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Bramford to Twinstead Reinforcement

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nationalgrid

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15. Cumulative Effects Assessment

15.1 Introduction

15.1.1 This Environmental Statement (ES) chapter details the cumulative effects assessment (CEA) for the project. Cumulative effects occur when impacts caused by present and reasonably foreseeable activities combine to create an increased level of effect. A single environmental impact resulting from a development may not be significant on its own but may become significant when combined with other environmental impacts of the same development or of other developments.

15.1.2 Cumulative effects are the result of multiple actions on environmental receptors or resources. Two categories of cumulative effects are considered: 'intra-project' and 'inter-project' effects (Institute of Environmental Management and Assessment (IEMA), 2011):

- **Intra-project cumulative effects** (referred to as 'interrelationships between aspects' in Advice Note 17 (Planning Inspectorate, 2019)) occur when a resource, receptor or group of receptors are potentially affected by more than one source of direct environmental impact resulting from the same development (IEMA, 2011). For example, a community may be affected by noise and dust impacts resulting from the construction phase activities of a single development; and
- **Inter-project cumulative effects** (referred to as 'cumulative effects' in Advice Note 17 (Planning Inspectorate, 2019)) occur when a resource, receptor or group of receptors are potentially affected by more than one development at the same time (IEMA, 2011). For example, the construction traffic effects of a development in isolation may not be significant, but when combined with the construction traffic effects of another development (using the same geographical area at the same time) may result in significant cumulative effects on the surrounding highways network.

15.1.3 This chapter has links with all environmental chapters as it considers the interrelationships between aspects.

15.1.4 This chapter is supported by the following appendices:

- Appendix 15.1: Cumulative Effects Baseline (**application document 6.3.15.1**);
- Appendix 15.2: Intra-Project Cumulative Effects Matrix (**application document 6.3.15.2**);
- Appendix 15.3: Long List of Other Developments (**application document 6.3.15.3**);
- Appendix 15.4: Shortlist of Other Developments (**application document 6.3.15.4**);
- Appendix 15.5: Inter-Project Cumulative Effects Assessment (**application document 6.3.15.5**);

15.1.5 This chapter is also supported by the following figures, which can be found in ES Volume 6.4: Figures (application **document 6.4**):

- Figure 15.1: Nationally Significant Infrastructure Projects; and
- Figure 15.2: Proposed Developments.

15.2 Regulatory and Planning Policy Context

National Policy Statement

15.2.1 ES Chapter 2: Regulatory and Planning Policy Context (**application document 6.2.2**) sets out the overarching policy relevant to the project including the Overarching National Policy Statement (NPS) for Energy (EN-1) (Department of Energy and Climate Change (DECC), 2011a). This is supported by NPS for Electricity Networks (EN-5) (DECC, 2011b).

15.2.2 Paragraph 4.1.3 in EN-1 states, *'In considering any other development, and in particular when weighing its adverse impacts against its benefits, the IPC should take into account … its potential adverse impacts, including any long term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts'*.

15.2.3 Paragraph 4.2.5 of EN-1 states, *'When considering cumulative effects, the ES should provide information on how the effects of the applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been sought or granted, as well as those already in existence)'*.

15.2.4 The Government has consulted on draft replacements of the Energy NPS, including NPS EN-1 (Department for Business, Energy and Industrial Strategy (BEIS), 2021a) and NPS EN-5 (BEIS, 2021b) in autumn 2021. The drafts did not contain substantive proposed changes regarding CEA which are considered to be relevant to the project.

15.2.5 Full consideration of the NPS can be found in the Planning Statement (**application document 7.1**).

Other Relevant Policy

15.2.6 ES Appendix 2.1: Legislation, Policy and Guidance (**application document 6.3.2.1**) includes legislation and national policy relevant to the CEA. It also outlines key guidance documents that have been referenced when writing this chapter.

15.2.7 ES Appendix 2.2: Local Planning Policy (**application document 6.3.2.2**) lists the local policy potentially relevant to the project. There are no specific policies relating to cumulative effects.

15.3 Scope of the Assessment

15.3.1 National Grid submitted the Scoping Report (**application document 6.5.1**) for the project to the Planning Inspectorate in May 2021. This included a chapter on cumulative effects setting out the scope of the assessment. It also included the first draft of the proposed developments that would be considered as part of the CEA (the 'long list' of other developments). It also set out the methodology for how proposed developments would then be shortlisted for more detailed consideration with the CEA.

15.3.1 Following the submission of the Scoping Report (**application document 6.5.1**), the Planning Inspectorate, on behalf of the Secretary of State, provided the Scoping Opinion for the project (**application document 6.6**). The scope of this chapter has been informed by the Scoping Opinion (**application document 6.6**) and has also been informed through engagement with relevant consultees, as summarised in ES Appendix 5.2: Response to Consultation Feedback (**application document 6.3.5.2**).

15.3.2 The Planning Inspectorate advised in ID 4.14.2 of the Scoping Opinion (**application document 6.6**) that the ES should provide further justification for the Zone of Influence (ZOI) used within the CEA, stating that this should be informed by an understanding of receptors and potential impact pathways rather than a distance-based zone. The justification for the ZOI is provided in Appendix 15.5: Inter-Project Cumulative Effects Assessment (**application document 6.3.15.5**).

15.3.3 The Planning Inspectorate also advised in ID 4.14.3 of the Scoping Opinion (**application document 6.6**) that the CEA should consider the potential for significant cumulative effects with Nationally Significant Infrastructure Projects (NSIP) within 50km of the project, and that the A12 Junctions 19 to 25 project should be included in the shortlist of other developments (ID 4.14.5). These recommendations were taken into account in the CEA approach, with NSIP up to 50km from the Order Limits included in the Long List of Other Developments in ES Appendix 15.3 (**application document 6.3.15.3**), and the A12 Junctions 19 to 25 project (also known as the A12 Chelmsford to A120 Widening scheme) included in the Shortlist of Other Developments in ES Appendix 15.4 (**application document 6.3.15.4**). Further details on methodology for determining the long list and shortlist for the CEA can be found in Section 15.4.

15.3.4 The Planning Inspectorate advised that the long list and shortlist of other developments should be kept under review. The long list and shortlist have been reviewed during the development of the application. Both were fixed for the application on the 31 January 2023 to allow the CEA to be written. However, National Grid will continue to monitor updates to developments, including through examination, to identify if new developments or updated information on the listed developments needs to be added into the CEA.

15.3.5 The Planning Inspectorate requested in ID 4.14.6 of the Scoping Opinion (**application document 6.6**) that the ES should distinguish between projects forming part of the project baseline and those in the CEA. The other developments that form part of the project baseline would be the developments that are in the process of being constructed and are expected to have been built by the time the project would be constructed (subject to consent). These developments form part of the future baseline in ES chapters 6 to 14 (the 'ES topic chapters'). Other developments with potential for a temporal overlap in construction are considered as part of the CEA. A summary of the other developments which have been considered as part of the project baseline is provided in Table 3.7 in ES Appendix 15.1: Cumulative Effects Baseline (**application document 6.3.15.1**).

15.3.6 The Planning Inspectorate advised '*that an assessment of the intra and inter-project cumulative effects on amenity in terms of socioeconomic and tourism receptors should be provided in the ES where significant effects are likely*' (ID 4.14.7). This is included within this chapter and the supporting appendices.

Project Engagement

15.3.7 National Grid has held regular meetings with the relevant planning authorities, which has included discussions about emerging developments that are potentially relevant to the CEA. The proposed method for the CEA and the long list of other developments have been issued to the relevant planning authorities for comment. Further details on how consultation responses have informed the assessment can be found in ES Appendix 5.2: Response to Consultation Feedback (**application document 6.3.5.2**).

15.4 Approach and Methods

15.4.1 This section describes the methodology used to establish the baseline environment and the approach to consider and assess the significance of potential intra-project and inter-project cumulative effects.

Data Sources

15.4.2 The baseline has been informed by a desk study which has drawn on the following key information sources:

- A review of the Planning Inspectorate's Programme of Projects for NSIP;
- A review of major planning applications and allocations, utilising relevant planning authority websites within the study area (including the relevant planning authority planning portals and local development plans);
- A review of the Network Options Assessment (National Grid, 2022a) and engagement with other National Grid teams about potential other developments within the study area; and
- A review of the receptors and likely effects identified within each of the environmental chapters in this ES.

Study Area

Intra-project Cumulative Effects

15.4.3 The intra-project cumulative effects study area is the same as that presented within each of the preceding environmental chapters in this ES. The intra-project cumulative effects assessment also draws on the baseline data in ES Appendix 15.1: Cumulative Effects Baseline (**application document 6.3.15.1**) to inform the assessment as to how the local community may be impacted by changes during construction and operation.

Inter-project Cumulative Effects

15.4.4 Following feedback received within the Scoping Opinion (**application document 6.6**), a study area of 50km has been used to identify NSIP which could result in likely significant effects in combination with the project.

15.4.5 The Order Limits plus a 10km buffer has been used as the study area to identify major planning applications and allocations that could be relevant to the CEA. The 10km buffer has been chosen based on the following justification:

- A 10km buffer allows for cumulative visual effects to be considered with other development that could potentially include pylons or other tall structures. ES Chapter 6: Landscape and Visual (**application document 6.2.6**) states that steel lattice pylons (the tallest element of the project) would be likely to be barely perceptible beyond 5km and therefore unlikely to give rise to significant effects. Therefore, it is not that the project itself could cause an effect on a development over 5km away, but that other development 5km from the Order Limits could be affected by the project and a large or tall development 5km in the other direction; and
- A 10km buffer was considered to be a reasonable distance for consideration of traffic effects from the project, given the rural nature of the road network and the likely roads

that would be affected by construction traffic. Proposed construction routes have been identified as part of the Transport Assessment (**application document 5.7**), which comprises the local road network (LRN) links between the construction access points in the Order Limits and the strategic road network (SRN) (i.e. the A12, A120 and A14) to the south and east of the project. A distance of 10km from the Order Limits encompasses the construction routes on the LRN and the study area for the Transport Assessment (**application document 5.7**).

15.4.6 The CEA for landscape and visual presented within this chapter uses both the 10km ZOI and also professional judgement based on the Zone of Theoretical Visibility (ZTV) that has been produced for the project. Further details on the ZTV can be found in ES Chapter 6: Landscape and Visual (**application document 6.2.6**).

15.4.7 The 10km study area excludes significant urban areas, including the Ipswich Borough Council boundary (2.8km from the Order Limits at its closest point), and south of the A12 within the Colchester Borough Council boundary (7.3km from the Order Limits at its closest point). This was considered reasonable as existing development, including the A12 and the A14, would be likely to obscure views of the overhead line (including pylons) from these locations at this distance.

Assessment Methodology

Intra-project Cumulative Effects

15.4.8 There is no standard approach to the assessment of intra-project cumulative effects. A checklist matrix has been used to visually represent relationships between project impacts and environmental components. For example, protected lanes could have effects identified within the landscape, ecological, cultural heritage, and traffic and transport assessments. The checklist matrix presented in ES Appendix 15.2: Intra-Project Cumulative Effects Matrix (**application document 6.3.15.2**) plots key project activities against representative groups and/or individual receptors to identify potential intra-project cumulative effects.

15.4.9 The matrix was used to identify potential intra-project cumulative effects. This involved the following steps, which are described further in the following sub-sections:

- Step 1: Review of ES topic chapters and discussions with technical specialists to identify representative groups and/or individual receptors;
- Step 2: Identification of key project activities during the construction and operational phases which could impact on representative groups and/or individual receptors; and
- Step 3: Identification of potential intra-project cumulative effects. The key project activities which could impact on each representative group and/or individual receptor are identified, and further review of the ES topic chapters is undertaken to determine whether effects of multiple project activities on each representative group and/or individual receptor have already been assessed within the ES topic chapters. Effects which have not been assessed within ES topic chapters are identified for inclusion within the intra-project cumulative effects assessment.

Step 1: Identification of Representative Groups and/or Individual Receptors

15.4.10 Representative groups and/or individual receptors, such as people, a watercourse, a group of listed buildings or protected species, have been identified following review of the

ES topic chapters. The identified receptors are presented in ES Appendix 15.2: Intra-Project Cumulative Effects Matrix (**application document 6.3.15.2**) as rows in the tables and have been grouped by theme for example, water environment receptors and landscape and visual receptors.

Step 2: Identification of Key Project Activities

15.4.11 Key project activities have been identified for the construction and operational phases. These key project activities are listed as column headings the tables presented in ES Appendix 15.2: Intra-Project Cumulative Effects Matrix (**application document 6.3.15.2**). Key project activities during the construction phase have been identified and grouped into the following categories:

- Effects due to construction machinery and vehicles (e.g. general construction activities, set up of site compound, increase in traffic during construction);
- Effects due to land-take of temporary works (e.g. vegetation removal, light spill from construction areas, materials storage, installation of temporary access routes); and
- People, services and goods (e.g. construction staff living and working within the area, materials being purchased for the project, and waste generated by the project).

15.4.12 Key project activities have been identified for the operational phase and are grouped into the following categories:

- Normal operational activities (including inspection visits); and
- Maintenance activities (such as refurbishment).

Step 3: Identification of Potential for Intra-project Cumulative Effects

15.4.13 During Step 3, the ES topic chapters were further reviewed to confirm which key project activities identified in Step 2 may impact on the representative groups and/or individual receptors identified in Step 1. Where a key project activity was identified as impacting on a representative group and/or individual receptor, this was indicated in the matrix in ES Appendix 15.2: Intra-project Cumulative Effects Matrix (**application document 6.3.15.2**) at the intersection of the key project activity column and the representative group and/or individual receptor row using a 'Y' symbol.

15.4.14 Where the same representative group and/or individual receptor is identified in more than one ES topic chapter, this may indicate a spatial overlap of effects (i.e. in the same location/area). Potential spatial overlaps of effects are checked for a temporal overlap of effects (i.e. at the same time). Where both a spatial and temporal overlap exists, this indicates potential for an intra-project cumulative effect. Where there is a blank cell in the matrix this indicates that the particular key project activity does not impact on the particular representative group and/or individual receptor, therefore it would not contribute to a potential intra-project cumulative effect.

15.4.15 During this step it is identified whether the potential cumulative effects were already assessed within ES topic chapters, to avoid double counting of effects. This screening has been indicated in the matrix in ES Appendix 15.2: Intra-project Cumulative Effects Matrix (**application document 6.3.15.2**), by shading the boxes in different colours using the following system as shown on the legend in ES Appendix 15.2:

- Coloured background (excluding red): A 'Y' symbol on a coloured background indicates that effects on a representative group and/or individual receptor have been assessed within an ES Chapter. For example, the effects of noise and vibration and visual intrusion on the setting of protected lanes has been considered within ES Chapter 8: Historic Environment (**application document 6.2.8**), therefore it does not require separate assessment for intra-project cumulative effects. Different background colours have been used for each ES topic chapter;

- White background: A 'Y' symbol on a white background indicates that either: only a single effect has been identified for the representative group and/or individual receptor, hence there is no potential for an intra-project cumulative effect on this representative group and/or individual receptor; or, it is considered unlikely that this effect would lead to a significant effect on a receptor in combination with other effects (i.e. the significance of effect would be negligible/neutral); and

- Red background: A red background indicates potential for an intra-project cumulative effect. Where an effect is assessed in more than one chapter, this is indicated using initials (e.g. T&T = Traffic and Transport; N&V = Noise and Vibration; HE = Historic Environment). A 'Y' symbol on a red background has been used for potential intra-project cumulative effects identified for socio-economic receptors, as there is no standalone socio-economics chapter of this ES.

15.4.16 Where screening highlights effects not covered by the previous assessment chapters, this would indicate a potential intra-project cumulative effect that requires further assessment. This screening assessment has drawn on the experience of different technical specialists to determine the likely cumulative effect on the receptor as a whole, and whether the combined effect is likely to be significant.

15.4.17 The potential intra-project cumulative effects identified during the screening exercise have been taken forward to a more detailed assessment presented in Section 15.6 to determine whether there are likely significant cumulative effects and, where appropriate, mitigation measures identified.

Inter-project Cumulative Effects

15.4.18 The methodology of the inter-project CEA is structured using the staged assessment approach detailed in Advice Note 17 (Planning Inspectorate, 2019). In summary, the staged assessment approach involves the following steps, which are explained in more detail in the following subsections:

- Stage 1: Establishing the long list of 'other existing development and/or approved development';

- Stage 2: Establishing a shortlist of 'other existing development and/or approved development';

- Stage 3: Gathering information on each of the 'other existing development and/or approved development' shortlisted at Stage 2; and

- Stage 4: Assessment of the cumulative effects of the project with the 'other existing development and/or approved development' identified in Stages 1-3 of the process outlined above.

Stage 1: Establishing the Long List of Other Developments

Identify Long List of Other Developments

15.4.19 A preliminary long list of other developments was presented in Appendix 18.1 of the Scoping Report (**application document 6.5.2**). The long list was also provided to the relevant planning authorities in summer 2021 for comment and was also published in the Preliminary Environmental Information (PEI) Report at the statutory consultation in January 2022. Feedback received at these stages has informed the long list of other developments presented in Appendix 15.3 (**application documents 6.3.15.3**). It also incorporated additional projects based on feedback from the Planning Inspectorate and relevant planning authorities through the Scoping Opinion (**application document 6.6**).

15.4.20 The long list has been reviewed on a monthly basis to identify any new or changed status planning applications submitted since the preliminary long list was produced. The long list of other developments was updated for the ES, with a cut-off date of 31 January 2023 to allow the assessment to be completed before submission of the application for development consent. The long list of other developments is presented in Appendix 15.3 (**application document 6.3.15.3**) and the other developments are shown spatially on ES Figure 15.1: NSIP and ES Figure 15.2: Proposed Developments (**application document 6.4**).

15.4.21 The other developments listed in Appendix 15.3: Long List of Other Developments (**application document 6.3.15.3**) have each been assigned a Planning ID for ease of reference (e.g. 'ID APP-BMSDC-001'). The Planning ID reference system comprises 'ID' followed by the application type (e.g. 'APP' for planning applications, and 'DCO' for NSIP), the relevant planning authority for planning applications and development allocations (e.g. 'BMSDC' for Babergh and Mid Suffolk District Councils) followed by a unique number (e.g. '001').

15.4.22 The following development types were included in the long list:

- NSIP listed on the Planning Inspectorate's Programme of Projects;
- Major developments (as defined under the Town and Country Planning (Development Management Procedure) (England) Order 2015, as amended; and
- Sites allocated in relevant Local Development Plans.

15.4.23 Major developments are defined as development involving any one or more of the following:

- The winning and working of minerals or the use of land for mineral-working deposits;
- Waste development;
- The provision of dwelling houses where:
  - The number of dwelling houses to be provided is 10 or more; or
  - The development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within sub-paragraph (c)(i);
- The provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or

- Development carried out on a site having an area of 1 hectare or more.

15.4.24 Minor planning applications have been excluded from the assessment, as these relate to developments of small scale and local importance. These developments are highly unlikely to give rise to significant cumulative environmental effects over and above the project in isolation.

15.4.25 A search period of 10 years preceding the planned start of construction for the GSP substation (construction anticipated to start in 2023 under the baseline construction schedule; search period starting in 2013) and the planned start of construction for the main project (construction starting in 2024 subject to development consent; search period starting in 2014) was used to identify submitted or approved planning applications that may have a temporal overlap with the project.

15.4.26 Advice Note 17 (Planning Inspectorate, 2019) identifies three tiers of development based on where they are in the planning process and recognises that the amount of information available to inform the assessment varies according to which tier the development fits in to. Tier 1 developments are the most certain, with a high level of publicly available information, while Tier 3 developments are the least certain, with limited publicly available information to inform assessments. Details of the three tiers are provided in Table 15.1, and the relevant tier is referenced in Appendix 15.3: Long List of Other Developments (**application document 6.3.15.3**). National Grid projects that are likely to be implemented under permitted development powers, and other known developments which are considered reasonably likely to come forward, have been assigned a tier based on availability of information and the stage that the project is at.

Table 15.1 – Criteria Used to Determine the Tier of Development for the Inter-Project CEA

Tier	Development Status	
1	Projects under construction.	Decreasing level of available data ↓
	Permitted application(s), whether under the Planning Act 2008 or other regimes, but not yet implemented.	
	Submitted application(s), whether under the Planning Act 2008 or other regimes, but not yet determined.	
2	Projects on the Planning Inspectorate's Programme of Projects or in the relevant planning authorities' portal where a Scoping Report has been submitted.	
3	Projects on the Planning Inspectorate's Programme of Projects or in relevant planning authorities' portal 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 would 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.	

15.4.27 Refused or withdrawn planning applications have not been progressed to Stage 2 of the inter-project CEA. However, any successful appeals or new planning applications brought forward have been assessed in the CEA where applicable.

15.4.28 Allocations within Local Development Plans and other plans and programmes have not been progressed to Stage 2 of the inter-project CEA because, as Tier 3 developments, the amount of information available and the resulting certainty around the assessment of cumulative effects is likely to be limited. It is expected that future developers bringing forward other development in line with those allocations would carry out their own assessment of cumulative effects.

15.4.29 A table format similar to Matrix 1 of Appendix 1 from Advice Note 17 (Planning Inspectorate, 2019) has been used to present the long list of other developments in Appendix 15.3 (**application document 6.3.15.3**). The locations of the other developments are shown on ES Figure 15.1: NSIP and ES Figure 15.2: Proposed Developments (**application document 6.4**).

Identify ZOI

15.4.30 The ZOI is the defined geographic area within which potential environmental receptors are located. The assessment has been based on pathways between receptors and potential impacts and effects. In addition to this, a maximum ZOI has been developed for each environmental aspect using professional judgement, a reasonable worst case and knowledge of effects experienced on similar developments. This maximum ZOI has been used to determine the developments which are taken forward to the shortlist for assessment and to help focus the assessment to those other developments that are more likely to result in significant inter-project cumulative effects in combination with the project. These maximum ZOI are listed in Table 15.2 and further details on how the ZOI were established can be found in ES Appendix 15.5: Inter Project CEA (**application document 6.3.15.5**).

Table 15.2 – ZOI for Environmental Aspects

Environmental Aspect	Maximum ZOI for Each Aspect
Landscape/visual and setting of heritage assets; traffic and transport.	10km*
Biodiversity; socio-economics, amenity (including recreation and tourism).	1km
Surface water; hydrogeology; noise and vibration.	0.5km
Contaminated land; air quality.	<0.25km

**Note: The urban areas of Ipswich and areas to the south of the A12 have been excluded from the 10km ZOI (see paragraph 15.4.7 for justification).*

15.4.31 Although the ZOI has been used in the screening of the projects in the long list and shortlist of other developments (**application documents 6.3.15.3** and **6.3.15.4** respectively), the inter-project CEA in ES Appendix 15.5 (**application document 6.3.15.5**) references specific receptors where relevant. Further details on impact pathways can be found in the ES topic chapters.

Stage 2: Establishing the Shortlist of Other Developments

15.4.32 As set out in Advice Note 17 (Planning Inspectorate, 2019), following identification of the long list of other developments threshold criteria should be applied to the long list of other

developments to establish a shortlist of other developments that is proportionate. The following criteria have been used to screen the long list of other developments (**application document 6.3.15.3**) to identify a shortlist of other developments at Stage 2 of the inter-project CEA:

- **Temporal scope:** Other development within the ZOI with overlapping construction phases based on the baseline construction schedule presented in ES Appendix 4.2: Construction Schedule (**application document 6.3.4.2**) could have potential for inter-project cumulative effects. The baseline construction schedule assumes construction of the GSP substation would take place between 2023-2024 and that the remaining works would take place between 2024–2028 subject to development consent. Operation is assumed to commence in 2028. A sensitivity test has been applied to the construction window of projects starting in 2022 to 2030 (see Section 15.9), to consider potential acceleration or delays to other development construction schedules;
- **Scale and nature of development:** Development identified as Schedule 1, 2 or 3 developments in the Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017 and the Town and Country Planning (EIA) Regulations 2017 could have potential for significant cumulative effects due to the nature/scale of the development or sensitivity of the receiving environment. Developments which were not identified as EIA development (i.e. were not considered to exceed the relevant threshold criteria in the EIA Regulations 2017) have been considered further where it was considered that there is potential for significant cumulative effects due to the scale/nature of development and/or distance from the project; and
- **Sensitivity of the receiving environment:** Where there are potential source-pathway-receptor linkages between the project and other developments, cumulative effects were considered further. Other developments with no clear source-pathway-receptor linkage were scoped out of the assessment.

15.4.33 The shortlist of other developments is presented in ES Appendix 15.4: Shortlist of Other Developments (**application document 6.3.15.4**). Professional judgement has been used when applying the threshold criteria to identify the shortlisted developments to take forward to Stages 3 and 4 of the inter-project CEA.

Stage 3: Information Gathering

15.4.34 An information gathering exercise has been undertaken at Stage 3 of the inter-project CEA. This included a review of available environmental assessment information. Design information, planning documentation, location plans, and proposed construction, operation and decommissioning programmes have also been reviewed, where available. This information has been gathered from sources including relevant planning authority planning portals, the Planning Inspectorate's website, and through engagement with local authorities, other National Grid project teams and third-party developers.

Stage 4: Assessment of Inter-Project Cumulative Effects

15.4.35 The assessment at Stage 4 of the inter-project CEA has been undertaken by a competent EIA practitioner in collaboration with environmental specialists to describe and evaluate the likely significant inter-project cumulative effects arising from the project. The assessment of likely significant effects has been based on professional judgement and

qualitative assessments considering the likely effects that could result if the project was implemented alongside the other developments.

15.4.36 Quantitative assessment, including modelling, was considered as requested by the Planning Inspectorate in the Scoping Opinion (**application document 6.6**). This was discounted as there was not enough data available from other developments to support the construction of a cumulative ZTV.

15.4.37 Traffic modelling has not been undertaken for the project, primarily as the effects on the LRN would be localised and temporary, therefore modelling would be disproportionate to the scale of the potential effects. In addition, there is a lack of data relating to traffic numbers and timing associated with other developments that would be required to build a combined traffic model. Instead, Department for Transport Trip End Model Presentation Program (TEMPro) growth factors have been applied along a review of the forecast traffic numbers, where available, associated with major developments within the study area. Further details can be found in the Transport Assessment (**application document 5.7**).

15.4.38 For each environmental aspect, the shortlist was filtered to just those other developments within the relevant ZOI (maximum area of influence). These were then assessed considering specific receptors and pathways in the results of the assessment. ES Appendix 15.5: Inter-Project CEA (**application document 6.3.15.5**) presents the results of the inter-project CEA in an accessible table format similar to that in Matrix 2 provided in Appendix 2 of Advice Note 17 (Planning Inspectorate, 2019).

15.4.39 Significance of effect has been taken from the environmental chapters to inform the significance of cumulative effects with other developments. Where significant effects have been identified, these are described as short-term or long-term, permanent or temporary. The operational assessment for some aspects was either scoped out in the Scoping Report (**application document 6.5.1**) or it has been concluded in the ES chapter that there would be no likely significant effects. Where this was the case, the CEA has concluded that there would be no likely significant cumulative effects with other developments.

15.4.40 For the shortlisted developments, whose own environmental assessments may have used different significance criteria or terminology, their effects have been interpreted using professional judgement, based on the available environmental documents.

15.4.41 Where the significance of a cumulative effect would be moderate or above (adverse or beneficial), it has been deemed to be ‘significant’. The need for additional mitigation measures has been considered (see Section 15.7), with the resulting residual significance of effects identified (see Section 15.8).

Limitations of Assessment

15.4.42 The CEA relies on third-party information available on web-based sources such as the Planning Inspectorate’s Programme of Projects and relevant planning authority planning portals (which can differ between local authorities) or information provided by other third parties. It is assumed that the information presented within planning documents is accurate. It has been supplemented with information sourced from engagement with the relevant planning authorities, National Grid teams and third-party developers.

15.4.43 Some of the other developments are at an early stage in their production and ES or other documents presenting the potential effects may not be available or may not be adequate to allow for a meaningful cumulative assessment to be undertaken. It is not within the

scope of this assessment to assess the individual effects of third-party or other developments. No additional work has been undertaken to identify potential receptors and impacts not evident from third party application documents. Professional judgement has been used where necessary to interpret the available information for use in the assessment of cumulative effects. The information sources used are listed within the tables in ES Appendix 15.5: Inter Project CEA (**application document 6.3.15.5**).

Key Parameters for Assessment and Assumptions

15.4.44 This section describes the key parameters and assumptions that have been used when undertaking the assessment presented within this ES chapter. All assessment work has applied a precautionary principle, in that where limited information is available (in terms of the proposals for the project), a realistic worst-case scenario is assessed.

Project Assumptions

15.4.45 It is assumed that this Bramford to Twinstead Reinforcement would operate at a voltage of at least 400kV in a similar way to the majority of the rest of the transmission network. For the purposes of this chapter, the new overhead line is referenced as 'proposed 400kV overhead line' to differentiate it from the existing 400kV overhead line and the UK Power Networks (UKPN) owned 132kV overhead line.

15.4.46 The baseline construction programme, presented in ES Appendix 4.2: Construction Schedule (**application document 6.3.4.2**), where the GSP substation is constructed in advance of the main project works, has been used to inform the inter-project CEA. Consideration of the impact of the alternative scenario, where the GSP substation is constructed pursuant to the Development Consent Order (DCO), has also been undertaken and is summarised in the sensitivity testing in Section 15.9.

15.4.47 For the purposes of the inter-project CEA it has been assumed that construction activities would take place throughout the whole duration of the construction programme, however in practice, individual construction activities would not take place over the full duration of the construction programme. Further details of the construction programme are provided in ES Chapter 4: Project Description (**application document 6.2.4**).

Assumptions About Other Developments

15.4.48 Planning applications granted before 2013 (10 years before the planned start of construction works for the project) have not been considered. It was considered reasonably likely that developments related to permissions granted before 2013 will have been completed before the project construction works start. Such developments were therefore considered unlikely to give rise to cumulative effects during construction, and operational effects would already form part of the baseline environment.

15.4.49 Online information sources have been used to determine the potential for a temporal overlap in construction between other developments and the project. For approved developments, where a construction programme has been specified in an applicant's documentation (available on planning portals or the Planning Inspectorate's website) or the applicant's website, it has been assumed that the specified construction programme is accurate. Where a construction programme is not available in an applicant's documentation or on the applicant's website, it has been assumed that other developments with planning permission would start construction by the date of expiration of the planning permission, if information on the planning portals (such as a building

control initial application) or recent Google Maps aerial data (obtained in 2022 and 2023) did not indicate that a proposed development appeared to be under construction.

15.4.50 For applications submitted but not yet determined it has been assumed that there would be potential for a temporal overlap with the Bramford to Twinstead Reinforcement.

15.4.51 It has been assumed that a medium or large-sized housing development (100+ dwellings) would be constructed at a rate of 50 dwellings per year. This has allowed the assessment to make assumptions about the duration of the construction activity. Where construction programmes for housing developments were available on planning portals or developer websites these have been used to inform the CEA and have been assumed to be accurate.

15.4.52 Small-sized housing developments (fewer than 100 dwellings) located over 2km from the project have not been progressed to Stage 2 of the CEA on the basis that, given the distance from the project and the small scale of development, significant cumulative effects are considered unlikely.

15.4.53 The CEA relies on the results of the assessments presented in the ES topic chapters and assumes that mitigation identified within the preceding chapters and/or within the EIA undertaken by other developers is included before undertaking the CEA.

15.4.54 During the compilation of the shortlist of other developments (ES Appendix 15.4: Shortlist of Other Developments (**application document 6.3.15.4**)), planning documentation (such as planning authority screening and scoping opinions) have been reviewed to determine whether other developments could be considered EIA development. In the absence of screening and/or scoping opinions, professional judgement has been used to determine whether other developments might be considered EIA developments using available design information and the EIA Regulations 2017 Schedule 1 to 3 threshold criteria.

15.4.55 It has been assumed that if other developments meet the EIA Regulations 2017 Schedule criteria to be an EIA development there could be potential for significant cumulative effects with the project.

15.4.56 The CEA has considered other National Grid projects where these meet the spatial and temporal parameters of the CEA and there are sufficient details available to assess the potential cumulative effects. This includes projects identified within the 2021 Network Options Assessment (NOA) (National Grid, 2021d) and 2022 NOA Refresh (National Grid, 2022a) and also certain known projects for which consents are not required, such as works to existing lines and works proposed at Bramford Substation. Where the screening parameters (such as lying within the ZOI) are met, these projects have been added into the long list of developments as ‘Other Known Developments’ for further consideration.

15.4.57 Additional parameters for assessment and assumptions can be found in each of the ES topic chapters.

Embedded and Good Practice Measures

15.4.58 Relevant embedded and good practice measures are listed within each of the preceding environmental chapters are not repeated here. A full list of the good practice measures can be found in the Code of Construction Practice (CoCP) (**application document 7.5.1**)

and a full list of the embedded measures can be found in the Register of Environmental Actions and Commitments (REAC) (**application document 7.5.2**).

15.5 Baseline Environment

Identification of Existing Baseline

15.5.1 The individual topic chapters of the ES provide a description of the baseline environment for the majority of the aspects considered within the CEA. Health and wellbeing and socio-economics, recreation and tourism were scoped out of requiring a standalone assessment in the Scoping Report (**application document 6.5.1**). The Planning Inspectorate (**application document 6.6**) supported this decision but requested that up-to-date baseline information be provided within the ES for these aspects to inform the assessment of likely significant effects in both the intra-project and inter-project CEA. The updated baseline information for health and wellbeing and socio-economics, recreation and tourism is presented in Appendix 15.1: Cumulative Effects Supporting Information (**application document 6.3.15.1**). National Grid has also submitted a Socio-economics and Tourism Report (**application document 5.9**) which confirms that there are no likely significant effects on these aspects.

Identification of Baseline

15.5.2 The baseline conditions for each of the environmental aspects covered within the ES topic chapters, have been detailed in the respective chapters and appendices in this ES, as set out in Table 15.3, and are not repeated here. Further baseline data is provided in Appendix 15.1: Cumulative Effects Supporting Information (**application document 6.3.15.1**). The data show that the local communities have characteristics similar to the averages across the UK as a whole and no specific factors have been identified at a community level that suggest communities would be particularly vulnerable or 'at risk' from the project in terms of socio-economics and health.

Table 15.3 – Environmental Topics and Their Location Within this ES

Environmental Topics	ES Chapter Where Covered
Landscape and Visual	Chapter 6 (**application document 6.2.6**)
Biodiversity	Chapter 7 (**application document 6.2.7**)
Historic Environment	Chapter 8 (**application document 6.2.8**)
Water Environment	Chapter 9 (**application document 6.2.9**)
Geology and Hydrogeology	Chapter 10 (**application document 6.2.10**)
Agriculture and Soils	Chapter 11 (**application document 6.2.11**)
Traffic and Transport (including public rights of way (PRoW))	Chapter 12 (**application document 6.2.12**)
Air Quality	Chapter 13 (**application document 6.2.13**)
Noise and Vibration	Chapter 14 (**application document 6.2.14**)
Socio-economics, Recreation and Tourism	Appendix 15.1 (**application document 6.3.15.1**)

Environmental Topics	ES Chapter Where Covered
Health and Wellbeing	Appendix 15.1 (**application document 6.3.15.1**)

Other Developments Considered as Part of Project Baseline

15.5.3 The Planning Inspectorate requested in ID 4.14.6 of the Scoping Opinion (**application document 6.6**) that the ES should distinguish between projects forming part of the project baseline and those in the CEA. The shortlist of other developments presented in ES Appendix 15.4 (**application document 6.3.15.4**) identifies other developments that have been or are likely to have been constructed before the project commences construction. As such, these other developments have been considered as part of the future baseline of the project for the EIA in the ES topic chapters. The developments which have been considered as part of the project baseline are listed in Table 3.7 of ES Appendix 15.1: Cumulative Effects Baseline (**application document 6.3.15.1**).

Inter-Project Cumulative Effects: Identification of Proposed Developments

15.5.4 As set out in Section 15.4, the approach to the assessment of inter-project cumulative effects requires the identification of other proposed developments for which effects may overlap spatially and/or temporally with the project.

15.5.5 The following developments were included in ES Appendix 15.3: Long List of Other Developments (**application document 6.3.15.3**):

- 19 NSIP listed on the Planning Inspectorate's Programme of Projects;
- 619 major developments (as defined under the Town and Country Planning (Development Management Procedure) (England) Order 2015, as amended;
- 117 sites allocated in relevant Local Development Plans; and
- 8 other proposed developments including other National Grid projects.

15.5.6 Consideration has also been given to the following other known developments, which, though not currently listed in the Planning Inspectorate's Programme of Projects, are considered likely to be forthcoming NSIP (see Appendix 15.3 (**application document 6.3.15.3**) for further details) and would lie within the 50km study area for NSIP:

- A14 J55 Copdock Interchange (ID OKD-NH-001) – a Road Investment Strategy 3 (RIS 3) project proposed by National Highways (located approximately 2.2km from the Order Limits);
- A11 Fiveways junction (OKD-NH-002) – a RIS 3 project proposed by National Highways (located approximately 38km from the Order Limits); and
- Eurolink (OKD-NGIH-001) – a proposal to build a High Voltage Direct Current transmission cable between the UK and the Netherlands, proposed by National Grid Interconnector Holdings Limited (distance from Order Limits not known as the proposal is at an early stage).

15.5.7 No additional proposed developments or allocations have been identified outside of the 10km study area for major developments that could require consideration in the CEA presented within the ES.

15.6 Likely Significant Effects (Without Mitigation)

Introduction

15.6.1 This section sets out the likely significant intra-project and inter-project cumulative effects during construction and operation. It assumes that the relevant embedded measures in the REAC (**application document 7.5.2**) and the good practice measures in the CoCP (**application document 7.5.1**) are in place before assessing the effects.

Intra-Project Cumulative Effects

15.6.2 Appendix 15.2: Intra-Project Cumulative Effects Matrix (**application document 6.3.15.2**) summarises the screening stage of the intra-project cumulative effects assessment based on the individual effects reported in the ES topic chapters. Many of the potential cumulative effects have already been assessed within ES topic chapters, as indicated by the colour coding within the matrix. For example, the effects of visual change, construction traffic, noise and vibration on Protected Lanes have been covered within ES Chapter 8: Historic Environment (**application document 6.2.8**).

Construction

15.6.3 Two aspects have been identified within Table 1.1 of ES Appendix 15.2: Intra-Project Cumulative Effects Matrix (**application document 6.3.15.2**) with potential for significant construction phase intra-project cumulative effects. These are effects on the local economy (including the tourism industry) and effects on local communities. The intra-project CEA for these two aspects is summarised in the following subsections.

Local Economy (Including the Tourism Industry)

Local Economy, Services and Materials

15.6.4 There could be a minor benefit to the local economy (including tourism industry) in terms of the construction workforce spending money in the form of accommodation and food (induced spend). The workforce numbers are estimated to be around 350 staff at peak and an average of around 180 workers on site across the whole of the construction schedule (see ES Appendix 15.1: Cumulative Effects Baseline (**application document 6.3.15.1**) for details. This is not considered to be a large number in workforce terms and therefore, workforce spending is not expected to provide a significant contribution to the local economy. Further details can be found in the Socio Economics and Tourism Report (**application document 5.9**).

15.6.5 The project may source materials and services from the local area, which could boost the local economy during construction. However, material supply and demand would vary significantly, and it is not possible to specify sources at the time of the application for development consent. It is considered unlikely that the project would require the use of a large amount of local materials and services (given the specialist activities involved in constructing high voltage electricity lines), and therefore the effect of the project from materials being purchased and services being used for the project is not expected to provide a significant contribution to the local economy.

Tourism and Amenity

15.6.6 During construction, there would be an influx of workers to the area. Data obtained from VisitEngland (2022) show that there is a bedspace occupancy rate of around 59% over the peak season in the East of England, which indicates there is sufficient availability in the private sector to accommodate the project workforce without compromising the accommodation available to tourists visiting the area. Given the relatively small number of workers and the availability of accommodation with the local and wider areas, it is considered that the construction workforce is unlikely to contribute to a significant adverse effect on tourist accommodation during construction. Further details can be found in ES Appendix 15.1: Cumulative Effects Baseline (**application document 6.3.15.1**) and the Socio Economics and Tourism Report (**application document 5.9**).

15.6.7 During construction, there is the potential for temporary amenity effects resulting from noise, dust, traffic congestion and visual effects which could have an effect on how tourists experience the area as a whole and therefore the tourist economy. It is anticipated that these would be short term and the measures set out within the CoCP (**application document 7.5.1**) would reduce the magnitude of the impacts.

15.6.8 ES Chapter 6: Landscape and Visual (**application document 6.2.6**) reported that there could be significant effects on landscape designations and landscape character areas during construction. The assessment also concluded that users of public footpaths on routes such as the Stour Valley Way and St Edmunds Way (regional trails), Painters Trail (cycle route) and Hadleigh Railway Walk (locally promoted footpath) would have views towards the project during construction, however these transient views tend to be glimpsed through vegetation even when in close proximity and therefore effects would be very localised and not significant on these routes overall. Due to the transient nature of views from public footpaths, and the temporary and short-term nature of the construction works it is considered that landscape and visual changes during construction would not contribute to a significant intra-project cumulative effect on amenity and the way in which tourists may experience the area as a whole.

15.6.9 ES Chapter 12: Traffic and Transport (**application document 6.2.12**) is supported by the Transport Assessment (**application document 5.7**). These conclude that there would be no significant effects on the LRN, including delays and congestion and on PRoW due to the short term duration of any closures and/or diversions. Therefore, these would not contribute to a significant intra-project cumulative effect on amenity and the way in which tourists may experience the area as a whole.

15.6.10 ES Chapter 13: Air Quality (**application document 6.2.13**) states that, following the application of the good practice measures set out within the Construction Environmental Management Plan (CEMP) and CoCP (**application documents 7.5** and **7.5.1**), any residual risk of dust would be reduced to negligible. Therefore, construction dust would not contribute to a significant intra-project cumulative effect on amenity and the way in which tourists may experience the area as a whole.

15.6.11 ES Chapter 14: Noise and Vibration (**application document 6.2.14**) identifies that there could be a significant effect on Daws Hall Centre for Environmental Education during construction, resulting from daytime construction noise during the construction of an access route and underground cables. However, the measures set out within the CEMP and CoCP (**application documents 7.5** and **7.5.1**) would reduce all construction noise and vibration effects to short term neutral to minor adverse. Therefore, noise and vibration

effects would not contribute to a significant intra-project cumulative effect on amenity and the way in which tourists may experience the area as a whole.

Supplementary Evidence

15.6.12 By way of supplementary evidence, findings from the National Grid review of previous linear infrastructure projects have been considered. 'A Study into the Effect of National Grid Major Infrastructure Projects on Socio-economic Factors' (National Grid, 2014b) reported findings from surveys of businesses and visitors in areas where projects were proposed ('ex-ante') and where projects had already been built ('ex-post') and considered both construction and operation effects.

15.6.13 The survey results showed that the majority of businesses (77%) did not perceive an impact from National Grid ex-post projects on their own business during the construction phase. Of the businesses that reported an effect, 16% said this was positive and 7% said it was negative. With regard to recreational users, an ex-post analysis of electricity projects revealed that only 10% of respondents said that construction affected what they did at the time.

15.6.14 Further evidence is provided by the results of the user questionnaire survey, undertaken in 2013 to inform the socio-economic assessment of the Hinkley Connection Project, which is almost twice as long (57km between Bridgwater and Avonmouth) as the Bramford to Twinstead Reinforcement (29km). A total of 246 responses were collected from five recreational sites in proximity to the Hinkley Connection Project. The results of the survey showed that only 9% of respondents stated that the project might affect their decision to come to the area. Given the shorter length of the Bramford to Twinstead Reinforcement compared to the Hinkley Connection Project, the number of visitors likely to be deterred from visiting would be expected to be low.

Conclusion on Local Economy and Tourist and Amenity

15.6.15 The assessment presented above demonstrates that there is likely to be some disruption to amenity during construction in terms of noise and views which would be the case of any construction site of similar developments. The good practice measures set out in the CEMP and CoCP (**application documents 7.5** and **7.5.1** respectively), such as best practicable means for noise, would help to reduce the effects.

15.6.16 People visiting tourist or recreation receptors such as Hadleigh Railway Walk or Dedham Vale Area of Outstanding Natural Beauty (AONB) would only have fleeting views of the construction site, as they pass through the immediate surrounds. Therefore, it is unlikely that there would be a significant effect on tourist experience of these sites. In addition, the supplementary evidence supports the idea that the presence of a construction site would not stop people from visiting the wider area. Therefore, it is considered unlikely that there would be significant intra-project cumulative effects on tourism receptors or the tourist economy during construction.

15.6.17 Some tourist areas, such as those visiting Dedham Vale AONB and parts of the Stour Valley are expected to benefit from the removal of the 132kV overhead line and the installation of underground cables during operation. This would result in one fewer overhead line in the landscape and views.

15.6.18 In conclusion, it is considered that intra-project cumulative effects on the local economy (including the tourism industry) arising during construction would be **not significant**.

Local Communities

15.6.19 Local communities may be affected by temporary PRoW diversions, road restrictions, diversions and closures of the public highway, an increase in traffic, and dust, noise and light spill close to construction working areas. The combined effects of these could impact on local communities.

15.6.20 No particular vulnerabilities have been identified within the health of the local population, as described in the baseline review in ES Appendix 15.1: Cumulative Effects Baseline (**application document 6.3.15.1**). In addition, the good practice measures outlined within the CEMP and CoCP (**application documents 7.5** and **7.5.1** respectively) would help to avoid and reduce potential impacts on the health of local communities. Therefore, it is not anticipated that there would be effects on the health of local communities.

15.6.21 ES Chapter 6: Landscape and Visual (**application document 6.2.6**) identified that there would be significant adverse effects on some community areas during construction, but notes that the effects relating to construction activity on these receptors would be short term and temporary. ES Chapter 6: Landscape and Visual (**application document 6.2.6**) also concluded that users of public footpaths on routes such as the Stour Valley Way and St Edmunds Way (regional trails), Painters Trail (cycle route) and Hadleigh Railway Walk (locally promoted footpath) would have views towards the project during construction, however these transient views tend to be glimpsed through vegetation even when in close proximity and therefore effects would be very localised and not significant on these routes overall. Due to the transient nature of views from public footpaths, and the temporary and short-term nature of the construction works it is considered that landscape and visual changes during construction would not contribute to a significant intra-project cumulative effect on local communities.

15.6.22 ES Chapter 4: Project Description (**application document 6.2.4**) notes that temporary construction lighting may be required in the latter part of the working day in winter months and during night working of operations that may take place outside of the core working hours such as trenchless crossing operations. The good practice measures relating to construction lighting outlined in the CoCP (**application document 7.5.1**), such as GG10 and GG20, would reduce the impacts of construction lighting on local communities. Therefore, it is considered that the impacts of construction lighting would not contribute to a significant intra-project cumulative effect on local communities.

15.6.23 ES Chapter 12: Traffic and Transport (**application document 6.2.12**) is supported by the Transport Assessment (**application document 5.7**). These conclude that there would be no significant effects on the LRN, including delays and congestion and on PRoW due to the short term duration of any closures and/or diversions. Therefore, these would not contribute to a significant intra-project cumulative effect on local communities.

15.6.24 ES Chapter 13: Air Quality (**application document 6.2.13**) states that following the application of the good practice measures set out within the CEMP and CoCP (**application documents 7.5 and 7.5.1**), any residual risk of dust would be reduced to negligible. Therefore, construction dust would not contribute to an intra-project cumulative effect on local communities.

15.6.25 ES Chapter 14: Noise and Vibration (**application document 6.2.14**) identifies that there could be significant effects on some residential receptors due to daytime and night-time noise during the construction of pylons and overhead lines, removal of overhead lines, and the trenchless crossings. There could also be a significant effect on one receptor (Hill

House Farm) due to construction vibration during piling. However, following application of the measures set out within the CoCP (**application document 7.5.1**) and Chapter 14: Noise and Vibration (**application document 6.2.14**), all construction noise and vibration effects would be reduced to short term neutral to minor adverse. Therefore, noise and vibration effects would not contribute to a significant intra-project cumulative effect on local communities.

Conclusion on Local Communities

15.6.26 The assessment presented above demonstrates that there is likely to be some disruption to local communities during construction in terms of noise, dust, light and traffic which would be the case of any construction site of similar developments. The good practice measures set out in the CEMP and CoCP (**application documents 7.5** and **7.5.1** respectively), such as best practicable means for noise, would help to reduce the effects. In addition, the baseline data presented in ES Appendix 15.1: Cumulative Effects Baseline (**application document 6.3.15.1**) does not indicate any particular vulnerability in the local communities that would make them particularly susceptible to short term disruption during construction.

15.6.27 Due to the nature of the linear project and the transient nature of the works, the communities in any given area would be affected for a shorter period of time than the overall construction duration. The impacts would cease once construction was completed. Therefore, although there would be cumulative effects on local communities during construction, these are considered to be **not significant**.

Operation

15.6.28 No potential for significant intra-project cumulative effects during the operational phase of the project was identified in Table 1.2 of ES Appendix 15.2: Intra-project Cumulative Effects Matrix (**application document 6.3.15.2**). Therefore, intra-project cumulative effects during operation would be **not significant**.

Inter-Project Cumulative Effects

Introduction

15.6.29 Stages 1 to 4 of the inter-project CEA have been undertaken. The following subsections describe the results of the inter-project CEA.

Stage 1: Establishing the Long List of Other Developments

15.6.30 The long list of other developments is presented in ES Appendix 15.3 (**application document 6.3.15.3**). This has been identified according to the criteria set out in Section 15.4. The long list of other developments identified 763 records of NSIP, planning applications, relevant development plan allocations, and other known developments. Screening of the long list of other developments and a review of consultation responses in the Scoping Opinion (**application document 6.6**) resulted in 89 NSIP, planning applications and other known developments being taken forward to Stage 2 of the inter-project CEA.

Stage 2: Establishing the Shortlist of Other Developments

15.6.31 The other developments progressed to Stage 2 of the inter-project CEA (as presented in the long list of other developments in ES Appendix 15.3 (**application document**

6.3.15.3)) were screened against the threshold criteria set out in Section 15.4. This screening is presented in the shortlist of other developments in ES Appendix 15.4 (**application document 6.3.15.4**)). At the end of Stage 2 of the inter-project CEA, 19 other developments were considered to have potential to generate significant cumulative effects with the project. These developments have been progressed to Stage 3/4 of the inter-project CEA.

Stage 3: Information Gathering

15.6.32 Relevant documentation has been gathered and reviewed for the other developments. Information has been gathered from sources including relevant planning authority planning portals, the Planning Inspectorate's website, and through engagement with relevant planning authorities, other National Grid teams and third-party developers.

15.6.33 The information gathering exercise has used the ES submitted as part of the applications for the other developments, where available. However, depending on the stage that the other development was at or the scale of the development (i.e. small scale), an ES was not available. In all cases where an ES was not available, other environmental documentation, such as Scoping Reports, design and access statements, or environmental survey reports, has been used where available. These may not contain details of the likely effects from the other developments and therefore, in some cases, assumptions have been made based on knowledge of similar projects to identify what the potential effects may be.

15.6.34 A summary of the documentation that was available for the assessment is presented in each assessment table in ES Appendix 15.5: Inter Project CEA (**application document 6.3.15.5**). Where key information regarding the other developments was not available, this has been noted in ES Appendix 15.5: Inter Project CEA (**application document 6.3.15.5**).

15.6.35 The information gathering exercise identified potential receptors and environmental effects arising from the proposed developments. These were then compared to the assessments presented within the ES topic chapters to identify if there were any common receptors that were likely to be affected.

Stage 4: Assessment of Inter-Project Cumulative Effects

15.6.36 Stage 4 of the inter-project CEA is presented in full in ES Appendix 15.5: Inter-Project CEA (**application document 6.3.15.5**). The following sub-sections summarise the potential significant cumulative effects that have been identified through the inter-project CEA.

Landscape and Visual During Construction

15.6.37 The inter-project CEA has identified potential for significant cumulative effects on landscape during construction, assuming that construction of the project is undertaken at the same time (and in the same locality) as construction of the following other developments:

- ID DCO-001 – East Anglia THREE (specifically construction of the converter station). The main contributor to these effects would be construction of East Anglia THREE, which would have significant effects on landscape character and visual amenity in some locations; and

- ID APP-BMSDC-025 – Stoke-by-Nayland Golf Course development. The main contributor to these significant effects would be construction of the 400kV underground cable component of the project, which would be within 350m of the works to construct the other development.

Cumulative Effects of Multiple Other Developments

15.6.38 If these other developments were to be constructed at the same time as the project, the combined visual intrusion of two adjacent construction sites on the landscape could result in effects that are **significant**. There is no mitigation proposed as it is not possible to screen the constructions sites, as the screening itself could create a visual intrusion. The likely temporal overlap of both projects is likely to be limited, and the effects temporary for the duration of construction, and therefore any likely significant effect is anticipated to be short term.

Landscape and Visual During Operation

15.6.39 Other developments around Bramford Substation have the potential to result in significant cumulative landscape and visual effects with the project during operation. The other developments with potential to generate significant cumulative effects with the project are:

- ID DCO-001 – East Anglia THREE proposed converter station; and
- ID DCO-019 – East Anglia GREEN two new 400kV overhead lines.

ID DCO-001 – East Anglia THREE

15.6.40 During operation, significant cumulative landscape and visual effects could arise in relation to East Anglia THREE (ID DCO-001). The main contributor would be the converter station component of East Anglia THREE (ID DCO-001) rather than other elements of the project. There is considered to be the potential for **significant** cumulative landscape and visual effects in Year 1 due to the combined presence of the proposed 400kV overhead line and converter station. This is anticipated to become **not significant** once the mitigation planting for East Anglia THREE (ID DCO-001) matures (identified as year 20 in the applicant's ES (Scottish Power Renewables, 2015)).

ID DCO-019 – East Anglia GREEN

15.6.41 During operation, significant cumulative landscape and visual effects could arise from the combined presence of the proposed 400kV overhead line component of the project and the two new 400kV overhead lines associated with East Anglia GREEN (ID DCO-019). The potential for **significant** cumulative effects would be greatest close to Bramford Substation where multiple lines are already present and the new overhead lines associated with East Anglia GREEN (ID DCO-019) would be most intervisible and would add to the overall influence of high voltage electricity infrastructure.

15.6.42 The presence of these projects would have an indirect effect on the landscape and would adversely affect visual amenity, particularly to the south and west of Bramford Substation.

Cumulative Effects of Multiple Other Developments

15.6.43 There is the potential for significant cumulative effects around Bramford Substation due to the presence of several large infrastructure projects. The biggest contributors would be the converter station component of East Anglia THREE (ID DCO-001) (until year 20)

and the new 400kV overhead lines associated with East Anglia GREEN (ID DCO-019) and the project as they converge on Bramford Substation. This is anticipated to result in a **significant** cumulative effect to landscape and views immediately around Bramford Substation.

Summary of Likely Significant Effects

Intra-Project Cumulative Effects

15.6.44 The intra-project CEA identified that there could be a minor benefit to the local economy (including tourism industry) in terms of induced spend by the construction workforce. However, the construction workforce numbers (averaging 180 workers on site across the whole of the construction schedule) were considered relatively low and unlikely to provide a significant contribution to the local economy. It was also considered that the sourcing of materials and services from the local area for the project would result in effects that would be **not significant** on the local economy.

15.6.45 The intra-project CEA identified that while there could be temporary amenity effects resulting from noise, dust, changes to the PRoW network and visual effects, which could have an effect on how tourists experience the area as a whole and also impact on local communities, cumulative effects arising would be **not significant**. Due to the linear nature of the project and the transient nature of the works, the communities in any given area would be affected for a shorter period of time than the overall construction duration. The impacts would cease once construction was completed in any given area. In addition, the good practice measures set out in the CEMP and CoCP (**application documents 7.5** and **7.5.1** respectively), such as best practicable means for noise, would help to avoid or reduce effects.

15.6.46 In conclusion, it is considered that intra-project cumulative effects on the local economy (including the tourism industry) and on local communities during construction would be **not significant**.

Inter-Project Cumulative Effects

15.6.47 There is the potential for significant cumulative effects around Bramford Substation due to the presence of a number of large infrastructure projects. The biggest contributors would be the converter station component of East Anglia THREE (ID DCO-001) until year 20, when mitigation planting associated with East Anglia THREE (ID DCO-001) has established, and the proposed 400kV overhead lines associated with East Anglia GREEN (ID DCO-019) and the project as they converge on Bramford Substation.

15.6.48 In summary, the assessment has identified the following potential significant cumulative effects:

- During construction:
  - Potential **significant cumulative effect** to landscape and views immediately around Bramford Substation from the combination of the Bramford to Twinstead Reinforcement and East Anglia THREE (ID DCO-001); and
  - Potential **significant cumulative effect** to landscape and views from the combination of the Bramford to Twinstead Reinforcement and Stoke by Nayland Golf Course development (ID APP-BMSDC-025).
- During operation:

- Potential **significant cumulative effect** to landscape and views immediately around Bramford Substation from the combination of the Bramford to Twinstead Reinforcement, East Anglia THREE (ID DCO-001) (until year 20) and East Anglia GREEN (ID DCO-019).

15.6.49 No significant effects have been identified for other aspects or for other locations within the study area during either construction or operation.

15.7 Proposed Mitigation

Introduction

15.7.1 Good practice measures are set out within the CoCP (**application document 7.5.1**). Additional mitigation identified in the ES topic chapters are set out in the REAC (**application document 7.5.2**). These are assumed to be in place.

Intra-Project Cumulative Effects

15.7.2 No significant intra-project cumulative effects have been identified and therefore no mitigation is proposed.

Inter-Project Cumulative Effects

15.7.3 Potential for significant cumulative landscape and visual effects has been identified during construction and operation. No mitigation for inter-project cumulative effects is proposed for the following reasons:

- **Significant** inter-project cumulative effects during construction – it is considered these effects would be temporary and short-term, and screening of linear and mobile construction sites is impractical and could itself create a visual intrusion; and
- **Significant** inter-project cumulative effects during operation – It is considered that additional mitigation, such as planting, would not reduce these effects to a non-significant level. This is because the significant operational effects arise from the presence and visibility of 400kV pylons associated with the Bramford to Twinstead Reinforcement in combination with East Anglia GREEN (ID DCO-019) which cannot be fully screened by tree planting due to the height of the pylons.

15.8 Residual Significant Effects (With Mitigation)

15.8.1 Table 15.4 summarises the likely significant intra-project and inter-project cumulative effects, proposed mitigation and residual intra-project and inter-project cumulative effects during construction and operation. There are no significant intra-project cumulative effects identified for construction or operation.

Table 15.4 – Summary of Likely Significant Effects

Aspect/Proposed Matter	Likely Significant Effect (Without Additional Mitigation)	Proposed Additional Mitigation	Residual Significant Effect (With Additional Mitigation)
Inter-project cumulative effects			
Construction			
Landscape and visual: Potential cumulative effects immediately around Bramford Substation from the combination of the Bramford to Twinstead Reinforcement and East Anglia THREE (ID DCO-001).	Significant short-term adverse	None proposed (see Section 15.7)	**Significant short-term adverse**
Landscape and visual: Potential cumulative effects from the combination of the Bramford to Twinstead Reinforcement and Stoke by Nayland Golf Course development (ID APP-BMSDC-025).	Significant short-term adverse	None proposed (see Section 15.7)	**Significant short-term adverse**
Operation			
Landscape and visual: Potential cumulative effects immediately around Bramford Substation from the combination of the Bramford to Twinstead Reinforcement, East Anglia THREE (ID DCO-001) (until year 20) and East Anglia GREEN (ID DCO-019).	Significant long-term adverse	None proposed (see Section 15.7)	**Significant long-term adverse**

15.9 Sensitivity Testing

Introduction

15.9.1 This section outlines alternative approaches to the baseline assessment presented in Sections 15.6 to 15.8. It considers the alternative construction schedule, which is described in ES Appendix 4.2: Construction Schedule (**application document 6.3.4.2**) and also flexibility between the baseline design and method set out within ES Chapter 4: Project Description (**application document 6.2.4**) and the Proposed Alignment shown on ES Figure 4.1: The Project (**application document 6.4**). Further details on the flexibility assumptions are outlined in Section 4.2 of ES Chapter 4: Project Description (**application document 6.2.4**).

Assessment of Alternative Construction Schedule

15.9.2 This chapter assumes the ‘baseline construction schedule’ described in ES Appendix 4.2: Construction Schedule (**application document 6.3.4.2**) for the purposes of the assessment. The sensitivity testing considers the ‘alternative scenario’, which has a later start date due to the GSP substation being delivered pursuant to the Development Consent Order. This section compares the baseline construction schedule (GSP constructed in advance of the main project) assumed for the CEA with the alternative scenario to consider the implications of the different programme on the results of the CEA.

15.9.3 General set-up works (including compound set-up, construction access installation, vegetation clearance, enabling works, and 132kV overhead line removal) would take place at the same time under both programme scenarios (Q3 2024 to Q2 2027). Therefore, the alternative scenario would result in no change to the CEA.

15.9.4 Construction of the proposed 400kV overhead line would start at the same time under both programme scenarios (Q1 2025) but would end approximately three months later under the alternative scenario (Q4 2028, instead of Q3 2028 under the baseline construction schedule). Under the alternative scenario there would likely be a greater temporal overlap in construction activities with East Anglia GREEN (ID DCO-019) assuming the current programmes for both projects. An overlap in construction has already been assumed for the inter-project CEA.

15.9.5 Underground cable works would start in Q1 2025 under the alternative scenario, approximately three months later than under the baseline construction schedule (Q4 2024). The works would end in Q3 2028, approximately 18 months later than under the baseline construction schedule (Q2 2027). Underground cabling works would take place in Section D: Polstead, Section E: Dedham Vale AONB and Section F: Leavenheath/Assington. Two of the other developments assessed in Stage 4 of the inter-project CEA (ES Appendix 15.5 (**application document 6.3.15.5**)) are located in these sections: ID APP-BMSDC-010 and ID APP-BMSDC-025. It is considered that the alternative scenario would not have an impact on the CEA of these other developments. An overlap in construction has already been assumed for the inter-project CEA.

15.9.6 Under the baseline construction schedule, construction of the GSP substation in Section H would take place between Q1 2023 and Q2 2024. Under the alternative scenario construction of the GSP substation would take place between Q3 2024 and Q4 2025, approximately 18 months later than under the baseline construction schedule. None of the other developments assessed in Stage 4 of the inter-project CEA are located in this section, therefore the alternative scenario would result in no change to the CEA.

15.9.7 In conclusion, no new or different significant cumulative effects have been identified if the alternative scenario was to be taken forward.

Flexibility in Design

Flexibility within the Order Limits

15.9.8 The assessment presented within Sections 15.6 to 15.8 has assumed the Proposed Alignment shown on the ES Figure 4.1: The Project (**application document 6.4**). It should be noted that as described in ES Chapter 4: Project Description (**application document 6.2.4**), the Proposed Alignment is not fixed and could be subject to change within the defined Limits of Deviation (LoD) within the parameters shown on the Works Plans (**application document 2.5**). Sensitivity testing has been carried out to determine the potential for likely significant effects should alternative locations within the parameters defined by the LoD be taken forward.

15.9.9 Each ES topic chapter has assessed the flexibility in the designs within Section 11 of the relevant chapter. These have concluded that there are no residual new or different effects associated with applying flexibility within the LoD (assuming additional mitigation is in place). As such, the significance of residual cumulative effects would be no different from those outlined in Sections 15.6 to 15.8.

15.10 Conclusion

Intra-Project Cumulative Effects

15.10.1 An intra-project cumulative effects assessment has been undertaken. The assessment has shown that there are no likely significant intra-project cumulative effects during construction or operation of the project. No new or different effects to those outlined in Sections 15.6 to 15.8 of this chapter have been identified through the sensitivity testing presented in Section 15.9 of this chapter.

Inter-Project Cumulative Effects

15.10.2 In accordance with NPS EN-1 (DECC, 2011a) a cumulative effects assessment has been included within the ES which documents how the applicant's proposals (the project) would interact with other developments.

15.10.3 The assessment has shown that for most environmental aspects no residual significant adverse cumulative effects are predicted. However, for landscape and visual, there are likely to be **residual significant adverse cumulative effects** during construction and/or operation.

15.10.4 No new or different effects to those outlined in Sections 15.6 to 15.8 of this chapter have been identified through the sensitivity testing presented in Section 15.9 of this chapter.

Construction

15.10.5 **Significant cumulative landscape and visual effects** could arise during construction of the project in combination with the construction phases of East Anglia THREE (ID DCO-001) and the Stoke-by-Nayland Golf Course development (ID APP-BMSDC-025). The significant effects are anticipated to be temporary and short-term. No mitigation has been proposed as screening of linear and mobile construction sites is impractical and could itself create a visual intrusion.

Operation

15.10.6 **Significant cumulative landscape and visual effects** on the landscape and visual amenity around Bramford Substation could arise during operation of the project in combination with the operational phases of East Anglia THREE (ID DCO-001) (reducing to non-significant by year 20 of East Anglia THREE) and East Anglia GREEN (ID DCO-019) as a result of the combined presence of these developments.

15.10.7 No mitigation has been identified to reduce these significant cumulative effects during operation as it is considered that the combined presence and visibility of the 400kV pylons associated with the Bramford to Twinstead Reinforcement and East Anglia GREEN could not be fully screened by tree planting due to the height of the pylons.

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