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Bramford to Twinstead Reinforcement

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6. Landscape and Visual

6.1 Introduction

6.1.1 This Environmental Statement (ES) chapter details the likely significant effects of the project on landscape and visual receptors during construction and operation. Landscape receptors include landscape designations and the landscape character of the area. Visual receptors include people who could experience different views and level of amenity, through the removal and/or introduction of man-made and natural features.

6.1.2 Landscape and visual receptors considered within this chapter comprise the following:

- Dedham Vale Area of Outstanding Natural Beauty (AONB);
- Special Landscape Areas (SLA) including Gipping Valley SLA, Brett Valley SLA, Box Valley SLA and Stour Valley SLA;
- County level landscape character areas (LCA);
- People living and moving around the area (communities); and
- Recreational receptors for example people using public rights of way (PRoW).

6.1.3 During construction, there would be construction vehicles and machinery on site, and the addition of man-made features within the landscape. Vegetation would also be removed during construction, which could change the landscape character and open up views. During operation, the above ground features such as pylons, the cable sealing end (CSE) compounds and the grid supply point (GSP) substation would become features within the landscape and may be visible to people visiting or living within the surrounds.

6.1.4 The reinforcement would include approximately 18km of overhead line (consisting of approximately 50 new pylons, and conductors). It is assumed that this reinforcement would operate at least 400kV in a similar way to the majority of the rest of the transmission network. For the purposes of this report, 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.

6.1.5 This chapter has links with other topic chapters, in particular ES Chapter 7: Biodiversity (**application document 6.2.7**), which considers the impact of the project on vegetation in terms of habitats, and also ES Chapter 8: Historic Environment (**application document 6.2.8**, which considers the impact of the project on the setting of historic assets.

6.1.6 Cumulative effects between the project and other proposed developments as well as receptors affected by more than one source of direct environmental impact resulting from the same development are considered in ES Chapter 15: Cumulative Effects Assessment (**application document 6.2.15**).

6.1.7 This chapter is supported by the following appendices:

- Appendix 6.1: Landscape and Visual Methodology (**application document 6.3.6.1**);
  - Annex A: Dedham Vale AONB Approach and Identification of Setting Study (**application document 6.3.6.1.1**);

- Appendix 6.2: Assessment of Effects on Designated Landscapes (**application document 6.3.6.2**);
- Appendix 6.3: Assessment of Effects on Landscape Character (**application document 6.3.6.3**);
- Appendix 6.4: Viewpoint Assessment (**application document 6.3.6.4.1** to **6.3.6.4.7**);
- Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**);

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

- Figure 6.1: Landscape and Visual Study Area and Landscape Designations;
- Figure 6.2: Landform and Drainage;
- Figure 6.3: Tree Cover;
- Figure 6.4: Settlements and Infrastructure;
- Figure 6.5: Landscape Character;
- Figure 6.6: Visual Receptors and Viewpoints;
- Figure 6.7: Comparative Zone of Theoretical Visibility (ZTV) of Pylons to be Removed and Proposed Pylons;
- Figure 6.8: ZTV of Proposed 400kV Overhead Line by Project Section;
- Figure 6.9: ZTV of Dedham Vale East CSE Compound;
- Figure 6.10: ZTV of Dedham Vale West CSE Compound;
- Figure 6.11: ZTV of Stour Valley East CSE Compound;
- Figure 6.12: ZTV of Stour Valley West CSE Compound;
- Figure 6.13: ZTV of Proposed GSP Substation; and
- Figure 16.1: Embedded Measures and Mitigation Proposals.

6.1.9 This chapter also makes reference to the following documents:

- Construction Environmental Management Plan (CEMP) (**application document 7.5**);
- Landscape and Environmental Management Plan (LEMP) (**application document 7.8**); and
- Photomontages (**application document 5.8**).

6.2 Regulatory and Planning Policy Context

National Policy Statement

6.2.1 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 the NPS for Electricity Networks (EN-5) (DECC, 2011b).

6.2.2 EN-1 states that energy projects could have adverse landscape and visual effects and paragraph 5.9.5 states that the applicant should carry out a landscape and visual assessment (LVIA) and report it in the ES. Paragraph 5.9.7 continues by saying that '*the assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity'*. The results of the LVIA are presented within this chapter. The consultation draft EN-1 (Department for Business, Energy and Industrial Strategy (BEIS), 2021a) has the same text.

6.2.3 EN-5 includes the following text in paragraphs 2.8.2 and 2.8.3:

'Government does not believe that development of overhead lines is generally incompatible in principle with developers' statutory duty under section 9 of the Electricity Act to have regard to amenity and to mitigate impacts ... In practice new above ground electricity lines, whether supported by lattice steel towers/pylons or wooden poles, can give rise to adverse landscape and visual impacts, dependent upon their scale, siting, degree of screening and the nature of the landscape and local environment through which they are routed. For the most part these impacts can be mitigated, however at particularly sensitive locations the potential adverse landscape and visual impacts of an overhead line proposal may make it unacceptable in planning terms, taking account of the specific local environment and context. New substations, sealing end compounds and other above ground installations that form connection, switching and voltage transformation points on the electricity networks can also give rise to landscape and visual impacts. Cumulative landscape and visual impacts can arise where new overhead lines are required along with other related developments such as substations, wind farms and/or other new sources of power generation'.

'Sometimes positive landscape and visual benefits can arise through the reconfiguration or rationalisation of existing electricity network infrastructure'.

6.2.4 The consultation draft of EN-5 (BEIS, 2021b) has slightly different wording in Section 2.11, although it still reaffirms that the Government does not believe that the development of installations (substations, CSE compounds and other above ground installations) is incompatible in principle with developers' statutory duty under Schedule 9 of the Electricity Act 1989. Paragraph 2.11.6 of the consultation draft of EN-5 (BEIS, 2021b) goes on to states that '*though mitigation of the landscape and visual impacts arising from overhead lines and their associated infrastructure is usually possible, it may not always be so, and the impossibility of full mitigation in these cases does not countermand the need for the infrastructure. However, in nationally designated landscapes (for instance, National Parks and AONB) even residual impacts may well make an overhead line proposal unacceptable in planning terms*.'

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

Other Relevant Policy

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

6.2.7 ES Appendix 2.2: Local Planning Policy (**application document 6.3.2.2**) lists the local policy potentially relevant to the LVIA and a more comprehensive review of the relevant policies. A summary of the key policies relating to the LVIA are provided below.

6.2.8 The saved policies in the Mid Suffolk District Local Plan (1998) include Policy CL3 which refers to major utility installations and power lines in countryside and specifically references power lines exceeding 33kV as needing to be carefully sited to minimise intrusion in the landscape and that the feasibility of undergrounding electricity lines would be regarded as a material consideration.

6.2.9 Policy CL2 in the Mid Suffolk District Local Plan (1998) covers development within SLA and states that development should be sensitively designed and of high quality in these areas. This is similar to Policy CR04 in the Babergh District Council Local Plan (2006), which states that development proposals in SLA will only be permitted where they: maintain or enhance the special landscape qualities of the area, identified in the relevant landscape appraisal; and are designed and sited so as to harmonise with the landscape setting. The emerging Babergh and Mid Suffolk Joint Local Plan (2020) does not have a policy relating specifically to SLA, and instead refers to a more general consideration of landscape in Policy LP17 and LP19, which state that developments should seek to protect and enhance the character of the landscape, and where significant landscape or visual effects are likely, ways of avoiding, reducing and mitigating any adverse effects should be identified along with opportunities for enhancement.

6.2.10 Policy CR02 in the Babergh District Council Local Plan (2006) relates to the AONB and states that the landscape of the AONB will be safeguarded through the strict control of development. The emerging Babergh and Mid Suffolk Joint Local Plan (2020) includes Policy LP20, which specifically refers to the AONB and states that development should conserve and enhance the landscape and scenic beauty of the AONB and its setting. It should be sensitive to the landscape and visual impacts (including on dark skies and on tranquil areas) and have regard for siting, design, lighting, use of materials and colour, along with associated mitigation measures.

6.2.11 The adopted Braintree District Council Local Plan (2022) includes Policy LPP67 Landscape Character and Features, which states that proposals should be informed by, and be sympathetic to, the character of the landscape as identified in the District Council's Landscape Character Assessment. Additional landscaping including planting of native species of trees, hedgerows and other flora may be required to maintain and enhance these features. Green infrastructure is encouraged and development proposals which result in harm to the setting of the AONB will not be permitted.

6.3 Scope of the Assessment

6.3.1 ES Appendix 5.1: Scope of the Assessment (**application document 6.3.5.1**) outlines the scope of the assessment for landscape and visual. This has been informed by the Scoping Opinion provided by the Planning Inspectorate (**application document 6.6**) on behalf of the Secretary of State, following the submission of the Scoping Report (**application document 6.5.1**).

6.3.2 The scope 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**).

6.3.3 The Scoping Report (**application document 6.5.1**) proposed using the district level LCA for the basis of the assessment. However, the Planning Inspectorate in ID 4.1.5 in the Scoping Opinion (**application document 6.6**) recommended that a landscape character assessment at a wider level than district level was required as part of the ES in order to understand the potential likely significant effects to landscape character and stated that the county scale LCA should be scoped into the ES. Therefore, the ES assesses the impacts on LCA at a county scale.

6.3.4 Effects on private views and effects on views from people travelling from roads and rail were scoped out of the assessment (references ID 4.1.7 to 4.1.9 respectively in the Scoping Opinion (**application document 6.6**)).

6.3.5 The specific aspects that are scoped into the LVIA are:

- Impacts on Dedham Vale AONB;
- Impacts on SLA;
- Impact on LCA at a county level;
- Impacts on people living and moving around the area (communities); and
- Impacts on recreational receptors for example people using PRoW.

6.3.6 At the time of undertaking this assessment, a potential Dedham Vale AONB extension has been submitted but has not yet been approved or rejected. Natural England, confirmed in March 2021 that the Partnership's proposal to vary the boundary of the AONB had been registered. In June 2021, Natural England announced proposals for new protected areas across England, alongside a new programme to examine how more areas could benefit from landscape improvements and deliver more for people and nature. Under these proposals, Natural England announced that extensions are being considered to two existing AONB (Surrey Hills AONB and the Chilterns AONB). There is no current programme available regarding consideration of the proposed extension to the Dedham Vale AONB.

6.3.7 As agreed with Natural England and documented in the Statement of Common Ground (SoCG) (**application document 7.3.2**), the landscape designation baseline and assessment considers the current AONB boundary and its setting as defined in ES Appendix 6.2: Assessment of Effects on Designated Landscapes (**application document 6.3.6.2**).

Project Engagement

6.3.8 National Grid has held a number of meetings with relevant organisations, including Suffolk County Council, Essex County Council, Babergh and Mid-Suffolk District Councils, Braintree District Council and Dedham Vale AONB and Stour Valley Partnership. National Grid has discussed the viewpoint locations and the locations of photomontages with the relevant planning authorities. National Grid has also agreed the scope and methodology used including the use of parish boundaries to inform the communities assessment (see ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**) for further details).

6.3.9 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**).

6.4 Approach and Methods

6.4.1 This section describes the methodology used to establish the baseline environment and the adopted approach to assessing the significance of potential effects on landscape and views. A desk study has been undertaken to inform the assessment of significant effects. This has been supported by a number of walkover surveys during 2021 and 2022 to understand the character of the study area and visual baseline, to undertake the viewpoint assessment and obtain viewpoint photography.

Data Sources

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

- Published landscape character assessments including Suffolk Landscape Character Assessment (Suffolk County Council, 2011a) and the Essex Landscape Character Assessment (Chris Blandford Associates, 2003);
- 1:25,000 and 1:50,000 Ordnance Survey (OS) maps (2021c);
- Aerial photography, Google Earth and Google Maps Street View (2022);
- Terrain data (OS Terrain 5, 2021); and
- Other advice and information provided by consultees and referenced within the chapter including the Dedham Vale AONB and Stour Valley Management Plan (Dedham Vale AONB and Stour Valley Partnership, 2021).

6.4.3 All of the information received has been incorporated into the baseline environment description presented in Section 6.5 and the landscape appendices supporting this chapter.

Study Area

6.4.4 The Scoping Report (**application document 6.5.1**) proposed a study area 5km distance from the Order Limits (the 'wider landscape'). The Planning Inspectorate stated in ID 4.1.15 of the Scoping Opinion (**application document 6.6**), the importance of consideration of visual receptors beyond 3km, therefore the 5km study area has been retained and used for this assessment, as it is considered to more than adequately cover receptors which could experience significant effects.

6.4.5 Although the study area is based on a 5km buffer of the Order Limits, the emphasis of this assessment is, however, based on receptors lying within 3km where significant landscape and visual effects are most likely to occur. Visual receptors that fall outside the ZTV are excluded from the assessment.

6.4.6 The justification for the study area and focus of the assessment is based on the following considerations:

- Professional experience of assessments of overhead lines (the tallest element of the project) (National Grid, 2014) and field assessment have shown that there are circumstances when a steel lattice pylon approximately 50m high can be discerned at distances up to 10km. However, in most instances it is likely to be barely perceptible beyond 5km and therefore unlikely to give rise to significant effects. This is because at 5km distance, when viewed at arm's length, a 50m tall pylon would appear to be approximately 6mm high in the landscape. This is known as the apparent height of the pylon. If a pair of pylons are seen close together at this distance, perceptibility may increase slightly but this is still unlikely to trigger significant effects;

- Field assessment has determined that where visible at distances between 1km and 3km, a steel lattice overhead line approximately 50m high, can typically be seen in only a small proportion of views as it is often screened by trees, landform and vegetation. Where visible within 1km it is typically seen in a greater proportion of the view depending on filtering, screening or backgrounding which may reduce the extent visible;

- The ZTV illustrated in ES Figure 6.7: Comparative ZTV of Pylons to be Removed and Proposed Pylons (**application document 6.4**), demonstrates that the difference in extent of theoretical visibility (worst-case scenario) between the proposed 400kV overhead line, the existing 400kV overhead line to be removed and the existing 132kV overhead line to be removed, is relatively small in terms of geographical coverage. Although the comparative ZTV does demonstrate the difference between the extent of theoretical visibility between the proposed 400kV overhead line and the existing 400kV and 132kV overhead lines to be removed, it is a high level ZTV and only provides an illustration as it is based on indicative top heights of pylons only, and does not take into consideration screening effects of existing vegetation. Additional ZTV have therefore been produced (ES Figures 6.8 to 6.13 (**application document 6.4**)) to further analyse potential visibility and to focus the assessment. These are discussed later in this section; and

- Site visits undertaken in April 2021 verified that the landscape within which the project is proposed is generally well treed and, with the exception of some elevated views, visibility is often foreshortened by woodland blocks, field and hedgerow trees and hedgerows.

Site Survey

6.4.7 The findings of the desk study have been supplemented by site surveys undertaken between winter 2021 and summer 2022.

6.4.8 Initial site visits were undertaken in 2021 to gain a high-level overview of the general landscape character and visual resource, gain a more in-depth understanding of the study area and with a focus on identifying viewpoints used to support the assessment. These visits involved visiting proposed viewpoint locations, capturing baseline photography and identifying potential visual receptors, preliminary judgements on potential impacts and initial consideration of options for mitigation.

6.4.9 Site visits continued during winter 2021 and during 2022 to undertake the viewpoint assessments, inform the communities assessment and to identify the areas considered to be within the setting of Dedham Vale AONB.

6.4.10 In addition to the landscape and visual site visits, further site visits were made in July 2021 and March 2022 to capture baseline photography (summer and winter images) used for photomontage production for the selected viewpoints presented in the Photomontages (**application document 5.8**).

Assessment Methodology

General Methodology

6.4.11 The assessment is based on the Guidelines for LVIA, Third Edition (GLVIA3) (Landscape Institute and Institute of Environmental Management and Assessment (IEMA), 2013). This states that LVIA should be proportional to the scale and nature of the proposals and the likely landscape and visual effects. Relevant guidance from the Landscape Institute has also been considered, including the Landscape Institute's (February 2016) Technical Information Note: Landscape Character Assessment (08/15), and Landscape Institute's (May 2021) Technical Guidance Note 02-21 'Assessing landscape value outside national designations'. (TGN 02-21 includes incorporation of cultural associations into consideration of landscape value.)

6.4.12 The approach set out in GLVIA3 establishes good practice guidelines for LVIA but also complies with the requirements of NPS EN-1 and NPS EN-5. Further relevant guidance documents were referenced in ES Appendix 2.1: Legislation, Policy and Guidance (**application document 6.3.2.1**).

6.4.13 The general approach to assessing potential impacts of the project on landscape and visual receptors is as follows:

- The existing landscape and views form the basis for the identification and description of the landscape and visual changes that may result from the project. The baseline includes the existing 400kV overhead line and the existing 132kV overhead line;
- An assessment of the potential impacts of the project on landscape receptors has been undertaken including a review of potential impacts on the fabric of the landscape (such as the addition, removal or alteration of structures, woodlands, trees or hedgerows), which may alter the character and perceived quality of the area, or more general impacts on landscape character and designated areas of landscape arising from the removal or introduction of man-made features. In landscapes designated or valued for their scenic or landscape quality such as Dedham Vale

AONB, such changes can affect the purpose of the designation or perceived value of the landscape; and

- An assessment of the potential impacts of the project on visual receptors has been undertaken. This relates to specific changes in the composition of views and the effects of those changes on visual receptors and wider visual amenity. In accordance with industry guidance, the assessment is focused on public views experienced by those groups of people who are likely to be most sensitive to the construction and operation of the project. This comprises local communities where views contribute to the landscape setting enjoyed by residents in the area and people using recreational routes, features and attractions.

6.4.14 The categories of landscape and visual receptors that are considered are:

- Landscape designations at a national and local level. These include the nationally designated Dedham Vale AONB and its setting and locally designated SLA;
- Landscape character (combinations of elements and aesthetic and perceptual aspects that make an area distinctive) at a county level but taking cognisance of other relevant published landscape character assessments and site based findings; and
- Views experienced by people living and moving around the area (communities) and people taking part in outdoor recreational activities/pursuits within the area (recreational receptors).

6.4.15 The detailed methodology can be found in ES Appendix 6.1: Landscape and Visual Methodology (**application document 6.3.6.1**).

6.4.16 Likely significant effects have been assessed using professional judgement considering the sensitivity (or value) of the receptors within the study area, and the magnitude of change (impact) likely to be caused by project activities. These factors are combined to give an overall significance of effect.

6.4.17 Significance has been derived using the matrix set out in Illustration 5.1 in ES Chapter 5: Environmental Impact Assessment (EIA) Approach and Method (**application document 6.2.5**). This has been supplemented by professional judgement, which, where applicable, has been explained to give the rationale behind the values assigned. Likely significant effects, in the context of the EIA Regulations 2017, are effects of moderate or greater significance.

Zone of Theoretical Visibility (ZTV)

6.4.18 A series of ZTV maps has been produced to inform the assessment (ES Figures 6.7 to 6.13 (**application document 6.4**)). These illustrate theoretical visibility of the project during the operational phase and have been modelled based on pylon and gantry locations shown on ES Figure 4.1: The Project (**application document 6.4**) and the heights given in the Table of Parameters included within the Work Plans (**application document 2.5**). Further details regarding the flexibility of the design and the application of the Limits of Deviation (LoD) can be found in ES Chapter 4: Project Description (**application document 6.2.5**).

6.4.19 The ZTV maps have been generated in a geographical information system (GIS) using a combination of OS Terrain 5 and Terrain 50 Digital Terrain Model. The ZTV presented in ES Figure 6.7: Comparative ZTV of Pylons to be Removed and Proposed Pylons (**application document 6.4**) is based on the theoretical visibility of the proposed overhead line and takes no account of the screening effects of buildings and vegetation, which may in reality preclude visibility from certain areas. This is referred to as a 'bare earth' ZTV and provides the 'worst case' scenario (largest geographical area) from which the project may be visible.

6.4.20 Additional ZTV have been produced (ES Figures 6.8 to 6.13 (**application document 6.4**)) to assist the assessment further. These figures present the extent of theoretical visibility of the proposed 400kV overhead line within each section of the project and also the CSE compounds and GSP substation. They are not based on bare-earth alone but take into consideration existing woodland. Woodland blocks have been defined by desk-top study using the National Forest Inventory mapping dataset and have been assigned a 15m height in the ZTV. This is considered a conservative approach to represent the likely screening/filtering effects of mature woodland. The ZTV do not take into account the additional screening and filtering effects of hedgerow and field trees, small copses or more recently planted trees, woodland and hedgerows which are found in many places throughout the study area.

6.4.21 Each of the maps illustrate the ZTV as follows:

- The areas from which pylons or gantries (gantries are structures located within a CSE compound or GSP substation) may theoretically be visible, from the ground level to the top;
- The areas from which the top half of pylons or gantries (within a CSE compound or GSP substation) may theoretically be visible, but the bottom half would not be; and
- The areas from which the very top of pylons or gantries (within a CSE compound or GSP substation) may theoretically be visible, but the rest would not be (this is based on the top 2.5m of pylons being visible or the very tip of the gantries).

6.4.22 As the ZTV are theoretical, fieldwork has been undertaken to take into account local screening elements within the landscape to inform the LVIA. The results of the fieldwork undertaken to date has informed this assessment.

Viewpoint Analysis

6.4.23 Viewpoint analysis has been conducted from a series of publicly accessible viewpoints in fine weather conditions as part of the site survey work undertaken in 2021 and 2022. The viewpoints illustrated on ES Figure 6.6: Visual Receptors and Viewpoints (**application document 6.4**) have been selected to represent the different receptors in the study area and their likely views. This includes people living and moving around the area (referred to as ‘Community Receptors’) and people taking part in outdoor recreational activities/pursuits within the area (referred to as ‘Recreational Receptors’). Potential changes in views have been considered to determine whether a potentially significant effect may be likely to arise.

6.4.24 The selection of these viewpoints has been informed by previous work undertaken prior to the project pause, ZTV analysis, site visits, desk-based research on access and recreation including footpaths, bridleways and public land, by tourism including popular vantage points, and by the distribution of the different groups of visual receptor.

6.4.25 The viewpoints have been discussed with relevant consultees. The relevant planning authorities provided joint feedback on the viewpoints locations and suggestions have been taken on board for the final viewpoint locations presented in this assessment.

Key Parameters for Assessment and Assumptions

6.4.26 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. The assumptions are based on information presented within ES Chapter 4: Project Description (**application document 6.2.4**) and include:

- Trenchless crossing construction methodology: The project has committed to undertaking trenchless crossings at the River Box, River Stour, Sudbury Branch Railway Line and to the south of Ansell's Grove;
- Limits of Deviation (LoD): The LVIA is based on the pylon heights presented in Table of Parameters included within the Work Plans (**application document 2.5**);
- Lighting: It is assumed that winter working requiring task lighting may be required on the project, for example at the GSP substation, CSE compounds and trenchless crossings including under the Sudbury Branch Railway Line during construction. Operational lighting would be limited to security lighting at the GSP substation, which would be motion-sensor activated and only triggered in exceptional circumstances;
- Vegetation Loss: The assessment is based on assumptions of potential construction working area and potential vegetation loss described in ES Chapter 4: Project Description **(application document 6.2.4**) and as presented on the Trees and Hedgerows to be Removed or Managed Plans **(application document 2.9**); and
- Reinstatement: The assessment assumes that vegetation removed during construction would be reinstated, except where there are planting restrictions for example trees cannot be planted over the underground cables. Further details on planting restrictions and assumptions can be found in the LEMP (**application document 7.8**).

Embedded and Good Practice Measures

6.4.27 This section outlines the relevant embedded and good practice measures that have been embedded into the design of the project and therefore the assessment has been undertaken on the assumption that these measures would be carried out. All assessment work has applied a precautionary principle, in that where limited information is available (in terms of the project design), a realistic worst-case scenario is assessed.

Relevant Embedded Measures

6.4.28 The Register of Environmental Actions and Commitments (REAC) (**application document 7.5.2**) presents the embedded measures that have been identified through the environmental assessment as part of the iterative design and have been committed to as part of the application of the mitigation hierarchy, to avoid or reduce likely significant environmental effects to support a proportionate assessment.

6.4.29 Embedded measures relevant to the LVIA include choosing a corridor that allows for paralleling with the existing 400kV overhead line to reduce the geographical area affected by overhead line infrastructure. The options appraisal identified Corridor 2 as an opportunity corridor as it also allowed removal of a section of the 132kV overhead line, to limit the magnitude of change from the project. Further details on the options appraisal can be found in ES Chapter 3: Alternatives Considered (**application document 6.2.3**).

6.4.30 Embedded measures relevant to the assessment of landscape and visual effects include:

- EM-P02: Approximately 25km of the existing 132kV overhead line would be removed between Burstall Bridge and Twinstead Tee;
- EM-P06: Full line tension gantries are proposed at all four of the proposed CSE compounds;
- EM-E01: The project includes a section of underground cable through Section E: Dedham Vale AONB;
- EM-G01: Approximately 2km of the existing 400kV overhead line would be removed to the south of Twinstead Tee;
- EM-G02: The project includes a section of underground cable through parts of the Section G: Stour Valley; and
- EM-G08: A trenchless crossing is proposed to avoid habitats to the south of Ansell's Grove including Alphamstone Meadows Local Wildlife Site.

6.4.31 In addition, embedded planting is proposed around each of the four CSE compounds (EM-D01, EM-F01, EM-G03 and EM-G06) and the GSP substation (EM-H02). The Order Limits also include adequate room for planting and low mounds at the GSP substation (EM-H04) for additional screening where required.

Good Practice Measures

6.4.32 The Code of Construction Practice (CoCP) (**application document 7.5.1**) sets out the standard good practice measures that would be undertaken during construction of the project if it is granted consent. The relevant good practice measures relating to landscape and visual including retaining vegetation where practicable and providing replacement planting (LV01), working in accordance with British Standard 5837:2012 Trees in relation to design, demolition and construction (LV02), and providing five years of aftercare for all reinstatement and mitigation planting (LV03).

6.4.33 Good practice measures GG07 and GG08 are also of relevance to landscape and visual, as it indicates that, hedgerows, fences and walls would be reinstated to a similar style and quality and where sensitive features are to be retained within the Order Limits, they would be protected appropriately through fencing and signage.

6.4.34 The LEMP (**application document 7.8**) expands on the good practice measures set out within the CoCP by providing additional information on how vegetation would be retained where practicable and how it would be reinstated at the end of construction.

6.5 Baseline Environment

Existing Baseline

6.5.1 The following text provides an overview of the landscape designations, landscape character and views within the 5km study area, as a summary for the overall study area. More detailed information on the baseline environment can be found within the appendices which accompany this chapter and referenced below.

6.5.2 The existing 400kV overhead line and the existing 132kV overhead line are considered as forming part of the baseline.

Landscape Designations

6.5.3 The project is located near to and crosses a number of landscape designations, as shown on ES Figure 6.1: LVIA Study Area and Landscape Designations (**application document 6.4**):

- Dedham Vale AONB (national designation);
- Gipping Valley SLA (local designation);
- Brett Valley SLA (local designation);
- Stour Valley SLA (local designation); and
- Box Valley SLA (local designation).

6.5.4 These designations and their relationship to the project are described in more detail in ES Appendix 6.2: Assessment of Effects on Designated Landscapes (**application document 6.3.6.2**).

6.5.5 Although not a designation, the Stour Valley Project Area (SVPA) is also shown on the same figure for context. This area has similar picturesque landscape qualities to Dedham Vale AONB, being valued for its similar gently undulating river valley topography, medieval settlement pattern and rural characteristics, it is also covered within the same management plan (Dedham Vale AONB and Stour Valley Partnership, 2021).

6.5.6 The project also runs close to areas of ancient woodland including at Hintlesham Woods. It passes numerous listed buildings and features listed in the Historic Environment Record (HER). These are discussed further in ES Chapter 7: Biodiversity (**application document 6.2.7**) and ES Chapter 8: Historic Environment (**application document 6.2.8**) respectively.

Landscape Character

6.5.7 The project crosses a landscape which comprises a low-lying topography of flat to gently undulating landform, and wide, flat river valleys. Topography becomes more rolling to the west of the River Stour, around Twinstead. Major watercourses within the study area typically flow north to south, including the River Brett, River Box, and River Stour, with topography gently rising between these river corridors.

6.5.8 At a national level, the project (and entirety of the study area) falls within the Natural England NCA 86: South Suffolk and North Essex Clayland (Natural England, 2014c).

6.5.9 At a regional level, the project is covered by the East of England Landscape Typology (Landscape East Partnership, 2011) and falls within the landscape typologies of Wooded Plateau Farmlands, Valley Settled Farmlands, Wooded Plateau Claylands, and Valley Meadowlands.

6.5.10 At a county level, the project is covered by the Suffolk Landscape Character Assessment (Suffolk County Council, 2011a), Essex Landscape Character Assessment (Chris Blandford Associates, 2003), and also the Suffolk and Essex Historic Landscape Characterisation (Suffolk County Council, 2012). These county scale landscape character types and areas are described in more detail in ES Appendix 6.3: Assessment of Effects on Landscape Character (**application document 6.3.6.3**).

6.5.11 At a district level, the eastern and central sections of the project are covered by the Joint Babergh and Mid Suffolk District Council Landscape Guidance (Dyson-Bruce and Bennet, 2013a). This is based on Suffolk Landscape Character Assessment (Suffolk County Council, 2011a), with further information and detail provided in order that each area clearly relates to the Babergh and Mid Suffolk District. The western sections of the project are covered by the Landscape Character of Braintree District (Braintree District Council, 2006).

6.5.12 The county level assessments have been used for the purposes of this assessment and are shown on ES Figure 6.5: Landscape Character (**application document 6.4**). These include:

- LCA 1 – Suffolk Rolling Valley Farmlands;
- LCA 2 – Suffolk Ancient Plateau Claylands;
- LCA 3 – Suffolk Plateau Farmlands;
- LCA 4 – Suffolk Ancient Estate Claylands;
- LCA 5 – Suffolk Valley Meadowlands;
- LCA 6 – Suffolk Ancient Rolling Farmlands;
- LCA 7 – Essex C8 Stour Valley; and
- LCA 8 – Essex B3 Blackwater and Stour Farmlands.

6.5.13 Below is a summary of the LCA identified within each project section.

Section AB: Bramford Substation/Hintlesham

6.5.14 The majority of Section AB: Bramford Substation/Hintlesham lies within landscape characterised as LCA 2 Suffolk Ancient Plateau Claylands, with LCA 3 Suffolk Ancient Estate Claylands to the south, and LCA 1 Suffolk Rolling Valley Farmlands to the west of Section AB and along the Belstead Brook valley.

6.5.15 The Dedham Vale AONB boundary lies approximately 2km from the west end of Section AB. The Belstead Brook valley is designated as the Gipping Valley SLA in the Babergh District Local Plan (2006). The Gipping Valley SLA extends northeast from the valley up to the local authority boundary, which is to the south-west of Bramford Substation. A small part of the Brett Valley SLA extends into the eastern part of Section AB: Bramford Substation/Hintlesham.

Section C: Brett Valley

6.5.16 Section C: Brett Valley lies in landscape characterised as LCA 1 Suffolk Rolling Valley Farmlands, and LCA 5 Suffolk Valley Meadowlands. Dedham Vale AONB lies approximately 2km to the south of Section C. The Brett Valley is designated as an SLA (Babergh District Council, 2006) and covers the whole of Section C: Brett Valley.

Section D: Polstead

6.5.17 Section D: Polstead lies in landscape which in the main is characterised as LCA 6 Suffolk Ancient Rolling Farmlands. The eastern end of Section D lies within LCA 1 Suffolk Rolling Valley Farmlands. Dedham Vale AONB abuts the western end of Section D and lies between 0.2km and 2km to the south of Section D: Polstead. The Brett Valley is designated as an SLA (Babergh District Council, 2006) and covers the eastern half of Section D: Polstead.

Section E: Dedham Vale AONB

6.5.18 Section E: Dedham Vale AONB lies in landscape characterised as LCA 6 Suffolk Ancient Rolling Farmlands, LCA 1 Suffolk Rolling Valley Farmlands, and LCA 5 Suffolk Valley Meadowlands.

6.5.19 The majority of Section E runs directly through Dedham Vale AONB. The River Box is designated as an SLA (Babergh District Council, 2006) and the southern extent of this designation lies approximately 0.5km to 1.4km to the north of Section E: Dedham Vale AONB.

Section F: Leavenheath/Assington

6.5.20 Section F: Leavenheath/Assington lies in landscape which is characterised as LCA 6 Suffolk Ancient Rolling Farmlands. The Dedham Vale AONB abuts the eastern end of Section F and some areas of the AONB come within approximately 0.5km to the south of Section F: Leavenheath/Assington.

6.5.21 The SVPA abuts the western end of Section F and some of the SVPA is covered by the SLA designation over the eastern extent of the Stour Valley (Babergh District Council, 2006).

Section G: Stour Valley

6.5.22 The eastern and western parts of Section G: Stour Valley lie within LCA 6 Suffolk Ancient Rolling Farmlands and the central area lies within LCA 1 Suffolk Rolling Valley Farmlands and LCA 5 Suffolk Valley Meadowlands. The western part of Section G is also characterised) as LCA 7 Essex C8: Stour Valley and LCA 8 Essex B3: Blackwater and Stour Farmlands.

6.5.23 The whole of Section G lies within the SVPA, which, whilst not a designated landscape in itself, has been described as having *'similar picturesque landscape qualities to Dedham Vale'* (Land Use Consultants, 2018).

Section H: GSP Substation

6.5.24 Section H: GSP Substation lies in landscape which is characterised as LCA 6 Suffolk Ancient Rolling Farmlands and LCA 1 Suffolk Rolling Valley Farmlands. This landscape is also characterised as LCA 8 Essex B3: Blackwater and Stour Farmlands. The Dedham Vale AONB lies approximately 7.5km to the east of the proposed GSP substation.

Views

6.5.25 An overview description of existing views is presented below with reference to each of the seven sections of the project. The following text takes into account site observations in addition to information gathered during desk studies and from consultation with relevant bodies.

6.5.26 For locations of viewpoints within each section refer to ES Figure 6.6: Visual Receptors and Viewpoints (**application document 6.4**) and ES Appendix 6.4: Viewpoint Assessment (**application document 6.3.6.4.1** to **6.3.6.4.7**). For further baseline information on community areas, which are based on parish boundaries, refer to ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**).

Section AB: Bramford Substation/Hintlesham

6.5.27 Bramford Substation lies at the north-east extent of the Order Limits and is on an interfluve of higher ground between the Gipping Valley to the east, and a smaller valley which contains Belstead Brook to the west. A number of existing 400kV and 132kV overhead lines which connect to Bramford Substation are dominant visual elements in the section. There are clear views toward the edge of Ipswich from higher ground. Strong hedgerow boundaries, interspersed by belts and blocks of broadleaved woodland also contribute to the visual experience, enclosing and foreshortening some view across this landscape.

6.5.28 To the north of the A1071, the area is served by a network of minor roads and lanes and extending from these are a series of public footpaths and bridleways which cross the land surrounding Bramford Substation. The Gipping Valley River Path, a long distance route, follows the River Gipping approximately 2km east of Bramford Substation. Intervening landform prevents views to the west from this route. A Regional Cycle Route (RCR) 48 runs through the hamlet of Flowton (approximately 1.5km to the north-west of Bramford Substation) and has some open views of the existing 400kV overhead line to the south.

6.5.29 The village of Burstall is approximately 1km to the south of Bramford Substation, on the edge of the Belstead Brook valley. Mature vegetation and intervening built form restrict views toward Bramford Substation and the existing 400kV overhead line from the majority of houses in the village. Residential properties in the hamlet of Flowton have views toward Bramford Substation and existing 400kV overhead line. There are a number of isolated farmsteads and groups of houses between Flowton and Burstall and east of Burstall that have views toward Bramford Substation and of the existing 400kV overhead line. The villages of Bramford and Sproughton are approximately 2km east of Bramford Substation in the Gipping Valley. Landform restricts views to the west from these settlements.

6.5.30 Mature vegetation along the Belstead Brook and woodland belts on the valley sides offer localised screening in this area. There are a small number of houses in the valley which have views of the existing 400kV overhead line. Views of the existing 400kV overhead line crossing Belstead Brook are limited from houses in Burstall by mature vegetation and tree belts to the western and southern edges of the village. There are potential visual receptors at Burstall Hill, a group of houses that sit in the valley to the north-west of the project and are served by a minor road which crosses the valley at this point. Belstead Brook is also crossed by the A1071 approximately 1.5km to the south-east of the project (at Burstall Bridge). Views to the north-west are limited by vegetation along the watercourse at this point.

6.5.31 The central portion of Section AB: Bramford Substation/Hintlesham is on an interfluve of higher ground north and west of Hintlesham. Hedgerow boundaries and belts and blocks of broadleaved woodland help to limit the effect on views of the existing 400kV overhead line. The Grade I listed Hintlesham Hall is now a hotel and a golf course. The existing 400kV overhead line crosses the former parkland, less than 0.5km from the hall and there are views of the existing overhead line from locations within the grounds of the hall and from parts of the golf course.

6.5.32 The A1071 runs through the village of Hintlesham and a secondary road (Pond Hall Road/Duke Street) connects with the A1071 at Hintlesham. A minor road network extends to the north of the A1071 and south of Pond Hall Road and there are also a number of public footpaths crossing the area. There are views of the existing 400kV overhead line from these routes. National Cycle Network (NCN) Route 1 is well-screened where it runs along Hadleigh Railway Walk on the eastern edge of the Brett Valley, but where the route runs approximately 1km to the south of the existing overhead lines, there are views of the existing 400kV and the 132kV overhead lines.

6.5.33 The village of Hintlesham is approximately 1km to the south of the existing 400kV overhead line. The majority of views to the north are limited by woodland and mature vegetation associated with Hintlesham Hall and the golf course. Ribbon development extends along Duke Street, west of Hintlesham and a number of residences here have views of the existing 400kV overhead line, where not obscured by Hintlesham Great Wood. Approximately 1km to the south of Hintlesham, is the village of Chattisham and there are some views of the existing 400kV overhead line from houses in the western part of the village. There are a number of other residential visual receptors at farmsteads in the area, and individual houses and groups of houses located principally along the A1071 and Pond Hall Road.

6.5.34 There are views from a number of houses in Hintlesham, Chattisham and Duke Street of the existing 132kV overhead line, which runs south of Hintlesham. There are also views of the existing 132kV overhead line from the A1071 (east of Hintlesham), the minor road network (including part of the NCN) and PRoW network.

6.5.35 Community areas within Section AB: Bramford Substation/Hintlesham relevant to the assessment and included in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**) are Bramford, Burstall, Chattisham, Copdock and Washbrook, Elmsett, Flowton, Hadleigh, Hintlesham, Raydon and Sproughton.

Section C: Brett Valley

6.5.36 The B1070 runs through the Brett Valley to the east of the river. A minor road runs south from Hadleigh on the western side of the river and through Lower Layham and a further minor road runs parallel to this route on the upper valley side. There are some PRoW crossing the valley between Hadleigh and Upper Layham and a PRoW link between Upper and Lower Layham which crosses the river. There are views of the existing 400kV overhead line from these routes. There are no long-distance walking routes in this area however there is the NCN Route 1, from which there are views of the existing 400kV and 132kV overhead lines where the NCN Route 1 runs through the Brett Valley on the minor road network and the Hadleigh Railway Walk.

6.5.37 Community areas within Section C: Brett Valley relevant to the assessment and included in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**) are Hadleigh, Layham and Raydon.

Section D: Polstead

6.5.38 This section of the project is on an interfluve of higher ground between the Brett Valley and the Box Valley. Hedgerows with hedgerow trees, interspersed by blocks of broadleaved woodland are characteristic of the area and break up views of the existing 400kV and 132kV overhead lines. Layham Quarry is relatively well-screened from the surrounding area by mature vegetation around its periphery.

6.5.39 Users of the A1071, and a network of minor lanes and PRoW have views of the existing overhead lines along at least part of the routes. There are no long-distance footpath routes, national or regional cycle routes in this immediate area, although there are distant views of the existing 400kV overhead line from part of the Stour Valley Path long distance route on high ground east of Stoke by Nayland (approximately 3km distant and within Dedham Vale AONB).

6.5.40 The small village of Polstead Heath is approximately 0.2km to the north of the existing 400kV overhead line in the western part of this area. Millfield Wood, a block of mature woodland, sits between the village and the existing overhead line and limits views to the south from some residential properties, although there are views of the existing 400kV overhead line from the eastern and western edges of the settlement. On the edge of the Box Valley, and approximately 1km to the south of the route, is the village of Polstead, which lies in Dedham Vale AONB. The village is set on lower ground and the majority of views from the village are restricted by a combination of landform and mature vegetation, apart from a few properties at the northern edge of the village. There are a number of other potential residential visual receptors at farmsteads in the area, and at individual houses and groups of houses along the A1071 and on the minor road network.

6.5.41 Approximately 3km to the south-west of the Order Limits, is the village of Stoke by Nayland on high ground in the AONB. There are existing views of the 400kV overhead line on the interfluve between the Brett and Box Valleys from the edge of the village.

6.5.42 Community areas within Section D: Polstead relevant to the assessment and included in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**) are Layham, Polstead and Shelley.

Section E Dedham Vale AONB

6.5.43 The A1071 is located to the north of this section, with intervening landform and vegetation restricting views to the south. A network of minor roads and lanes provide connections between the A1071 and B1068. A number of PRoW cross the area, including a PRoW which runs along the bottom of the Box Valley and forms part of the Suffolk Way, a published long-distance walking route. There is also a small network of public paths to the north of Polstead associated with the tributary valley and Dollops Wood. The long distance Stour Valley Path and St Edmund Way run through Stoke-by-Nayland, approximately 2.5km to the south of the Order Limits.

6.5.44 The village of Boxford and hamlets of Stone Street, Calais Street and Whitestreet Green lie to the north of this section. Views south from Boxford and Stone Street are restricted by intervening landform and vegetation. Calais Street is on higher ground. There are some houses at the southern and western edge of Whitestreet Green, which are on higher ground overlooking the valley. The village of Polstead lies approximately 750m to the south-east of the project. Views to the north-west from Polstead are restricted by intervening landform. Views northward toward the Box Valley from the village of Stoke-by-Nayland (approximately 2km south of the Order Limits) are limited by a combination of distance and intervening vegetation. There are other potential individual residential visual receptors in the Box Valley and tributary valley.

6.5.45 Community areas within Section E: Dedham Vale AONB relevant to the assessment and included in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**) are Boxford, Polstead and Stoke-by-Nayland.

Section F: Leavenheath/Assington

6.5.46 This section is characterised by blocks and belts of woodland, some of which are substantial, and which assist in limiting some views of the existing 400kV overhead line, although long views across the plateau are possible from a number of locations. As well as the existing 400kV and 132kV overhead lines in the landscape, in the western part of the area, close to the eastern edge of the Stour Valley, and approximately 0.6km north of the existing 400kV overhead line, Assington Masts form prominent landmarks in the surrounding landscape.

6.5.47 A number of PRoW cross this landscape and there are existing views of the existing overhead lines along at least part of these routes. There are no long distance footpaths, national or regional cycle routes in this immediate area. However, there are views of the existing 400kV overhead line from the Stour Valley Path long distance walking route, which is approximately 2km to the south in the eastern part of the area and the St Edmund Way long distance walking route, which is approximately 2km to the south in the western part of the area.

6.5.48 The village of Leavenheath, which comprises separate northern and southern parts of the settlement, is in the eastern part of this section. The northern settlement is at the junction between the A134 and B1068. Houses here are approximately 0.2km from the existing 400kV overhead line and would be close to the project. The southern settlement at Leavenheath is on the western side of the A134, approximately 1km to the south of the existing 400kV overhead line. Houses along the northern edge of the village have views of the existing 400kV overhead line, obscured in places by vegetation along field boundaries and intervening woodland.

6.5.49 Further west and to the north of the existing overhead lines is the village of Assington. This village forms a linear settlement along a minor road (The Street) orientated in a north south direction. Houses at the southern edge of the village are approximately 0.2km from the existing overhead lines. There are a number of other potential residential visual receptors at farmsteads in the area, and at individual houses and groups of houses along the A134, B1068 and minor road network.

6.5.50 To the south-west of the B1068 and south of Boxford Fruit Farm is the Stoke by Nayland hotel and golf club. Although views from the hotel toward the existing overhead lines are restricted by tall and dense screen planting, there are some glimpsed views of the existing 400kV overhead line from the golf course.

6.5.51 Approximately 3km south-east of this section, is the village of Stoke by Nayland on high ground in the AONB. There are existing views of the 400kV overhead line on the interfluve between the River Box and River Stour valleys from the edge of the village.

6.5.52 Community areas within Section F: Leavenheath/Assington relevant to the assessment and included in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**) are Assington, Leavenheath and Nayland with Wissington.

Section G: Stour Valley

6.5.53 The eastern part of this section comprises a relatively large scale flat valley floor with pronounced valley sides, which on the outer reaches interface with a much wider plateau landscapes. Woodland in this edge plateau landscape is often visually prominent in views across the valley providing a well wooded skyline.

6.5.54 The western part of Section G: Stour Valley, around Alphamstone is heavily influenced by tributary valleys of the Stour and a patchwork of woodland and tree cover often screen and filter views which are often also foreshortened in many places by topography. These smaller valleys create a complex topography with some steep slopes, resulting in a small scale incised and intimate landscape in contrast to the more open and expansive valley floor of the River Stour.

6.5.55 The southern residential edge of Sudbury extends southward along the Stour Valley as ribbon development along the B1508 which lies lower down in the valley and is approximately 2km to the north of the existing 400kV overhead line. Views from properties at the edge of the settlement are generally oblique towards the project and filtered by intervening vegetation.

6.5.56 The village of Bures also sits in the valley bottom and is approximately 2km to the south of the existing overhead lines. Views from the community on the northern edge of the village are generally filtered by interviewing vegetation. There are a number of other small villages on the valley sides between Sudbury and Bures including the small hamlet of Little Cornard, which lies in an elevated location to the south-east of Sudbury.

6.5.57 The small village of Workhouse Green is on the eastern valley side and approximately 0.2km to the north of the existing 132kV overhead line. The local community on the eastern edge of the village currently have views of the existing 400kV overhead line on the skyline. Views from the community on the western edge of the village are panoramic cross the Stour Valley.

6.5.58 The village of Lamarsh is on the western edge of the valley bottom, 0.25km to the south of the existing 132kV overhead line. Views currently experienced by people living in this community are typically oblique toward the existing overhead lines to the north and northeast.

6.5.59 The village of Alphamstone is on the western edge of the Stour Valley, approximately 1km to the south of the existing 132kV overhead line. The village of Twinstead is 0.6km to the west of the Order Limits. There are other scattered local community within this section, primarily along roads running along the valley sides, including Henny Road to the west and St Edmunds Hill to the east also Upper Road and at Dorkings Tye on the interfluve to the east of the river valley.

6.5.60 In the Stour Valley, on the eastern side of the river, the B1508 runs southward from Sudbury (approximately 2km to the north of the existing overhead lines) to Bures (approximately 2km to the south of the existing overhead lines). A minor road runs between Sudbury and Bures on the western side of the river. A network of minor lanes crosses the valley sides; many of these are sunken and flanked by tall hedgerow trees.

6.5.61 The Stour Valley Path and St Edmund Way long distance footpaths follow the same route northwards from Bures along the Stour Valley bottom before climbing up along the western valley side and approaching Sudbury from the south-west. These long distance paths cross the project on the western valley side. There are a number of other PRoW in the area and the NCN Route 13 crosses the project north of Lamarsh. On the eastern valley side, users of footpaths typically experience views which contain the top of existing pylons extending above trees. Footpaths crossing the valley often have views along the valley bottom and are filtered by trees and shrubs on the valley sides. Views within the valley in the eastern part of the section are relatively well contained. Existing overhead lines are mostly backclothed by the sloping landform on the valley sides and are more visible on the skyline higher up the slopes.

6.5.62 Community areas within Section G: Stour Valley relevant to the assessment and included in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**) are Alphamstone, Assington, Bures St Mary, Great Henny and Little Henny, Lamarsh and Little Cornard.

Section H: GSP Substation

6.5.63 There are no long distance footpaths, national or regional cycle routes in this immediate area. There are however a number of PRoW in the area, some of which have views towards the gap between Butler's and Waldegrave Woods, particularly from the west. Views towards the proposed GSP substation from public footpaths to the north and south are generally restricted by woodland, although there are some views possible from public footpaths to the south.

6.5.64 The project crosses the A131 which runs in a southerly direction from Sudbury to Halstead and adjoins Butler's Wood and Waldegrave Wood to the east. Unrestricted views of the field between the woods are possible from a short section of the road immediately adjacent. Views towards the proposed GSP substation from other roads in the area are generally limited as minor roads and lanes are characteristically sunken and hedge-lined and the two adjacent woods screen most views. Views of the field between Butler's Wood and Waldegrave Wood tend to be restricted to a localised area. More distant views toward the field are largely screened by the existing woodland, becoming increasingly discernible in longer distance views.

6.5.65 The nearest villages to the proposed GSP substation and associated works are Twinstead, which is over 1.8km to the east, Wickham St Paul, which is approximately 1km to the west, Audley End which is over 2.9km to the west, and Bulmer Tye, which is over 2.9km to the north. Views toward the proposed GSP substation from these locations are limited by intervening hedgerows and mature trees. The hamlet of Twinstead Green is at the south-eastern edge of the study area and there are some existing views toward the proposed GSP substation from the nearest residential properties, however, mature vegetation to garden curtilages limits these views. There are views of the proposed GSP substation from scattered local community within 0.5km of the woods; intervening vegetation again limits existing views.

6.5.66 Community areas within Section H: GSP Substation relevant to the assessment and included in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**) are Bulmer, Gestingthorpe, Great Henny and Little Henny, Pebmarsh, Twinstead and Wickham St Paul.

Future Baseline

6.5.67 The future baseline is related to landscape and visual changes which are considered certain or likely to happen, including consented proposals which are not yet present in the landscape but are expected to be constructed. There are applications for development within the study area, which may affect the landscape character or result in changes to visual amenity and people's views. These are considered within ES Chapter 15: Cumulative Effects Assessment (**application document 6.2.15**). The effects of future proposed developments within the Order Limits that are anticipated to be built prior to construction of the project have also been considered. See Table 3.7 in ES Appendix 15.1: Cumulative Effects Baseline (**application document 6.3.15.1**) for the list of developments.

6.5.68 Ash (*Fraxinus excelsior*) trees within the study area may be affected by ash dieback. This is a disease of ash trees caused by a fungus of Asian origin. The disease causes leaf loss and crown dieback in affected trees and is usually fatal. Mapping by the Department for Environment, Food and Rural Affairs (Defra) and the Forestry Commission confirms the presence of ash dieback in Essex and Suffolk and it has been identified in site surveys undertaken for the project. The future baseline therefore assumes that there would be loss of ash trees in the long term across the study area, but that other tree species would occupy gaps created in the short term, and overall levels of vegetation would remain similar to existing. The arboricultural survey has recorded incidents of ash dieback and the results of this area included in the Arboricultural Impact Assessment (**application document 5.10**).

6.5.69 In contrast to expected loss of ash trees, some beneficial landscape changes are also anticipated. These relate to agri-environment and woodland planting schemes which would continue to enhance the landscape. Within the areas of the study area being managed in accordance with the Dedham Vale AONB and Stour Valley Management Plan (Dedham Vale AONB and Stour Valley Partnership, 2021), new areas of woodland and hedgerows have been planted to restore the landscape fabric and it is anticipated this area would continue to be enhanced.

6.5.70 As previously stated, it is recognised that no landscape is static and that the landscape across the study area is under different pressures and continually changing; albeit over relatively long timeframes. Further to a review of the above, in terms of landscape character, it is considered that the character of the baseline landscape would not significantly change in the future during construction and operation.

6.6 Likely Significant Effects During Construction (Without Mitigation)

Introduction

6.6.1 This section sets out the potential for likely significant effects on landscape and visual receptors during construction. The assessment 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 and the results of the assessment then inform the need for any additional mitigation requirements during construction (see Section 6.8).

6.6.2 As described in ES Chapter 4: Project Description (**application document 6.2.4**), the assessment presented within this chapter is split into the 'main project' and the 'GSP substation. The main project includes the 132kV overhead line removal, proposed overhead line and underground cables (including the CSE compounds). The GSP substation includes works at the substation where this connects into the network and the minor works to the existing overhead lines.

6.6.3 The potential sources of landscape and visual effect during construction include the following:

- Site clearance, tree felling and hedgerow removal - the loss of landscape elements and features such as woodland, trees, scrub and hedgerows within the Order Limits;
- Topsoil stripping, earthworks and excavation, including those associated with construction compounds and site accesses;
- Movement of construction related traffic including delivery and removal of material to and from site, off-site road traffic including workers travelling to and from site;
- Construction and removal of temporary access points (bellmouths) and access routes including temporary bridges and culverts;
- General construction activities and facilities including the movement of large scale construction equipment, construction compounds and temporary buildings required for construction, parking on site and materials stockpiles;
- Temporary scaffolding;
- Temporary hoardings and/or security fencing or signage;
- Temporary pylons and overhead line required for construction; and
- Construction lighting particularly during the winter months and potentially at the trenchless crossings if night working was required.

6.6.4 The following tables summarise the significant effects that have been identified during the assessment. For the full assessment on landscape and visual receptors refer to the following appendices:

- Appendix 6.2: Assessment of Effects on Designated Landscapes (**application document 6.3.6.2**);

- Appendix 6.3: Assessment of Effects on Landscape Character (**application document 6.3.6.3**); and
- Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**).

Main Project

6.6.5 The following table summarises the likely significant effects identified during construction for the main project as defined in ES Chapter 4: Project Description (**application document 6.2.4**). Where judgements refer to a distance from the LoD or to effects on the landscape within the LoD, this is to reflect the impacts of the works within the main construction corridors.

Table 6.1 – Likely Significant Effects During Construction (Without Mitigation)

Receptor	Sensitivity	Summary of Effects	Magnitude of Change	Effect during Construction
Landscape Designations				
Dedham Vale AONB	High	Significant direct and indirect adverse effects on the landscape of the AONB from the large scale of the construction activities associated with the 400kV underground cables. The natural beauty indicators of the AONB – notably scenic quality, relative wildness and relative tranquillity would be adversely affected. Effects would be relatively localised within approximately 1km from the LoD and would be short term, temporary and mainly reversible. It is not considered that the overall integrity of the AONB would be affected.	Large <1km from the LoD Small >1km from the LoD	**Major adverse (significant)** locally within approximately 1km from the LoD
Stour Valley SLA	High	Significant direct and indirect construction effects on the landscape within this SLA are anticipated during construction, mainly due to the large scale of the construction activities associated with the underground cables and Stour Valley East CSE compound. These significant effects would be localised within approximately 1km from the LoD.	Medium-large <1km from the LoD Small >1km from the LoD	**Moderate adverse (significant)** locally within approximately 1km from the LoD
Landscape Character Areas				
LCA 1: Suffolk Rolling Valley Farmlands	High	LCA 1d Box Valley – Effects from the activities required to construct the underground cables. The indirect effects on the landscape resulting from the construction activities would include a loss of scenic quality, and sense of tranquillity/rural isolation. Due to the localised screening by landform and vegetation within the Box Valley, the effects would be limited to those parts of the valley which would be relatively close to the works within the LoD.	Large <1km from the LoD Small >1km from the LoD	**Major adverse (significant)** <1km from LoD
		LCA 1e Stour Valley – Effects from the activities required to construct the underground cables and Stour Valley East CSE compound. The indirect effects on the landscape resulting from the presence of construction activities, in both this LCA (and LCA 7 on the western side of the River Stour), would include a loss of scenic quality, and sense of tranquillity/rural isolation. These effects would be extended by the potential night time lighting associated with overnight working on the trenchless crossings. The openness of the valley sides reduces the amount of tree loss but means that construction activities would be widely visible in views across the valley.	Large <1km from the LoD Small >1km from the LoD	**Major adverse (significant)** <1km from the LoD

Receptor	Sensitivity	Summary of Effects	Magnitude of Change	Effect during Construction
LCA 5: Suffolk Valley Meadowlands	High	LCA 5c River Box – Effects from the activities required to construct the underground cables. The indirect effects on the landscape resulting from the construction activities would include a loss of scenic quality, and sense of tranquillity/rural isolation. Due to the localised screening by landform and vegetation within the Box Valley, the effects would be limited to those parts of the valley which would be relatively close to the works within the LoD.	Large <1km from the LoD Small >1km from the LoD	**Major adverse** (**significant**) <1km from the LoD
		LCA 5d River Stour – Effects from the activities required to construct the underground cables and Stour Valley East CSE compound. The indirect effects on the landscape resulting from the presence of construction activities in this LCA would include a loss of scenic quality, and sense of tranquillity/rural isolation. These effects would be extended by the potential night time lighting associated with overnight working on the trenchless crossings. The openness of the valley sides reduces the amount of tree loss but means that construction activities would be widely visible in views across the valley.	Medium	**Moderate adverse** (**significant**)
LCA 6: Suffolk Ancient Rolling Farmlands	Medium	LCA 6a Polstead – Effects from the activities required to construct the Dedham Vale East CSE compound and the underground cables, would substantially alter the appearance of the landscape between Polstead Heath and Broom Hill. The indirect effects on the landscape resulting from the construction activities would include a loss of scenic quality, and sense of tranquillity/rural isolation. Movement of construction vehicles and plant along the A1071, Rands Road, Stackwood Road, Millward Road, Heath Road, Holt Road, Hadleigh Road, would introduce some visual disturbance outside the main working area.	Large <1km from the LoD Small >1km from the LoD	**Major adverse** (**significant**) <1km from the LoD

Receptor	Sensitivity	Summary of Effects	Magnitude of Change	Effect during Construction
		LCA 6b Leavenheath – Effects from activities required to construct the Dedham Vale West CSE compound and the underground cables, would substantially alter the appearance of the landscape. The indirect effects on the landscape resulting from the construction activities would include a loss of scenic quality, and sense of tranquillity/rural isolation. Movement of construction vehicles and plant along the A134, A1071, B1068, The Street, High Road, and Brick Kiln Lane would introduce some visual disturbance outside the main working area. There would also be indirect effects on the quality of views out from the western edge of the LCA, due to the presence of large scale construction activities associated with the underground cables and Stour Valley East CSE compound in the adjoining LCA 1e. These effects would be intensified by the night time lighting associated with potential overnight working on the trenchless crossings.	Large <1km from the LoD Small >1km from the LoD	**Major adverse** (**significant**) <1km from the LoD
LCA 7: Essex C8 Stour Valley	High	Effects from the activities required to construct the underground cables north of Lamarsh. Indirect effects on the landscape resulting from these construction activities would include a loss of scenic quality, and sense of tranquillity/rural isolation. The openness of the valley floor means that construction activities in the adjacent LCA would also affect views out from LCA 7. Movement of construction vehicles and plant along the Colchester Road, Lower Road, Sandy Hill, Colne Road, Lamarsh Hill, Springer's Hill, Bell Hill, Henny Road, Henny Street, Church Road, Clay Hill, Middleton Road and the A131 would introduce some visual disturbance outside the main working areas.	Large <1km from the LoD Small >1km from the LoD	**Major adverse** (**significant**) <1km from the LoD
Community Areas				
Alphamstone	High	Effects from the activities required to construct the underground cables and Stour Valley West CSE compound.	Medium-large	**Moderate adverse** (**significant**)
Lamarsh	High	Effects from the activities required to construct the underground cables and Stour Valley East CSE compound.	Medium-large	**Moderate adverse** (**significant**)

Receptor	Sensitivity	Summary of Effects	Magnitude of Change	Effect during Construction
Leavenheath	High	Effects from the activities required to construct the underground cables and Dedham Vale West CSE compound.	Medium-large	**Moderate adverse** (**significant**)
Polstead	High	Effects from the activities required to construct the underground cables and Dedham Vale East CSE compound.	Medium	**Moderate adverse** (**significant**)
Key Recreational Receptors				
No significant effects have been identified for key recreational receptors during construction as shown in the viewpoint assessment presented in ES Appendix 6.4: Viewpoint Assessment (**application document 6.3.6.4.1** to **6.3.6.4.7**) and the assessment of effects on communities presented in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**). Although it is acknowledged that receptors 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, 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.				

GSP Substation

6.6.6 Table 6.2 summarises the likely significant effects identified during construction of the GSP substation and associated works.

Table 6.2 – Likely Significant Effects During Construction (Without Mitigation) (GSP Substation)

Receptor	Summary of Effects
Landscape Designations	No significant effects have been identified for landscape designations during construction of the GSP substation.
Landscape Character Areas	No significant effects have been identified for the wider LCA, including LCA 8: Essex B3 Blackwater and Stour Farmlands within which the GSP substation is located. Effects from the activities required to construct the GSP substation would alter the appearance of the rural farmland. However, as discussed in ES Appendix 6.3: Assessment of Effects on Landscape Character (**application document 6.3.6.3**) this would be concentrated in a very small area within LCA 8: Essex B3 Blackwater and Stour Farmlands between and immediately to the west of Butler's Wood and Waldegrave Wood. The presence of the woodland would partially screen the works and limit effects on the character of the wider LCA.
Community Areas	No significant effects have been identified for community areas during construction of the GSP substation. The effects would be very localised and benefit from the screening afforded by Butler's Wood and Waldegrave Woods which limit the effects on the wider landscape and views.

Summary of Construction Effects

6.6.7 Construction activities would take place in a predominantly farmed landscape where mechanical operations are frequently associated with agricultural activities. Construction operations are generally considered to be temporary effects, but they may introduce activities which are not typical of the farmed landscape, including high level construction work, the creation of access roads and the movement of materials. Other construction effects may result from the need for working areas, soil stripping and materials storage. Additional activities which may give rise to temporary effects include the erection of scaffolding over rural roads and the use of a temporary pylons to divert existing lines whilst construction work is undertaken.

6.6.8 Construction effects would generally be temporary and short term and the effects localised. Some short term landscape and visual effects of significance are likely during construction due to the working areas required to construct underground cables; however, these are anticipated to reduce in the medium to long term (year 15) once construction is complete and replacement planting matures. Significant adverse effects on views of the overhead line construction are less likely due to the temporary nature of the construction works; together with the fact that not all of the work would take place at the same time.

6.6.9 There is however potential for some short term landscape and visual effects of significance within Dedham Vale AONB and its setting, LCA 1, 5, 6, and 7 due to the construction of underground cables which would involve site clearance and construction work within the landscape. These effects would likely reduce in the medium to long term (year 15).

6.7 Likely Significant Effects During Operation (Without Mitigation)

Introduction

6.7.1 This section sets out the likely significant effects of the project on landscape and visual receptors during operation. It assumes that the relevant embedded measures are in place before assessing the effects, and the results of the assessment then inform the need for any additional mitigation during operation (see Section 6.9).

6.7.2 The potential sources of landscape and visual effect during operation include the following:

- The removal of the existing 132kV overhead line and a section of the existing 400kV overhead line from the landscape;
- The introduction of the overhead/above ground components of the project (proposed 400kV overhead line, CSE compounds, ground link pillars, GSP substation and associated infrastructure and permanent access routes) into the landscape;
- Maintenance of trees and vegetation within the operational corridor; and
- Effects of embedded measures and good practice measures, particularly replacement planting.

6.7.3 As described in ES Chapter 4: Project Description (**application document 6.2.4**), the assessment presented within this chapter is split into the 'main project' and the 'GSP substation. The main project includes the 132kV overhead line removal, proposed overhead line and underground cables (including the CSE compounds). The GSP substation includes works at the substation where this connects into the network and the minor works to the existing overhead lines.

Main Project

6.7.4 Table 6.3 summarises the likely significant effects identified during operation. The effects at year 1 and year 15 are fully described in the appendices. This table focuses on the long term effects at year 15 after embedded measures such as replacement planting have matured. Where judgments refer to a distance from the LoD or to effects on the landscape within the LoD, this is to reflect the impacts of the works within the main operational corridor.

Table 6.3 – Likely Significant Effects During Operation (Without Mitigation)

Receptor	Sensitivity	Summary of Effects	Magnitude of Change	Effect during Operation
Landscape Designations				
Dedham Vale AONB (including setting)	High	By year 15, the replacement planting and natural regeneration would be returning the landscape within the LoD to its current character and the benefits of removing the existing 132kV overhead line and a section of the 400kV overhead line in association with the underground cables would be apparent. These effects are anticipated to be significant within 1km reducing to not significant for the AONB as a whole. The reduction in the presence of high voltage electricity infrastructure within the northern part of the AONB and specifically within the valley of the River Box and wider landscape setting of Polstead Hall would enhance the overall landscape within the AONB (including its setting) and contribute positively to its natural beauty indicators.	Medium-small <1km from the LoD Small >1km from the LoD	**Moderate beneficial (significant)** locally within approximately 1km from the LoD
Landscape Character Areas				
LCA 2: Suffolk Ancient Plateau Claylands – LCA 2b Hintlesham	Medium	The introduction of a new section of 400kV overhead line to the north-west of Ramsey Wood, would extend the influence of high voltage electricity infrastructure within a greater geographical extent of LCA 2b, affecting the character of views and overall scenic quality. The pylons would be very noticeable when seen at close range and from elevated areas of LCA 2b such west of Elmsett from which longer distance views are afforded.	Medium-small <1km from the LoD Small >1km from the LoD	**Moderate adverse (significant)** <1km from the LoD
LCA 5: Suffolk Valley Meadowlands	High	LCA 5c – The removal of the existing 132kV overhead line in association with the 400kV underground cables, would result in a reduction in the extent and influence of high voltage electricity infrastructure on a part of the LCA which lies completely within the AONB, and have a beneficial effect on the small scale wooded valley of the River Box and the wider parkland landscape of Polstead Park	Medium <1km from the LoD Small >1km from the LoD	**Moderate beneficial (significant)** <1km from the LoD

Receptor	Sensitivity	Summary of Effects	Magnitude of Change	Effect during Operation
		LCA 5d – The removal of the existing 132kV overhead line would have a beneficial effect on views and the scenic quality of the landscape. Once the planting around the Stour Valley East CSE compound is mature it would both screen the infrastructure and integrate it into the wider landscape.	Medium	**Moderate beneficial (significant)**
LCA 7: Essex C8 Stour Valley	High	The removal of the existing 132kV overhead line and sections of 400kV overhead line in association with the underground cables, would result in a reduction in the extent and influence of high voltage electricity infrastructure on a part of the LCA which lies completely within the SVPA.	Medium <1km from the LoD Medium-small >1km from the LoD	**Moderate beneficial (significant)** <1km from the LoD
Community Areas				
Burstall	Medium-high	Effects from the proposed 400kV overhead line which would be located in the open farmland and be prominent on the skyline. The effect would be experienced across a wide geographical area.	Medium	**Moderate adverse (significant)**
Chattisham	Medium-high	Effects from removal of the 132kV overhead line.	Medium	**Moderate beneficial (significant)**
Hintlesham	High	Effects predominantly from the new section of 400kV overhead line to the north of Ramsey Wood, although these effects would be localised within the community area.	Medium	Localised **moderate adverse (significant)**
Lamarsh	High	Effects from removal of the 132kV overhead line.	Medium	**Moderate beneficial (significant)**
Polstead	High	Effects from removal of the 132kV overhead line.	Medium	**Moderate beneficial (significant)**

Receptor	Sensitivity	Summary of Effects	Magnitude of Change	Effect during Operation
Key Recreational Receptors				
No significant effects have been identified for key recreational receptors during operation. Although it is acknowledged that receptors 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 of the project, these transient views tend to be glimpsed through vegetation even when in close proximity and therefore effects would not be significant.				

GSP Substation

6.7.5 Table 6.4 summarises the likely significant effects identified during operation of the GSP substation. This table focuses on the longer term effects at year 15 after embedded measures such as replacement planting have matured.

Table 6.4 – Likely Significant Effects During Operation (Without Mitigation) (GSP Substation)

Receptor	Effect during Operation
Landscape Designations	No significant effects have been identified for landscape designations during operation of the GSP substation.
Landscape Character Areas	No long term significant effects have been identified for the LCA during operation of the GSP substation. Embedded planting proposed for the GSP substation included planting and mounding the screening afforded by Butler's Wood and Waldegrave Woods limits the effects on the wider landscape and views.
Community Areas	No significant effects have been identified for community areas during operation of the GSP substation. The effects would be very localised and benefit from the screening afforded by Butler's Wood and Waldegrave Woods which limit the effects on the wider landscape and views.
Key Recreational Receptors	No significant effects have been identified for key recreational receptors during operation of the GSP substation.

Summary of Operational Effects

6.7.6 Whilst the removal of the existing 132kV overhead line and introduction of the larger-scale proposed 400kV overhead line broadly in its place would be likely to intensify the visual effects in relation to the baseline, effects are unlikely to be significant unless close to the project, since overhead lines are already components in baseline views. The exception to this would be in Section AB: Bramford Substation/Hintlesham, where the proposed 400kV overhead line moves away from the existing 132kV overhead line alignment, and significant effects within the community areas of Burstall and Hintlesham have been identified.

6.7.7 The proposed CSE compounds, GSP substation, elements relating to the underground cable (including the link pillar and joint bays) and other above ground elements of the project are unlikely to result in long term significant visual effects during operation (year 15). This is because embedded design and good practice measures would limit their wider visibility. Although some vegetation may be able to be replanted in situ, there would be an ongoing need for the maintenance of trees and vegetation around the permanent features (beyond year 15), for example maintenance of vegetation underneath overhead lines to maintain safety clearances.

6.7.8 Overall landscape effects are likely to be not significant in the long term. Significant beneficial landscape effects are likely to occur where the existing 132kV and 400kV overhead lines are removed, for example within Dedham Vale AONB and the Stour Valley within LCA 5 and LCA 7.

6.7.9 Significant visual effects occur where community and recreational receptors are moving within and around areas close to the overhead line elements of the project and the project is visible from a wider geographic area. This occurs within the community areas of Burstall and Hintlesham. Changes to views as a result of the project are likely to diminish (and become not significant) with increased distance from the project, and where there is screening from intervening vegetation and/or landform.

6.7.10 Significant beneficial visual effects are likely to occur where the existing 132kV and 400kV overhead lines are removed, for example within the community areas of Chattisham, Lamarsh and Polstead.

6.7.11 No long term significant landscape and visual effects have been identified for the GSP substation. The embedded measures include low mounds to the west of the A131 and to the west of the proposed GSP substation. These would be planted to help filter views of the GSP substation from the A131 and from Wickham St Paul, and would help mitigate any landscape and visual effects.

6.8 Proposed Mitigation During Construction

6.8.1 No additional mitigation is proposed for landscape and visual receptors during construction in additional to the good practice measures set out within the CoCP (**application document 7.5.1**). Although significant effects have been identified, it is not possible to mitigate these through landscape mitigation measures, predominantly due to the scale of the works for the 400kV underground cable.

6.9 Proposed Mitigation During Operation

Introduction

6.9.1 This section sets out the proposed additional mitigation for the likely significant effects during operation outlined in Section 6.7. The additional mitigation measures are listed in the REAC, which forms Appendix B to the CEMP (**application document 7.5.2**). The CEMP is secured though Requirement 4 of the draft DCO (**application document 3.1**).

Main Project

6.9.2 No additional mitigation measures are proposed for landscape designations over those embedded into the design of the project. For example, the removal of 132kV overhead line, proposed 400kV underground cabling and replacement planting within Dedham Vale AONB are embedded measures and mean that no likely significant effects have been identified for SLA during operation and therefore no additional mitigation is proposed.

6.9.3 No likely significant effects have been identified for LCA during operation. Therefore, no additional mitigation is proposed for LCA.

6.9.4 No additional mitigation measures are proposed for community areas generally. Only Burstall and Hintlesham have been identified as having likely significant adverse effects. These effects are from the proposed 400kV overhead line and cannot be mitigated due to the pylon heights. However, there are a number of receptors within these community areas, where additional mitigation planting is proposed to help reduce the significant effects as listed below and referenced in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**).

- Burstall – Mitigation planting including woodland and scrub planting is proposed adjacent to Bramford Substation (MM01) to help filter views from properties on Church Lane; and
- Hintlesham – New hedgerow planting (MM06) is proposed to help filter views for properties along the A1071.

GSP Substation

6.9.5 No likely significant effects have been identified to landscape receptors during operation from the GSP substation. Therefore, no additional mitigation is proposed.

6.10 Residual Significant Effects (With Mitigation)

6.10.1 It is acknowledged that there would be some significant effects during construction as described in Table 6.1, however, effects relating to construction activity would be short term and temporary, and effects relating to loss of vegetation would largely be of medium term duration whilst reinstatement planting becomes established, reducing over time to non-significant effects at year 15.

6.10.2 Table 6.5 therefore summarises the significant effects, proposed additional mitigation and residual landscape and visual effects in year 15 when reinstatement planting would be established. There would be no residual significant effects from the GSP substation, therefore this table relates only to the main project.

Table 6.5 – Summary of Likely Significant Effects

Aspect/Proposed Matter	Likely Significant Effect (Without Additional Mitigation)	Proposed Additional Mitigation	Residual Significant Effect (With Additional Mitigation)
Operation			
Dedham Vale AONB	Long term **moderate beneficial (significant)** locally within approximately 1km	None proposed, significant effect is beneficial.	Long term **moderate beneficial (significant)** locally within approximately 1km
LCA 2: Suffolk Ancient Plateau Claylands – LCA 2b Hintlesham	Long term **moderate adverse (significant)** locally within approximately 1km	None proposed, effects from the introduction of the proposed 400kV overhead line to the north of Ramsey Wood cannot be mitigated.	Long term **moderate adverse (significant)** locally within approximately 1km
LCA 5: Suffolk Valley Meadowlands – LCA 5c River Box	Long term **moderate beneficial (significant)** locally within approximately 1km	None proposed, significant effect is beneficial.	Long term **moderate beneficial (significant)** locally within approximately 1km
LCA 5: Suffolk Valley Meadowlands – LCA 5d River Stour	Long term **moderate beneficial (significant)**	None proposed, significant effect is beneficial.	Long term **moderate beneficial (significant)**

Aspect/Proposed Matter	Likely Significant Effect (Without Additional Mitigation)	Proposed Additional Mitigation	Residual Significant Effect (With Additional Mitigation)
LCA 7: Essex C8 Stour Valley	Long term **moderate beneficial (significant)** locally within approximately 1km	None proposed, significant effect is beneficial.	Long term **moderate beneficial (significant)** locally within approximately 1km
Burstall	Long term **moderate adverse (significant)**	Effects from the introduction of the 400kV overhead line on elevated ground within Burstall cannot be mitigated. However, proposed woodland and scrub planting at Bramford Substation (MM01) would benefit properties on Church Lane by filtering views of the substation (EIA_LV01).	Long term **moderate adverse (significant)**
Chattisham	Long term **moderate beneficial (significant)**	None proposed, significant effect is beneficial.	Long term **moderate beneficial (significant)**
Hintlesham	Long term **moderate adverse (significant)**	Effects from the introduction of the 400kV overhead line within Hintlesham cannot be mitigated. However, proposed hedgerow planting (MM06) would benefit properties along the A1071 by filtering views of the new 400kV overhead line (EIA_LV02).	Long term **moderate adverse (significant)**
Lamarsh	Long term **moderate beneficial (significant)**	None proposed, significant effect is beneficial.	Long term **moderate beneficial (significant)**
Polstead	Long term **moderate beneficial (significant)**	None proposed, significant effect is beneficial.	Long term **moderate beneficial (significant)**

6.11 Sensitivity Testing

Introduction

6.11.1 This section outlines alternative approaches to the baseline assessment presented in Sections 6.6 to 6.10. 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

6.11.2 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. Sensitivity testing considering the alternative scenario, which has a later start date due to the GSP substation being delivered pursuant to the Development Consent Order, has shown that there would be no new or different likely significant effects to those identified in the baseline construction schedule assessed in Sections 6.6 to 6.10 of this chapter as a change in dates would make no difference to the appearance of the construction works.

Flexibility in Design

Flexibility in Trenchless Crossings

6.11.3 The assessment has assumed trenchless crossings at the River Box, River Stour, Sudbury Branch Railway Line and south of Ansell's Grove. Changes that could result from an alternative construction method or from a change to drill direction, would not result in any new or different significant effects to those identified in Sections 6.6 to 6.10 of this chapter, as these would make no difference to the appearance of the construction works.

Flexibility in Construction Method

6.11.4 The assessment has considered the possible effects of locating temporary access routes and working areas anywhere else within the Order Limits. In terms of the assessment of landscape and visual effects it is considered that there is no potential for changes that would result in new or different likely significant effects to those identified in Section 6.6 as it is likely vegetation removal would be similar to that of the existing locations and effects would be temporary and vegetation reinstated wherever the temporary access routes or working areas are located.

Flexibility within the Order Limits

6.11.5 The assessment presented within Sections 6.6 to 6.10 has assumed the Proposed Alignment shown on ES Figure 4.1: Proposed 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, for example in relation to the pylon location and height. Table 6.6 lists out the element of flexibility and the assumptions considered in the assessment.

Table 6.6 – Flexibility Assumptions

Element of Flexibility	Assumption for Initial Assessment	Flexibility Assumptions Considered
Lateral LoD for Overhead Line (perpendicular to Proposed Alignment)	As depicted on the Works Plans (**application document 2.5**).	The assessment has considered the possible effects of locating pylons or conductors anywhere within the LoD, typically up to 30m either side of the Proposed Alignment or 30m either side of pylon working area.
Longitudinal LoD for Overhead Line (along the Proposed Alignment)	Unlimited within the Order Limits.	The assessment has considered the possible effects of locating pylons or conductors anywhere within the LoD.
Vertical LoD for pylons (and conductors)	Assessed at the height shown in the Table of Parameters contained within the Works Plans (**application document 2.5**).	The assessment has considered the possible worst case of pylons being 4m above the pylon heights shown in the Table of Parameters contained within the Works Plans (**application document 2.5**).
Pylon footprint	The pylon footprint would have no material difference to the LVIA therefore has not been considered.	The pylon footprint would have no material difference to the LVIA therefore this has not been considered.
Pylon foundation type	The type of foundation used is not considered relevant to the LVIA.	The type of foundation used is not considered relevant to the LVIA.
Lateral LoD for Underground Cables (perpendicular to Proposed Alignment)	As depicted on the Works Plans (**application document 2.5**).	Not applicable as this has already been taken into account for the initial assessment.
CSE compounds and GSP substation	The assessment has been undertaken based on the maximum parameters depicted on Works Plans (**application document 2.5**) where the CSE compound or GSP substation could lie anywhere within the LoD.	Not applicable as this has already been taken into account for the initial assessment.
Vertical LoD for gantries	Assessed at the height shown in the Table of Parameters contained within the Works Plans (**application document 2.5**).	The assessment has considered the possible effects of gantries being 4m above the pylon heights shown in the Table of Parameters contained within the Works Plans (**application document 2.5**).

6.11.6 There are no aspects of flexibility in the reasonable worst case (basis of assessment) that would increase the level of magnitude of any of the effects listed above. The assessment has considered pylon locations anywhere within the LoD and an additional 4m is unlikely to increase the level of effect of a pylon more than 54m in height. The value and susceptibility are constant and would not therefore change. As such, the significance of residual effects would be no different from those outlined in Sections 6.6 to 6.10.

Landscape Softening

6.11.7 Paragraph 2.8.11 in EN-5 (DECC, 2011b) states that there may be more specific measures that could be taken to potentially soften the effect of a new above ground line whilst providing some screening from important visual receptors. As part of this consideration, it is acknowledged that there would be individual properties within community areas which would have effects from the project and could benefit from planting to screen or filter views. However, as these are not associated with significant effects identified in the ES, the landscape softening is not mitigation and the decision to screen or filter a view with planting would be discussed with the relevant properties, who may choose to retain a view without the proposed landscape softening.

6.11.8 Table 6.7 identifies the properties that could benefit from landscape softening and the areas of planting that have been proposed. These are referenced in ES Appendix 6.5: Assessment of Visual Effects on Communities (**application document 6.3.6.5**) but are otherwise not relied on as part of any of the assessment presented within the ES. For completeness, the proposed landscape softening areas are shown on ES Figure 16.1: Embedded Measures and Mitigation Proposals (**application document 6.4**).

Table 6.7 – Proposed Landscape Softening

Receptor/Property	Summary of Effects	Proposed Softening
Section AB: Bramford Substation/Hintlesham		
Orchard Lands, Burstall.	The property has views north-east towards Bramford Substation and would also have overhead lines in views from both sides of the property.	Tree and hedgerow planting to the south of Orchard Lands to help filter views (MM02).
Mill Farm, Hintlesham	The property has views to the north-west towards the existing 400kV overhead line on rising landform. The proposed 400kV overhead line would be closer to the property.	Tree and hedgerow planting along the access to Mill Farm to help filter views (MM03).
Hintlesham Hall, Hintlesham	Grade I listed building with views to the south-west towards Hintlesham Woods. The proposed 400kV overhead line would be closer than the existing.	Tree and hedgerow planting along existing field boundaries to help filter views (MM04).
Bungalow Farm and College Farm Cottages, Hintlesham	Group of properties which includes residential, a café and bed and breakfast business. The proposed 400kV overhead line would be closer to properties.	Tree and hedgerow planting along existing field boundaries to help filter views (MM08).
Rams Farm, Hintlesham	Property has views towards Ramsey Wood which screens the existing 400kV overhead line. The proposed 400kV overhead line would be to the north of Ramsey Wood in close proximity to the property.	Woodland planting along the southern property boundary to help filter views (MM11).
Ramsey Farm, Hadleigh	Property has views south-east towards the existing 400kV overhead line. The proposed 400kV overhead line would be to the west of Ramsey Wood in close proximity to the property.	Woodland planting along the southern property boundary to help filter views (MM12).
Hadleigh Bee Farm, Hadleigh	Property in close proximity to the existing 400kV overhead line which is prominent in views to the south and east. Property would have overhead lines in views from both sides of the property.	Woodland planting along the southern property boundary to help filter views (MM13).
Section C: Brett Valley		
Pipkin Lodge, Layham	Property has views of the existing 400kV overhead line which is prominent to the north and the 132kV overhead line to the south. Property would continue to have overhead lines in views from both sides of the property, with larger 400kV pylons to the south.	Tree and hedgerow planting along the western property boundary to help filter views towards the proposed 400kV overhead line (MM14).

Receptor/Property	Summary of Effects	Proposed Softening
Section D: Polstead		
Properties east of Millward Road, Shelley	Properties with filtered views to the west towards the existing 400kV and 132kV overhead lines. The Dedham Vale East CSE compound would be located to the west of these properties.	New hedgerow planting along the east side of Millward Road (MM16) to help screen views of Dedham Vale East CSE compound.
Section F: Leavenheath/Assington		
Properties to the north of B1068 Stoke Road at Leavenheath	Properties with filtered views to the north towards the existing 400kV and 132kV overhead lines. The proposed 400kV existing line would be slightly closer to the properties. The Dedham Vale West CSE compound would be located to the north-east of these properties.	Tree and hedgerow planting to help filter views towards Dedham Vale West CSE compound and the proposed 400kV overhead line (MM19).
The Street, Assington	Views from The Street which is also the Painters Trail. The proposed 400kV overhead line would be closer to the property than the existing 132kV overhead line.	New hedgerow planting along The Street to provide screening of views from the road (MM20).
Chestnut Grove, Assington	The property has views to the north and east towards the existing 400kV and 132kV overhead line. The proposed 400kV overhead line would be closer to the property than the existing 132kV overhead line.	New hedgerow planting and reinforcement along the eastern property boundary to help filter views (MM21).
Section G: Stour Valley		
Stanton's Farm, Bures St Mary	The property has views to the south towards the existing 400kV and 132kV overhead line. The proposed 400kV overhead line would be prominent in views.	Tree and hedgerow planting to help filter views (MM22), reinforcing the existing vegetation.
Abbots, Alphamstone	Properties to the south-east of Mabb's Corner including Abbot's Farmhouse (Grade II listed). Properties are under the existing 400kV overhead line. The Stour Valley West CSE compound would be located to the north-east.	Tree and hedgerow planting to the north of the properties to help filter views (MM23).

6.12 Conclusion

6.12.1 There would be residual effects on the landscape and views resulting from the project. In the main these would be not significant although there are areas where effects remain significant. A project of this scale and nature can be reasonably predicted to have some residual landscape and visual effects, as is acknowledged in NPS EN-1 (DECC, 2011a).

6.12.2 In terms of construction, activities would take place in a predominantly farmed landscape where mechanical operations are frequently associated with agricultural activities. Some short to medium term significant adverse landscape and visual effects have been identified during construction.

6.12.3 For landscape designations, significant effects have been identified for Dedham Vale AONB and Stour Valley SLA. These effects are from the large scale construction works associated with the 400kV underground cable. These effects would be short term and localised within 1km.

6.12.4 For landscape character, significant effects have been identified within LCA 1d Box Valley, LCA 1e Stour Valley, LCA 5c River Box, LCA 5d River Stour, LCA 6a Polstead, LCA 6b Leavenheath, LCA 7 Essex Stour Valley and LCA 8 Blackwater and Stour Farmlands. The majority of these effects are from the large scale construction works associated with the 400kV underground cable, effects of construction of the CSE compounds and construction of the GSP substation. However, these are anticipated to reduce in the medium term once construction is complete and vegetation is reinstated.

6.12.5 For community areas, a number of short term significant effects from construction have been identified within Alphamstone, Lamarsh, Leavenheath and Polstead. As with the designation and character areas, the greatest visual effects are from the large scale construction activities associated with the 400kV underground cable and from the construction of the CSE compounds.

6.12.6 Significant visual effects occur during operation where community and recreational receptors are moving within and around areas very close to the overhead line elements of the project. Changes to views as a result of the project are likely to diminish (and become not significant) with increased distance from the project, and where there is screening from intervening vegetation and/or landform.

6.12.7 No significant adverse effects have been identified for landscape designations during operation. There would be significant beneficial effects on Dedham Vale AONB from the removal of the 132kV overhead line within the Box Valley. These effects would be more pronounced in close proximity to the project, within 1km.

6.12.8 The only long term significant adverse effect for landscape character has been identified in LCA 2b Hintlesham. Within this LCA, the proposed 400kV overhead line does not follow the alignment of the existing 132kV overhead line and therefore there would be an increase in overhead line infrastructure within the landscape. There would be significant beneficial effects on LCA 5c River Box, LCA5d River Stour and LCA 7 Essex Stour Valley from the removal of the 132kV overhead line within the Box and Stour Valleys and removal of a section of 400kV overhead line. These effects would be more pronounced in close proximity to the project, within 1km.

6.12.9 For community areas, the only long term significant adverse effects would be within Burstall and Hintlesham. These are areas where the proposed 400kV overhead line does not follow the existing 132kV overhead line and therefore there would be an increase in the number of pylons in views. Chattisham, Lamarsh, and Polstead would have long term significant beneficial effects from the removal of pylons within views from these communities.

6.12.10 In accordance with paragraph 5.9.5 of NPS EN-1 an LVIA has been included as part of the ES. In accordance with paragraph 5.9.7 the assessment considers the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. As such, the requirements of the EN-1 are considered to be met.

6.12.11 In addition, and in accordance with paragraph 2.8.11 in EN-5 (DECC, 2011b), landscape softening has also been considered and areas have been identified where planting could benefit specific properties or receptors.

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