medium-term (e.g. localised excavation works, temporary compounds) or long-term (e.g. permanent onshore substation). This could affect breeding, roosting or foraging individuals.
- Displacement and disruption of breeding and foraging birds as a result of noise and visual disturbance (Impact 2: Construction Disturbance) may occur over the duration of a particular construction activity within working hours, or the duration of the whole construction period.
- Indirect impacts due to habitat alteration (including smothering or contamination, including bentonite breakout associated with HDD works) (Impact 3). This may occur over a range of timeframes depending on the extent and location of and response to any incidents, although is most likely to be short-term.

185. For each impact, an assessment is made for each IOF, although in some instances where impacts are similar, species have been grouped together for ease of interpretation. In each case, impacts associated with the (i) landfall; (ii) onshore cable route (including associated temporary works, accesses, TCCs and Bentley Road improvement works – see worst-case Table 24.4); and (iii) onshore substation and national grid substation connection works are treated individually, with an overall single level of significance of effect then predicted for the whole onshore project area combined. For ease of reference, a summary of the magnitude of impact and significance of effects is presented at the end of this chapter in Table 24.26.

#### *24.6.2.1 Impact 1: Habitat loss*

##### 24.6.2.1.1 Landfall description

186. The Project would bring the export cables onshore at landfall between Clacton-on-Sea and Frinton-on-Sea on the Tendring coast (see ES Figure 24.2 (Document Reference: 3.2.20) for landfall location and extent).

187. Cables will be installed at the landfall using HDD which will be drilled from a fenced landfall compound, of a maximum 150 x 75m size, for up to two transition joint bays (4 x 15m per bay) in that area. The maximum length of the HDD will be 1.1km. The location of the HDD drill exit will be below MLWS, meaning that there will be no construction footprint within the intertidal area.

188. The TCC would be located to the north of the Frinton Golf Course part of Holland Haven Marshes SSSI, and within landfall survey Compartment E (see location on ES Figure 24.2 (Document Reference: 3.2.20)). It would be within a field currently comprising of agricultural grassland with some hedgerow and scrubby field margins.

##### 24.6.2.1.2 Onshore cable route description

189. The onshore exports cables will connect the landfall to the onshore substation and be installed underground along the onshore cable route using various techniques.

190. The onshore cable route working area required to install the export cables will be up to 24km in length and up to 72m wide (open cut trenching), 90m wide (trenchless crossings), or 130m wide (complex trenchless crossings).

191. Along the onshore cable route, up to 11 TCC locations have been identified. The dimensions would be 150x150m (main compound) or 100x100m (satellite compound), and trenchless crossing compound dimensions would be 75 x 150m. Where there is no existing hardstanding, TCCs would be constructed by laying a geotextile membrane or similar directly on top of the subsoil which would have stone spread over the top. Following completion of construction, geotextile / stone would be removed, and the site reinstated.

192. As a worst-case the haul road is assumed to be required along the full length of the onshore cable route. Following an initial topsoil strip, the haul road would be installed in stages as each work front progresses.

193. All construction accesses would be removed, and land reinstated following the completion of construction.

194. Jointing bays will be used to pull the cables into the ducts and/or to join the cable lengths to each other. Link boxes are used for earthing cables and will be installed inside a protective concrete chamber. The jointing bays are subsurface structures, while the link boxes will require access (for inspections) from the surface during operations and will therefore be located at or above ground level. The frequency of jointing bays and link boxes will be approximately every 500m.

#### 24.6.2.1.3 Onshore substation and national grid substation connection works description

195. This refers to the onshore substation works area, proposed to be located west of Little Bromley. The worst-case scenario for the total footprint for the onshore substation works area is calculated as being 43ha. Within this a maximum area of 280 x 210m would be required for the onshore substation platform, with additional land required for access, drainage, landscaping and environmental mitigation (see ES Figure 5.2 (Document Reference: 3.2.3)).

196. National grid has identified a search area within which their new EACN substation will be located. This is the hatched highlighted area illustrated on ES Figure 5.2 (Document Reference: 3.2.3), within the North Falls onshore project area. A cable (up to 40m construction swathe) would run from the new North Falls onshore substation to the new national grid substation, and a construction compound would be required, which for assessment purposes, is considered to be similar in size to the one required for the onshore substation.

#### 24.6.2.1.4 Breeding IOFs

Barn Owl

*Impact associated with the landfall*

197. The Essex breeding barn owl population is at least 51 pairs, based on checks of nest boxes conducted in 2019 by the Essex Wildlife Trust[5]. Within the landfall survey area in 2021, single barn owl breeding attempts took place in survey Compartments B and D, and two attempts took place in Compartment D in 2022 (Confidential ES Figure 24.15 (Document Reference: 3.2.20)). Based on the locations of these breeding attempts (all over 1km from the landfall compound) it is unlikely that any important foraging habitat would be affected.

198. The temporary loss of suboptimal foraging habitat over 1km from any nest site would result in a negligible magnitude of impact on the regional (Essex) population.

*Impact associated with the onshore cable route*

199. Barn owls were also recorded breeding in two locations in the middle and northern stretches of the onshore ornithology study area in 2022 (see Confidential ES Figure 24.26 (Document Reference: 3.2.20)), both outside of the onshore project area. Evidence of roosting or feeding barn owls was identified at a further four locations in the northern part of the onshore ornithology study area.

200. Based on the evidence collected, there would be no direct loss of barn owl nest or roost sites. Anecdotal reports from landowners suggest that parts of the onshore cable route are likely to be frequented by foraging barn owls, and some temporary loss of foraging habitat is therefore likely. As barn owls may forage 1km or more around nest sites, any short-term losses would be a small part of their range, and unlikely to impact on breeding or survival rates for any pairs. At a regional level, a negligible magnitude of impact is predicted.

*Impact associated with the onshore substation and national grid substation connection works*

201. The northern barn owl nest site recorded in 2022 (see Confidential ES Figure 24.26 (Document Reference: 3.2.20)) would be approximately 1km from the onshore substation and over 400m from the onshore substation works area at its closest point. Whilst it is possible that part of the pair's foraging range may be lost temporarily and/or permanently by infrastructure construction, this is unlikely to impact on breeding or survival rates. At a regional level, a negligible magnitude of impact is predicted.

*Significance of effect*

202. The significance of effect for a breeding IOF has been determined by considering its sensitivity (shown in Table 24.17, based on nature conservation

[5] https://www.barnowltrust.org.uk/wp/wp-content/uploads/State-of-the-UK-Barn-Owl-Population-2019-V2.pdf

importance and population trend) and magnitude and duration of impact (Table 24.9 and Table 24.10). This is used to reach a conclusion based on the matrix in Table 24.11. A summary of predicted magnitudes of impact, unmitigated significances of effects and residual significances of effect for each IOF is presented in Table 24.26.

203. Whilst loss of breeding pairs is unlikely, impacts on foraging and productivity may occur to barn owl (short- and long-term) and therefore the overall level of significance for habitat loss impacts is considered to be **minor adverse** at a population level (i.e., not significant in EIA terms).

#### *Additional Mitigation*

204. Embedded mitigation that is relevant to this impact is presented in Section 24.3.3.

205. For barn owl, a number of nest boxes are located within and surrounding the Holland Haven Marshes SSSI. Occupancy and breeding success of these is likely to have reduced over time due to the deterioration of the wood constructions and occupation by jackdaws in some of them. Effort would be made in consultation with the Essex Wildlife Trust, Tendring District Council and Natural England, to repair or replace existing nest boxes, or add new ones in suitable locations across the onshore project area to enhance nesting conditions, and ultimately increase the productivity of the local breeding population.

#### *Residual significance of effect*

206. Following the implementation of the additional mitigation and enhancement measures (as outlined above), the effects of habitat loss on breeding barn owl would be at most **minor adverse** and not significant in EIA terms.

### Cetti's Warbler

#### *Impact associated with the landfall*

207. ES Figures 24.3 and 24.4 (Document Reference: 3.2.20) show that up to three Cetti's warbler territories may be found along the field margins where the landfall TCC would be located.

208. The landfall compound is estimated to be 150 x 75m in extent, which equates to around 20% of the field, and as such, the direct habitat loss will be minimal.

209. In a worst-case scenario, it is therefore possible that up to two Cetti's warbler territories may be temporarily affected by direct loss of nesting and/or foraging habitat, although with embedded mitigation being employed (pre-construction surveys by ECoW or qualified ornithologist to ensure no nests are directly affected, and in the case of Schedule 1 species such as Cetti's warbler, no breeding adults are disturbed – see Table 24.5), it is likely that breeding could continue with suitable restrictions to construction enforced as required.

210. Within a regional population context, a medium-term negligible impact magnitude is therefore predicted.

### *Impact associated with the onshore cable route*

211. No Cetti's warblers were recorded outside of the landfall area, and therefore there would be no impacts on the species in addition to those described above for the landfall.

### *Impact associated with the onshore substation and national grid substation connection works*

212. No Cetti's warblers were recorded outside of the landfall area, and therefore there would be no impacts on the species in addition to those described above for the landfall.

### *Significance of effect*

213. For Cetti's warbler, the unmitigated significance of effect associated with combined habitat loss within the landfall, onshore cable route and onshore substation and national grid substation connection works is considered to be no more than **negligible** at a population level (i.e., not significant in EIA terms) because of the embedded mitigation (avoidance of sensitive wetland habitats such as Holland Haven Marshes SSSI through site selection) and small worst-case losses (at landfall only) within the context of relatively large regional population.

## Corn Bunting

### *Impact associated with the landfall*

214. ES Figures 24.3 and 24.4 (Document Reference: 3.2.20) show that up to two corn bunting territories may border or overlap with the field that would hold the landfall TCC.

215. The landfall compound is estimated to be 150 x 75m in extent, which equates to around 20% of the field, and as such, the direct habitat loss will be minimal.

216. In a worst-case scenario, it is possible that one corn bunting territory may be temporarily affected by direct loss of nesting and/or foraging habitat, although with embedded mitigation being employed (pre-construction surveys by ECoW or qualified ornithologist to ensure no nests are directly affected – see Table 24.5), it is likely that breeding could continue with suitable restrictions to construction enforced as required.

217. There were considered to be approximately 11,000 corn bunting breeding pairs in the UK in 2016 (Woodward *et al.* 2020) and the BTO Breeding Atlas results (Balmer *et al.* 2013) indicates that Essex remains one of the strongholds for the species in England. The current regional (Essex) population is unknown, but from a study conducted across 247 $km^2$ of farmland within the Tendring district in 1994-1998, some 2–3% of the UK population (278 singing males) was present. Based on the UK distribution map, the Essex population is considered to be approximately 1,500 to 2,000 pairs.

218. Within a regional population context, the loss of up to two territories would result in medium-term negligible impact magnitude.

### *Impact associated with the onshore cable route*

219. The main aggregations of breeding corn buntings were recorded in arable fields at the southern and northern ends of the onshore cable route (ES Figure 24.21 (Document Reference: 3.2.20)). Whilst most records were from field margins just outside of the onshore project area, there is likely to be direct loss of nesting or territorial habitat for a minority of pairs present along the onshore cable route.

220. With embedded mitigation including reinstatement of habitat, any habitat losses would be short-term in duration, and if works occurred during the non-breeding season, habitats may become suitable for the following breeding season if reverted to agriculture.

221. During the winter corn buntings were recorded in proximity to the onshore cable route survey area, mainly in the northmost and southernmost parts (ES Figures 24.19 and 24.20 (Document Reference: 3.2.20)). It may be the case that during the winter period, if onshore cable construction occurs within a particular field, the remainder of the field may remain untouched by the farmer and therefore cereal seeds may be more available to birds, at least in part offsetting any impacts due to habitat loss. However, the assessed worst-case assumes that some feeding activity may be affected in these areas due to temporary habitat loss.

222. Overall, under the realistic worst-case scenario, as described in Table 24.4, impacts during the breeding and non-breeding seasons may result in a low magnitude of impact on the regional (Essex) population.

### *Impact associated with the onshore substation and national grid substation connection works*

223. Flocks of up to 41 corn buntings were recorded during winter months within and around the onshore substation works area (ES Figures 24.19 and 24.20 (Document Reference: 3.2.20)).

224. In 2022, there were concentrations of breeding corn bunting records within arable fields inside the onshore substation works area, but none within the national grid substation connection works area (ES Figure 24.21 (Document Reference: 3.2.20)). Assuming some clustered records refer to the same territorial male/pair, then it is possible that up to four breeding pairs may be affected to some extent by habitat loss associated with construction.

225. The worst-case scenario for total temporary working area footprint for the onshore substation is 43ha, with the construction compound footprint being 3.8ha (approximately 9% of the onshore substation works area). The permanent onshore substation footprint could be up to 5.9ha (approximately 14% of the onshore substation works area). Judging by the distribution of records in 2022, at worst one or two of the four pairs would therefore be directly affected by permanent habitat loss associated with the onshore substation and supporting infrastructure.

226. Whilst some arable land within the onshore substation works area will be lost during the construction period, and throughout the operational period, other nearby arable fields are likely to remain available for corn buntings. However, a

worst-case loss of up to four breeding pairs, and impacts on winter flocks of up to 41 individuals may therefore reach regional (Essex) significance.

227. A long-term low magnitude impact on the regional (Essex) corn bunting population is therefore predicted.

#### *Significance of effect*

228. The long-term habitat loss associated with the onshore substation in particular may result in **minor to moderate adverse** effects on corn bunting, when considering breeding and non-breeding season usage, which is significant in EIA terms.

### Grey Partridge

#### *Impact associated with the landfall*

229. No grey partridge observations were made within 1km of the landfall (see ES Figure 24.3 (Document Reference: 3.2.20) for closest record), and so no impacts are predicted.

#### *Impact associated with the onshore cable route*

230. Grey partridge was absent from the onshore cable route survey area during the 2021-22 non-breeding season surveys, and not recorded within 400m in 2022-23 (however was recorded within the onshore substation works area – see below). No impacts are therefore predicted.

#### *Impact associated with the onshore substation and national grid substation connection works*

231. Counts of up to three grey partridges were made from January to March 2022 on farmland within and adjacent to the onshore substation works area (ES Figure 24.19 (Document Reference: 3.2.20)). A pair of grey partridge was flushed from a field to the west of the onshore substation works area during the 2022 breeding season (ES Figure 24.23 (Document Reference: 3.2.20)), suggesting that a small population of birds are resident in that area.

232. Whilst it is possible that the substation and national grid substation connection works infrastructure may result in some temporary and permanent habitat loss for the birds, it is unlikely that it would affect the ability of any pairs to nest and breed successfully. However, as a worst-case, within the context of the regional (Essex) population, a long-term low magnitude of impact is predicted if it assumed that one breeding pair is affected.

#### *Significance of effect*

233. The long-term habitat loss associated with the onshore substation in particular may result in **minor to moderate adverse** effects on grey partridge, when considering breeding and non-breeding season usage, which is significant in EIA terms.

#### *Additional mitigation*

234. For additional mitigation, soft landscaping works committed to within the onshore substation works area will be designed to be sympathetic for the year-round habitat requirements of grey partridge, by providing hedgerows and tree

planting with thick, grassy cover on low banks for nesting and semi-improved grassland for chick-rearing. Indicative locations and extents for these landscaping measures are shown on the outline landscaping plan provided in the OLEMS (Document Reference: 7.14).

### *Residual significance of effect*

235. Following the implementation of the additional mitigation and enhancement measures (as outlined above), the effects of habitat loss on grey partridge would be at most **minor adverse** and not significant in EIA terms.

#### Hobby

### *Impact associated with the landfall*

236. No hobby breeding observations were made within 1km of the landfall, and so no impacts are predicted.

### *Impact associated with the onshore cable route*

237. Two hobby breeding locations (HY_1 and HY_2) were recorded in 2022, both outside of the onshore project area (see Confidential ES Figure 24.26 (Document Reference: 3.2.20)), meaning that there would be no direct loss of nest sites due to construction works. Prey species for hobbies are mobile and include dragonflies and small birds such as swallows or house martins. It is therefore unlikely that habitat loss associated with construction would impede on the ability of hobbies to forage or breed successfully, and as such a negligible magnitude of impact is predicted.

### *Impact associated with the onshore substation and national grid substation connection works*

238. The aforementioned HY_2 breeding location in 2022 would be over 1km from the onshore substation and over 400m from the onshore project area at its closest point. As described above, it is unlikely that associated habitat loss would impede on the ability of hobbies to forage or breed successfully, and as such a negligible magnitude of impact is predicted.

### *Significance of effect*

239. For hobby, a **negligible** effect is predicted because no direct impacts on breeding would occur, and foraging is also likely to be unimpeded by construction.

#### Quail

### *Impact associated with the landfall*

240. No quail observations were made within 1km of the landfall, and so no impacts are predicted.

### *Impact associated with the onshore cable route*

241. The onshore project area would overlap with a large linseed field where in 2022, three to five males were heard singing (actual breeding attempts were unknown) (see ES Figure 24.23 (Document Reference: 3.2.20)). The species has substantial year-on-year fluctuations in population size in the UK and it is

therefore the case that the abundance and distribution of the species around the onshore cable route may be different during the construction period. Whilst this suggests that there may be some flexibility in habitat choice for the species, in a worst-case scenario, the temporary loss of habitat within the field for some of these birds would result in up to a moderate magnitude impact on the regional (southeast England) population which was estimated to be around 50 singing males in 2020 by Eaton *et al.,* (2022). This population estimate is however not necessarily reflective of breeding status, which is likely to be under recorded, and so this should be taken as a precautionary conclusion as in practice the impact would be likely to be a smaller percentage of the overall breeding population.

### *Impact associated with the onshore substation and national grid substation connection works*

242. No quail observations were made within 1km of any onshore substation infrastructure, and so no impacts are predicted.

### *Significance of effect*

243. For quail, worst-case (short-term) losses to possible breeding habitat may result in a **moderate adverse** effect on the small regional population (potentially significant in EIA terms).

### *Additional mitigation*

244. Although the presence and distribution of quail may vary each year in response to agricultural land use changes, if construction activity is likely to occur during the breeding season within the 27ha field where quails were recorded in 2022 (ES Figure 24.23 (Document Reference: 3.2.20)), provisions would be made to ensure that the field (or adjacent field within the onshore project area) remains suitable for breeding. This would be achieved by enhancing the areas of unfarmable land in the field so that they provide suitable habitat, for example the growth of permanent (e.g. retained from the previous year), tall and dense vegetation (cereal, linseed and/or grassland).

### *Residual significance of effect*

245. Following the implementation of the additional mitigation and enhancement measures outlined above, the effects of habitat loss on breeding quail would be at most **minor adverse** and not significant in EIA terms.

## Skylark

### *Impact associated with the landfall*

246. It is likely that the habitat where the landfall TCC would be located supports a small number of skylark breeding territories each year. Associated short- to medium-term loss would result in a negligible magnitude of impact on the relatively large regional skylark population.

### *Impact associated with the onshore cable route*

247. Breeding skylarks are abundant within agricultural habitat along the onshore cable route. In winter, the species was also regularly recorded using fields within the onshore ornithology project area. Although declining nationally, the species

is a common resident in Essex. Direct habitat loss associated with construction activities during a breeding season is likely to affect a relatively small number of breeding pairs, with territory sizes likely to be small in densely populated areas (likely closer to the lower end of the 0.25ha to 2ha range estimated by Cramp (1988)). In winter construction may locally impact on the ability of some birds to forage, but overall a short-term negligible impact due to habitat loss is predicted to occur on the regional breeding and non-breeding populations.

#### *Impact associated with the onshore substation and national grid substation connection works*

248. It is likely that a small number of skylark breeding territories would be lost due to the construction of the onshore substation and national grid substation connection. At a regional population level however, this is considered to be a negligible magnitude of impact.

#### *Significance of effect*

249. For breeding and non-breeding skylark, effects are considered to be **negligible** at a (large) regional population level.

#### *Additional mitigation*

250. None required. Soft landscaping works committed to within the onshore substation works area will include semi-improved grassland which is likely to be beneficial for breeding skylark. Indicative locations and extents for these landscaping features are shown on the outline landscaping plan provided in the OLEMS (Document Reference: 7.14).

#### *Residual significance of effect*

251. The residual effect on skylark remains **negligible**, and therefore not significant.

### Yellow Wagtail

#### *Impact associated with the landfall*

252. Although yellow wagtails were recorded within the landfall survey area (see ES Figures 24.3 and 24.4 (Document Reference: 3.2.20)) there were no records in the vicinity of the landfall TCC. No habitat loss impacts are therefore predicted.

#### *Impact associated with the onshore cable route*

253. Survey results suggest that perhaps up to six yellow wagtail territories may have been recorded within proximity to the onshore cable route in 2022. Most records were in fields outside of the onshore project area, although it is possible that birds may utilise some of that habitat for feeding, if not nesting. In any single breeding season, the loss of habitat may affect a small number of breeding pairs, although it is more than likely that birds may be able to continue to breed elsewhere in the local area. At worst a low, short-term magnitude of impact on the regional population is predicted.

#### *Impact associated with the onshore substation and national grid substation connection works*

254. Yellow wagtails were recorded within and around the southern part of the onshore substation works area in 2022 (ES Figure 24.23 (Document Reference:

3.2.20)). It is possible that 2-3 pairs were present in this area and breeding may to some extent be affected by habitat loss, most likely associated with the cable installation (temporary) and operational access route from Ardleigh Road to the onshore substation platform (permanent). Whilst it is unlikely that this would result in the prevention of opportunities to nest, it is possible that foraging ability and productivity may be affected, particularly during the construction period, should works occur during the breeding season. Within the context of the regional population, this is considered to be a low impact magnitude.

### *Significance of effect*

255. Whilst loss of breeding pairs is unlikely, impacts on foraging and productivity may occur to yellow wagtail (short- and long-term) and therefore the overall level of significance for habitat loss impacts is considered to be **minor adverse** at a population level (i.e., not significant in EIA terms).

## Designated Sites

### *Impact associated with the landfall*

256. The landfall lies just outside of the Holland Haven Marshes SSSI, and it is therefore unlikely that direct habitat loss would affect any species nesting within the SSSI. The possible exception to this is barn owl which may forage more widely. Within the SSSI in 2021, single barn owl breeding attempts took place in survey Compartments B and D, and two attempts took place in Compartment D in 2022 (Confidential ES Figure 24.25 (Document Reference: 3.2.20)). Based on the locations of these breeding attempts (all over 1km from the landfall compound) it is unlikely that any important foraging habitat would be affected. Within the context of the SSSI assemblage, this is seen as a negligible magnitude of impact.

257. For all other SSSIs, due to distance from the landfall, no habitat loss impacts are predicted.

### *Impact associated with the onshore cable route*

258. The onshore cable route lies outside of the Holland Haven Marshes SSSI and it is highly unlikely that temporary habitat loss would affect any species nesting within this, or any of the other further afield designated sites. No impacts are therefore predicted for any designated site.

### *Impact associated with the onshore substation and national grid substation connection works*

259. Due to separation distances it is highly unlikely that temporary habitat loss would affect any species nesting within any designated site. No impacts are therefore predicted for any designated site.

### *Significance of effect*

260. Within the context of Holland Haven Marshes SSSI assemblage, the temporary loss of productivity of one pair of barn owl is considered to be of **minor adverse** significance (not significant in EIA terms). No habitat loss effects are predicted for any other designated site.

*Additional mitigation*

261. For barn owl, a number of nest boxes are located within and surrounding the Holland Haven Marshes SSSI. Occupancy and breeding success of these is likely to have reduced over time due to the deterioration of the wood constructions and occupation by jackdaws in some of them. Effort would be made in consultation with the Essex Wildlife Trust, Tendring District Council and Natural England, to repair or replace existing nest boxes, or add new ones in suitable locations across the onshore project area to enhance nesting conditions, and ultimately increase the productivity of the local breeding population.

*Residual significance of effect*

262. Following the implementation of the additional mitigation and enhancement measures outlined above, the effects of habitat loss on Holland Haven Marshes SSSI would be at most **minor adverse** and not significant in EIA terms (no effects predicted for any other designated site).

#### 24.6.2.1.5 Non-breeding IOFs

263. Worst-case scenario habitat loss impacts described in Table 24.4 and summarised above for breeding birds are also relevant for the non-breeding bird assemblage, noting these impacts may affect feeding and roosting activities rather than breeding.

Impact associated with the landfall

*All IOFs*

264. ES Figures 24.5 to 24.8 (Document Reference: 3.2.20) show that the landfall TCC area was not occupied by any IOF during non-breeding season baseline surveys. The closest records were in neighbouring fields, and comprised a single European white-fronted goose, a flock of 25 brent geese and two curlews.

265. Whilst the grassland within the landfall compound may be of some suitability for wildfowl and waders at least for part of the year, the lack of records suggests that usage is at best low and infrequent compared to other parts of the landfall survey area. Direct habitat loss associated with HDD works may reduce the amount of habitat potentially available outside Holland Haven Marshes SSSI, but it is unlikely to affect the ability of any IOF assemblage species to forage or roost successfully through the winter. Therefore, within a regional population context, a negligible extent, and medium-term temporal impact magnitude is predicted for all IOFs. This is also the conclusion for Holland Haven Marshes SSSI and all other designated site non-breeding assemblages.

Impact associated with the onshore cable route

266. Results from the non-breeding season surveys within the onshore cable route area are presented in ES Figures 24.9 to 24.20 (Document Reference: 3.2.20).

*Dark-bellied brent goose and European white-fronted goose*

267. ES Figures 24.9 and 24.10 (Document Reference: 3.2.20) show that dark-bellied brent geese were largely absent from the onshore cable route survey area, with most records occurring inside or near Hamford Water SSSI in 2022-

23. No European white-fronted geese were recorded outside of the landfall survey area. Although it cannot be discounted that the onshore cable route would pass through fields that may on occasion be used by geese, based on recorded distribution, the magnitude of impact of habitat loss on these two species is considered to be negligible.

### *Waders*

268. ES Figures 24.11 and 24.12 (Document Reference: 3.2.20) show distributions of curlew, golden plover and lapwing. In 2021-22, peak counts of these species for the whole onshore cable route survey area were 84 curlew, 484 golden plover and 1,628 lapwing individuals. In 2022-23 these were 282 curlew, 850 golden plover and 668 lapwing. For all three species the main aggregations were recorded in the centre of the onshore cable route survey area, between Thorpe Green and Hamford Water SSSI. There were also smaller counts at the southern end of the onshore cable route survey area (north of the landfall survey area) and further north between Tendring Green and Horsley Cross. Thus, the results of non-breeding season surveys show that the onshore cable route would pass through fields that are used by curlew, golden plover and lapwing, likely part of the Hamford Water SSSI non-breeding assemblage, and possibly in the north, the Stour Estuary SSSI non-breeding assemblage, and in the south, the Holland Haven Marshes SSSI assemblage.

269. Green sandpipers were mainly recorded in two areas: around two adjoining agricultural reservoirs in the centre of the onshore cable route survey area, near Hamford Water SSSI, and around Little Bromley to the north of the onshore cable route, towards Stour Estuary SSSI.

270. The varying distribution of curlew, golden plover and lapwing survey records within the onshore cable route survey area across the two winters suggests that sufficient suitable habitat (including areas closer to SSSIs) would be available to IOFs throughout the construction period, despite some temporary habitat losses which are unlikely to be significantly greater than variations in habitat suitability between and within years due to agricultural practices. As such a medium-term, negligible magnitude of impact due to temporary habitat loss is predicted for the regional lapwing, curlew and golden plover non-breeding populations.

271. Based on the distribution of green sandpiper records outside of the onshore cable route being associated with waterbodies, loss of habitat is not likely to affect birds and so impacts would also be at worst of a negligible magnitude.

272. Overall, impacts on the three SSSIs are also considered to be negligible.

### Impact associated with the onshore substation and national grid substation connection works

273. In the vicinity of the onshore substation works area the key location for waterbirds is the fields and waterbodies around Stacie's farm approximately 2km to the north-east of the onshore substation works area, which are used for feeding and roosting, including nationally important (albeit still small) numbers of green sandpiper. This area around Stacie's Farm is likely to be preferred for usage by geese and waders that form part of the assemblage of Stour Estuary

SSSI to the north and possibly Hamford Water SSSI. ES Figures 24.9 to 24.16 (Document Reference: 3.2.20) show that the onshore substation works area held few waterbird records.

274. The temporary and permanent loss of arable land due to the construction of the onshore substation is predicted to result in a long-term negligible magnitude impact on non-breeding wildfowl and waders (no impact on green sandpiper due to the distance between records and the onshore substation works area). No impacts on designated sites are predicted.

Significance of effect

275. For brent goose, European white-fronted goose, curlew, lapwing, golden plover and green sandpiper, the significance of effect associated with temporary habitat loss within the landfall, onshore cable route and permanent habitat loss associated with the onshore substation works area is considered to be no more than minor adverse at a regional (Essex) population level (not significant in EIA terms).

276. The sections of the onshore cable route within c.2km of Hamford Water SSSI may cross land used by the SSSI non-breeding bird assemblage, including the aforementioned wader species. However, any temporary direct loss would occur in relatively limited extents of this habitat within the onshore cable route, thus giving an effect of minor adverse significance on the SSSI assemblage (not significant in EIA terms) on this high sensitivity IOF.

277. Waders from the Holland Haven Marshes SSSI may occasionally be found within the landfall and southern part of the onshore cable route, but the extent of habitat loss is not likely to affect any individuals, and so an unmitigated effect of minor adverse significance on the SSSI non-breeding assemblage is predicted (not significant in EIA terms).

278. Due to the distances involved, and lack of brent goose (or European white-fronted goose) records in particular, no effects on the Stour Estuary SSSI or Colne Estuary SSSI are predicted.

279. In summary, the effects of habitat loss on non-breeding birds is at most **minor adverse** not significant in EIA terms for all IOFs.

#### *24.6.2.2 Impact 2: Construction disturbance*

##### 24.6.2.2.1 Landfall description

280. Construction activity associated with the landfall could last for up to 13 months, with HDD works taking place over six of these months. The HDD works may include limited 24 hour / 7 days working programme where required for short periods of time during the drilling works. As a worst-case assumption, construction activity may overlap with up to two breeding seasons.

281. The extent of any disturbance impacts associated with construction activities is likely to be dependent on the species, nature of the disturbance source and current baseline disturbance levels. In general, there is currently widespread and frequent human activity within the vicinity of the landfall, with activities recorded during baseline surveys including dog walkers, runners, wildfowling, golfing, angling (at rocky jetties) and metal detecting. Within the landfall,

activities during the breeding season are currently likely to be related to agricultural production and walkers along PRoWs.

#### 24.6.2.2.2 Onshore cable route description

282. Spatial dimensions of the onshore cable route works have been summarised in Impact 1: Habitat Loss, as well as in Table 24.4 which describes the realistic worst-case scenario.

283. The installation of the onshore export cable ducts is expected to take between 18 – 27 months in total (for the installation of four ducts), which could therefore affect two or three breeding seasons, depending on the commencement date. In addition, Bentley Road works are expected to commence earlier and take 6-9 months to complete.

#### 24.6.2.2.3 Onshore substation and national grid substation connection works description

284. Spatial dimensions of the onshore substation and national grid substation connection works have been summarised in Impact 1: Habitat Loss, as well as in Table 24.4 which describes the realistic worst-case scenario.

285. Construction associated with the onshore substation may last 21-27 months, which in a realistic worst-case scenario could affect two or three breeding seasons, depending on month of commencement.

#### 24.6.2.2.4 Breeding birds

##### Embedded mitigation

286. As part of embedded mitigation, measures will be adopted to minimise noise, light and disturbance on identified breeding birds, such as keeping existing vegetation screening, positioning of plant and machinery and adding visual screening (e.g. opaque fencing) where considered necessary, particularly for the landfall HDD works near the Holland Haven Marshes SSSI. Details of such measures would be set out in the EMP secured by DCO Requirement, although additional site-specific measures may be deployed should potential disturbance impacts be identified by the ECoW during pre-construction checks. The effectiveness of these actions will be determined from monitoring by the ECoW or ornithologist, to ensure compliance with the Wildlife and Countryside Act 1981 (as amended) and protection of breeding birds.

##### Barn Owl

###### *Impact associated with the landfall*

287. No barn owl nest sites were recorded within 1km of the landfall, and although it is possible that individuals may on occasion use the area for foraging, it is unlikely that any pair's breeding success would be affected, even if HDD works continue from dusk until dawn. This is therefore at worst a short-term negligible magnitude impact at a regional (Essex) level for the species.

###### *Impact associated with the onshore cable route*

288. Barn owls were recorded nesting in 2021 and 2022, although all locations were outside of the onshore project area (see Confidential ES Figures 24.25 and 24.26 (Document Reference: 3.2.20)). Shawyer's (2011) good practice guidance for avoiding construction disturbance to barn owls advises a protection

zone around a nest of 175m for heavy construction works. With the closest record of barn owl breeding activity approximately 280m from the onshore cable route, no direct disturbance to nesting barn owls is predicted.

289. Barn owls may be disturbed within foraging habitat, but only in the unlikely event of onshore cable route works taking place from dawn to dusk, related to highly localised, temporary trenchless crossing activities. With construction working hours largely being limited to 0700 to 1900 hours, most crepuscular and nocturnal foraging activity during the breeding season will likely be unaffected by the presence of construction activity. It is possible that barn owls may roost, at least on occasion, in mature trees within the onshore cable route. The presence of such roosts would however be determined by the ECoW / qualified ornithologist prior to construction in that location, and if possible, suitable measures would be put in place to reduce disturbance risk. These measures are captured within the OLEMS (Document Reference: 7.14).

290. With embedded mitigation, construction disturbance is therefore unlikely to impact on the breeding or survival rates for any barn owl pairs. At a regional level, a negligible magnitude of impact is predicted.

#### *Impact associated with the onshore substation and national grid substation connection works*

291. Construction works within the onshore substation area would be outside of disturbance range from nest sites, but within 1km of a barn owl breeding pair, and therefore within potential foraging distance. However, for the same reasons as noted above, breeding is unlikely to be affected, and a negligible magnitude of impact is predicted.

#### *Significance of effect*

292. As a Schedule 1 breeding species, if required, embedded mitigation enforced by the ECoW as part of the EMP (see Table 24.5 and paragraph 285) would ensure that breeding barn owl activity is not affected, and therefore disturbance effects are considered to be **negligible** and therefore not significant in EIA terms.

### Cetti's Warbler

#### *Impact associated with the landfall*

293. For Cetti's warbler, assuming that disturbance is also limited to within 150m of a nest, up to four Cetti's warbler territories were recorded within this distance of the landfall (ES Figures 24.3 and 24.4 (Document Reference: 3.2.20)). However, as previously stated, the landfall compound will cover 20% of the landfall, so a temporary loss of at most 2-3 territories due to disturbance is likely to be a medium-term, negligible magnitude of impact on the regional (Essex) population.

#### *Impact associated with the onshore cable route*

294. No Cetti's warblers were recorded outside of the landfall, and therefore there would be no disturbance impacts on the species in addition to those described above for the landfall.

### *Impact associated with the onshore substation and national grid substation connection works*

295. No Cetti's warblers were recorded outside of the landfall, and therefore there would be no disturbance impacts on the species in addition to those described above for the landfall.

### *Significance of effect*

296. As a Schedule 1 breeding species, if required, embedded mitigation enforced by the ECoW as part of the EMP (see Table 24.5 and paragraph 285) would ensure that breeding Cetti's warbler activity is not affected, and therefore disturbance effects are considered to be **negligible** and therefore not significant in EIA terms.

## Corn Bunting

### *Impact associated with the landfall*

297. A study of 60 nesting corn buntings in west Sussex found that most foraging trips were 115m of the nest (Brickle *et al*. 2001) and so a reasonably precautionary assumption is that disturbance may affect territorial birds within 150m of a nest.

298. Based on the results from 2021 and 2022 shown on ES Figures 24.3 and 24.4 (Document Reference: 3.2.20), it is possible that up to two corn bunting territories outside of the landfall area may be within disturbance range. If it is assumed that the final landfall compound area would be 75 x 150m in extent, this would cover only approximately 20% of the landfall, suggesting that at most one pair would be affected. This would likely constitute a medium-term negligible magnitude in a regional (Essex) context.

### *Impact associated with the onshore cable route*

299. The main aggregations of breeding corn buntings were recorded in arable fields at the southern and northern ends of the onshore cable route (ES Figure 24.21 (Document Reference: 3.2.20)). If, as assumed above in the landfall section above, birds are disturbed within 150m of the onshore cable route, then up to approximately 20 territories may be affected during the whole period of construction. It is likely in most cases that this would occur over a single breeding season as cable construction proceeds along the route, although it is possible that some territories that overlap with the haul road may be affected for more than one breeding season. In other cases, territories may not be affected if works take place there during winter only.

300. Corn bunting distribution during the non-breeding season is shown on ES Figures 24.19 and 24.20 (Document Reference: 3.2.20). Small flocks of corn buntings may be subject to periodic disturbance due to construction activities along the onshore cable route during winter, although based on low recorded distribution this is likely to be occasional and sporadic.

301. As outlined under Impact 1: Habitat Loss, the Essex breeding population is considered to be approximately 1,500 to 2,000 pairs. This would indicate that up to approximately 1-2% of the regional breeding population may be affected by disturbance along the cable route throughout the year, which would

represent a short-term, reversible, low magnitude of impact on the regional (Essex) population.

### *Impact associated with the onshore substation and national grid substation connection works*

302. In 2022, there were concentrations of corn bunting records within arable fields inside the onshore substation works area, but none within the national grid substation connection point (ES Figure 24.21 (Document Reference: 3.2.20)). Assuming some clustered records refer to the same territorial male/pair, then it is possible that up to six breeding pairs within may be affected by construction disturbance associated with the onshore substation and associated infrastructure. As it is likely that at least some pairs would remain to breed locally, within a regional population (c.1,500-2,000 pairs) context, a worst-case loss would be seen as a medium- or long-term negligible magnitude impact.

303. Corn buntings were recorded using the onshore substation works area and National Gird connection point and adjacent fields in winter (ES Figures 24.19 and 24.20 (Document Reference: 3.2.20)), and localised disturbance may occur, depending on the nature of the construction works taking place. With flocks of up to 41 individuals being recorded in this area, within the context of the regional corn bunting partridge population, a medium- to long-term low magnitude of impact is predicted.

### *Significance of effect*

304. Medium- to long-term disturbance impacts are likely to occur to multiple pairs of corn bunting (medium-high sensitivity species). within the whole onshore project area. Within a regional (Essex) population context this is considered to be of **minor to moderate adverse** and significant in EIA terms.

## Grey Partridge

### *Impact associated with the landfall*

305. No grey partridge observations were made within 1km of the landfall (see ES Figure 24.3 (Document Reference: 3.2.20) for closest record), and so no impacts are predicted.

### *Impact associated with the onshore cable route*

306. No grey partridge observations were made within the onshore cable route ornithology study area, and so no disturbance impacts upon the species are predicted.

### *Impact associated with the onshore substation and national grid substation connection works*

307. A pair of grey partridge was flushed from a field to the west of the onshore substation works area during the 2022 breeding season (ES Figure 24.23 (Document Reference: 3.2.20)). Although the locations of the records were at distances of around 200m from the closest areas of construction activity, it is possible that breeding birds could be disturbed. Within the context of the regional (Essex) population, a medium- or long-term low magnitude of impact is predicted.

### *Significance of effect*

308. Grey partridge is not a Schedule 1 species and so disturbance to adult breeding birds may result in a **minor to moderate adverse** and significant effect (as a medium-high sensitivity species) in EIA terms at a regional population level.

### *Additional mitigation*

309. Due to its scarcity in the area, grey partridge will be considered as a key species in the EMP to ensure that nesting is unaffected by construction activities. Although not a Schedule 1 species, restrictions to construction (e.g. temporary halts to work) would be deployed by the ECoW during the breeding season if required, to avoid disturbance to adults or broods which may be located away from nest sites.

310. Additional mitigation and enhancement measures (landscaping and vegetation management of onshore substation works area) outlined under Impact 1: Habitat Loss in Section 24.6.2.1 are also applicable mitigation for construction disturbance to grey partridge.

### *Residual significance of effect*

311. When the above additional mitigation is taken into consideration, the residual effect on grey partridge can be reduced to **minor adverse** and not significant in EIA terms.

## Hobby

### *Impact associated with the landfall*

312. No hobby breeding observations were made within 1km of the landfall, and so no impacts are predicted.

### *Impact associated with the onshore cable route*

313. Two hobby breeding locations were recorded in 2022 (see Confidential ES Figure 24.26 (Document Reference: 3.2.20)), located approximately 215m (HY_1, Confidential ES Figure 24.26 (Document Reference: 3.2.20)) and 550m (HY_2) from the closest stretch of onshore cable route. In their expert review, Goodship & Furness (2022) categorise hobby as being of medium sensitivity to disturbance (although this is a precautionary assessment due to the lack of available published studies) and recommend a breeding season buffer zone of 200-450m around active nest sites, depending on the likely existing level of habituation to human disturbance. Based on known nest site locations and background levels of human presence, it is therefore considered that the closest hobby nest site (HY_1) could be disturbed by nearby construction activities. As part of embedded mitigation, pre-construction checks would establish whether this nest site is occupied, and if construction disturbance is considered possible by the ECoW, a suitable exclusion area would be enforced until breeding has ceased.

314. Although hobbies may forage within the onshore cable route, based on their choice of prey species and aerial capture strategy, it is unlikely that birds would be disturbed by construction activity occurring at ground level.

315. With embedded mitigation to avoid nest disturbance, it is considered unlikely that construction activities would impede on the ability of hobbies to forage or breed successfully, and as such a negligible magnitude of impact is predicted.

### *Impact associated with the onshore substation and national grid substation connection works*

316. No additional hobby breeding attempts were recorded in closer proximity to the onshore substation area, and although it is possible that pair HY_2 could forage in the area, for the reasons described above, a negligible magnitude of impact is predicted.

### *Significance of effect*

317. As a Schedule 1 breeding species, if required, embedded mitigation enforced by the ECoW as part of the EMP (see Table 24.5 and paragraph 285) would ensure that breeding hobby activity is not affected, and therefore disturbance effects are considered to be **negligible** and therefore not significant in EIA terms.

## Quail

### *Impact associated with the landfall*

318. No quail observations were made within 1km of the landfall, and so no impacts are predicted.

### *Impact associated with the onshore cable route*

319. The onshore project area would overlap with a large linseed field (ES Figure 24.23 (Document Reference: 3.2.20)) where in 2022, 3-5 males were heard singing (actual breeding attempts were however unknown). The species has substantial year-on-year fluctuations in population size in the UK and it is therefore the case that the abundance and distribution of the species around the onshore cable route may differ during the construction period.

320. As a Schedule 1 species, embedded mitigation would include effort made by the ECoW or qualified ornithologist undertaking species-specific pre-construction surveys of suitable habitat to ensure that no quail breeding attempts would be affected by construction disturbance. The means of avoidance of disturbance would be dependent on location and nature of work, but could involve temporal or spatial restrictions for construction work, or mitigation such as screening, until breeding has ceased.

321. With the embedded mitigation applied, a negligible magnitude of impact is predicted on the regional (Essex) breeding population.

### *Impact associated with the onshore substation and national grid substation connection works*

322. No quail observations were made within 1km of any onshore substation infrastructure, and so no impacts are predicted.

### *Significance of effect*

323. As a Schedule 1 breeding species, if required, embedded mitigation enforced by the ECoW as part of the EMP (see Table 24.5 and paragraph 285) would

ensure that breeding quail activity is not affected, and therefore disturbance effects are considered to be **negligible** and therefore not significant in EIA terms.

### Skylark

#### *Impact associated with the landfall*

324. It is likely that the habitat where the landfall TCC would be located supports a small number of skylark breeding territories each year. Although measures would be employed by the ECoW to avoid destruction of an identified skylark nest, eggs or young, associated short- to medium-term disturbance of breeding activity may occur, which would result in a negligible magnitude of impact on the relatively large regional skylark population.

#### *Impact associated with the onshore cable route*

325. Breeding skylarks are abundant within agricultural habitat along the onshore cable route. Although ground nesting and therefore susceptible to nest destruction, the species is commonly found in close proximity to humans and managed landscapes. Any disturbance impacts are therefore likely to be limited to a small area around a nest site, and probably less than the 0.25ha territorial area mentioned by Cramp (1988), in areas densely populated by skylarks.

326. Due to their abundance, it is likely that some breeding pairs would be affected over one breeding season by construction activities along the onshore cable route. This is however very unlikely to be measurable at a population level (the UK population was estimated by Woodward *et al.* 2020 to be approximately 1.5 million pairs and Essex is likely to have areas of relatively high densities). As such, a short-term negligible impact due to habitat loss is predicted to occur on the regional population.

327. Total counts of up to 890 skylarks were made during any non-breeding season survey within the onshore ornithology survey area (Table 24.15). Distributions are likely to be relatively similar to those shown for corn buntings, with the species having similar requirements during winter. Although relatively large aggregations of feeding skylarks may therefore on occasion be disturbed by construction activities, this is likely to be very localised, and would not likely affect the survival rates during the winter at a population level. A negligible impact magnitude to the regional non-breeding population is predicted.

#### *Impact associated with the onshore substation and national grid substation connection works*

328. It is likely that a small number of skylark breeding territories may be impacted by construction activities associated with the onshore substation and national grid substation connection point. As described above, impacts are unlikely to be measurable within the context of the large regional population and so a negligible impact magnitude is predicted.

#### *Significance of effect*

329. Medium- to long-term disturbance impacts are likely to occur to multiple pairs of skylarks (low-medium sensitivity species). within the whole onshore project

area. Within a large regional (Essex) population context this is however considered to be **negligible** and not significant in EIA terms.

### *Additional mitigation*

330. None required. Additional mitigation and enhancement measures (landscaping and vegetation management of onshore substation works area) outlined under Impact 1: Habitat Loss in Section 24.6.2.1 are also applicable mitigation for construction disturbance to skylark.

### *Residual significance of effect*

331. The residual effect on corn bunting remains **negligible** and not significant in EIA terms.

## Yellow Wagtail

### *Impact associated with the landfall*

332. Although yellow wagtails were recorded within the landfall survey area (see ES Figures 24.3 and 24.4 (Document Reference: 3.2.20)) there were no records in the vicinity of the landfall TCC, and therefore no disturbance impacts are predicted.

### *Impact associated with the onshore cable route*

333. Survey results suggest that perhaps up to six yellow wagtail territories may have been recorded within proximity to the onshore cable route in 2022. Most records were in fields outside of the onshore project area, although it is possible that birds may utilise some of that habitat for feeding, if not nesting. In any single breeding season, disturbance may affect a small number of breeding pairs, although it is more than likely that birds may be able to continue to breed elsewhere in the local area. As part of the embedded mitigation, pre-construction checks by the ECoW / qualified ornithologist would consider nesting yellow wagtail, and although not a Schedule 1 species, effort would be made to avoid nest disturbance if possible.

334. It was estimated by Woodward *et al.* (2020) that there were 19,500 yellow wagtail territories in the UK in 2016. Essex forms part of the species' core range, predominantly in the east of England, and based on the UK distribution map provided by Balmer *et al.* (2013), perhaps around 1,000 pairs may be present in Essex. With embedded mitigation, a negligible, short-term magnitude of impact on the regional population is therefore predicted.

### *Impact associated with the onshore substation*

335. Yellow wagtails were recorded within and around the southern part of the onshore substation works area in 2022 (ES Figure 24.23 (Document Reference: 3.2.20)). It is possible that two or three pairs were present in this area and breeding may to some extent be affected by disturbance, most likely associated with the cable installation and Ardleigh Road operational access route construction. Within the context of the regional population (c.1,000 territories), this is considered to be a negligible impact magnitude, although the species would be considered by the ECoW when determining if measures to avoid disturbance to nests are possible.

### *Significance of effect*

336. Medium- to long-term disturbance impacts are likely to occur to multiple pairs of yellow wagtails (medium-high sensitivity species). within the whole onshore project area. Within a regional (Essex) population context this is considered to be **minor adverse** and not significant in EIA terms.

## Designated Sites

### *Impact associated with the landfall*

337. Although the landfall is located to the north of Holland Haven Marshes SSSI, it is possible that disturbance to breeding birds due to noise or visual impacts may extend beyond the landfall and into surrounding areas, including the SSSI. This has been taken into account in the Project's design process where it was ensured that sufficient distance (approximately 600m set-back) was retained between the landfall and the lagoon within the SSSI, which is a key location for the SSSI's breeding (and non-breeding) bird assemblage. Embedded mitigation also includes screening of HDD works within the landfall compound, which further reduces any risk of visual or noise disturbance to the breeding assemblage within the SSSI.

338. When taking into consideration the embedded mitigation (visual and noise screening of works), and the fact that HDD works will be localised to an area of approximately 75 x 150m, the likelihood of disturbance affecting target breeding species such as avocet and redshank is considered to be low.

339. Non-IOF SSSI assemblage species that are more likely to breed in close proximity to the landfall include reed warbler and meadow pipit, but it is unlikely that any more than a few pairs would be theoretically disturbed by the construction activity. Thus, although there may be some disturbance to SSSI assemblage (non-target) breeding birds, this is only likely to be in close proximity to the landfall, and so a medium-term low magnitude impact on the SSSI would result. No impacts are predicted for any other SSSI.

### *Impact associated with the onshore cable route*

340. The onshore cable route lies outside of the Holland Haven Marshes SSSI and it is highly unlikely that disturbance would affect any assemblage species nesting within it. This is also the case for assemblage species nesting within Hamford Water SSSI which is at least 800m away, and beyond likely maximum disturbance ranges for relevant sensitive species estimated by Goodship & Furness (2022). Both Stour Estuary SSSI and Colne Estuary SSSI are further away and so no impacts are predicted for any designated site.

### *Impact associated with the onshore substation and national grid substation connection works*

341. Due to separation distances it is highly unlikely that any species nesting within any designated site would be subject to disturbance. No impacts are therefore predicted for any designated site.

*Significance of effect*

342. When considering embedded mitigation enforced by the ECoW as part of the EMP (see Table 24.5 and paragraph 285), for the Holland Haven Marshes SSSI breeding assemblage (high sensitivity), construction activity associated with the landfall may in a worst-case scenario result in a **minor adverse** effect (not significant in EIA terms), albeit with non-target assemblage species most likely being affected. No other designated sites' breeding assemblages are likely to be affected (no effects).

#### 24.6.2.2.5 Non-breeding birds

##### Embedded mitigation

343. As part of embedded mitigation to reduce the impact of construction disturbance of potentially FLL associated with the Holland Haven Marshes SSSI and Hamford Water SSSI non-breeding bird assemblages, the design process has sought to avoid HDD works and construction of the onshore cable route respectively within any key habitats identified as being used regularly by assemblage species. This process was informed by the results of the two years of baseline surveys.

##### Impact associated with the landfall

*All Non-breeding IOFs*

344. During baseline surveys, surveyors recorded evidence of background disturbance levels. In general there was widespread and frequent human activity across large parts of the landfall area during the non-breeding season, including dog walkers, wildfowling, golfing, angling (at rocky jetties) and metal detecting.

345. The majority of the coastal strip from Holland Haven to Frinton is used for recreational pursuits, so there is frequent potential disturbance to birds. During one of the non-breeding bird surveys in late December 2020 for example, a total of 23 dog-walkers with 30 dogs (some off leash), 28 joggers, 21 golfers and 50-100 non-dog walkers were noted. Some ProWs in other parts of the onshore ornithology study area were also in heavy use by walkers.

346. Two gas gun scarers were stationed within the landfall survey during winter months. These are likely to affect the distribution and site usage of wildfowl and waders when operational, and in general birds are likely to move frequently between locations in response to disturbance sources.

347. ES Figures 24.5 to 24.8 (Document Reference: 3.2.20) show that the landfall area is generally of low importance for non-breeding target species, which may at least in part be due to current levels of disturbance, although it may also be the case that the arable and amenity habitats are of lower suitability for such species. The surrounding area is occasionally used by dark-bellied brent geese and European white-fronted geese as well as wader species, particularly lapwing, where flocks of up to 250 individuals were recorded within Compartment E. Peak counts of curlew and golden plover were relatively low and individual green sandpipers were only occasionally recorded within Holland Haven Marshes SSSI, away from the landfall area.

348. When taking into consideration embedded mitigation (Table 24.5, including screening of the landfall HDD compound), any residual disturbance associated with landfall works is considered unlikely to affect the ability of geese or waders to forage or roost successfully, on the assumption that these birds already move widely and frequently across the wider area. A medium-term, negligible impact magnitude is therefore predicted for dark-bellied brent goose, European white-fronted goose, lapwing, curlew and golden plover at a regional (Essex) level. No impacts on green sandpiper are predicted.

349. Large numbers of non-IOF assemblage species utilise the lagoon and wetland area within Holland Haven Marshes SSSI for roosting and foraging. The wetland area is around 300m from the landfall, with the lagoon approximately 600m away. When taking into account the embedded mitigation measures (screening of landfall compound), it is considered that usage of these areas would continue unaffected by construction activities, particularly when considering the current background levels of human activity in the wider area. A negligible impact magnitude is therefore predicted for the Holland Haven Marshes SSSI non-breeding assemblage.

350. Whilst it is possible that dark-bellied brent geese from other SSSIs may at times use the landfall area, any disturbance is unlikely to be as important to these birds, and the magnitude of impact would be medium-term, negligible at worst.

### Impact associated with the onshore cable route

#### *Dark-bellied brent goose and European white-fronted goose*

351. As outlined in Impact 1: Habitat Loss and shown on ES Figures 24.9 and 24.10 (Document Reference: 3.2.20), the onshore project area appears to be unimportant for dark-bellied brent geese and European white-fronted geese. Dark-bellied brent goose flocks were recorded within the onshore ornithology study area near Hamford Water on a small number of occasions in 2022-23 only (ES Figure 24.10 (Document Reference: 3.2.20)), and European white-fronted geese were absent.

352. Goodship and Furness (2022) did not include brent goose in their literature review of disturbance ranges of bird species, but similar species such as barnacle goose and white-fronted goose were evaluated. For all goose species, the maximum recommended disturbance buffer was 600m, and therefore it is considered reasonable that this would also apply to brent goose.

353. Although it is therefore possible that brent geese may on occasion be disturbed or prevented from using fields nearest to Hamford Water SSSI due to construction activity, it is considered very unlikely that this would affect the survival rate of any local population, due to the apparent infrequency of usage, wide-ranging nature of the species and tolerance of background activity. Disturbance impacts are therefore considered to be negligible for dark-bellied brent goose, with no impacts for European white-fronted goose.

#### *Lapwing, curlew and golden plover*

354. The main aggregations of non-breeding curlew, golden plover and lapwing in 2021-22 and 2022-23 were recorded near to the landfall in the south and in the

centre of the onshore ornithology study area, towards Hamford Water SSSI (see ES Figures 24.11 and 24.12 (Document Reference: 3.2.20)).

355. Goodship & Furness (2022) recommended disturbance distances of up to 650m for non-breeding curlew, and up to 500m for non-breeding golden plover. Lapwing was not included in their review, but it is reasonable to assume that distances would not stretch beyond that recommended for curlew, the most sensitive wader species evaluated. Based on these estimates, it is possible that construction activities could cause disturbance and temporarily prevent birds from using locations, including where larger aggregations have previously been recorded.

356. Gillings & Fuller (1999) reported that during BTO surveys of lapwing and golden plover usage of arable land, flocks, or at least some individual birds, regularly make movements between sets of fields up to 10km to 12km apart. More local movements however appear to be common, and flocks can be extremely mobile within winters. In a study of waders on the Ribble Estuary, Greenhalgh (1975) found that curlew, more than any other wader species, was an inland-feeder as well as shore-feeder particularly at high tides. There is a lack of evidence to determine how far inland curlews may travel to feed or roost, but in a BTO study[6] of wintering movements of three tagged curlews in the Cefni Valley, birds flew up to 4.5km inland from an estuary to grassland / pasture fields.

357. All three wader species are therefore currently likely to be mobile during the non-breeding season, in response to tidal states, land use and human activity. Due to this mobility, and assuming that some works along the onshore cable route will take place during the breeding season and outside of the clear midwinter peaks for lapwing and golden plover in particular (see Graphs 1 and 2 in Section 24.5: Existing Environment), redistributions of flocks will occur, but it is considered unlikely that the temporary reduction in available habitat or cessation of feeding will reduce survival rates within the respective populations during the non-breeding season.

358. In 2021-22, peak counts of these species for the whole onshore cable route survey area were 84 curlew, 484 golden plover and 1,628 lapwing individuals. In 2022-23 these were 282 curlew, 850 golden plover and 668 lapwing. As a comparison, the five-year mean BTO WeBS Report core counts for Hamford Water estimate 579 curlew, 2,768 golden plover and 3,184 lapwing (Woodward et al. 2024).

359. As it is possible that numbers within the onshore cable route may reach regional importance, disturbance impacts on golden plover, curlew and lapwing are considered to be of medium-term, low magnitude.

[6] https://www.bto.org/our-science/topics/tracking/tracking-studies/understanding-curlew-populations-wales

### *Green sandpiper*

360. Goodship & Furness (2022) did not include green sandpiper, but for the closest species reviewed, non-breeding disturbance impacts on redshank and greenshank were thought to stretch out to 300m and 500m respectively. Most green sandpiper records were made outside of the 400m onshore ornithology study area (see ES 24.11 and 24.12, Volume 3.2) and therefore at distances unlikely to be subject to construction disturbance. An exception to this was around two agricultural reservoirs near Thorpe-le-Soken where up to four individuals were recorded. These records were adjacent to the onshore cable route and an access road to allow for haul road avoidance of hedgerow and woodland.

361. Although it is likely that birds would simply move to suitable habitat elsewhere (e.g. Hamford Water) in response to disturbance, in a worst-case, unmitigated disturbance to non-breeding green sandpiper may result in a medium-term medium magnitude at a regional population level.

### *Designated Sites*

362. The closest point of the onshore cable route is over 500m from where the main aggregations of non-breeding birds were recorded within the Holland Haven Marshes SSSI (see ES Figures 24.7 and 24.8 (Document Reference: 3.2.20)). It is considered unlikely that at this distance, based on disturbance ranges presented in Goodship & Furness (2022), non-breeding target species within the SSSI would be displaced due to construction disturbance.

363. It is possible that the curlew, golden plover and lapwing flocks found on occasion within the southern part of the onshore cable route are associated with the small Holland Haven Marshes SSSI populations. The apparent infrequency of usage, and mobility of these species suggests that it is unlikely that disturbance would result in any impacts on survival rates. A low medium-term impact magnitude is therefore predicted for the Holland Haven Marshes SSSI non-breeding bird assemblage.

364. Hamford Water SSSI is over 800m from the onshore cable route at its closest point, and at that distance, based on disturbance guidance by Goodship & Furness (2022), non-breeding target species feeding or roosting within the SSSI would not be impacted by construction disturbance.

365. Aggregations of curlew, lapwing and golden plover in fields in the centre of the onshore cable route could be part of the Hamford Water SSSI assemblage. As noted above, these wader species are unlikely to be affected at a population level by temporary disturbance outside of the SSSI. Green sandpipers were recorded close to the onshore cable route and Hamford Water SSSI and therefore these birds may be part of the SSSI assemblage. As stated above, local redistribution is a more likely outcome than impacts on survival rates.

366. Based on relatively large peak counts of waders recorded within the central onshore ornithology study area (compared to Hamford Water SSSI counts), disturbance impacts on the Hamford Water SSSI non-breeding bird assemblage are considered to be of medium-term low magnitude.

367. Although it is possible that some wider ranging species may occasionally use the onshore project area, for Stour SSSI and Colne SSSI, impacts are likely to be negligible at worst.

### Impact associated with the onshore substation and national grid substation connection works

#### *All Non-breeding IOFs*

368. In the vicinity of the onshore substation works area and National Gird connection point, a key location for waterbirds is the fields and waterbodies around Stacie's farm, which is approximately 2km to the north-east and therefore highly unlikely to be affected by construction disturbance. In fields surrounding the onshore substation works area, golden plover and lapwing (potentially from the Stour Estuary SSSI) were occasionally present and it is possible that they may be discouraged from using these fields during the non-breeding seasons when construction is in progress. The magnitude of impact is however considered to be medium- to long-term negligible for all wader species and Stour Estuary SSSI assemblage (no impact on geese, green sandpiper or other designated sites).

### Significance of effect

369. For the regional Essex populations of medium sensitivity curlew, lapwing and golden plover, the unmitigated significance of effect associated with disturbance within the landfall, onshore cable route and onshore substation works area is considered to be no more than **minor adverse** (not significant in EIA terms) at a regional population level.

370. As IOFs of medium-high sensitivity (but likely tolerant of human activities), the worst-case effect of disturbance to dark-bellied brent goose and European white-fronted goose (recorded only at the landfall) would be **minor adverse** (not significant in EIA terms).

371. For green sandpiper (medium-high sensitivity), unmitigated disturbance effects along the onshore cable route would be **moderate adverse** for the regional population, and significant in EIA terms.

372. The Holland Haven Marshes SSSI assemblage within the landfall area may also occasionally be found within the southern part of the onshore cable route but it is considered that with embedded mitigation, and the distance of the HDD TCC from the lagoon and wetland area, a **minor adverse** effect (not significant in EIA terms) is predicted.

373. Aggregations of waders from Hamford Water SSSI were mainly located outside of the 400m onshore ornithology study area adjacent to the central part of the onshore cable route. Although species such as lapwing, golden plover and curlew may be part of the Hamford Water SSSI assemblage, disturbance effects on this assemblage population are considered to be **minor adverse** (not significant in EIA terms). Effects on Stour Estuary SSSI and Colne Estuary SSSI are much less likely and considered to be **negligible** (not significant in EIA terms).

### Additional mitigation

374. Measures will be adopted to minimise noise, light and disturbance on key aggregations of non-breeding birds, such as: keeping existing hedgerows and vegetation for visual screening, or the installation of additional solid or acoustic fencing around compounds or noisy plant where considered necessary. This is of particular relevance to the landfall HDD works near the Holland Haven Marshes SSSI.

375. Construction activity in important areas for non-breeding IOFs (e.g., the two agricultural reservoirs near Thorpe-le-Soken used by green sandpipers) would be monitored by the ECoW and should it be determined that construction activities may impact upon non-breeding birds insomuch as to them affecting survival rates, additional mitigation would be deployed, and may include measures such as avoidance of work around dawn and dusk, high tides, or extended periods of cold weather.

376. Details of such measures would be set out in the EMP secured by DCO Requirement.

### Residual significance of effect

377. Following the commitment to the additional mitigation measures to minimise disturbance, as outlined above, the effects of construction disturbance on non-breeding birds will remain at most minor adverse for IOFs. For green sandpiper, the effects can be reduced to **minor adverse** and not significant in EIA terms.

378. A summary of predicted magnitudes of impact, unmitigated significances of effects and residual significances of effect for each IOF is presented in Table 24.26.

#### *24.6.2.3 Impact 3: Indirect impacts due to habitat alteration (including smothering or contamination, including bentonite breakout associated with HDD works)*

379. Material indirect impacts on target species' habitats are only considered to have potential to occur where wetland exists within the onshore project area, due to hydrological connectivity. These habitat types are mainly found in the landfall area, within Holland Haven Marshes SSSI. Processes such as contamination or sedimentation can spread over a wider area in wetland habitats compared to agricultural land, which comprises the bulk of the remainder of the onshore project area.

380. Construction activity associated with the landfall would last for up to 13 months, with HDD works taking place over six of these months. The HDD works may include limited 24 hour / 7 days working where required for short periods of time during the drilling works.

381. During the drilling process there is the potential for the release inert drilling fluids should a 'breakout' occur. In such an instance the materials released will largely comprise bentonite, an inert clay. The release of such material into the watercourses and waterbodies within Holland Haven Marshes SSSI has the potential to give rise to smothering of aquatic or emergent flora within the watercourses and water bodies before it disperses or is removed. In turn this

could affect prey species, such as invertebrates or fish or aquatic habitats thereby having an indirect effect upon breeding and non-breeding birds.

382. As part of the Project's embedded mitigation (Table 24.5), the HDD will be designed taking into account the ground conditions to minimise the risk of a bentonite breakout. An HDD Method Statement and Draft Contingency Plan will be prepared in advance of construction which will detail the measures to be taken in the event of a drilling fluid breakout in order to minimise effects upon Holland Haven Marshes SSSI. An outline version of the HDD Method Statement and Draft Contingency Plan has been provided with the DCO application (Document Reference: 7.15).

383. Elsewhere along the onshore cable route, various embedded mitigation measures outlined in Table 24.5 will be implemented to minimise the risk of any pollution or sedimentation incidents.

384. Effects on invertebrates, fish and coastal, river and wetland habitats due to breakouts are assessed in ES Chapter 23 Onshore Ecology (Document Reference: 3.1.25), taking into consideration the embedded mitigation. These are determined to be either negligible or low magnitude up to medium-term. It therefore follows that impacts on the IOFs that are found in wetland habitats and consume these prey items would also be of negligible or low magnitude.

385. In addition to breakouts, effects arising from air quality emissions from road traffic associated with the Project have been considered. ES Chapter 20 Onshore Air Quality (Document Reference: 3.1.7) identified those ecologically designated sites which will be subject to emissions which will cross the screening threshold for consideration of impacts. Assessment of the effects upon the habitats which support IOFs has then been further considered within ES Chapter 23 Onshore Ecology (Document Reference: 3.1.25). Please refer to ES Chapter 23 Onshore Ecology (Document Reference: 3.1.25) for consideration of the air quality effects upon the habitats within designated sites which support the IOFs considered within this chapter.

#### 24.6.2.3.1 Significance of effect

386. For all IOFs, the significance of indirect impacts due to habitat contamination is considered to have in some cases no effect (e.g. for farmland species such as corn bunting), and all others, no more than **minor adverse** and not significant in EIA terms. This includes the Holland Haven Marshes SSSI breeding and non-breeding bird assemblages.

### 24.6.3 Likely significant effects during operation

387. The predicted worst-case operational parameters are outlined in Table 24.4, which describes the above ground infrastructure footprint. Further information is presented in ES Chapter 5 Project Description (Document Reference: 3.1.7). The possible associated operational impacts for onshore ornithology are described and assessed below.

388. During operation, it is expected that there will be no further requirement for land to be disturbed or excavated, except in the event that onshore cables require repair or maintenance or the onshore substation access works needing to be

reinstated. However, these activities would not extend beyond the construction footprint assessed above, and for the former would be relatively rare and localised in occurrence. For the latter, the haul road required to access the onshore substation, required in the unlikely event of transformer failure, would potentially be in place for up to 7 months, but its location would be over land already disturbed during construction. As such, direct and indirect physical impacts on ecological receptors during operation have been scoped out of further assessment, as impacts would have already occurred during the construction phase.

#### *24.6.3.1 Impact 4: Disturbance due to operational maintenance activities*

389. Inspection and maintenance activities following completion of the Project may be required, however, these works would be localised around the area of inspection. Impacts on breeding or non-breeding birds would therefore be very limited in extent and duration, meaning that it is unlikely that the survival or productivity of any IOF population would be materially affected. As such the magnitude of impact for all IOFs is predicted to be short-term, negligible.

##### 24.6.3.1.1 Significance of effect

390. For all IOFs, the significance of disturbance related to maintenance activities is considered to be negligible, or no more than **minor adverse** and not significant in EIA terms, with many IOFs considered unlikely to be affected.

391. A summary of predicted magnitudes of impact, unmitigated significances of effects and residual significances of effect for each IOF is presented in Table 24.26.

#### *24.6.3.2 Impact 5: Onshore substation operational noise and light disturbance*

392. During the operation of the onshore substation, noise and lighting may result in disturbance and/or illumination on adjacent habitats used by IOFs.

393. Operational light spill will be mitigated and minimised through the detailed design process (see embedded mitigation in Table 24.5). The onshore substation will not be manned, therefore there will be no regular lighting of the substation. Nevertheless, some displacement associated with noise and lighting may occur to IOFs located around the perimeter of the onshore substation during maintenance activities. From the survey results, these would most likely be breeding and non-breeding corn bunting, grey partridge and skylark, and possibly small numbers of wintering lapwing and golden plover.

394. The most likely impacts on these species is temporary, localised displacement into surrounding land, with a possible increase in predation risk and temporary cessation of feeding. Due to the limited spatial extent of these impacts, it is unlikely that this would impact on the ability of any IOF to breed or forage successfully over a season, but even if this was the case, all impacts are likely to be of negligible magnitude in the context of their reference populations, with the possible exception of grey partridge which, due to the small regional population, may result in a low impact magnitude.

##### 24.6.3.2.1 Significance of effect

395. For all IOFs, the significance of disturbance related to the onshore substation is considered to be in some cases no effect, and all others no more than minor

adverse (not significant in EIA terms). Effects on grey partridge may reach minor to moderate adverse significance which is considered significant in EIA terms.

#### 24.6.3.2.2 Additional mitigation

396. Soft landscaping works within the onshore substation works area will be sympathetic for the habitat requirements of grey partridge (and other species), by considering the provision of hedgerows and tree planting with thick, grassy cover on low banks for nesting and semi-improved grassland for chick-rearing. Indicative locations and extents for these landscaping measures are shown on the outline landscaping plan provided in the OLEMS (Document Reference: 7.13).

397. For barn owl, effort would be made in consultation with the Essex Wildlife Trust, Tendring District Council and Natural England, to repair or replace existing nest boxes, or add new ones in suitable locations across the onshore project area. This would help address any possible losses in productivity for barn owls in proximity to the onshore substation.

#### 24.6.3.2.3 Residual significance of effect

398. The residual significance of the effect for operational light and noise from the onshore substation is considered to be negligible and not significant for all IOFs and can be reduced to minor adverse for grey partridge when the above additional mitigation is considered.

399. A summary of predicted magnitudes of impact, unmitigated significances of effects and residual significances of effect for each IOF is presented in Table 24.26.

### 24.6.4 Likely significant effects during decommissioning

400. No decision has been made regarding the final decommissioning policy for the onshore substation, as it is recognised that industry good practice, rules and legislation change over time. However, the onshore substation station equipment will likely be removed and reused or recycled.

401. It is expected the onshore cables will be removed from ducts and recycled, with the transition pits and ducts left in situ.

402. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan would be provided.

403. It is assumed that as a worst-case, the decommissioning impacts will be similar in nature to those of construction (in particular, temporary habitat loss under Impact 1, and temporary disturbance under Impact 2), and therefore predictions of significance of construction effects on IOFs are applicable here (i.e., no residual significant effects for all IOFs – see summary Table 24.26). Embedded mitigation measures are likely to be similar to those outlined in Table 24.5 to avoid significant habitat loss or disturbance effects during decommissioning.

## 24.7 Potential monitoring requirements

404. Monitoring IOF breeding populations will be undertaken by the appointed ECoW or a qualified ornithologist during construction phase as part of the EMP where required, to enable legal compliance with the Wildlife and Countryside Act 1981 (as amended). It is also anticipated that, in the event that HDD works at landfall are undertaken during winter months, monitoring of the Holland Haven Marshes SSSI non-breeding bird assemblages would be undertaken to ensure that there are no significant construction disturbance effects. Monitoring would also take place during the non-breeding season at key locations closest to Hamford Water SSSI, as identified in Additional Mitigation within Section 24.6, to determine whether any measures are required to avoid significant disturbance events on non-breeding populations.

405. Any habitat creation (e.g. associated with the onshore substation) and reinstatement will require monitoring and maintenance otherwise habitat quality may degrade and negate the original intended mitigation role of the habitats. Further details regarding monitoring are set out in the OLEMS (Document Reference: 7.13).

## 24.8 Cumulative effects

### 24.8.1 Identification of potential cumulative effects

406. The first step in the CEA process is the identification of which residual effects assessed for North Falls on their own have the potential for a cumulative effect with other plans, projects, and activities. This information is set out in Table 24.18. Only likely significant effects assessed on IOFs in Section 24.6 as negligible adverse or above for the Project alone are included in the CEA. Those assumed to have 'no impact' on particular IOFs are not taken forward as there is no potential for them to contribute to a potentially significant cumulative effect, and likewise if there is considered to be no more than a negligible cumulative effect, the associated impact has also been scoped out.

**Table 24.18 Potential cumulative effects**

| Impact | Potential for cumulative effect | Rationale |
|---|---|---|
| **Construction** | | |
| Impact 1: Habitat loss | Yes | Habitat loss associated with the onshore Project will mainly be short- or medium-term, temporary and reversible, with habitat reinstatement occurring as a priority in sensitive areas. Permanent loss of habitat associated with the onshore substation may affect a small number of corn bunting, grey partridge, yellow wagtail and skylark. There is potential for these IOFs to be affected by habitat loss associated with other projects. |
| Impact 2: Construction disturbance | Yes | Construction disturbance will be temporary and localised within and surrounding a working width. Effects on birds may be short-term (the duration of a |

| Impact | Potential for cumulative effect | Rationale |
|---|---|---|
| | | particular disturbance event) or medium-term (the duration of the construction phase). There is potential for breeding and non-breeding IOFs to be affected by disturbance from other projects in construction at the same time as North Falls. |
| Impact 3: Indirect impacts due to habitat alteration (including smothering or contamination, including bentonite breakout associated with HDD works) | No | Incidences of contamination, pollution events are likely to be rare occurrences due to standard industry practice requirements. It is considered very unlikely that simultaneous incidents would occur at different projects which would significantly affect the same IOF population(s). |
| **Operation** | | |
| Impact 4: Disturbance due to operational maintenance activities | No | Maintenance activities would be very localised and short-term in duration. It is considered very unlikely that simultaneous activities would occur at different projects which would be of an extent and duration to significantly affect the same IOF population(s). |
| Impact 5: Onshore substation operational noise and light disturbance | No | Noise and visual disturbance associated with the North Falls onshore substation may affect a small number of IOFs (grey partridge, corn bunting, yellow wagtail and skylark). The localised nature of this impact means that it is very unlikely that further individuals of these species would also be affected by operational noise and lighting from other Essex projects at a scale which would increase effects at a population level. |
| **Decommissioning** | | |
| As per Construction | Yes (Impacts 1 and 2) | As above. |

### 24.8.2 Other plans, projects and activities

407. The second step in the cumulative assessment is the identification of the other plans, projects and activities that may result in cumulative effects for inclusion in the CEA (described as 'project screening'). This information is set out in Table 24.19 below, together with a consideration of the relevant details of each, including current status (e.g. under construction), planned construction period, closest distance to the North Falls Project, status of available data and rationale for including or excluding from the assessment.

408. The Project screening has been informed by the development of a CEA project list which forms an exhaustive list of plans, projects and activities within Essex, which is considered to be the appropriate onshore ornithology cumulative study area as it is the scale used as reference regional populations for the assessment.

409. The list has been appraised, based on the confidence in being able to undertake an assessment from the information and data available, enabling individual plans, projects and activities to be screened in or out.

**Table 24.19 Summary of projects considered for the CEA in relation to onshore ornithology (project screening)**

| Project | Status | Construction period | Closest distance from the onshore project area (km) | Confidence in data | Included in the CEA (Y/N) | Rationale |
|---|---|---|---|---|---|---|
| **National Infrastructure Planning** | | | | | | |
| Five Estuaries Offshore Wind Farm<br>EN010115 | Pre-application | 2028 – 2030 | Five Estuaries onshore project area directly overlaps with North Falls onshore project area. | High | Yes | The onshore project area for Five Estuaries covers largely the same area as North Falls. There is also a possibility that both projects could be constructed at around the same time, therefore, cumulative effects may occur. |
| Norwich to Tilbury<br>EN020027 | Pre-application | 2027 – 2031 | Scoping area directly overlaps with North Falls onshore project area. | Low | Yes | The proposed substation area for Norwich to Tilbury is in close proximity to North Falls proposed onshore substation works area; and the proposed new substation operational access road overlaps with the Bentley Road improvement works. Therefore, cumulative impacts could occur. |
| East Anglia TWO Offshore Wind Farm<br>EN010078 | Approved (DCO Issued 2022) | Mid 2020s | 47 | High | No | The project's ES did not consider any North Falls IOF, with the exception of Cetti's warbler and yellow wagtail. Negligible or low magnitude of unmitigated impacts were predicted for these species. With standard embedded mitigation measures during the breeding season minimising disturbance risks, cumulative effects are therefore unlikely. |
| Bradwell B new nuclear power station<br>EN010111 | Pre-application | Predicted 9 – 12 years | 21 | Low | Yes | The Stage One consultation document briefly describes likely breeding and non-breeding bird assemblages in the local area which include IOFs associated with North Falls. As this project is also located in Essex cumulative effects may occur. |
| Ipswich Rail Chord<br>TR040002 | Approved (DCO issued 2012) | Built | 17 | High | No | Ipswich Rail Chord has already concluded construction and will therefore not contribute to cumulative effects during North Falls construction or decommissioning periods. This project is unlikely to impact on similar IOFs as North Falls so will not likely have a cumulative effect during operation. |

| Project | Status | Construction period | Closest distance from the onshore project area (km) | Confidence in data | Included in the CEA (Y/N) | Rationale |
|---|---|---|---|---|---|---|
| Sizewell C Project EN010012 | Approved (DCO issued 2022) | 2022 – 2034 | 49 | High | No | Sizewell C Project is located outside of Essex and so no cumulative effects will occur on the regional reference populations of North Falls IOFs. |
| Nautilus Interconnector EN020023 | Pre-application | Information unavailable | 44 | Medium | No | The extent of onshore infrastructure associated with this project is not known, however, the proposed grid connection site is located outside of Essex and so no cumulative effects will occur on the regional reference populations of North Falls IOFs. |
| Lake Lothing Third Crossing TR010023 | Approved (DCO issued 2020) | Over 2 years | 76 | High | No | This is unlikely to impact on similar IOFs as North Falls so will not likely have a cumulative effect on onshore ornithology. |
| Richborough Connection Project EN020017 | Approved (DCO issued 2017) | Built | 55 | High | No | This project has already been built and is located outside of Essex and so no cumulative effects will occur on the regional reference populations of North Falls IOFs. |
| Manston Airport TR02002 | Information unavailable | Information unavailable | 53 | N/A | No | This project is located outside of Essex and so no cumulative effects will occur on the regional reference populations of North Falls IOFs. |
| Kentish Flats Extension EN010036 | Approved (DCO issued 2013) | Built | 46 | High | No | This project is located outside of Essex and so no cumulative effects will occur on the regional reference populations of North Falls IOFs. |
| Sea Link EN020026 | Pre-application | Information unavailable | 20 | N/A | No | The location of any onshore infrastructure associated with this project is not known, however, it is located outside of Essex and so no cumulative effects will occur on the regional reference populations of North Falls IOFs. |
| Galloper Offshore Wind Farm EN010003 | Approved | Built | 15 | High | No | This project has already been built and no operational effects on onshore ornithology IOFs are likely. |

| Project | Status | Construction period | Closest distance from the onshore project area (km) | Confidence in data | Included in the CEA (Y/N) | Rationale |
|---|---|---|---|---|---|---|
| A12 Chelmsford to A120 widening scheme<br>TR010060 | Pre-examination | Information unavailable | 27 | Medium | No | This is unlikely to impact on similar IOFs as North Falls so will not likely have a cumulative effect on onshore ornithology. |
| Rivenhall IWMF and Energy Centre<br>EN010138 | Pre-application | Information unavailable | 27 | Medium | No | The project is located within a quarried area and is unlikely to impact on similar IOFs as North Falls so will not likely have a cumulative effect on onshore ornithology. |
| **Essex County Council** | | | | | | |
| Elmstead Hall, Elmstead, Colchester, Essex<br>ESS/24/15/TEN | Approved | Information unavailable. | 5 | N/A | No | Small-scale project. No cumulative effects on onshore ornithology IOFs are predicted. |
| Land at: Elmstead Hall, Elmstead, Colchester, Essex<br>ESS/105/21/TEN | Approved | Information unavailable. | 5 | N/A | No | Small-scale project. No cumulative effects on onshore ornithology IOFs are predicted. |
| St. George's Infant School and Nursery, Barrington Road, Colchester, Essex, CO2 7RW<br>CC/COL/71/22 | Approved | Information unavailable | 9 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Wilson Marriage Centre, Barrack Street, Colchester, Essex, CO1 2LR<br>CC/COL/85/22 | Approved | Information unavailable | 9 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Wivenhoe Quarry Alresford Road, Wivenhoe, Essex, CO7 9JU<br>ESS/80/20/TEN/42/2 | Approved | Information unavailable | 7 | N/A | No | Habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |

| Project | Status | Construction period | Closest distance from the onshore project area (km) | Confidence in data | Included in the CEA (Y/N) | Rationale |
|---|---|---|---|---|---|---|
| Old Heath County Primary School, Old Heath Road, Colchester, Essex, CO2 8DD<br>CC/COL/50/22 | Approved | Information unavailable. | 8 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Crown Quarry (Wick Farm), Old Ipswich Road, Ardleigh, CO7 7QR<br>ESS/57/04/TENLA4 | Approved | Information unavailable. | 6 | N/A | No | Existing quarry. Habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Crown Quarry (Ardleigh Reservoir Extension), Wick Farm, Old Ipswich Road, Tendring, Colchester, CO7 7QR<br>ESS/57/04/TENLA4 | Approved | Information unavailable. | 3 | N/A | No | Existing quarry. Habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Martell's Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU<br>ESS/42/22/TEN | Out for consultation | Information unavailable | 3 | N/A | No | Habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Land at: Martells Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU<br>ESS/39/22/TEN/NMA/1 | Approved | Information unavailable | 3 | N/A | No | Habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Land to the south of Colchester Main Road, Alresford, Colchester, CO7 8DB<br>ESS/17/18/TEN/NMA2 | Report being prepared | Information unavailable | 6 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Tendring Education Centre, Jaywick Lane, Clacton on Sea, Essex, CO16 8BE | Approved | Information unavailable. | 6 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |

| Project | Status | Construction period | Closest distance from the onshore project area (km) | Confidence in data | Included in the CEA (Y/N) | Rationale |
|---|---|---|---|---|---|---|
| CC/TEN/40/21/3/1 | | | | | | |
| Tendring Education Centre, Jaywick Lane, Clacton on Sea, Essex, CO16 8BE<br>CC/TEN/40/21/4/1 | Approved | Information unavailable. | 6 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Ardleigh Waste Transfer Station, A120, Ardleigh, Colchester, CO7 7SL<br>ESS/04/17/TEN | Approved | Information unavailable. | 5 | N/A | No | Habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| 35 Roach Vale, Colchester, CO4 3YN<br>CC/COL/07/22 | Approved | Information unavailable. | 4 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Boxted Bridge, Boxted, Essex, CO4 5TB<br>CC/COL/106/21 | Report being prepared | Information unavailable | 9 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Lufkins Farm, Great Bentley Road, Frating CO7 7HN<br>ESS/99/21/TEN/SO | EIA not required | Information unavailable. | 6 | N/A | No | Small-scale project. No cumulative effects on onshore ornithology IOFs are predicted. |
| Lufkins Farm, Great Bentley Road, Frating CO7 7HN<br>ESS/99/21/TEN | Resolution made/ awaiting legal agreement | Information unavailable. | 6 | N/A | No | Small-scale project. No cumulative effects on onshore ornithology IOFs are predicted. |
| **Tendring District Council** | | | | | | |
| Land Between the A120 and A133, To The East of Colchester and of Elmstead Market<br>21/01502/CMTR | Awaiting decision | Information unavailable. | 3 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |

| Project | Status | Construction period | Closest distance from the onshore project area (km) | Confidence in data | Included in the CEA (Y/N) | Rationale |
|---|---|---|---|---|---|---|
| Hamilton Lodge Parsons Hill Great Bromley Colchester Essex CO7 7JB<br>20/00547/OUT | Approval-outline | Information unavailable. | 2 | N/A | No | Small-scale project and habitats are different to the North Falls onshore project are and so this is unlikely to impact on similar IOFs as North Falls. No cumulative effects on onshore ornithology IOFs are predicted. |
| Land adjacent to Lawford Grid Substation Ardleigh Road Little Bromley Essex CO11 2QB<br>21/02070/FUL | Approved | Information unavailable. | 0.3 | N/A | No | Small-scale project. No cumulative effects on onshore ornithology IOFs are predicted; in addition, it will have been constructed and operational by the time of the Project's construction. |

### 24.8.3 Assessment of cumulative effects

410. Five Estuaries is also in its application phase, having its DCO application accepted for examination by The Planning Inspectorate on 22 April 2024. Although subject to a separate DCO, the Five Estuaries shares the same landfall location and onshore cable route (including Bentley Road improvement works) as North Falls, with the two projects also having co-located onshore substations within the same onshore substation works area. The two projects also have the same national grid substation connection point.

411. VEOWL and NFOW have sought to collaborate and coordinate where practicable, which has led to collaborative design of the projects' onshore infrastructure, and also to sharing of detailed onshore project design information. As a result, a detailed CEA for effects arising from the development of Five Estuaries can be undertaken. The CEA section of this chapter is therefore split into two sections:

- The first describing a detailed CEA covering effects predicted to arise from development of Five Estuaries and North Falls;
- The second, detailing effects predicted to arise from the development of Five Estuaries, North Falls and other projects.

412. The latter section will be based on the project information available for each scheme in the public domain, and by definition is therefore less detailed than the Five Estuaries and North Falls CEA section.

413. Full details on the approach to CEA used within this chapter are set out in ES Chapter 6 EIA Methodology (Document Reference: 3.1.8).

#### *24.8.3.1 Five Estuaries*

##### 24.8.3.1.1 Realistic worst-case scenario

414. Using the design information provided by Five Estuaries and checked/updated against the submission of the Five Estuaries ES, a realistic worst case cumulative scenario has been developed for the purpose of this chapter.

415. This considers three potential cumulative build-out scenarios as outlined in ES Chapter 5 Project Description (Document Reference: 3.1.7):

- **Scenario 1:** North Falls 'Option 2' build out is progressed, and VEOWL undertakes landfall, onshore substation construction and cable pull which overlaps with North Falls equivalent works. In this scenario, onshore cable route associated works, including temporary construction compounds, accesses and haul road, all remain in place and are used by the second project during its construction.
- **Scenario 2:** North Falls 'Option 1 build out is progressed, and VEOWL undertakes landfall, onshore substation and onshore cable route construction and cable pull, all of which does not overlap with North Falls' equivalent works. There would be a gap of between 1 and 3 years between each Projects' construction. In this scenario, onshore cable route associated works, including temporary construction compounds, accesses and haul road, all remain in place and are used by the second project during its construction.

- **Scenario 3:** North Falls 'Option 1' build out is progressed, and VEOWL undertakes a separate landfall, onshore substation and onshore cable route construction and cable pull with a multi-year (i.e. >3 year) gap between the two construction activities. In this scenario, there is no reuse in onshore temporary works between the two projects, and all onshore cable route associated works are rebuilt and reinstated in full by the second project.

416. Full details on the build out scenarios considered within this assessment are detailed in ES Chapter 5 Project Description (Document Reference: 3.1.7) and ES Chapter 6 EIA Methodology (Document Reference: 3.1.8).

417. The realistic worst-case scenario for likely cumulative effects scoped into the EIA for the onshore ornithology assessment is considered to be Scenario 3, due to the longer duration of potential disturbance impacts to breeding and non-breeding IOFs associated with sequential construction. Worst-case parameters associated with Scenario 3 are summarised in Table 24.20. These are based on project parameters for Five Estuaries described in ES Chapter 5 Project Description (Document Reference: 3.1.7), which provides further details regarding specific activities and their durations.

**Table 24.20 Realistic worst-case scenario of cumulative effects arising from development of North Falls and Five Estuaries – (Scenario 3) (independent build).**

| Potential impact | Parameter | Notes |
|---|---|---|
| **Construction** | | |
| Impacts relating to the landfall | Landfall HDD (temporary works) physical parameters:<br>• Maximum No. of Transition Joint Bays (TJB) = 4<br>• Individual TJB dimensions / permanent landtake = 4 x 15m<br>• Maximum number of HDD = 6<br>• Maximum indicative HDD spacing onshore = 40m<br>• Maximum HDD depth = 20m<br>• Maximum indicative length of HDD = 1.1 km<br>• HDD temporary works area = 150 x 300m<br>• Drill exit location = subtidal exit below MHWS (up to 8m depth) | Duration includes compound establishment, HDD, transition bays, and reinstatement. |
| | Duration:<br>• 13 months (of which HDD = 6 months) + 13 months (of which HDD = 6 months)<br>• HDD to include 24 hour / 7 days working where required | |
| Impacts relating to the onshore cable route | Cable route construction physical parameters:<br>• Route length = up to 24km<br>• Jointing bays = Up to 192 (approximately every 500m) buried below ground<br>• Joint bay dimensions = 4 x 15m<br>• Maximum cable trench depth = 2m<br>• Minimum cable burial depth = 0.9m<br>• Indicative cable route width = 72m (open cut trenching), 90m (trenchless crossings), 130m (complex trenchless crossings)<br>• Cable construction compound dimensions = 150 x 150m (main) to 100 x 100m (satellite)<br>• Number of temporary construction compounds (est.) = 11<br>• No. of trenches = 4 | Overall duration includes establishing / reinstating temporary construction compounds (TCCs) and haul roads, cable installation (trench excavation, duct installation, cable jointing), HDD (includes compound establishment, HDD, and reinstatement). |

| Potential impact | Parameter | Notes |
|---|---|---|
| | • Cable trench dimensions = 3.75 – 1.2 x 2m (tapered top to bottom)<br>• Haul road width = 6m wide road, 10m wide total including verges, drainage and passing places.<br>• Haul road spacing at passing places = 500m<br>• Hedge replanting restrictions = shrubs max 5m high within 6m of each cable centre i.e. 37m swathe in which only shrubs can be planted. | |
| | Trenchless crossings physical parameters:<br>• Maximum width of buried cable = 130m<br>• HDD compound dimensions = 75 x 150m | |
| | Durations:<br>• Bentley road improvement works = 6 – 9 months<br>• Cable route works = 18 – 27 months per project, with a 57-month gap in between i.e. 111 months start to finish<br>• Cable installation = 12 months (per project)<br>• Major HDD (each location) = 8 months (of which HDD = 4 months) (per project)<br>• Minor HDD crossings = 2 months (per project)<br>• Major HDD crossings to include 24 hour / 7 days working where required. | |
| Impacts relating to the onshore substation | Onshore substation (temporary works) physical parameters:<br>• Indicative area of the substations = 280 x 210m (North Falls) + 280 x 210m (Five Estuaries)<br>• Maximum structure height = 18m (lightning rods)<br>• Maximum equipment height = 13m (switchgear)<br>• Construction compound footprint = 250 x 150m + 250 x 150m | |
| | Durations:<br>• Substation construction duration = 21 – 27 months per project, with a 57-month gap in between i.e. 111 months start to finish | |

| Potential impact | Parameter | Notes |
|---|---|---|
| Impacts relating to the national grid substation connection works | • Works within the search area for the East Anglia Connection Node (EACN) (the Project's national grid substation connection point).<br>• National grid have identified a search area within which they anticipate their new substation will be located. This is the hatched highlighted area illustrated on ES Figure 5.2 (Document Reference: 3.2.3), within the North Falls onshore project area. At this stage national grid have not confirmed the proposed location of the substation within this search area, nor any information regarding the parameters of the substation. The assessment is therefore based on a realistic worst-case scenario using data collected for the Project.<br>Works delivered by North Falls to connect to the national grid (the 'national grid substation connection works') are anticipated to include (for each project):<br>• 400kV cable installation works between the onshore substation and the national grid substation connection point, as described above.<br>Installation of new equipment within the national grid substation connection point, which may include:<br>• Switchgear bays;<br>• Troughs / ducts to facilitate the 400kv circuits, protection & control cables from the North Falls onshore substation into the switchgear bays;<br>• Protection and control equipment (if required) within the national grid relay building; and<br>• Temporary infrastructure such as haul roads and construction compounds to facilitate access, egress, laydown, storage, and welfare containers which would be placed within close proximity of the work area.<br><br>All enabling works / platform constructed by national grid. | |

| Potential impact | Parameter | Notes |
|---|---|---|
| | | |
| Impacts relating to Bentley Road improvement works | The upgrade works entail the following:<br>• Improvements to the turn-off from the A120;<br>• Widening of the carriageway to 6.5m along the length of Bentley Road from the A120 to the new construction access to the west off Bentley Road;<br>• Creation of a new, temporary segregated non-motorised user route along the length of Bentley Road from the A120 to the new construction access to the west off Bentley Road (if required).<br><br>These works are proposed to be serviced using existing TCCs. | |
| **Operation** | | |
| Impacts relating to the onshore cable route | Cable route operational physical parameters:<br>• No. of link boxes = up to 192<br>• Link box footprint (per box) = 0.6 x 1 x 1.5m<br>• Cross-sectional area of buried cement-bound sand = 0.6m$^2$ | |
| Impacts relating to the onshore substation | Onshore substation physical parameters:<br>• Project 1:<br>  ○ Permanent substation footprint = 280 x 210m<br>  ○ Maximum structure height = 18m (lightning rods)<br>  ○ Maximum equipment height = 13m (switchgear)<br>  ○ Maximum building height = 7m<br>• Project 2:<br>  ○ Permanent substation footprint = 280 x 210m<br>  ○ Maximum structure height = 18m (lightning rods)<br>  ○ Maximum equipment height = 13m (switchgear)<br>  ○ Maximum building height = 15m | Normal operating conditions would not require lighting at the onshore substation, although low level movement detecting security lighting may be utilised for health and safety purposes. Temporary lighting during working hours would be provided during maintenance activities only. Low level continuous noise emissions would also be generated by the onshore substation during operation. |

| Potential impact | Parameter | Notes |
|---|---|---|
| | | |
| **Decommissioning** | | |
| No final decision has yet been made regarding the final decommissioning policy for the onshore project infrastructure including landfall, onshore cable route and onshore substation. It is also recognised that legislation and industry good practice change over time. However, it is likely that the onshore project equipment, including the cable, will be removed, reused, or recycled where practicable and the transition bays and cable ducts being left in place. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator. It is anticipated that for the purposes of a worst case scenario, the impacts will be no greater than those identified for the construction phase. | | |

#### 24.8.3.1.2 During construction

##### Impact 1: Habitat Loss

418. The large majority of the North Falls onshore project area is shared with the Five Estuaries' onshore project area. This includes the landfall, onshore cable route (including Bentley Road improvement works) and national grid substation connection point. The overlapping nature of both project areas means that the Five Estuaries construction will very likely affect the same IOFs, and indeed in some cases the same individuals, as those for the North Falls Project.

419. The only location where there is some potential for additional cumulative habitat loss impacts is within the onshore substation works area, where the Five Estuaries project would have a separate substation, onshore substation construction compound, and temporary and permanent attenuation ponds. It should be noted however that the worst-case assessment for North Falls alone assumed full site clearance of the onshore substation works area, which includes the Five Estuaries substation infrastructure, and so the only additional spatial habitat loss impacts would relate to permanent Five Estuaries substation infrastructure.

420. Based on the assessment for North Falls, the IOFs that may be impacted by cumulative habitat loss are grey partridge, corn bunting, yellow wagtail, and skylark. For the latter three species, it is possible that a small number of additional pairs may be affected by cumulative permanent habitat loss due to the substation, but for grey partridge it is likely that the same individuals would be affected.

421. For all IOFs, the duration of temporary habitat losses within the whole onshore project area would be increased due to sequential construction and reinstatement under Scenario 3, resulting in overall long-term impacts (i.e., more than two breeding seasons, see Table 24.10). Again, in most cases this would not affect any additional pairs or territories, but losses would be more likely to impact on birds than with the Project alone, as there would be a greater probability of some works, and therefore habitat loss, taking place during the breeding season.

422. Five Estuaries has proposed a suite of habitat management measures within the onshore substation works area, which is similar, and complimentary to those proposed for North Falls (see Five Estuaries ES, Volume 9, Report 22: *Outline Landscape and Ecological Management Plan*). These include hedgerow reinstation and creation, grassland creation and nest box erection.

423. Five Estuaries also concludes an unmitigated significant effect on corn bunting due to habitat loss, but does not include additional mitigation measures. The Five Estuaries ES states that "*Additional mitigation/ compensation for the permanent loss of arable habitat supporting…corn bunting at the* [onshore substation] *is not possible within the Order Limits due to a lack of potentially suitable land available*".

424. For all IOFs, excluding corn bunting, taking into account the mitigation and enhancement for the two projects, it is concluded that the increased spatial extent or duration of any additional cumulative habitat loss impacts due to sequential construction would not make a material difference at a regional population level compared to the Project alone, and so there would be no

change in level of residual effects compared to those already predicted (i.e., no more than minor adverse and not significant in EIA terms).

425. For corn bunting, although a small number of additional breeding pairs may be affected by the two projects, compared to that for North Falls alone, this is not likely to change the magnitude of impact on the regional (Essex) population. As such, a low impact magnitude is predicted, which would result in a minor to moderate, and therefore significant cumulative effect.

### Impact 2: Construction Disturbance

426. The worst-case Scenario 3 would increase the duration of possible disturbance impacts on breeding and non-breeding IOFs within the onshore project area, in some cases becoming a long-term impact (more than two breeding or non-breeding seasons).

427. As with Impact 1: Habitat Loss, it is likely that the same IOFs could be affected by the increased duration of disturbance. In most cases the impacts due to Five Estuaries would essentially be the same as for North Falls due to similar location of infrastructure, except for in particular locations such as the onshore substation works area, where separate infrastructure is required. Due to the similar extent of this infrastructure however, it is likely that a similar number of pairs/territories/individuals may again be affected by a second period of construction.

428. Whilst the increased duration of construction activities may mean that disturbance impacts are more likely to occur on particular birds / territories than if only one project was constructed (or both projects were constructed simultaneously), both projects would have similar embedded and additional mitigation measures to avoid significant disturbance effects on IOFs. Five Estuaries ES Volume 6, Part 3, Chapter 4: *Onshore Biodiversity and Nature Conservation* includes a range of mitigation measures including: employment of an ECoW; measures to avoid damage to active nests; surveys for important species prior to and during construction; and disturbance-free buffer zones around active nests of important species. It was also noted that additional mitigation may include screening of waterbodies used by relatively large numbers of waterbirds to reduce disturbance.

429. The magnitude of these impacts at a population level are therefore not predicted to increase above the worst-case assessment made for the Project alone. As such, there would be no change in residual effects compared to those already predicted. For all IOFs, except for corn bunting this would be no more than minor adverse and not significant in EIA terms when taking into consideration embedded and additional mitigation measures for both projects.

430. Five Estuaries did not predict significant effects on corn bunting due to construction disturbance when considering mitigation measures during the breeding season. However, the Project-alone assessment for North Falls predicted a minor-moderate adverse effect on the species when also considering impacts on non-breeding corn bunting flocks. Because it is likely that similar numbers of breeding and non-breeding birds may be affected by the two projects in any construction year, the residual cumulative effect would remain minor-moderate adverse, and therefore significant.

#### 24.8.3.1.3 During operation

431. Impacts on IOFs during operation have been scoped out, as per Table 24.18, due to a low likelihood of significant effects, either due to the Project alone, or cumulatively with other projects.

#### 24.8.3.1.4 During decommissioning

432. As with the Project alone, it is assumed that as a worst-case, the decommissioning impacts and associated mitigation measures will be similar in nature to those of construction (Impacts 1 and 2 above), and therefore predictions of significance of cumulative construction effects on IOFs are applicable here.

#### 24.8.3.1.5 Summary

433. Table 24.21 below provides a summary of the potential significant cumulative effects identified during the onshore ornithology CEA in relation to Five Estuaries Offshore Wind Farm.

**Table 24.21 Summary of potential cumulative effects of North Falls and Five Estuaries.**

| Potential impact | Cumulative effect | Additional mitigation |
|---|---|---|
| **Construction** | | |
| Impact 1: Habitat Loss | No additional cumulative effects (negligible or minor adverse for all IOFs except for corn bunting which would be minor-moderate adverse). | None. |
| Impact 2: Construction Disturbance | No additional cumulative effects (negligible or minor adverse for all IOFs except for corn bunting which would be minor-moderate adverse). | None. |
| **Operation** | | |
| No cumulative effects identified. | No additional cumulative effects (negligible or minor adverse). | None. |

### *24.8.3.2 North Falls, Five Estuaries and Other projects*

434. Based on the project screening in Table 24.19, in addition to Five Estuaries, two of the other listed projects have been scoped into the CEA for further assessment: Norwich to Tilbury National Grid Electricity Transmission, and Bradwell B New Nuclear Power Station.

435. Following the impact screening process described above for Table 24.18, two impacts have again been identified as having the potential for a significant cumulative effect: Impact 1: Habitat Loss, and Impact 2: Construction Disturbance. All other construction and operational impacts have been scoped out. Decommissioning strategies have not yet been finalised; however, the cumulative impacts are expected to be similar to those of the initial construction phase.

436. Cumulative effects from North Falls, Five Estuaries, Norwich to Tilbury National Grid Electricity Transmission and Bradwell B New Nuclear Power Station during construction are discussed in Table 24.22.

**Table 24.22 Cumulative impacts from other projects on onshore ornithology**

| Project | Cumulative effect 1: Habitat Loss | Cumulative effect 2: Construction Disturbance |
|---|---|---|
| Norwich to Tilbury National Grid Electricity Transmission | A new onshore substation is proposed to be built as part of the Norwich to Tilbury proposals by national grid. The Norwich to Tilbury substation would be near the preferred location for the North Falls onshore substation. However exact location details are not known at this stage.<br>The earliest North Falls construction could begin is 2027, i.e. the same start date as Norwich to Tilbury. At the time of drafting this ES, the latest publicly available information for Norwich to Tilbury comprises of a PEIR (published April 2024). Approximately 10% of the six bird survey areas have been completed in 2023, with remaining areas (including the proposed substation within the onshore project area) to be completed in 2024.However, the Applicant is in regular and on-going dialogue with national grid and will seek to continue working closely with national grid, and with statutory consultees to assess potential cumulative effects.<br>It is considered likely that similar IOFs will be affected by the construction of the Norwich to Tilbury onshore substation, with corn bunting, yellow wagtail, skylark and grey partridge most likely to be affected. Assuming a similar location and size of substation to that for North Falls (and Five Estuaries), a small number of additional breeding pairs/territories or individuals may be affected due to temporary and permanent habitat loss, over an extended timeframe. | The IOFs most likely to be affected by construction disturbance are corn bunting, yellow wagtail, skylark and grey partridge.<br>Cumulative construction disturbance impacts have the potential to occur in proximity to the North Falls and Five Estuaries onshore substations' locations. If consecutive construction were to occur, the duration of disturbance impacts would increase, and it is also likely that the extent of disturbance would increase due to the overall cumulative footprint, assuming that this may continue, albeit to a lesser extent, during the operational phase of the North Falls Project. |
| Bradwell B New Nuclear Power Station | Bradwell B is a proposed new nuclear power station at Bradwell-on-Sea in Essex. In addition to the power station site itself (covering approximately 230ha), the project will also require some associated developments in the area to support construction, such as park and ride sites, temporary accommodation, marine transport facilities and road improvements. Construction would take 9-12 years. Stage One consultation took place in 2020 and the associated report summarised likely ornithological interest. It was noted that the arable fields within the site provide foraging habitat for wintering dark-bellied brent geese, which have historically been recorded there in large numbers. The fields may also support other wintering waders and wildfowl, and breeding species including grey partridge and skylark. | The decision to locate the power station on the higher ground to the south and west of the existing Bradwell power station was influenced by reducing potential disturbance of wintering birds using the coastal mudflats which are centred on Dengie Flats to the east of the site. It is however possible that some wildfowl or wader species may forage further inland and so during the construction period, birds may be disturbed from adjacent land. Some of these species may be IOFs associated with North Falls (and Five Estuaries), albeit are likely to be different individuals. It may also be the case that adjacent territories of breeding IOFs may be affected by disturbance over a prolonged period. This would be mitigated for by landscape and vegetation screening where appropriate. |

| Project | Cumulative effect 1: Habitat Loss | Cumulative effect 2: Construction Disturbance |
|---|---|---|
| | Overall therefore, the habitats and breeding and non-breeding assemblages are likely to be similar to the North Falls and Five Estuaries onshore project areas. The total area of permanent habitat loss would be greater for Bradwell B than for North Falls, and so some pairs/territories of IOFs such as corn bunting, skylark, grey partridge and yellow wagtail may be lost. Additionally, some habitat used by non-breeding birds including wildfowl and waders associated with the nearby Dengie (Mid-Essex Coast Phase 1) SPA may be lost either temporarily or permanently. A proposed ecological mitigation strategy for the site includes habitat creation/enhancement which may benefit some of these species. | |

#### 24.8.3.2.1 During construction

##### Impact 1: Habitat Loss

437. Although there would be an increased footprint due to the four projects combined, based on the information provided above it is considered unlikely that the magnitude of habitat loss impact would increase for any IOF at a population level, and therefore significance of effects would remain the same as those predicted for the North Falls alone (and when combined with Five Estuaries). When embedded and additional mitigation measures for North Falls, Five Estuaries, and likely Norwich to Tilbury and Bradwell B are included, this would result in a residual cumulative habitat loss effect of at worst, minor adverse, and not significant in EIA terms for all IOFs, except for corn bunting, which would remain minor-moderate adverse and therefore significant.

##### Impact 2: Construction Disturbance

438. When considering North Falls alone, a negligible or low impact magnitude was predicted for IOFs that may be impacted by disturbance around the onshore substation and grid connection works area (corn bunting, skylark, grey partridge and yellow wagtail). It is possible that a small number of additional territories/pairs/individuals may be affected by cumulative disturbance with Norwich to Tilbury and Five Estuaries, and so committed mitigation for the North Falls and Five Estuaries projects (visual screening of substation, habitat management) will be important in reducing the likelihood of a significant effect on these species to the residual non-significant effects predicted (with the exception of corn bunting which would remain minor-moderate adverse and therefore significant). It is likely that Norwich to Tilbury and Bradwell B will commit to appropriate mitigation measures to ensure legal compliance for breeding birds, and landscape enhancement measures, although it is not clear whether this would include corn bunting mitigation/enhancement.

439. Overall, when committed embedded and additional mitigation measures for North Falls and Five Estuaries are included, it is considered unlikely that the magnitude of disturbance impact across the four projects would increase for any non-breeding or breeding IOF at a population level, and therefore significance of effects would remain the same as for the Project alone. This would result in a residual cumulative disturbance effect of at worst, minor adverse, and not significant in EIA terms, for all IOFs apart from corn bunting, which would be minor-moderate adverse and therefore significant on the regional (Essex) population.

## 24.9 Transboundary effects

440. There are no transboundary effects with regards to onshore ornithology as the onshore project area would not be sited in proximity to any international boundaries. Transboundary effects are therefore scoped out of this assessment and are not considered further.

## 24.10 Interactions

441. The effects identified and assessed in this chapter have the potential to interact with those identified in other chapters, which could give rise to synergistic effects as a result of that interaction. Most onshore ornithology IOFs are intrinsically linked to effects related to habitat types, hydrology, noise, lighting and traffic movements.

**Table 24.23 Onshore ornithology interactions**

| Topic and description | Related chapter (Volume 3.1) | Where addressed in this chapter | Rationale |
|---|---|---|---|
| **Construction** | | | |
| Impacts on terrestrial habitats | ES Chapter 23 Onshore Ecology (Document Reference: 3.1.25) | Assessment of habitat loss under Impact 1 | Potential changes to terrestrial habitats, including arable land, field margins, hedgerows and grassland during construction and operation could result in changes in distribution and abundance of breeding and non-breeding IOFs. |
| Impacts on water-dependent habitats and designated sites | ES Chapter 21 Water Resources and Flood Risk (Document Reference: 3.1.23) | Assessment of habitat loss under Impact 1 | Potential changes to ground conditions (including chemical quality and physical properties) during construction could affect the quality and quantity of groundwater and surface water which could in turn affect IOFs which rely on these water sources. This could include breeding or non-breeding wildfowl, waders and ducks. |
| Impacts from changes in noise, lighting, ground vibration and traffic movements during construction | ES Chapter 26 Noise and Vibration (Document Reference: 3.1.28) | Assessment of construction disturbance under Impact 2 | Construction activities will inevitably result in new sources of noise, lighting, ground vibration and traffic movements. These have the potential to impact breeding, feeding or roosting bird distribution and abundance. |
| **Operation** | | | |
| Impacts from changes in noise, lighting, ground vibration and traffic movements during operation | ES Chapter 26 Noise and Vibration (Document Reference: 3.1.28) | Assessment of maintenance activities under Impact 4 and onshore substation operation under Impact 5. | Operational maintenance activities will result in temporary sources of noise, lighting, ground vibration and traffic movements. This will be long-term where associated with the operational onshore substation. These have the potential to impact breeding, feeding or roosting bird distribution and abundance. |
| **Decommissioning** | | | |
| Impacts associated with the decommissioning phase are currently unknown but would be no greater than those identified for the construction phase. | | | |

## 24.11 Inter-relationships

442. The impacts identified and assessed in this chapter have the potential to interrelate with each other. The areas of potential inter-relationships between impacts are presented in Table 24.24. This provides a screening tool for which impacts have the potential to interrelate. Table 24.25 provides an assessment for each IOF as related to these impacts.

443. Within Table 24.25 the impacts are assessed relative to each development phase (i.e. construction, operation or decommissioning) to see if (for example) multiple construction impacts affecting the same IOF could increase the significance of effect upon that IOF. Following this, a lifetime assessment is undertaken which considers the potential for impacts to affect IOFs across all development phases.

**Table 24.24 Inter-relationships between impacts – screening**

| Potential inter-relationships between impacts | | | | | |
|---|---|---|---|---|---|
| | **Impact 1: Habitat loss** | **Impact 2: Construction disturbance** | **Impact 3: Indirect impacts due to habitat alteration (including smothering or contamination, including bentonite breakout associated with HDD works)** | **Impact 4: Disturbance due to operational maintenance activities** | **Impact 5: Onshore substation operation** |
| **Impact 1: Habitat loss** | | Construction disturbance is likely to extend beyond extent of habitat loss, but will be of shorter duration. | Indirect effects on watercourses and wetland habitats may extend beyond direct habitat loss during construction period. | Maintenance will likely be concentrated around limited areas where permanent habitat loss has already occurred. | Habitat loss associated with the onshore substation will be permanent in duration. |
| **Impact 2: Construction disturbance** | Construction disturbance is likely to extend beyond extent of habitat loss, but will be of shorter duration. | | Direct disturbance on birds and indirect impacts on prey species may occur at same time and over similar extents, acting additively. | Will not overlap in time, but may affect similar IOFs. | Will not overlap in time, but may affect similar IOFs. |
| **Impact 3: Indirect impacts due to habitat alteration (including smothering or contamination, including bentonite breakout associated with HDD works)** | Indirect effects on watercourses and wetland habitats may extend beyond direct habitat loss during construction period. | Direct disturbance on birds and indirect impacts on prey species may occur at same time and over similar extents, acting additively. | | Will not overlap in time, but may affect similar IOFs. | Will not overlap in time, but may affect similar IOFs. |
| **Impact 4: Disturbance due to operational maintenance activities** | Maintenance will likely be concentrated around limited areas where permanent habitat loss has occurred. | Will not overlap in time, but may affect similar IOFs | Will not overlap in time, but may affect similar IOFs. | | Maintenance would temporarily increase source of disturbance above background operational levels associated with substation. |

| Potential inter-relationships between impacts | | | | | |
|---|---|---|---|---|---|
| **Impact 5: Onshore substation operation** | Habitat loss associated with the onshore substation will be permanent in duration. | Will not overlap in time but may affect similar IOFs. | Will not overlap in time, but may affect similar IOFs. | Maintenance would temporarily increase source of disturbance above background operational levels associated with substation. | |

**Table 24.25 Inter-relationship between impacts – phase and lifetime assessment**

| Receptor / IOF | Highest residual significance level | | | Phase assessment | Lifetime assessment |
|---|---|---|---|---|---|
| | Construction | Operation | Decommissioning | | |
| Breeding birds | Minor adverse<br>Minor-moderate adverse (corn bunting) | Minor adverse | Assumed to be the same as construction | No greater than individually assessed impact.<br>The construction phase is expected to have the greatest likelihood for unmitigated significant effects on breeding birds due to the larger footprint and more extensive and intensive nature of disturbance activities, and so mitigation has been proposed to avoid significant effects, resulting in residual effects of no more than minor adverse (with the exception of corn bunting which would be minor-moderate adverse). In contrast, operational impacts are expected to have much lower effects on most IOFs and decommissioning works (which would be of a smaller scale and shorter timeframe than construction) would not be expected to have impacts of greater magnitudes or effects of greater significance than construction. | No greater than individually assessed impact.<br>Given the anticipated small footprint and short timeframe of decommissioning works relative to construction, there is considered to be no realistic potential for effects on breeding IOFs to accumulate over the lifetime of the Project. It is conceivable that some of the same populations could be affected both during construction and again during decommissioning, but given the long period between these events, any combined effects would be no greater than those assessed at individual phases. It is also anticipated that relevant mitigation measures for IOFs (in particular, measures which ensure legal offences, such as destruction of nests, are avoided) would be adopted during |
| Non-breeding birds | Minor adverse | Minor adverse | Assumed to be the same as construction | | |
| Holland Haven Marshes SSSI assemblage | Minor adverse | Minor adverse | Assumed to be the same as construction | | |
| Hamford Water SSSI assemblage | Minor adverse | No effect | Assumed to be the same as construction | | |
| Stour Estuary SSSI assemblage | Minor adverse | No effect | Assumed to be the same as construction | | |

| Receptor / IOF | Highest residual significance level | | | Phase assessment | Lifetime assessment |
|---|---|---|---|---|---|
| | Construction | Operation | Decommissioning | | |
| Colne Estuary SSSI assemblage | Minor adverse | No effect | Assumed to be the same as construction | Furthermore, it is anticipated that relevant mitigation measures will be adopted during decommissioning, which further reduces the potential for inter-related impacted across multiple phases of the Project. | decommissioning in the same manner they will be adopted during construction. |

## 24.12 Summary

444. This chapter has provided a characterisation of the existing environment for onshore ornithology based on historic and site-specific survey data. Site-specific survey data included two years of breeding, non-breeding and passage bird surveys around the landfall and along the full onshore project area.

445. The following species and species assemblages were scoped into the assessment as IOFs:

- Barn owl;
- Cetti's warbler;
- Corn bunting;
- Grey partridge;
- Hobby;
- Quail;
- Skylark;
- Yellow wagtail;
- Dark-bellied brent goose;
- European white-fronted goose;
- Green sandpiper;
- Lapwing;
- Curlew;
- Golden plover;
- Holland Haven Marshes SSSI assemblage;
- Hamford Water SSSI assemblage;
- Stour Estuary SSSI assemblage; and
- Colne Estuary SSSI assemblage.

446. The assessment has established that IOFs could be affected as a result of direct and indirect impacts during the construction, operational and decommissioning phases. The unmitigated effects on the majority of IOFs during all phases would be negligible or minor adverse, but specific additional mitigation (above that embedded mitigation which is assumed would be implemented) would be required in a small number of cases to reduce the residual effects on a particular IOF's regional (Essex) population to a non-significant level in EIA terms. The exception to this would be for corn bunting, where due to an absence of suitable mitigation opportunities, habitat loss and construction disturbance could result in a minor-moderate adverse and therefore significant effect on the regional (Essex) population.

447. The CEA concluded that the effects predicted to arise from the result of the development of Five Estuaries, Norwich to Tilbury National Grid Electricity Transmission and Bradwell B New Nuclear Power Station in addition to North

Falls would not give rise to any greater effects than those predicted for North Falls alone.

448. A summary of predicted effects is presented in Table 24.26, and a summary of the CEA is presented in Table 24.27.

**Table 24.26 Summary of potential likely significant effects on onshore ornithology**

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| Impact 1: Habitat Loss | Barn owl | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | Negligible<br>Negligible<br>Negligible | | Minor adverse | Erection and maintenance of nest boxes | Minor adverse |
| | Cetti's warbler | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | Negligible<br>No impact<br>No impact | | Negligible | None required | Negligible |
| | Corn bunting | Medium-high | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | Negligible<br>Low<br>Low | | Minor to moderate adverse | None. | Minor to moderate adverse |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | Grey partridge | Medium-high | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>No impact<br>Low | | Minor to moderate adverse | Soft landscaping, habitat management at onshore substation and national grid substation connection point | Minor adverse |
| | Hobby | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>Negligible<br>Negligible | | Negligible | None required | Negligible |
| | Quail | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>Moderate<br>No impact | | Moderate adverse | Habitat enhancement of unfarmed land in area of recorded activity (provision of suitable vegetation for breeding quails) | Minor adverse |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | Skylark | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | Negligible<br>Negligible<br>Negligible | | Negligible | Soft landscaping, habitat management at onshore substation and national grid substation connection point | Negligible |
| | Yellow wagtail | Medium-high | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>Low<br>Low | | Minor adverse | None required | Minor adverse |
| | Brent goose and European white-fronted goose | Medium-high (brent goose)<br>High (European white-fronted goose) | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | | Negligible<br>Negligible<br>Negligible | minor adverse | None required | Breeding: No effect<br>Non-breeding: Minor adverse |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | Lapwing, curlew and golden plover | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | | Negligible<br>Negligible<br>Negligible | minor adverse | None required. | Breeding: No effect<br>Non-breeding: Minor adverse |
| | Green sandpiper | Medium-high | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | | No impact<br>Negligible<br>No impact | minor adverse | None required | Breeding: No effect<br>Non-breeding: Minor adverse |
| | Holland Haven Marshes SSSI assemblage | High | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | Negligible<br>No impact<br>No impact | Negligible<br>Negligible<br>No impact | Breeding: Minor adverse<br>Non-breeding: minor adverse | Erection and maintenance of barn owl nest boxes | Breeding: Negligible<br>Non-breeding: Minor adverse |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | Hamford Water SSSI assemblage | High | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>No impact<br>No impact | Negligible<br>Negligible<br>No impact | Breeding: No effect<br>Non-breeding: Minor adverse | None required. | Breeding: No effect<br>Non-breeding: Minor adverse |
| | Stour Estuary SSSI and Colne Estuary SSSI assemblages | High | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>No impact<br>No impact | Negligible<br>Negligible<br>No impact | Breeding: No effect<br>Non-breeding: No effect | None required. | Breeding: No effect<br>Non-breeding: No effect |
| | | | | | | | | |
| Impact 2: Construction Disturbance | Barn owl | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | Negligible<br>Negligible<br>Negligible | | Negligible | Erection and maintenance of nest boxes | Negligible |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | Cetti's warbler | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | Negligible<br>No impact<br>No impact | | Negligible | None required | Negligible |
| | Corn bunting | Medium-high | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | Negligible<br>Low<br>Low | | Minor to moderate adverse | None. | Minor to moderate adverse |
| | Grey partridge | Medium-high | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>No impact<br>Low | | Minor to moderate adverse | Treatment as a Schedule 1 species under EMP using additional measures to avoid disturbance to breeding adults and broods.<br>Soft landscaping, habitat management at onshore substation and national | Minor adverse |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | grid substation connection point | |
| | Hobby | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>Negligible<br>Negligible | | negligible | None required | negligible |
| | Quail | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>Negligible<br>No impact | | negligible | Habitat enhancement of unfarmed land in area of recorded activity (provision of suitable vegetation for breeding quails) | negligible |
| | Skylark | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid | Negligible<br>Negligible<br>Negligible | | Negligible | Soft landscaping, habitat management at onshore substation and national grid substation connection point | Negligible |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | | | substation connection | | | | | |
| | Yellow wagtail | Medium-high | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>Negligible<br>Negligible | | Minor adverse | None required | Minor adverse |
| | Brent goose and European white-fronted goose | Medium-high (brent goose)<br>High (European white-fronted goose) | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | | Negligible<br>Negligible<br>No impact | Minor adverse | None required | Minor adverse |
| | Lapwing, curlew and golden plover | Medium | Landfall<br>Onshore cable route<br>Onshore Substation and national grid | | Negligible<br>Low<br>Negligible | Minor adverse | Retain existing screening vegetation, adding visual screening around HDD works in particular if considered necessary<br>Provision for ECoW to instruct spatial and | Minor adverse |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | | | substation connection | | | | temporal restrictions or screening requirements to construction work in proximity to key habitats and key periods for breeding and non-breeding SSSI assemblage species. | |
| | Green sandpiper | Medium-high | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | | No impact<br>Medium<br>No impact | Moderate adverse | Retain existing screening vegetation, adding visual screening around HDD works in particular if considered necessary<br>Provision for ECoW to instruct spatial and temporal restrictions or screening requirements to construction work in proximity to key habitats and key periods for breeding and non-breeding SSSI assemblage species. | Minor adverse |
| | Holland Haven Marshes SSSI assemblage | High | Landfall<br>Onshore cable route<br>Onshore Substation and national grid | Low<br>No impact<br>No impact | Negligible<br>Low<br>No impact | Breeding: Minor adverse<br>Non-breeding: Minor adverse | Retain existing screening vegetation, adding visual screening around HDD works in particular.<br>Provision for ECoW to instruct spatial and | Breeding: Minor adverse<br>Non-breeding: |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | | | substation connection | | | | temporal restrictions or screening requirements to construction work in proximity to key habitats and key periods for breeding and non-breeding SSSI assemblage species.<br>Erection and maintenance of barn owl nest boxes | Minor adverse |
| | Hamford Water SSSI assemblage | High | Landfall<br>Onshore cable route<br>Onshore Substation and national grid substation connection | No impact<br>No impact<br>No impact | Negligible<br>Low<br>No impact | Breeding: No effect<br>Non-breeding: Minor adverse | Retain existing screening vegetation, adding visual screening around HDD works in particular.<br>Provision for ECoW to instruct spatial and temporal restrictions or screening requirements to construction work in proximity to key habitats and key periods for non-breeding SSSI assemblage species. | Breeding: No effect<br>Non-breeding: Minor adverse |
| | Stour Estuary SSSI and Colne Estuary SSSI assemblages | High | Landfall<br>Onshore cable route | No impact<br>No impact<br>No impact | Negligible<br>Negligible<br>Negligible (Stour SSSI) | Breeding: No effect<br>Non-breeding: Negligible | None required | Breeding: No effect |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | | | Onshore Substation and national grid substation connection | | | | | Non-breeding: Negligible |
| | | | | | | | | |
| Impact 3: Indirect impacts due to habitat smothering or contamination, including bentonite breakout | Barn owl | Medium | All | No impact | | No effect | None required | No effect |
| | Cetti's warbler | Medium | All | Negligible | | Minor adverse | None required | Minor adverse |
| | Corn bunting | Medium-high | All | No impact | | No effect | None required | No effect |
| | Grey partridge | Medium-high | All | No impact | | No effect | None required | No effect |
| | Hobby | Medium | All | No impact | | No effect | None required | No effect |
| | Quail | Medium | All | No impact | | No effect | None required | No effect |
| | Skylark | Medium | All | No impact | | No effect | None required | No effect |
| | Yellow wagtail | Medium-high | All | No impact | | No effect | None required | No effect |
| | Brent goose and European white-fronted goose | Medium-high (brent goose) High (European white-fronted goose) | All | | Negligible | Minor adverse | None required | Minor adverse |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | Lapwing, curlew and golden plover | Medium | All | | Negligible | Minor adverse | None required | Minor adverse |
| | Green sandpiper | Medium-high | All | | Negligible | Minor adverse | None required | Minor adverse |
| | Holland Haven Marshes SSSI assemblage | High | All | Negligible | Negligible | Minor adverse | None required | Minor adverse |
| | Hamford Water SSSI assemblage | High | All | Negligible | Negligible | Minor adverse | None required | Minor adverse |
| | Stour Estuary SSSI and Colne Estuary SSSI assemblages | High | All | No impact | No impact | No effect | None required | No effect |
| | | | | | | | | |
| Impact 4: Disturbance due to operational maintenance activities | All IOFs | Medium to High | All | Negligible | Negligible | Minor adverse | None required | Minor adverse |
| Impact 5: Onshore substation | Barn owl | Medium | Onshore substation | Negligible | Negligible | Minor adverse | Erection and maintenance of barn owl nest boxes | Minor adverse |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| operational noise and light disturbance | Cetti's warbler | Medium | Onshore substation | No impact | | No effect | None required | No effect |
| | Corn bunting | Medium-high | Onshore substation | Negligible | | Minor adverse | None required | Minor adverse |
| | Grey partridge | Medium-high | Onshore substation | Low | | Minor to moderate adverse | Soft landscaping, habitat management at onshore substation and national grid substation connection point | Minor adverse |
| | Hobby | Medium | Onshore substation | No impact | | No effect | None required | No effect |
| | Quail | Medium | Onshore substation | No impact | | No effect | None required | No effect |
| | Skylark | Medium | Onshore substation | Negligible | | Negligible | None required | Negligible |
| | Yellow wagtail | Medium-high | Onshore substation | Negligible | | Minor adverse | None required | Minor adverse |
| | Brent goose and European white-fronted goose | Medium-high (brent goose)<br>High (European white-fronted goose) | Onshore substation | | No impact | No effect | None required | No effect |

| Potential Impact | Receptor / IOF | Sensitivity | Onshore project component | Magnitude of Impact: breeding IOFs | Magnitude of Impact: non-breeding IOFs | Significance of effect | Additional mitigation measures | Residual effect |
|---|---|---|---|---|---|---|---|---|
| | Lapwing, curlew and golden plover | Medium | Onshore substation | | Negligible | Minor adverse | None required | Minor adverse |
| | Green sandpiper | Medium-high | Onshore substation | | No impact | No effect | None required | No effect |
| | Holland Haven Marshes SSSI assemblage | High | Onshore substation | No impact | No impact | No effect | None required | No effect |
| | Hamford Water SSSI assemblage | High | Onshore substation | No impact | No impact | No effect | None required | No effect |
| | Stour Estuary SSSI and Colne Estuary SSSI assemblages | High | Onshore substation | No impact | No impact | No effect | None required | No effect |

**Table 24.27 Summary of potential cumulative effects on onshore ornithology**

| Potential impact | Cumulative effect | Additional mitigation |
|---|---|---|
| **Construction** | | |
| Cumulative Impact 1: Habitat Loss | Residual effects of no more than minor adverse for all IOFs when considering embedded and additional mitigation for all projects. Corn bunting residual effect would be minor to moderate adverse. | No additional mitigation identified for corn bunting.<br>None required above that for Project alone for all other IOFs. |

| Potential impact | Cumulative effect | Additional mitigation |
|---|---|---|
| Cumulative Impact 2: Construction Disturbance | Residual effects of no more than minor adverse for all IOFs when considering embedded and additional mitigation for all projects. Corn bunting residual effect would be minor to moderate adverse. | No additional mitigation identified for corn bunting.<br>None required above that for Project alone for all other IOFs. |
| Operation | | |
| No cumulative impacts identified | None | None required above that for Project alone |
| Decommissioning | | |
| Decommissioning strategies have not yet been finalised for North Falls, Five Estuaries or Norwich to Tilbury; however, the cumulative effects are expected to be the same as those of the initial construction phase. | | |

## 24.13 References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