



Hornsea Project Four: Environmental Statement (ES)

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Volume A4, Annex 5.5: Onshore Cumulative Effects

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Glossary

Term	Definition
Cumulative Effects	The combined effect of Hornsea Four in combination with the effects of a number of different projects, on the same single receptor/resource.
Cumulative Impact	Impacts that result from changes caused by other past, present or reasonably foreseeable actions together with Hornsea Four.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Directive and EIA Regulations, including the publication of an Environmental Statement (ES).
Hornsea Project Four Offshore Wind Farm	The term covers all elements of the project (i.e. both the offshore and onshore). Hornsea Four infrastructure will include offshore generating stations (wind turbines), electrical export cables to landfall, and connection to the electricity transmission network. Hereafter referred to as Hornsea Four.
Landfall	The generic term applied to the entire landfall area between Mean Low Water Spring (MLWS) tide and the Transition Joint Bay (TJB) inclusive of all construction works, including the offshore and onshore ECC, intertidal working area and landfall compound. Where the offshore cables come ashore east of Fraisthorpe.
Onshore substation (OnSS)	Comprises a compound containing the electrical components for transforming the power supplied from Hornsea Project Four to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid. If a HVDC system is used the OnSS will also house equipment to convert the power from HVDC to HVAC.
Order Limits	The onshore limits within which Hornsea Project Four (the 'authorised project') may be carried out.
Orsted Hornsea Project Four Ltd.	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm Development Consent Order (DCO).

Acronyms

Acronym	Definition
BEIS	Department of Business, Energy and Industrial Strategy
CEA	Cumulative Effects Assessment
DCO	Development Consent Order
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ERYC	East Riding of Yorkshire Council
ES	Environmental Statement
MHWS	Mean High Water Springs
NPS	National Policy Statements
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
PINS	The Planning Inspectorate
SoS	Secretary of State
Zol	Zone of Influence

1 Introduction

- 1.1.1.1 A fundamental requirement of undertaking the Cumulative Effects Assessment (CEA) is to identify those projects, plans and activities with which Hornsea Project Four offshore wind farm (hereafter Hornsea Four) may interact to produce a cumulative impact. These interactions may arise within the construction, operation and maintenance or decommissioning phases.
- 1.1.1.2 The objective of this annex is to provide details on the proposed methodology for the Hornsea Four onshore CEA, justification for the approach taken regarding cumulative impacts, and to detail the long list of projects, plans and activities that have been considered within the onshore CEA. The approach for cumulative impacts is based upon the Planning Inspectorate (PINS) Advice Note 17: Cumulative Effects Assessment (PINS, 2019). The approach to the CEA is intended to be specific to Hornsea Four and takes account of the available knowledge of the environment and other activities around the onshore Hornsea Four Order Limits.

2 Policy and legislative context

- 2.1.1.1 The Planning Act 2008 underpins the consenting regime for certain types of development classed as Nationally Significant Infrastructure Projects (NSIPs). The Secretary of State (SoS) for the department of Business, Enterprise and Industrial Strategy (BEIS) has confirmed that Hornsea Four will require development consent under the Planning Act. The Infrastructure Planning (Environmental Impact Assessment) Regulations (2017) implemented the requirements of the Environmental Impact Assessment (EIA) Directive (Directive 2014/52/EU) into UK law.
- 2.1.1.2 The overarching National Policy Statement (NPS) for Energy (EN-1) and the NPS for Renewable Energy Infrastructure (EN-3) both identify the need to address the maximum potential adverse impacts. Matters considered to affect the maximum adverse impact are topic impacts, inter-relationships between topics, and cumulative impacts. The maximum adverse scenario, or envelope, is termed the Design (or 'Rochdale') Envelope.
- 2.1.1.3 PINS has produced 'Advice Note 9: Rochdale Envelope' (2018) setting out the views of PINS regarding how this approach should be used in the context of the Planning Act 2008. The Rochdale Envelope approach is a well understood concept that involves ensuring that any EIA is based on assessing the realistic worst-case scenario where flexibility or a range of options is sought as part of the consent application. This guidance confirms that in order to ensure a robust application of the Rochdale Envelope principle to the EIA process, this principle must also be applied to cumulative as well as individual effects.
- 2.1.1.4 PINS have produced 'Advice Note 17: Cumulative Effects Assessment' (PINS,2019), which provides guidance on a staged process that can be used for cumulative effects assessments for NSIPs. Advice Note 17 (AN17) details a four-step process that can be followed by developers and which has been applied here.

3 Consultation

3.1.1.1 As part of the Environmental Statement (ES) for Hornsea Four, consultation in relation to cumulative effects has been undertaken with various statutory and non-statutory authorities and stakeholders as part of the evidence plan process. A record of the key areas of consultation is provided within [Volume A1, Chapter 6: Consultation](#), but consultation to date is also summarised in the topic-specific ES chapters.

3.1.1.2 A summary of responses from PINS relevant to the CEA from the Scoping Opinion (PINS, 2018) are provided in [Table 1](#).

Table 1: PINS Scoping comments relating to the CEA.

Comment	Response to issue raised and/or where considered in this annex
<p><u>Cumulative effects during decommissioning:</u> Decommissioning is not proposed to be addressed in the cumulative assessment on the basis that it is too far in the future for enough information to be available to form a robust assessment. The Inspectorate notes the intention to assess this phase of the Proposed Development and to commit to a decommissioning plan at the relevant time and is content with this approach. The Inspectorate agrees to scope cumulative effects during decommissioning out of the cumulative assessment; however, the Applicant should take into account comments in Section 3, Paragraph 2.3.11 of this Scoping Opinion.</p>	<p>Noted – no response required.</p>
<p><u>Cumulative effects on onshore environment:</u></p> <p><u>Cumulative flood risk at onshore substation:</u> The Inspectorate advises that the drainage design presented in the ES should take into account the potential cumulative flood risk impact.</p> <p><u>Cumulative visual effects: onshore construction:</u> While it is appreciated that these effects will be temporary, given the large scale of the Proposed Development and other developments identified in Section 8 the Inspectorate considers that significant effects could occur if developments fall within the same area and in the same temporal extent. The ES should assess cumulative impacts to visual receptors.</p> <p><u>Cumulative land and agriculture effects: onshore construction:</u> While it is appreciated that these effects will be temporary, given the large scale of the Proposed Development and other developments identified in Section 8 the Inspectorate considers that significant effects could occur if developments affect the same geographical area and in temporal extent. This might be when impacts are sequential or overlapping. The Inspectorate would expect to see an assessment in the ES where significant effects could occur.</p>	<p>This annex sets out the approach to the CEA with the long list of projects, plans and activities presented in Appendix A. Topic-specific assessments are included in the relevant ES chapters in Volume A3.</p>

Comment	Response to issue raised and/or where considered in this annex
<p><u>Zols for cumulative assessment:</u> The Zones of Influence (Zol) for the cumulative assessment differ from the environmental aspect chapter for some aspects. It is noted that some principles behind the Zol are given in Paragraph 8.4.3.2 and the Inspectorate would expect the ES to clearly explain how the Zol or study area(s) have been determined, based on the likely extent of impacts.</p>	<p>Zols have been defined in Table 3 which have been derived based upon the likely extent over which cumulative impacts are likely to occur. Cumulative effect screening ranges specific to each EIA receptor topic are presented in Table 6.</p>

4 Definitions of cumulative effects for Hornsea Four

- 4.1.1.1 The ES addresses the cumulative effects for both the onshore and offshore elements of Hornsea Four. For the purposes of the Hornsea Four CEA process, cumulative effects are defined as those that result from incremental changes caused by other reasonably foreseeable actions alongside Hornsea Four. This includes the impact of other relevant developments that were not present at the time of data collection or survey. In-combination effects are defined as the combined effect of Hornsea Four, with the effects from a number of different projects, on the integrity of European Sites designated for their nature conservation value. In-combination effects are presented separately within the Report to Inform the Appropriate Assessment (RIAA) ([Volume B2, Chapter 2: Report to Inform Appropriate Assessment](#)).
- 4.1.1.2 This definition is consistent with the definition provided by PINS in AN17 and has been applied consistently throughout the ES.

5 Approach to cumulative effects assessment

5.1 Overview

- 5.1.1.1 In the past, there has been a lack of guidance for CEA, and past projects have consequently tended to adopt different methods for assessment. PINS produced Advice Note 17: Cumulative Effect Assessment, to provide guidance on a staged process that can be used for CEAs for NSIPs (summarised in [Table 2](#)). In addition to AN17, the approach to cumulative assessment for Hornsea Four has also taken into account the Cumulative Impacts Assessment Guidelines issued by RenewableUK and PINS Advice Note 9: Rochdale Envelope.

Table 2: Stages and activities involved in the CEA process (taken from PINS AN17).

CEA stage	Activity
<p>Stage 1 – Establish the project’s Zol and establish a long-list of other developments</p>	<p>The Project undertakes a desk study to identify the Zol for the development for the topics that are proposed to be scoped into the EIA. The Zol analysis is documented (i.e. table of topics and Zol), with supporting GIS.</p> <p>The long list of other plans and projects/activities is drawn up through a desk study of planning applications, development plan documents, relevant development frameworks and any other available sources to identify ‘other development’ within the Zol.</p> <p>Information on each project (development type, when occurring, etc.) is documented, along with the certainty or tier assigned to the ‘other development’ (i.e. confidence it will take place in the current form and when it will take place in relation to the project).</p> <p>AN17 notes that the project should then consult with the relevant planning authority/authorities and statutory consultees regarding the long list (and ideally prior to the submission of the Scoping Report)¹.</p> <p>Through consultation it has been identified that potential developments that need considering as part of the onshore CEA are restricted to those within the East Riding of Yorkshire Council (ERYC) and Hull County Council (HCC) area. To determine a ‘long-list’ of possible projects for inclusion in the CEA the following actions have been carried out:</p> <ul style="list-style-type: none"> • Review of the ERYC & HCC planning portals (latest review is August 2021); and • Discussion of potential projects for specific inclusion in the CEA at the Evidence Plan meetings. <p>To date these processes have identified 86 potential projects which form the ‘long-list’. In order to attribute an element of certainty to the CEA each project has been assigned a Tier reflecting their current status within the planning and development process. This approach allows appropriate weight to be given to each scenario (tier) when considering the potential cumulative impact. The proposed tier structure that is intended to ensure that there is a clear understanding of the level of confidence in the cumulative assessments provided in the Hornsea Four ES. An explanation of each tier is included in Table 4.</p>

¹ Note that for Hornsea Four a long list for onshore issues was provided for consideration at scoping.

CEA stage	Activity
	<p>The full list of projects and relevant tiers assigned can be found in Appendix A. The location of the projects is provided in Volume A4, Annex 5.6: Location of Onshore Cumulative Schemes.</p>
<p>Stage 2 – Screening of long list: Identify a shortlist of other developments for the CEA</p>	<p>PINS have provided inclusion/exclusion threshold criteria, against which the potential for ‘other development to give rise to significant cumulative effects by virtue of overlaps in temporal scope, the scale and nature of the ‘other developments’ and/or receiving environment, or any other relevant factors is assessed. From this assessment, a shortlist of ‘other developments’ to be included in the CEA is produced. It is noted that documented information on each of the ‘other development’ is likely to be high level at this stage, outlining the key issues to take forward.</p> <p>AN17 notes that the proposed inclusion/exclusion should ideally be finalised prior to the request for a Scoping Opinion, and the project must consult with the relevant planning authorities and statutory consultees regarding the shortlist¹.</p> <p>Following on from the Stage 1 long-list a consideration of effect-receptor pathways, data confidence and temporal and spatial scales has allowed the selection of the relevant projects for a topic-specific cumulative short-list.</p> <p>Predicted cumulative effects predominantly relate to direct effects, however a topic specific buffer (Table 3) around the Hornsea Four Order Limits was selected to ensure that the indirect impacts on each specific topic were also appropriately included. It is considered unlikely that significant effects greater than this distance would occur given the impacts under assessment.</p>
<p>Stage 3 – Information gathering</p>	<p>All available information on the ‘other developments’ within the shortlist generated at Stage 2 is collated to inform the CEA.</p> <p>Where available, information on the other developments within the topic specific shortlist generated at Stage 2 has been collated to inform the CEA. At this stage (i.e. ES), information is of high level unless explicitly discussed with the relevant planning authority (ERYC or HCC). The information collected on each development is presented in Appendix A and Volume A4, Annex 5.6: Location of Onshore Cumulative Schemes.</p>
<p>Stage 4 - Assessment</p>	<p>The project reviews each of the ‘other developments’ in turn to assess whether cumulative effects may arise, which in turn produces topic specific shortlists (for the topic specific CEA study area) that are referred to and considered within each technical onshore chapter in Volume A3. This should also include, where relevant, consideration of any mitigation measures where significant adverse cumulative effects are identified and should clearly signpost to the relevant means of securing mitigation (e.g. DCO requirements and associated mitigation plans).</p>

CEA stage	Activity
	<p>While not to be used as a means to shift the burden of mitigation, it may be appropriate to ascertain the contribution of each development to the effect (done via professional judgement). However, it may be useful during the consultation with other developers to identify means to jointly address mitigation of significant adverse cumulative effects and the means to ensure delivery.</p> <p>The CEA has been undertaken in two phases, where:</p> <ul style="list-style-type: none"> Phase one is where each of the potential effects that are subject to assessment alone have been reviewed against the potential for cumulative effects to occur; and Phase two is where a CEA assessment of each of the other developments on the shortlist has taken place for those effects where it is considered that potential cumulative impacts could occur. <p>The CEA also includes, where relevant, consideration of any mitigation measures where adverse cumulative effects are identified and signposts to the relevant means of securing mitigation.</p>

5.1.1.2 The following sections sets out the Hornsea Four approach to completing Stages 1 to 3, incorporating development of the long list, tiering of projects and development of the topic-specific short lists. These short lists have been considered in detail in each of the topic-specific ES chapters as part of the cumulative assessment process (Stage 4)

5.2 Stage 1 - Establish the Zols and identify long list of 'other development'

5.2.1 Approach to the long list

5.2.1.1 Under the first stage of the onshore CEA, a long-list of relevant projects, plans and activities occurring within a large study area around Hornsea Four has been developed. Given the scale of the onshore project and its location entirely within the boundary of ERYC proposed or planned development information has been collated from within this local authority boundary and has been based on publicly available information available at the time of preparation. In addition, a review of HCC's planning portal has also been undertaken following stakeholder feedback.

5.2.1.2 The long-list, landward of Mean High-Water Springs (MHWS) has been produced based on the scale of other projects and the potential for them to interact with Hornsea Four. Any projects submitted for planning permission post-August 2021 have not been considered for inclusion in the ES.

5.2.1.3 **Table 3** defines the search area extents that have been applied in developing the long list of other projects, plans and activities for each of the onshore technical assessments included in the ES.

Table 3: CEA onshore long list search areas extents or Zols.

Project, plan or activity	CEA search area extents
Geology and Ground Conditions	1 km buffer around the onshore Hornsea Four Order Limits.
Hydrology and Flood Risk	Surface water catchments containing onshore project activities.
Ecology and Nature Conservation	5 km buffer around the onshore Hornsea Four Order Limits.
Landscape and Visual	5 km search area around the OnSS (no cumulative assessment of landfall/export cable corridor (ECC) is anticipated as the assessment assesses construction stage works only).
Historic Environment	1 km buffer around the onshore Hornsea Four Order Limits; and 5 km buffer around OnSS permanent infrastructure.
Land Use and Agriculture	1 km buffer around the onshore Hornsea Four Order Limits.
Traffic and Transport	Schemes of regional significance as agreed with ERYC.
Noise and Vibration	2 km buffer around the onshore Hornsea Four Order Limits.
Air Quality	Schemes of regional significance as agreed with ERYC.
Socio-Economic	Scoped out during EIA screening.

5.2.1.4 All projects, plans, and activities within the search areas defined in the table above have been identified through a desktop study using, amongst others, the following data sources:

- ERYC Planning website (<https://newplanningaccess.eastriding.gov.uk/newplanningaccess/>);
- HCC website (<https://www.hullcc.gov.uk/padcbc/publicaccess-live/>); and
- Developer and project proponent websites (e.g. <https://highwaysengland.co.uk/projects/a63-castle-street-improvement/>)

5.2.1.5 Additionally, the Applicant has been in contact with National Highways (formally Highways England) and National Grid to obtain information for specific CEA projects, where information was not available in the public domain.

5.2.1.6 The Hornsea Four cumulative long list is presented in **Appendix A**. All onshore projects, plans and activities considered within the CEA, based on the search areas set out in **Table 3** are presented in **Annex 5.6: Location of Onshore Cumulative Schemes**.

5.2.2 Tiered approach

5.2.2.1 In assessing the potential for cumulative effects from Hornsea Four, it is important to bear in mind that projects, predominantly those 'proposed', may or may not be taken forward for development. Therefore, there is a need to build in some consideration of certainty (or uncertainty) with respect to the potential impacts which might arise from such proposals, in line with the approach set out by PINS in AN17.

5.2.2.2 For these reasons, all of the relevant long list plans and projects have been allocated into 'tiers', reflecting their current status within the planning and development process. This allows the cumulative impact assessment to present several scenarios if required, reflecting the varying levels of certainty of an activity proceeding and therefore the potential for

impacts to arise that might act cumulatively with the impacts arising from Hornsea Four. Appropriate weight may therefore be given to each scenario (tier) in the decision-making process when considering the potential cumulative impacts associated with Hornsea Four. For example, it may be considered that greater weight be attributed to tier 1 than tier 2.

- 5.2.2.3 In accordance with PINS AN17, the proposed tiering structure is described in **Table 4**. The tiers are listed in descending order of level of detail likely to be available (and certainty of effects arising). It is noted in PINS AN17 that where other projects are expected to be completed before the construction of the proposed NSIP and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline and may be considered as part of assessment in the construction and operational phase (noting that the assessment should clearly distinguish between projects forming part of the baseline and those in the CEA).

Table 4: Description of tiers of other developments considered for CEA (adapted from PINS AN17).

Tier 1	Project under construction.
	Permitted applications, whether under the Planning Act 2008 or other regimes, but not yet implemented.
	Submitted applications, whether under the Planning Act 2008 or other regimes, but not yet determined.
Tier 2	Projects on the Planning Inspectorate’s Programme of Projects where a Scoping Report has been submitted.
Tier 3	Projects on the Planning Inspectorate’s Programme of Projects where a Scoping Report has not been submitted.
	Identified in the relevant Development Plan (and emerging Development Plans with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited.
	Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

- 5.2.2.4 The tiering allocated to each of the long list projects is indicated as part of the long list presented in **Appendix A**. It is acknowledged that the Applicant has included outline parameters for the future expansion to the National Grid Electricity Transmission (NGET) substation at Creyke Beck after obtaining them from National Grid. This expansion does not specifically fit within the tiers outlined above; however, outline parameters have been obtained for the purpose of the CEA to form a robust assessment at the point of DCO application submission. For the purpose of the CEA the expansion has been assigned as tier 3.

- 5.2.2.5 Furthermore, whilst the National Grid Continental Link project has not been assessed as part of the CEA (as the project is at an early stage of development and location unconfirmed), the Applicant has been in regular engagement with National Grid to discuss opportunities to collaborate.

5.3 Stage 2 – Screening of long list (interactions)

- 5.3.1.1 Having developed the Hornsea Four long list, all projects, plans and activities have been screened based on the level of detailed information available and the potential for

interaction with Hornsea Four, whether this interaction be temporal and/or spatial and where a potential pathway exists. This screening has produced EIA topic-specific short-lists of projects to be considered further within the CEA as part of each EIA topic chapter. It should be noted that this process may have screened a project in for one EIA topic, but screened it out for another. The individual short-lists are presented in each technical topic chapter in **Volume A3** of the ES. The screening process has applied the criteria presented in **Table 5**.

Table 5: CEA long list screening criteria.

Project screened-in	Project screened-out
<ul style="list-style-type: none"> - Project, plan or activity is considered as part of the baseline environment but has ongoing effects; - Potential for an impact-receptor pathway to exist; - Potential for a spatial effect interaction to exist; and/or - Potential for temporal effect interaction exists. 	<ul style="list-style-type: none"> - Project, plan or activity included as part of the baseline environment (therefore not a consideration in the CEA); - Low data confidence (meaningful assessment cannot be undertaken); - No potential impact-receptor pathway exists; - No potential for a spatial effect interaction; and/or - No potential for a temporal effect interaction.

5.3.1.2 During the screening process, the steps above have been followed in the defined order to allow a clear justification for screening projects in/out. Definitions of relevance to [Table 5](#) comprise:

- **Spatial effect interaction:** The impacts on a receptor from Hornsea Four and one or more other plans/projects have a geographical overlap. For example, noise from construction operations at Hornsea Four could overlap with those of another onshore construction project, if it is sufficiently close to Hornsea Four. If there is no spatial interaction, there is no potential for a cumulative effect.
- **Temporal effect interaction:** The impacts from Hornsea Four and one or more other plans/projects have the potential to occur at the same time. If there is no temporal interaction, there is no potential for a cumulative effect.
- **Potential impact-receptor pathway:** There is the potential that a pathway exists whereby an impact could have an effect on a receptor. For example, increases to suspended sediment concentration could have an impact on fish and shellfish receptors, but noise could not have an effect on geology and ground condition receptors.

5.3.1.3 Only where there is the potential for both spatial and temporal interaction between effects at Hornsea Four and one or more other plans/projects, has a cumulative impact been taken forward for consideration in the CEA. The screening of the long list is set out in [Appendix A](#), identifying those projects screened in or out for further consideration on the basis of one or more of the preceding criteria.

5.4 Stage 2 – Topic-specific screening of long list (impact ranges)

5.4.1.1 The screened long list identifies all of the other plans/projects and activities that might give rise to cumulative effects when considered alongside the potential impacts arising from Hornsea Four but does not identify the differences in impact ranges for different environmental receptors. In order to focus the topic specific CEAs presented in the ES chapters, the screened long list was subject to further topic specific screening to identify those relevant plans/projects and activities within the Zols of Hornsea Four for each topic.

The topic-specific screening distances used to refine the screened long list into topic-specific short lists (along with justifications for the distances used) are provided in [Table 6](#).

Table 6: Cumulative effect screening ranges specific to each EIA receptor topic.

EIA topic	Maximum extent of impact and justification
Geology and Ground Conditions	With regards to the CEA the predicted effects predominantly relate to direct effects, a 1 km buffer was selected to ensure that the indirect impacts on geology and ground conditions were appropriately included. It is considered unlikely that significant effects greater than this distance would occur given the impacts under assessment. Impacts greater than this distance had also previously not been assessed as part of the PRA which has been used to inform the ES chapter.
Hydrology and Flood Risk	Due to the inter-connected nature of surface hydrological system, activities in one part of a surface catchment have the potential to affect other parts of the catchment in which they take place and also affect other connected catchments downstream. For the purposes of this assessment, all river water body catchments (identified by the Environment Agency for the purposes of the Water Framework Directive) in which construction of operational activities would take place have been used to define the maximum theoretical extent of project impacts. It is considered unlikely that potential impacts on surface water receptors would occur outside of these catchments.
Ecology and Nature Conservation	A maximum search area of 5 km has been selected for onshore ecology. This is in order to consider highly mobile bat and bird species. For other protected species and habitats, a maximum extent of impact is 2 km, taking into consideration potential pathways (i.e. connecting habitats between projects) as well as temporal overlap on shared habitat resources.
Landscape and Visual	The Hornsea Four LVIA Study Area for the cumulative assessment was defined as a 5 km radius from the onshore Hornsea Four Order Limits. This considers the potential inter-visibility of other planned projects with the OnSS at operation. It also extends up to 10 km radius as a precautionary basis for potential inter-visibility of tall Hornsea Four substation structures with other tall structures from other planned development such as proposed onshore wind farms or overhead power lines.
Historic Environment	The 1 km and 5 km buffers have been identified for the historic environment CEA to ensure indirect (non-physical) cumulative effects can be appropriately identified and assessed. It is considered unlikely that significant effects

EIA topic	Maximum extent of impact and justification
	greater than these distances would occur given the impacts under assessment and the nature of this topic.
Land Use and Agriculture	Whilst most predicted effects relate to direct effects the 1 km buffer was selected to ensure that indirect effects on land use and agriculture were appropriately included. It is considered unlikely that significant effects greater than this distance would occur given the impacts under assessment and the nature of this topic.
Traffic and Transport	<p>Agreement with the ERYC that the CEA should consider the, A164/ Jocks Lodge highway improvement scheme and the A63 Castle Street highway improvement scheme.</p> <p>The regions' local plan allocations (employment and housing) are included within the TEMPro growth factors applied to the future baseline traffic flows.</p>
Noise and Vibration	It is considered unlikely that any direct significant effects outside of the 2 km buffer would occur given the impacts under assessment and the nature of this topic.
Air Quality	<p>The maximum extent of impact for air quality are the same as those for Traffic and Transport.</p> <p>In addition, Natural England's SSSI Impact Risk Zones (5 km radius) for all designated sites screened into the air quality assessment have been considered.</p>

5.4.1.2 These topic-specific ranges have been applied to the long list presented in [Appendix A](#) to identify relevant short list plan/projects/activities to be taken forward to the topic-specific CEA presented in each ES chapter (summary short list tables are presented in each of the onshore ES topic chapters).

5.5 Stage 3 (information gathering) and Stage 4 (assessment)

5.5.1.1 Following on from the production of the topic-specific long lists, EIA topics authors have undertaken an information gathering exercise in relation to all plans/projects/activities that have been screened in for each particular topic. This information gathering has then been used to inform the CEA assessments that are presented within each EIA topic chapter.

5.5.1.2 The CEA assessments are provided in each of the technical chapters in [Volume A3](#) of the ES and utilise topic specific criteria and rationales for individual assessments which are not repeated here.

6 References

DECC (2011). Overarching National Policy Statement for Energy (EN-1). Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure> Accessed July 2021.

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Appendix A
Onshore Cumulative Screening Matrix

ES Volume A4, Annex 5.5, Appendix A - Onshore Cumulative Effects Screening Matrix

Key to Status of Listed Project

	In Planning/Consenting/Pre-Construction
	Construction
	Operation and Maintenance
	Decommissioning

Abbreviations

- OnSS = Onshore Substation
- onshore ECC = onshore Export Cable Corridor

Key to Topic Specific CEA Screening Status

a	Included as part of the topic baseline and hence not considered within the cumulative impact assessment.
b	Part of the baseline but has an ongoing impact and is therefore considered relevant to the cumulative impact assessment: Screened in to assessment.
c	Potential cumulative impact exists: Screened in to assessment.
d	No potential effect-receptor pathway (including where located outside of topic specific screening buffer): Screened out of assessment.
e	Low data confidence: Screened out of assessment.
f	No physical effect-receptor overlap: Screened out of assessment.
g	No temporal overlap: Screened out of assessment.

Name	Project	Reference	Data Source(s)	Data Confidence Assessment	Notes	Status of Development	Construction Period (red outline denotes the onshore construction period for Hornsea Four)													Location Description (relative to Hornsea Four Order Limits)	Location in relation to project aspect (Landfall / Onshore ECC / OnSS)	Air Quality	Ecology	Geology & Ground Conditions	Historic Environment	Hydrology & Flood Risk	Land Use & Agriculture	Landscape	Noise & Vibration	Traffic & Transport											
							2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031-2040																							
Lawns Farm Park Battery Storage	Lawns Farm Park Battery Storage	17/01953/STPLF	https://newplaningprocess.esa.stirling.gov.uk/invest/developmentaccess/developmentdetails/view/par/PAELQ8ANW008/activeTab/summary	High - Third party project details published in the public domain and confirmed as being 'accurate' by developer	Construction of a 43.5MW Battery Storage Facility (17 battery units) with associated infrastructure and landscaping.	Approved																																			
Jocks Lodge Highway Improvement Scheme	Jocks Lodge Highway Improvement Scheme	20/0107/3/STPLF	https://newplaningprocess.esa.stirling.gov.uk/invest/developmentaccess/developmentdetails/view/par/DT17VMS6CC0006/activeTab/summary	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Construction of road improvements between Beverley and Cottingham to include: Lincoln Way to Victoria Road Roundabouts - widening of carriage way, Jocks Lodge to Lincoln Way roundabout - construction of roundabout on A1079, link roads and bridge, Dunfer Road to Jocks Lodge - widening of carriage way, Skelby Roundabout to Dunfer Road - widening of carriage way, modification of junction and creation of pedestrian and cycle path and facilities; and Castlehill to Skelby Roundabouts - construction of dual carriage way, bridge over Epworth Road and widening of carriage ways.	Approved																																			
Dogger Bank A	Dogger Bank A	N/A	https://portal.bea.gov.uk/EIP/pages/search.htm	High - Third party project details published in the public domain and confirmed as being 'accurate'	The consent application submitted allows for up to 400 wind turbines in total, therefore currently being split across the two phases. Project Capacity 1000-1200MW.	Approved																																			
Dogger Bank B	Dogger Bank B	N/A	https://portal.bea.gov.uk/EIP/pages/search.htm	High - Third party project details published in the public domain and confirmed as being 'accurate'	The consent application submitted allows for up to 400 wind turbines in total, therefore currently being split across the two phases. Project Capacity 1000-1200MW.	Approved																																			
Killingwold Retail Development	Retail Development on Land North East Of Killingwold Roundabout Bishop Burton	19/01217/PLF	https://newplaningprocess.esa.stirling.gov.uk/	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of petrol filling station and retail store	Approved after appeal																																			
Great Outer Lane Housing Development	Housing Development on Land South Of 21 Great Outer Lane West Wilberby	19/01041/STPLF	https://newplaningprocess.esa.stirling.gov.uk/	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of 131 dwellings of which 52 are affordable with associated access, parking, open space and infrastructure following demolition of 3 existing dwellings.	Approved																																			
Low Farm Development	Low Farm Dunwell Lane Dunwell Development	19/00968/STPLF	https://newplaningprocess.esa.stirling.gov.uk/	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of glasshouses, automated bedding units and wind breaks to outdoor planting beds, external and internal alterations to redundant agricultural buildings to allow conversion to offices and stores; relocation of workers caravans, construction of reservoir with installation of drainage infrastructure across the site and creation of access to low farm, 5 parking places along Long Lane and junction improvements onto the A1174 (Hull Road).	Approved																																			
Focus School Campus Housing Redevelopment	Focus School Campus Housing Redevelopment, Haggate Cottingham	19/00849/PLF	https://newplaningprocess.esa.stirling.gov.uk/	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Conversion of existing school buildings into 29 flats and the erection of a new building to provide 6 flats.	Approved																																			
A63 Castle Street Roadworks	A63 Castle Street Roadworks	N/A	https://highwaysengland.co.uk/projects/a63-castle-street-improvement/	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Creation of new junction by lowering the level of the A63 at Mytongate junction. Ferryway and Commercial Road would cross the A63 creating a split-level junction. Between Princes Dock Street and Market Place there are plans to widen the eastbound carriageway to three lanes. Plan to construct two new bridges over the A63 at Porter Street and another in front of Princes Quay Shopping Centre. Decision expected March 2020.	Approved																																			

		Construction Period (red outline denotes the onshore construction period for Horsea Four)																												
Name	Project	Reference	Data Source(s)	Data Confidence Assessment	Notes	Status of Development	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031-2050	Location Description (relative to Horsea Four Order Limits)	Location in relation to project aspect (Landfall) / Onshore ECC / OnSS	Air Quality	Ecology	Geology & Ground Conditions	Historic Environment	Hydrology & Flood Risk	Land Use & Agriculture	Landscape	Noise & Vibration	Traffic & Transport	
Beverly Racecourse	Storage Yard Beverly Racecourse	200135ZTELCOM	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of a 20m high ground-based column, 4 x 0.6 dia transmission delta's, 6 multi-band antennas, 2 equipment cabinets, 2 x 3m gantry poles on tower base, 2.1m high palisade fencing and ancillary equipment and cabling.	Required and Granted Prior Approval													650m east of the onshore ECC.	650m east of the onshore ECC.	d	e		d	d	c	d	d	d	
The Paddocks Development	The Paddocks High Site Leven East Riding Of Yorkshire HU17 5NL	2001187STPLF	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=084408J07E00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of 90 dwellings with associated access, parking, landscaping and infrastructure.	Approved													Located on the eastern edge of Leven, 8km east of Horsea Four Order Limits.	8km east of the onshore ECC.	a	f	d	d	d	d	d	d	a	
Benninghorne Grange Farm	Benninghorne Grange Farm Kidth Lane Benninghorne East Riding Of Yorkshire HU11 5EF	2001068PLF	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=071567B1800	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of a steel portal frame agricultural building for housing pigs and associated feed bin.	Approved													Located 2km west of Skiffagh at Benninghorne Grange, 8km east of Horsea Four Order Limits.	8km north east of the OnSS.	d	f	d	d	d	d	d	d	d	
Ings Lane & East Of Skillings Lane Development #2	Land At Ings Lane And East Of Skillings Lane Ings Lane Elopington East Riding Of Yorkshire HU15 1EN	2001027STREM	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=084408J07E00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of 320 one and two storey dwellings with associated internal vehicular and pedestrian access, car parking, landscaping and infrastructure following outline permission 1500916STVAR (Variation of 110410AS/OUT). (All matters to be considered) [Brough South - Phase 3.	Approved													Located 0.25km south of Brough, 11.5km south of Horsea Four Order Limits.	11.5km south of onshore ECC logistics compound.	a	f	d	d	d	d	d	d	a	
Doggar Bank Construction Compound	Land South East Of Orange House Grange Road North Fordingham East Riding Of Yorkshire YO25 8LW	2001030PLF	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Works to improve access arrangements for a temporary construction compound associated with the Doggar Bank Wind Farm project, including construction and use of a temporary access track, creation of a vehicle access (Junction H), and alterations to an existing access (Junction G).	Approved													Located 3.5km north of Bransburton along the A165, 5km east of the Horsea Four Order Limits.	3km east of an access track to the onshore ECC.	a	f	d	d	d	d	d	d	a	
Belvedere Parade Development	Land North Of Park And Ride Cafe Belvedere Parade Bridlington East Riding Of Yorkshire YO15 3LX	2000985REM	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=0726AM810000	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of 22 dwellings following outline permission 1601109/OUT (All matters to be considered)	Approved													Located south of Bridlington at the golf course, 4km north of Horsea Four Order Limits.	4km north of landfall.	a	e	d	d	d	d	d	d	a	
Aviton Butt Development	Land South Of Aviton Butt Lane Totton East Riding Of Yorkshire HU17 5SF	1903930OUT	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Outline - Erection of two dwellings (All Matters Reserved).	Application Refused													Located 2.5km north east of Beverley along the A1035 at Totton, 6km east of the Horsea Four Order Limits.	4km east of the onshore ECC.	a	e	d	d	d	d	d	d	a	
Decoy House Farm Development	Decoy House Farm Wotton Carrs Wotton East Riding Of Yorkshire YO25 9RQ	2000851PLF	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of a circular sturry store, 4 covered manure storage building and a slurry reception tank.	Approved													Located adjacent to Tophill Low nature reservoir, 1km east of the Horsea Four Order Limits.	1km east of the onshore ECC.	d	e	d	d	c	d	d	d	d	
White House Farm Development	White House Farm Scarborough Lane Scarborough East Riding Of Yorkshire YO25 9AZ	2001629AGNOT	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of a general purpose agricultural building.	Prior Approval Not Required													Located 1.1km north of Leconfield along the A164 at Scarborough, 400m south of Horsea Four Order Limits.	400m south of an access track for the onshore ECC.	d	e	d	d	c	d	d	d	d	
Beverly Road Telecommunications Mast	Telecommunications Mast 42693 Beverly Road Wileby East Riding Of Yorkshire	2001616TELCOM	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of 20m high telecommunications mast, 3 shrouded antennas, 3 unshrouded antennas, 1 300mm dia. 3 cabinets and ancillary development including bollards.	Required and Granted Prior Approval													Located NW of Wileby along the B1232, 4.5km south of Horsea Four Order Limits.	4.5km south of OnSS temporary works.	d	e	d	d	d	d	d	d	d	
Warren Business Park Development	Land East Of Warren Business Park Main Street Beeford East Riding Of Yorkshire YO25 8FD	2001571OUT	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	OUTLINE - Erection of an office block with associated access, car parking and landscaping (Access and Layout to be considered).	Approved													Located adjacent to the manor house at Beeford, 2.5km south of Horsea Four Order Limits.	2.5km south of an access track to the onshore ECC.	a	e	d	d	d	d	d	d	a	
Model Farm Development	Model Farm Long Lane Woodmansey East Riding Of Yorkshire HU17 0RN	2001354AGNOT	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of agricultural building for the keeping of livestock and straw storage.	Required and Granted Prior Approval													Located south of Beverley, just north of the A1039, 700m north east of the Horsea Four Order Limits.	700m north east of the OnSS access track.	a	e	d	d	d	c	d	d	d	
Wingate Development	Land South Of 1 To 5 Wingate Bridlington East Riding Of Yorkshire YO16 4QF	2001333PLF	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of 4 dwellings and associated works.	Approved													Located adjacent to the B1255 at Bridlington, 6.5km north of Horsea Four Order Limits.	6.5km north of landfall.	a	f	d	d	d	d	d	d	a	
Strawberry Fields Development	Land North Of Strawberry Fields Kingsgate Bridlington East Riding Of Yorkshire	2001338STREM	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of 470 dwellings with associated infrastructure, open space and landscaping following Outline Planning Permission 1440366ST/OUT (Appearance, Landscaping, Layout and Scale to be considered).	Approved													Located at south Bridlington, adjacent to Bridlington golf course along the A1038, 4km north of Horsea Four Order Limits.	4km north of landfall.	a	e	d	d	d	d	d	d	a	
Harland Way Development	Land West Of Harland Way Cottingham East Riding Of Yorkshire HU16 5TA	2001289PLF	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of 7 dwellings (partial re-plan of approved application 1901555/STPLF).	Approved													Located NW of Cottingham adjacent to the B1233, 1.5 km south of Horsea Four Order Limits.	1.5km south of the OnSS temporary works.	a	e	d	d	d	d	d	d	a	
Doggar Bank Cable Corridor	Land West Of Gobe Farm Carr Lane Rooth Carrs East Riding Of Yorkshire HU17 5LP	2002638STVAR	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Variation of Conditions 1-7 of planning reference 2001637/STPLF. Alterations to subsurface cable corridor connected to Doggar Bank Offshore Wind Farm.	Approved													12 amendments across entire cable corridor. Closest amendments are east and northeast of onshore substation.	0.4km east of OnSS.	a	e	d	d	d	c	d	d	a	
Wakington House Development	Site Of Wakington House Townsend Road Wakington East Riding Of Yorkshire HU17 8SY	2002414PLF	https://newplanningaccess.eastriding.gov.uk/newplanningaccess/registrationDetails.do?keyVal=08184J00	Medium - Third party project details published in the public domain but not confirmed as being 'accurate'	Erection of a replacement dwelling with detached outbuildings for use as garages/vehicles and green house/boating shed, riding arena, turnout pen, grass paddocks and associated access, hard/soft landscaping.	Approved													Located in Wakington, directly north of Townsend Park, 1.8km west of Horsea Four Order Limits.	1.8km west of Onshore ECC.	d	e	d	d	d	d	d	d	d	

