FIVE ESTUARIES OFFSHORE WIND FARM

ENVIRONMENTAL STATEMENT

VOLUME 6, PART 3, CHAPTER 2: ONSHORE LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Application Reference	EN010115
Application Document Number	6.3.2
Revision	A
APFP Regulation	5(2)(a)
Date	March 2024

Project	Five Estuaries Offshore Wind Farm
Sub-Project or Package	Environmental Statement
Document Title	Volume 6, Part 3, Chapter 2: Onshore Landscape and Visual Impact Assessment
Application Document Number	6.3.2
Revision	A
APFP Regulation	5(2)(a)
Document Reference	005024210-01

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
A	Mar 2024	ES	OPEN	GoBe	VE OWFL

TABLES

DEFINITION OF ACRONYMS

Term	Definition
AIS	Air Insulated Switchgear
AONB	Area of Outstanding Natural Beauty
CoCP	Code of Construction Practise
DCO	Development Consent Order
DBEIS	Department for Business, Energy and Industrial Strategy
DECC	Department of Energy and Climate Change
DESNZ	Department for Energy, Security and Net Zero
EACN	East Anglia Connection Node
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ES	Environmental Statement
ETG	Expert Topic Group
GIS	Gas Insulated Switchgear (substation technology)
GLVIA	Guidelines for Landscape and Visual Impact Assessment
IPC	Infrastructure Planning Commission
LCA	Landscape Character Area
LCT	Landscape Character Type
LEMP	Landscape and Ecology Management Plan
LVIA	Landscape and Visual Impact Assessment
MDS	Maximum Design Scenario
National Grid	National Grid Electricity Transmission
NF OWF	North Falls Offshore Wind Farm
NLCA	National Landscape Character Area
NPPF	National Planning Policy Framework
NPS	National Policy Statements
NSIP	Nationally Significant Infrastructure Project
OLEMP	Outline Landscape and Ecological Management Plan
OnSS	Onshore Substation
OS	Ordnance Survey
OPEN	Optimised Environments

Term	Definition
PINS	The Planning Inspectorate
PRoW	Public Right of Way
SoS	Secretary of State
TCC	Temporary Construction Compound
TJB	Transition Joint Bay
UKPC18	United Kingdom Climate Projections 2018.
UKPN	UK Power Network
ZTV	Zone of Theoretical Visibility

GLOSSARY OF TERMS

Term	Definition
Development Consent Order	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP) from the Secretary of State (SoS) for the Department for Energy Security and Net Zero (DESNZ).
East Anglia Connection Node (EACN) Substation	The new NGET substation. This will be subject to a separate DCO application submitted by NGET as part of a wider NGET DCO project (Norwich to Tilbury HV network reinforcement).
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact in question with the sensitivity of the receptor in question, in accordance with defined significance criteria.
Export Cable Corridor (ECC)	The area(s) where the export cables will be located. Refer to either the offshore or onshore ECC.
Grid Connection Point	The point at which the ECC connects to the National Grid (i.e. the new National Grid substation).
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial, resulting from the activities associated with the construction, operation and maintenance, or decommissioning of the project.
Landfall	The area where the Export Cables come ashore and transition from the marine environment to the terrestrial environment.
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape effects	Effects on the landscape as a resource in its own right.
Lawford Substation	Existing UKPN Substation located next to the proposed OnSS.
Maximum Design Scenario	The maximum design parameters of the combined project assets that result in the greatest potential for change in relation to each impact assessed.
Mitigation	Mitigation measures, or commitments, are commitments made by the project to reduce and/or eliminate the potential for significant effects to arise as a result of the project.
The Project / VE	Refers to the Five Estuaries Offshore Wind Farm including the offshore and onshore components.
Order Limits	The extent of development including all working area, off route haul roads, TCCs site accesses and visibility splays.

Term	Definition
Trenchless crossing technique	In most instances where a crossing constraint is encountered a trenchless crossing technique, such as HDD (or another trenchless crossing techniques) will be used.
Visual amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating or travelling through an area.
Visual effects	Effects on specific views and on the general visual amenity experienced by people.

2 ONSHORE LANDSCAPE AND VISUAL IMPACT ASSESSMENT

2.1 INTRODUCTION

2.1.1 This chapter of the Environmental Impact Assessment (EIA) presents the Landscape and Visual Impact Assessment (LVIA) for the onshore elements of the proposed Five Estuaries Offshore Wind Farm project, hereafter referred to as VE. The onshore elements of VE assessed in the LVIA are described in Volume 6, Part 3, Chapter 1: Onshore Project Description.

2.1.2 The key onshore elements of VE include the proposed Onshore Substation (OnSS), onshore Export Cable Corridor (onshore ECC) and the landfall (where the offshore export cables will meet the onshore export cables). For the purpose of this chapter, landfall refers to the intertidal area (Mean Low Water to Mean High Water Springs).

2.1.3 The LVIA has been undertaken by Chartered Landscape Architects at Optimised Environments (OPEN), in accordance with the LVIA methodology set out in Sections 2.4 and 2.5.

2.1.4 This chapter has been informed by the following Environmental Statement (ES) chapters:

- Volume 6, Part 3, Chapter 1: Onshore Project Description;
- Volume 6, Part 1, Chapter 3: Environmental Impact Assessment Methodology; and
- Volume 6, Part 1, Chapter 4: Site Selection and Consideration of Alternatives.

2.1.5 This chapter should be read in conjunction with the following ES documents:

- Volume 6, Part 2, Chapter 10: Seascape, Landscape and Visual Impact Assessment (SLVIA);
- Volume 6, Part 3, Chapter 4: Onshore Biodiversity and Nature Conservation; and
- Volume 6, Part 3, Chapter 7: Onshore Archaeology and Cultural Heritage.

2.1.6 The LVIA is supported by plan graphics and visual representations within Volume 6, Part 7, Annex 2.1: LVIA Figures and Volume 6, Part 7, Annex 2.2.1-16: LVIA Visualisations. LVIA figures include Zone of Theoretical Visibility (ZTV) maps; reference photography; outline landscape mitigation and visual representations, including baseline panorama views, wirelines and photomontages.

2.1.7 Compensatory measures are proposed at an onshore location for Lesser Black Backed Gull (LBBG) to compensate for the predicted worst-case impacts of VE on this species in relation to Habitats Regulation Assessment. Further details of the location of these measures and an assessment of the potential impacts are available in Volume 6, Part 8: LBBG EIA.

2.2 STATUTORY AND POLICY CONTEXT

2.2.1 This section includes a summary of national and local policy of particular relevance to landscape and visual amenity that have been taken into account in this chapter. For broader legislation driving the overall ES, please refer to Volume 6, Part 1, Chapter 2: Policy and Legislation.

2.2.2 The National Policy Statements (NPS) are the principal policy for determining Nationally Significant Infrastructure Projects (NSIP). As such, this assessment has made explicit reference to the relevant NPS requirements.

2.2.3 The NPSs provide the main policy tests in relation to VE. In 2023 the NPSs were revised and came into effect in 2024. The recently published NPSs relevant to the landscape and visual aspects of the onshore elements of VE are listed below and have been reviewed in Table 2.1.

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

2.2.4 Reference is also made to the updated National Planning Policy Framework (Department for Levelling Up, Housing and Communities (DLUHC), 2023).

Table 2.1: Legislation and policy context.

Legislation/ Policy	Key Provisions	Section where comment addressed
Overarching National Policy Statement for Energy (NPS EN-1) (DESNZ, 2023)	Paragraph 4.3.11 advises that *'In some instances it may not be possible at the time of the application for development consent for all aspects of the proposal to have been settled in precise detail. Where this is the case, the applicant should explain in its application which elements of the proposal have yet to be finalised, and the reasons why this is the case.'* At paragraph 4.3.12 it is stated that, where this is the case, *'the ES should, to the best of the applicant's knowledge, assess the likely worst-case environmental, social and economic effects of the proposed development to ensure that the impacts of the project as it may be constructed have been properly assessed.'*	Volume 6, Part 3, Chapter 1: Project Description sets out the details of VE and which areas are and are not settled in precise detail. Section 2.8 sets out the maximum design parameters that have been defined to ensure that the worst case landscape and visual effects are assessed. The design of landscape mitigation has been undertaken in Volume 9, Report 22: OLEMP as part of the DCO Application.
NPS EN-1 (DESNZ 2023)	In relation to the topic of '*Criteria for Good Design for Energy Infrastructure'*, Paragraph 4.7.1 advises that '*The visual appearance of a building, structure, or piece of infrastructure, and how it relates to the landscape it sits within, is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes far beyond aesthetic considerations. The functionality of an object - be it a building or other type of infrastructure - including fitness for purpose and sustainability, is equally important.'* Paragraph 4.7.2 advises that *'Applying "good design" to energy projects should produce sustainable infrastructure sensitive to place, including impacts on heritage,*	Volume 6, Part 3, Chapter 1: Onshore Project Description, sets out how VE responds to this criterion. The design of landscape mitigation has been undertaken in Volume 9, Report 22: OLEMP as part of the DCO Application.

Legislation/ Policy	Key Provisions	Section where comment addressed
	efficient in the use of natural resources, including land use, and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible. It is acknowledged, however that the nature of energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area.'	
NPS EN-1 (DESNZ 2023)	At paragraph 4.7.5 the concept of design champions is introduced in the following statement; *'To ensure good design is embedded within the project development, a project board level design champion could be appointed, and a representative design panel used to maximise the value provided by the infrastructure. Design principles should be established from the outset of the project to guide the development from conception to operation.'*	The Applicant considers that there would be merit in appointing a senior member of the Project team as design champion early in the process – ensuring that design options are explored, advice taken, and decisions made to achieve a well-considered and good design.
NPS EN-1 (DESNZ 2023)	In relation to Good Design paragraph 4.7.6 advises that '*Whilst the applicant may not have any or very limited choice in the physical appearance of some energy infrastructure, there may be opportunities for the applicant to demonstrate good design in terms of siting relative to existing landscape character, land form and vegetation. Furthermore, the design and sensitive use of materials in any associated development such as electricity substations will assist in ensuring that such development contributes to the quality of the area. Applicants should also, so far as is possible, seek to embed opportunities for nature inclusive design within the design process.'*	Volume 6, Part 3, Chapter 1: Onshore Project Description, sets out how VE has considered and balanced these criteria. Section 2.9 of this chapter sets out the mitigation that is included for VE and provision for biodiversity and ecological networks is outlined in Volume 9, Report 22, OLEMP.
NPS EN-1 (DESNZ 2023)	Paragraph 4.7.7 sets out that the applicants must demonstrate how the design process was conducted and how the design evolved and design decisions were made. This is in order for the SoS to consider the application. In doing so the SoS, as stated at Paragraph 4.7.12 '*should take into account the ultimate purpose of the infrastructure and bear in mind the operational, safety and security requirements which the design has to satisfy. Many of the wider impacts of a development, such as landscape and environmental impacts, will be important factors in the design process.'*	The evolution of the design is set out Volume 6, Part 1, Chapter 4: Site Selection and Consideration of Alternatives, and Volume 6, Part 3, Chapter 1: Onshore Project Description. How the design has evolved in relation to landscape impacts is included in Section 2.9 of this Chapter. The duration of LVIA effects is explained in Section 2.5.

Legislation/ Policy	Key Provisions	Section where comment addressed
	At Paragraph 4.7.13, it is also noted that *'Assessment of impacts must be for the stated design life of the scheme rather than a shorter time period.'*	
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.1 notes that landscape and visual effects will vary according to '*the type of development, its location and the landscape setting of the proposed development'* and that '*references to landscape should be taken as covering seascape and townscape where appropriate.'*	The varied nature of landscape and visual effects is explained in Section 2.7. The visual effects resulting from the offshore elements are assessed in Volume 6, Part 2, Chapter 10: SLVIA.
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.6 advises that *'Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints, the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate.'*	Volume 6, Part 1, Chapter 4: Site Selection and Consideration of Alternatives sets out the iterative process that has influenced the design of VE. The mitigation of landscape effects set out in Section 2.9 has been considered in the LVIA, to minimise "*harm to the landscape*" where possible.
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.12 advises – *'Outside nationally designated areas, there are local landscapes that may be highly valued locally. Where a local development document in England or a local development plan in Wales has policies based on landscape or waterscape character assessment, these should be paid particular attention. However, locally valued landscapes should not be used in themselves to refuse consent, as this may unduly restrict acceptable development.*'	The value of the local landscape is a consideration within the LVIA, as set out in Sections 2.11 and 2.14.
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.15 states '*Coastal areas are particularly vulnerable to visual intrusion because of the potential high visibility of development on the foreshore, on the skyline and affecting views along stretches of undeveloped coast.'*	The visual effects resulting from the onshore elements of VE during construction and operation are assessed in the LVIA in Section 2.12. Volume 6, Part 1, Chapter 10: SLVIA assesses the seascape, landscape and visual effects of the offshore components of VE.
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.16 sets out the need to carry out a landscape and visual impact assessment, including a cumulative assessment in accordance with published guides. Relevant	Reference documents and guidance, relevant to the LVIA, are set out in Section

Legislation/ Policy	Key Provisions	Section where comment addressed
	guides are listed as The Landscape Institute and Institute of Environmental Management and Assessment: Guidelines for Landscape and Visual Impact Assessment (2013, 3rd edition); Landscape and Seascape Character Assessments – https://www.gov.uk/guidance/landscape-and-seascape-character-assessments.	2.2. The cumulative section is presented in section 2.14.
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.17 goes on to say that *'The landscape and visual assessment should include reference to any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the proposed project. The applicant's assessment should also take account of any relevant policies based on these assessments in local development documents in England and local development plans in Wales'*.	Published landscape character assessments and associated studies for the study area are referred to in Sections 2.7 and 2.11 of this chapter.
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.19 states that '*The applicant should consider landscape and visual matters in the early stages of siting and design, where site choices and design principles are being established. This will allow the applicant to demonstrate in the ES how both negative effects have been minimised and opportunities for creating positive benefits or enhancement have been recognised and incorporated into the design, delivery and operation of the scheme.'*	The balance between mitigation of visual and landscape effects and significant operational constraint/ reduction in function is considered in Volume 6, Part 1, Chapter 4: Site Selection and Consideration of Alternatives. VE's approach to good design is set out in Volume 9, Report 4: Onshore Substation Design Principles Document.
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.20 advises '*The assessment should include the effects on landscape components and character during construction and operation'* while paragraph 5.10.21 advises '*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 landscape and visual effects resulting from the onshore elements of VE during construction and operation are assessed in Section 2.11 and Section 2.12 respectively.
NPS EN-1 (DESNZ 2023)	At paragraph 5.10.22 the document states that '*The assessment should also address the landscape and visual effects of noise and light pollution, and other emissions, from construction and operational activities on residential amenity and on sensitive locations, receptors and views, how these will be minimised.*''	The mitigation of landscape and visual effects through good design are considered within the LVIA at Section 2.9.

Legislation/ Policy	Key Provisions	Section where comment addressed
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.24 introduces the potential for landscape management plans to be considered as they may help to enhance environmental assets.	Volume 9. Report 22: OLEMP describes measures to be employed during construction and restoration. It also provides longer term landscape and habitat management of the land surrounding the OnSS.
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.26 advises that '*Reducing the scale of a project can help to mitigate the visual and landscape effects of a proposed project. However, reducing the scale or otherwise amending the design of a proposed energy infrastructure project may result in a significant operational constraint and reduction in function for example, the electricity generation output. There may, however, be exceptional circumstances, where mitigation could have a significant benefit and warrant a small reduction in function. In these circumstances, the Secretary of State may decide that the benefits of the mitigation to reduce the landscape and/or visual effects outweigh the marginal loss of function*'.	The balance between mitigation of visual and landscape effects and significant operational constraint/ reduction in function is considered in Volume 6, Part 1, Chapter 4: Site Selection and Consideration of Alternatives. VE's approach to good design is set out in Volume 9, Report 4: Onshore Substation Design Principles Document.
NPS EN-1 (DESNZ 2023)	Paragraph 5.10.27 advises – '*Adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within its development site and wider setting. The careful consideration of colours and materials will support the delivery of a well-designed scheme, as will sympathetic landscaping and management of its immediate surroundings.'*	As described in Volume 6, Part 3, Chapter 1: Onshore Project Description, the refinement of the OnSS and onshore ECC has been carefully considered alongside the potential for landscape and visual effects and mitigation, as set out in Section 2.9.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (DESNZ, 2023)	Paragraph 2.5.2 advises – 'Proposals for renewable energy infrastructure should demonstrate good design, particularly in respect of landscape and visual amenity, opportunities for co-existence / co-location with other marine and terrestrial uses, and in the design of the project to mitigate impacts such as noise and effects on ecology and heritage.'	The mitigation of landscape and visual effects through good design are considered within the LVIA, as set out in Section 2.9.
NPS EN-3 (DESNZ 2023)	Paragraph 2.8.64 highlights the complex nature of offshore windfarm development. It is recognised that the details of a proposed scheme, including the location and configuration of turbines and associated development, the	Section 2.8 sets out the maximum design parameters that have been defined to ensure that the worst case

Legislation/ Policy	Key Provisions	Section where comment addressed
	exact turbine dimensions, the precise cable type and route and the exact locations of the offshore and onshore substations, may not be known at the time of the application to the SoS.	landscape and visual effects are assessed.
NPS EN-3 (DESNZ 2023)	Paragraph 2.8.200 advises – *'As part of the SLVIA, photomontages will be required. Viewpoints to be used for the SLVIA should be selected in consultation with the statutory consultees at the EIA Scoping stage.'*	Viewpoints were agreed in consultation with statutory consultees as described in Table 2.2.
National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (DESNZ, 2023)	Paragraph 2.9.9 of Draft NPS EN-5 advises – *'New substations, sealing end compounds (including terminal towers), and other above-ground installations that serve as connection, switching, and voltage transformation points on the electricity network may also give rise to adverse landscape and visual impacts.'*	The proposed onshore ECC is to be underground. The LVIA has assessed the effects of the underground onshore ECC and OnSS in Sections 2.10, 2.11 and 2.12.
NPS EN-5 (DESNZ 2023)	Paragraph 2.9.10 of Draft NPS EN-5 advises – *'Cumulative adverse landscape, seascape and visual impacts may arise where new overhead lines are required along with other related developments such as substations, windfarms, and/or other new sources of generation.'*	Cumulative landscape and visual effects of the onshore infrastructure are considered in Section 2.14.
NPS EN-5 (DESNZ 2023)	Paragraph 2.9.11 of Draft NPS EN-5 advises – *'Landscape and visual benefits may arise through the reconfiguration, rationalisation, or undergrounding of existing electricity network infrastructure. 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 overhead lines.'* Paragraph 2.9.12 of Draft NPS EN-5 advises – *'However, in nationally designated landscapes (for instance, National Parks, The Broads and Areas of Outstanding Natural Beauty) even residual impacts may well make an overhead line proposal unacceptable in planning terms.'*	The proposed onshore ECC is to be underground. The LVIA has assessed the effects of the underground onshore ECC and OnSS in Sections 2.10, 2.11 and 2.12. Section 2.9 of this chapter sets out the mitigation that is included for VE and Section 2.12 assesses visual impacts.
NPS EN-5 (DESNZ 2023)	Paragraph 2.9.18 states *'The Horlock Rules – guidelines for the design and siting of substations – were established by National Grid in 2009 in pursuance of its duties under Schedule 9 to the Electricity Act 1989. These principles should be embodied in applicants'*	How the The Horlock Rules have been considered as part of the site selection process is set out in Volume 6, Part 1, Chapter 4: Site Selection and Alternatives.

Legislation/ Policy	Key Provisions	Section where comment addressed
	proposals for the infrastructure associated with new overhead lines.'	
National Planning Policy Framework (NPPF) (DLUHC 2023)	Paragraph 180 of NPPF advises: *'Planning policies and decisions should contribute to and enhance the natural and local environment by:* *a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);* *b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;* *c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;* *d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;'*	The mitigation of landscape and visual effects through good design are considered within the LVIA, as set out at Section 2.9. Provision for biodiversity and ecological networks is presented in Volume 9, Report 22: OLEMP.
NPPF (DLUHC 2023)	Paragraph 181 of NPPF advises 'Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.'	The LVIA considers effects on landscape character including landscape designations. Effects on landscape character and landscape designations are assessed in Section 2.11 of this chapter.
NPPF (DLUHC 2023)	Paragraph 182 of NPPF advises *'Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads. The scale and extent of development*	The LVIA includes consideration of effects on landscape character including landscape designations. Effects on landscape character and landscape designations are assessed in Section 2.11 of this chapter.

Legislation/ Policy	Key Provisions	Section where comment addressed
	within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas."	

2.3 CONSULTATION

2.3.1 Consultation and scoping with stakeholders have helped to facilitate proportionate and efficient assessment in the LVIA, by identifying potentially key significant issues and effects. Table 2.2 provides a summary of the principal issues from the Planning Inspectorate (PINS) scoping opinion, Section 42 responses and further consultation with stakeholders relating to the Evidence Plan. It also describes how issues raised by consultees have been addressed in the LVIA.

2.3.2 Given the changes in the project design between PEIR and ES, some areas of land will be affected differently by the proposals than consulted on at PEIR. Changes were made following feedback from the PEIR consultation, increased understanding of the local environment from dedicated surveys and coordination work with the North Falls project. To comply with the requirements of the Planning Act 2008, a targeted consultation was held with those affected by the changes from 5 December 2023 to Wednesday 31 January 2024.

Table 2.2: Summary of consultation relating to LVIA

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
November 2021 PINS on behalf of SoS Scoping Opinion	Landscape and visual effect resulting from construction traffic. *"The Inspectorate agrees that this matter may be scoped out from the assessment due to the short term and localised nature of the effects during the construction period."*	Noted - an assessment of the effects resulting from construction traffic not required as scoped out.
November 2021 PINS on behalf of SoS Scoping Opinion	Effects on landscape and visual receptors resulting from the cable infrastructure during the operational phase. *"The Scoping Report seeks to scope this matter out on the grounds that the significant effects will occur during construction and would decrease in significance following land restoration. At this stage, the precise route of the onshore cable corridor has not been finalised. As such, it is considered that the potential effects such as vegetation removal and change in appearance of land in the onshore cable corridor are not yet known. It is also unknown how effective restoration proposals are likely to be. In the absence of information such as evidence demonstrating clear agreement with relevant statutory bodies, the Inspectorate is not in a position to agree to scope this matter from the assessment. Accordingly, the ES should include an assessment of these matters or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of an LSE."*	The physical effects resulting from the restoration of land and the establishment of vegetation associated with the construction of the onshore ECC are referenced in Section 2.4.6 and assessed in Section 2.10. Volume 9, Report 22, OLEMP presents an outline of the landscape restoration and management that will be implemented where vegetation removals occur.
November 2021 PINS on behalf of SoS Scoping Opinion	Effects on landscape and visual receptors resulting from maintenance activities at the OnSS for the Proposed Development. *"On the basis that maintenance activities at the onshore substation will be infrequent and short in duration, the*	Noted - an assessment of the effects resulting from maintenance activities at the OnSS not required as scoped out.

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	Inspectorate agrees this matter may be scoped out of the landscape assessment."	
November 2021 PINS on behalf of SoS Scoping Opinion	Night time landscape and visual effect during operation. *"The Scoping Report states that there may be some limited permanent lighting at the onshore substation or lighting associated with temporary construction or maintenance activities. However, these are not expected to lead to significant effects. The Inspectorate considers that as the location and design of the onshore infrastructure has not yet been ascertained, the potential effects on the night time landscape cannot be fully understood. Accordingly, the ES should include an assessment of this matter or information demonstrating agreement with the relevant consultation bodies and the absence of an LSE. The ES should also include an assessment of cumulative effects with nearby infrastructure."*	The effects of permanent and temporary light sources at the OnSS are considered and assessed where relevant in Section 2.12. Cumulative effects with nearby infrastructure are included in the assessment in Section 2.14 where there is the potential for a significant effect to arise.
November 2021 PINS on behalf of SoS Scoping Opinion	Transboundary impacts. *"The Scoping Report states that impacts are likely to be localised and that transboundary impacts are unlikely. The Inspectorate agrees that there are unlikely to be any pathways which could lead to effects on EEA states and therefore agrees that this matter can be scoped out of further assessment."*	Noted - an assessment of transboundary effects not required as scoped out (Section 2.17).
November 2021 PINS on behalf of SoS Scoping Opinion	Study area *"It is noted that the study area is based on a set buffer around the onshore AoS. The Inspectorate appreciates that this is partly in response to the currently lack of uncertainty around the location of the National Grid substation and is likely to be refined. However, the ES should include a ZTV which demonstrates that the assessment of effects covers an appropriate area."*	ZTVs are presented in Volume 6, Part 7, Annex 2.1: LVIA Figures, Figures 2.8a to 2.11b, 2.14 and 2.15. Figures 2.8a, 2.9a, 2.10a and 2.11a present ZTVs based on bare ground; and Figures 2.8b, 2.9b, 210b and 2.11b present reduced ZTVs which take into account the screening effect of woodland. The LVIA study area covers the appropriate extent beyond which significant effects on landscape

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
		character and visual amenity will be very unlikely to arise.
November 2021 PINS on behalf of SoS Scoping Opinion	*"Viewpoints for the onshore landscape and visual assessment have not yet been confirmed. The Inspectorate considers that effort should be made to agree viewpoints with relevant stakeholders. A range of viewpoints should be used to represent the various receptors who will be affected by the Proposed Development, including designated and non-designated heritage assets and their settings. A figure showing locations of viewpoints used for the assessment should be provided in the ES."*	The location of 10 representative viewpoints has been agreed with the consultation bodies and other relevant stakeholders. These viewpoints have been used to represent the visual receptors affected by VE, such as residents, road-users and walkers, as well as used to represent the landscape character receptors. Representative viewpoints are shown in Volume 6, Part 7, Annex 2.2.1-16, LVIA Visualisations, Figures 2.16 to 2.26. Cultural Heritage assets are assessed in Volume 6, Part 3, Chapter 7: Onshore Archaeology and Cultural Heritage, for which a separate set of viewpoints have been selected.
November 2021 PINS on behalf of SoS Scoping Opinion	Guidance The Technical Guidance Note 02-21 'Assessing the Value of Landscapes outside National Designations' has recently been published and should be used within the assessment.	This document is referenced in Section 2.4.23 and its contents have been used to inform the assessment of effects on landscape character in Section 2.11.
27 May 2022 Natural England Post scoping meeting	*"The Project explained that viewpoints for the cable routes are not proposed to inform the EIA as the effects are small scale, temporary operations and so do not typically require to be represented by photomontages."* *"What is meant here by 'small scale'? Although impacts will be temporary with regards to the cable route installation and* habitats will be replaced, would photos not *be required to inform the impact assessment and future monitoring to ensure the same/similar standards are replaced? The correct baseline information would be required to inform effective mitigation and monitoring."*	Site survey has been carried out at relevant parts of the onshore ECC, during which photography has been used to record the baseline landscape elements with potential to be affected. This information has been used to identify where trenchless crossing techniques are potentially required and to relocate or narrow the onshore ECC in order to avoid the more substantial and better condition landscape elements. The extensive use of trenchless crossing techniques means that tree and hedgerow removals will be very limited.

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
27 May 2022 Natural England Post scoping meeting	*"There will also be longer-term effects due to vegetation removal and time taken for reinstatement."*	These longer-term effects on the physical landscape are assessed in Section 2.10.
27 May 2022 Natural England Post scoping meeting	*"It is noted that there may be impacts on 'longer range views'. As such, we query whether photos would help to assess this?"*	Site survey has been carried out and shown that long range views are limited in occurrence and extent owing to the extent of intervening tree cover and hedgerows.
27 May 2022 Natural England Post scoping meeting	*"Detailed cumulative assessment of the visual impacts associated with the substation in the EIA."* *"Will this include photomontages? Does this include in-combination effects with regards to other projects in the area?"*	Photomontages in Volume 6, Part 7, Annex 2.2.1-16, LVIA Visualisations, Figures 2.11 to 2.22 show NF OnSS and National Grid East Anglia Connection Node (EACN) OnSS are the most relevant cumulative development to the OnSS. An in conjunction and in combination assessment is presented in Section 2.14.
27 May 2022 Natural England Post scoping meeting	*"The viewpoints sought to address any visual receptors (settlements, roads and Public Rights of Way (PRoW)) with the potential for likely significant effects."* *"Have specific viewpoints such as heritage assets or listed buildings, been considered?"*	The visual assessment considers the effects of the proposed development on visual receptors, who are people in settlements, on roads and on Public Right of Ways (PRoW), as well as visiting visitor attractions. Assessment of heritage assets and listed buildings will be assessed by the cultural heritage specialists in Volume 6, Part 3, Chapter 7: Onshore Archaeology and Cultural Heritage.
27 May 2022 Natural England Post scoping meeting	*"Are the maximum parameters for the substation infrastructure known at this stage? This will have an impact on viewpoints. Potentially more viewpoints may be required, depending on the size and height of the substation."*	The maximum OnSS footprint is 58,800 m^2 and the maximum building and external equipment height is 15 m. The exception being the lightening masts which will be up to 18 m, as set out in the Project Description. For the purposes of viewpoint selection, these parameters have been applied to ensure that the maximum extents of visibility are being considered and that all visual receptors with

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
		potential to be significantly affected are being included. Visualisations are presented in Volume 6, Part 7, Annex 2.2.1-16, LVIA Visualisations, Figure 2.11 to 2.22.
27 May 2022 Natural England Post scoping Evidence Plan	*"The extent of the views which may be impacted are likely to be contained within 2 to 3km."* *"Would this require a larger distance to be covered e.g., 5km?"*	The purpose of the study area is not to define the extents of visibility but to define the extents within which significant effects are likely to arise. In the process of refining the layout and better understanding the extents of visibility and potential for significant effects to arise, the extent of the study area has been reviewed and set at 5 km as described in paragraphs 2.4.8 to 2.4.10 and shown on Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.1 – Study Area
27 May 2022 Natural England Post scoping Evidence Plan	*"Has a Zone of Theoretical Visibility (ZTV) been completed? If so, could this be circulated when available?"*	ZTVs are presented in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figures 2.7a to 2.7.d, 2.8a and 2.8b, 2.9a and 2.9b, and 2.10a and 2.10b. Figure 2.7a and 2.7c presents ZTVs based on bare ground and Figure 2.7b and 2.7d, 2.8a and 2.8b, 2.9a and 2.9b, and 2.10a and 2.10b present reduced ZTVs which take into account the screening effect of woodland.
27 May 2022 Natural England Post scoping Evidence Plan	*"Essex County Council's pledge to plant one million trees over five years."* *"We advise that screening and tree planting should be provided as mitigation (to replace any trees lost or to screen the substation) and should be additional to this pledge."*	The reference" to Essex County Council's pledge presented a positive commitment to contributing to an increase in tree planting in this area. The intention will be to avoid loss of trees and standard practice will be to replace any losses that do occur, which it is agreed should not be included as part of Essex County Council's pledge. Information on mitigation planting is set out in Volume 9, Report 22: OLEMP.
27 May 2022 Natural England	*"Hedgerows and boundaries grant – UK Government."* *"We advise that this does not cover meeting legal requirements, including*	Reference to the 'hedgerows and boundaries grant' was intended as part of the exploration of possibilities to increase the extent of mitigation planting off-site. Information on

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
Post scoping Evidence Plan	*planning conditions and tenancy agreements. Furthermore, as with our comment above, screening and planting should be additional to this."*	mitigation planting is set out in Volume 9, Report 22: OLEMP.
27 May 2022 Natural England Post scoping Evidence Plan	*"The substation colour scheme will need to be considered to lessen impacts."*	The colour of the buildings and other selected elements of the onshore substation will be considered as part of the design review process that will be carried out post consent as set out in Volume 9, Report 4, Onshore Substation Design Principles Document.
27 May 2022 Natural England Post scoping Evidence Plan	*"We also advise that decommissioning impacts will need to be considered."*	The effects of decommissioning are considered in the assessment at Section 2.13 and are typically assessed as being similar to or less than the effects of the construction phase.
27 May 2022 Natural England Post scoping Evidence Plan	*"A Tree Planting Management Plan should be developed to detail the dedicated ongoing active management* required, including replacement of failed trees within a 5 to10 year period, watering regime, protection of trees, i.e. protection during the substation construction phase, use of compostable tree guards. The Management Plan should specify tree species and age of trees to be planted. Tree species should be suitable for the area and habitat and soil types, and trees should be of suitable maturity, taking into account growth rates."	Volume 9, Report 22: OLEMP forms part of this DCO application. These documents will detail the replacement of failed specimens within the first five years. It will also detail all the specifications listed to ensure successful plant establishment and in particular taking into account the hotter and drier climate that is evolving in the south-east of England owing to climate change.
27 May 2022 Natural England Post scoping Evidence Plan	"Timing of planting in relation to the timing of construction works needs to be considered."	The timing of tree planting and opportunities for advanced planting are considered as set out in Volume 9, Report 22: OLEMP.
27 May 2022 Natural England Post scoping Evidence Plan	"Any trees planted prior to construction of the substation, should be protected with fencing with at least a 5-metre buffer area, thus allowing enough area for growing roots (root protection zones)."	Appropriate protection of tree planted areas will be implemented as set out in Volume 9, Report 22: OLEMP.

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
27 May 2022 Natural England Post scoping Evidence Plan	"Tree species beneficial to wildlife e.g. fruit or flowering species, should be included in the planting scheme. Other factors such as climate change and soil type should be considered."	Selection of tree species considers Biodiversity Net Gain, soil types, exposure, species provenance, pest and disease resilience, as well as climate resilience. This information is presented in Volume 9, Report 22: OLEMP.
27 May 2022 Natural England Post scoping Evidence Plan	The Project agreed to scope in the potential for light pollution in rural areas. "Impacts of lighting to landscape and ecology should be assessed and measures taken to minimise impacts. A detailed lighting design should be produced."	Once operational, lighting associated with the OnSS is likely to be very limited. There may be lighting used during the hours of darkness during the construction phase or during maintenance activities and the effects of this are considered in the assessment. Details of OnSS construction and operational lighting are presented in Volume 9, Report 21, CoCP. Relevant guidance will be followed during the works.
2 November 2022 Natural England Post scoping Evidence Plan meeting	Natural England suggested additional viewpoints in the Dedham Vale AONB with potential for visibility shown on the ZTV in relation to: PROW 170_31 (Bridleway), PROW 170_49 (Bridleway), PROW 170_33 (footpath) and; PROW 170_31 (footpath)	These ProWs have been walked during site survey and the potential for actual visibility of the OnSS is considered limited owing to the enclosure of intervening tree cover and hedgerows. Viewpoint 9 Essex Way, Dedham Road (Figure 2.24) is located on ProW 170_49 and shows that there is no potential for visibility owing to the screening effect of intervening landform and tree cover.
2 November 2022 Natural England Post scoping Evidence Plan meeting	Natural England enquired whether collaboration was taking place with the EIA teams for other projects in the area.	Co-ordination is ongoing with opportunities for information sharing, alignment of methodology for LVIA and co-ordination of layout and design with the North Falls EIA team and National Grid team. VE and North Falls are engaging jointly with the Design Review Panel with regard to the detailed design of the co-located substations.
2 November 2022 Suffolk County Council	Suffolk County Council enquired about the proposed approach to the cumulative assessment.	There are a small number of consented or application stage projects relevant to the assessment. The two scoping stage projects of particular relevance are the co-

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
Post scoping Evidence Plan meeting		located North Falls Onshore Substation (NF OnSS) and National Grid. A cumulative assessment of all relevant cumulative developments is presented at Section 2.13 based on available information at the time of writing.
2 November 2022 Suffolk County Council Post scoping Evidence Plan meeting	Suffolk County Council enquired about the worst case scenario for LVIA in respect of the different Gas Insulated Switchgear (GIS) and Air Insulated Switchgear (AIS) options for the OnSS.	In order to ensure the worst case scenario is assessed in the LVIA the Maximum Design Scenario (MDS) comprises the larger footprint of the AIS option at 58,800 m^2 and the larger height of the GIS option at 15 m above finished ground level. The larger footprint of the AIS with the taller height of the GIS has been used in the production of the Rochdale Envelope and ZTVs to ensure the fullest possible extents of visibility are represented.
2 November 2022 Tendring District Council Post scoping Evidence Plan meeting	Tendring District Council highlighted the issues of slow growth rates in this area owing to the arid climate.	Volume 9, Report 22, OLEMP presents guidance on climate resilient planting in terms of suitable species selection and management techniques.
2 November 2022 Post scoping Evidence Plan meeting	The Project stated that visualisations would be prepared in accordance with NatureScot's 'Visual Representation of Wind Farms' Version 2.2.	Visualisations have been prepared in accordance with the Landscape Institute's 'Visual Representation of Windfarms Guidance' (2019) which largely reflects guidance set out in NatureScot's 'Visual Representation of Wind Farms' Version 2.2.
12 May 2023 Essex County Council S42 Responses	*"Viewpoints have primarily been selected based on the potential impacts from the turbines. However, we would also be expecting receptors along the onshore cable corridor to also be assessed where impacts may occur. This does not appear to have been addressed in the latest revision and further clarification is therefore required."*	The assessment presents the effects of the onshore ECC on landscape and visual receptors at Sections 2.10 and 2.12 respectively.
12 May 2023	*"The proposed substation search area is located to the south of the Dedham Vale*	The OnSS will have a limited effect on the Dedham Vale AONB owing to

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
Essex County Council S42 Responses	*AONB and therefore may contribute towards its setting. For this reason, the proposed substation design and location need to be carefully considered. ECC also note that the landscape around Lawford and the proposed substation location is an open and exposed plateau with a low density and rural settlement pattern, therefore any changes to the landscape will undoubtedly have an adverse impact on visual amenity and landscape character. Therefore, mitigation measures and landscape enhancements must be appropriately considered to ensure these are minimised considerably."*	the limited extent to which inter-visibility occurs. Site survey and aerial photography show that the landscape around Lawford has a good level of tree cover, especially to the north where the AONB occurs and this limits potential visibility of the OnSS. Mitigation measures will be implemented and are described at Section 2.9 and shown in Figure 2.12.
12 May 2023 Essex County Council S42 Responses	*"Limited reference has been made to the Essex Landscape Character Assessment. In line with previous comments, ECC would advise that the Essex Landscape Character Assessment should provide the overarching framework for the baseline study, with further reference to the Tendring Landscape Character Assessment and Landscape Character Assessment of the Essex Coast for additional local landscape characteristics and qualities."*	Reference is made to the Essex Landscape Character Assessment and Tendring Landscape Character Assessment in Section 2.7 and shown in Figures 2.3 and 2.4.
12 May 2023 Essex County Council S42 Responses	*"ECC would also expect localised landscape studies (1:2500 scale) to be undertaken for areas surrounding the proposed substation to ensure the baseline and potential impacts are accurate."*	The local landscape around the Substation Zone is described and assessed in Section 2.11.
12 May 2023 Essex County Council S42 Responses	*"In determining landscape value, the Landscape Institute's Technical Guidance Note (TGN) 02-21 'Assessing the Value of Landscapes Outside National Designations' has recently been published and builds on the details within GLIVIA3 and the assessment of value (GLIVIA3 Box 5.1). For instance, Table 1 of the TGN provides a range of factors that can be considered when identifying landscape value. This includes the incorporation of cultural associations (natural heritage and cultural heritage)*	Reference to 'Assessing the Value of Landscapes Outside National Designations' is made in Section 2.7. It should be noted that the value of the local landscape around the OnSS is limited by the extent to which this landscape has been moderated by intensive agricultural practices and the very limited occurrence and extents of natural or semi-natural habitats or vegetation.

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	into consideration of landscape value, which is greatly supported."	
12 May 2023 Essex County Council S42 Responses	*"In terms of landscape and visual cumulative effects, ECC would expect all proposed receptors to be scoped in. We note the 'high-level cumulative assessment(s) have only made reference to the Tendring District Landscape Character Assessment (7A Bromley Heaths) whereas we would expect other receptors such as those identified within Section 2.7 to be included."*	The purpose of the LVIA is to identify significant effects and significant cumulative effects and it is line with this purpose that only receptors with potential to undergo significant effects and significant cumulative effects are assessed in detail. The close clustering of the cumulative developments means that significant cumulative effects will be localised and, therefore, likely to be contained within the Landscape Character Area (LCA) of 7A Bromley Heaths. The cumulative assessment is presented in Section 2.14.
12 May 2023 Natural England S42 Responses	*"NE have reached the initial conclusion that the risk of significant adverse landscape visual impacts on the Dedham Vale and SCHAONB is low. NE advise a site visit should be undertaken to fully assess the intervisibility of the eastern and western substation sites from Dedham vale."*	Site Survey has been carried out to test visibility of the OnSS from within the Dedham Vale AONB and this has indicated the very limited potential for visibility to arise.
12 May 2023 Tendring District Council S42 Responses	*"Tendring District Council has significant landscape concerns and feels that there is a clear need for landscape impact and mitigation plans in respect not only of the SSSI and LNR at landfall, but also along the length of the route through the district to either of the proposed substations."*	The requirements for replanting along the onshore cable route are set out in Volume 9, Report 22: OLEMP and mitigation plans for the OnSS are shown in Volume 6, Part 7, Annex 2.1, LVIA Figures Figure 2.12.
2 May 2023 Little Bromley Parish Council S42 Responses	*"Little Bromley Parish Council has concerns around Visual Impact – The potential visual impact for the entire parish is major. The scale of the substation within its search areas is so large that proposed screening cannot be entirely effective. You state that, from all considered viewpoints, the initial visual impact is classed as Major reducing to Moderate or Minor after 5 to 10 years. With the height of the substation buildings being up to 15 metres, and the tree species proposed growing up to 8 metres (after 15 years), then there is still*	A plan of the mitigation planting for the OnSS is shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.12. This has been developed with the intention of maximising screening in the views of local residents, road-users and walkers. The visualisations in Volume 6, Part 7, Annex 2.2.1-16, LVIA Visualisations, Figures 2.16 to 2.26 demonstrate the effect that perspective will have in relation to screening, whereby planting closer

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	in the order of 7 metres of the industrial substation visible above the tree line. LBPC would like to understand how screening can be improved so the substation is less visible."	to the receptor will create an effective screen.
27 September 2023 ETG Online meeting	ECC questioned whether the predicted growth rate of the mitigation planting is realistic and appropriate.	Volume 9, Report 22, OLEMP sets out the predicted growth rates for the mitigation planting. These represent a conservative estimate and is based on guidance set out in David Skinner's 'A Woody Plant Selection Guide' 1987) in respect of common native species.
27 September 2023 ETG Online meeting	ECC queried why there were only representative viewpoints for the OnSS and not for the onshore ECC.	Representative viewpoints for the OnSS are essential owing to the size of the development and long term effects. The onshore ECC is much smaller in scale and effects will be short term.
27 September 2023 ETG Online meeting	ECC made comment that Essex is known to be a dry county and as such there are difficulties in getting landscape planting established in certain areas. ECC questioned what is going to be the commitment to maintain the proposed landscape planting which will form a requirement through DCO?	Volume 9, Report 22, OLEMP presents outline information on the mitigation landscape planting. Post DCO consent the specification of the planting will be worked up in detail and this will ensure the optimum conditions for the establishment of the planting and its maintenance over the most critical first five years Also to note, the OnSS is located in an area of Grade 1 agricultural land which will benefit planting establishment.
27 September 2023 ETG Online meeting	ECC queried use of bunding at substations.	The development of detailed landscape design post DCO consent will consider ground levels in further detail and while there will not be large bunding, shallow bunding may be required.
11 December 2023 Essex County Council Online meeting	ECC made comment that the design of the mitigation planting, using shelterbelts to create a framework of screens around the OnSS would be in keeping with the inherent rural character of the local landscape.	Noted. Post DCO consent the detailed design of the mitigation planting will be further developed with cognisance of local landscape character.

2.4 SCOPE AND METHODOLOGY

2.4.1 The project characteristics for the onshore elements of VE are set out in Volume 6, Part 3, Chapter 1: Onshore Project Description. The LVIA assessment parameters are summarised in this Chapter, in Section 2.8.

SCOPE OF THE ASSESSMENT

IMPACTS SCOPED IN FOR ASSESSMENT

2.4.2 This LVIA includes a 'Preliminary Assessment' which identifies landscape and visual receptors that have the potential to undergo a significant effect as a result of the onshore elements of VE. These landscape and visual receptors are scoped in and a detailed assessment is presented in Sections 2.10, 2.11 and 2.12.

2.4.3 The following impacts have been scoped into this assessment:

CONSTRUCTION

- The physical effects on the agricultural land, hedgerows and trees resulting from the excavation works associated with the landfall, onshore ECC and OnSS;
- The effects on landscape character and visual amenity resulting from the presence of Temporary Construction Compounds (TCCs), access and haul roads, plant, materials, spoil heaps and vehicles, associated with the construction of the landfall, onshore ECC and OnSS;
- The effects on landscape character and visual amenity resulting from the excavation and land restoration associated with the landfall and onshore ECC and, the earthworks and construction works associated with the emerging OnSS;
- The effects on landscape character and visual amenity resulting from the presence of the emerging OnSS; and
- The effects on visual amenity arising from the use of lighting associated with the construction of the onshore ECC and OnSS during the hours of darkness.

OPERATION AND MAINTENANCE

- The effects on landscape character and visual amenity resulting from the presence of the OnSS;
- The effects on landscape character and visual amenity resulting from the residual loss of trees and hedgerows associated with the landfall, onshore ECC and OnSS during the construction phase; and
- The effects on landscape character and visual amenity resulting from the emergence of mitigation and replacement planting.

DECOMMISSIONING

- The physical effects and effects on landscape character and visual amenity resulting from the removal of cabling, dismantling and removal of electrical equipment from within the OnSS buildings and the removal of the main onshore OnSS building and minor services equipment; and
- The physical effects and effects on landscape character and visual amenity as a result of the restoration of the Substation Zone.

IMPACTS SCOPED OUT OF ASSESSMENT

2.4.4 This LVIA includes a 'Preliminary Assessment' which identifies landscape and visual receptors that do not have potential to undergo a significant effect as a result of the onshore elements of VE. These landscape and visual receptors are scoped out of the detailed assessment.

2.4.5 In the Scoping Opinion, the SoS agreed that the operational impacts of the landfall and onshore cable route could be scoped out of the assessment once the land has been restored, but that assessment will be required in respect of the residual effects associated with vegetation loss and the mitigation through replanting. These considerations have been made in the assessment of effects on the physical landscape in Section 2.10.

2.4.6 The SoS also agreed that the effects of construction traffic, maintenance activities at the OnSS, and transboundary effects should be scoped out of the assessment. Part 1, Chapter 3, Annex 3.2: Transboundary Screening is presented for the purposes of regulation 32 of the 2017 EIA Regulations.

2.4.7 Volume 9, Report 21, CoCP sets out the operational and maintenance requirements for lighting at the OnSS. Regular maintenance at the OnSS will be planned for daylight hours where possible, to reduce the need for artificial lighting, however in winter months and in the event of emergency works additional lighting may be required to meet health and safety requirements. Where dark hours lighting is required, the lighting will be designed to minimise light spillage as far as possible, while providing the necessary levels of light for safety requirements. While a lower level of lighting would remain overnight for security purposes, this would be motion activated.

2.4.8 The limited occurrence of dark hours lighting combined with the measures to reduce its impact on the occasions it may be required and the low levels of security lighting mean that its effect on visual receptors will be especially limited and therefore potential effects have been scoped out of the detailed assessment.

STUDY AREA

2.4.9 The initial step in the LVIA is the establishment of the study area to be used in the assessment of landscape and visual effects. The LVIA study area for the onshore elements of VE extend to define a limit beyond which professional judgement considers it would be unlikely for significant effects to arise. This judgement is based on knowledge of similar projects, an understanding of the character of the local landscape, and appreciation of the scale of the construction and development of the onshore components of VE.

2.4.10 The study area for the LVIA of the onshore ECC and landfall extends to a 500 m buffer either side of the onshore ECC. Under Scenario 1, the width of the onshore ECC will comprise a 60 m width for open trenching within the 90m corridor in Sections 1 to 5, broadened to 72 m in Sections 6 and 7 where it will incorporate a dedicated substation haul road. The onshore ECC will broaden where the cables egress from the TJB at the landfall, and when they ingress and egress from the OnSS. Main temporary TCCs occur at the landfall, OnSS and intermittently along the length of the onshore ECC. As these will typically be located adjacent to the onshore ECC, their additional extents are included in the definition of the study area. The 500 m buffer is applied to the extent of these variable widths in order to make up the onshore ECC study area.

2.4.11 The OnSS study area extends to a 5 km radius around the OnSS location. This radius has been informed by the ZTVs for the OnSS, and presents a cautionary approach as it is considered unlikely that significant effects will arise beyond 2 or 3 km. The 5 km radius study area also encompasses the road-widening works scheduled for Bentley Road.

2.4.12 Together, these composite study areas form the LVIA study area for the onshore elements of VE (Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.1).

2.4.13 The LVIA study area is not intended to provide a boundary beyond which the onshore elements of VE would not be seen, but rather to define the area within which there is potential for significant landscape or visual effects. In addition, a significant effect is very unlikely to occur towards the edges of the LVIA study area.

DATA SOURCES

2.4.14 The key data sources used to inform the baseline for the LVIA are presented in Table 2.3 below.

Table 2.3: Data Sources

Data Sources	Summary	Spatial coverage of VE
Ordnance Survey (OS)	OS 1:50,000, 1:25,000 Terrain 50 and Terrain 5 DTM data	National mapping coverage.
OS Open Data	> National landscape planning designations. > Settlements, roads, railways and public rights of way; and > National Trails.	National OS data able to provide designations for the specific area.
Essex County Council	> Essex Landscape Assessment (Chris Blandford Associates for Essex County Council 2003); and > The Landscape Character Assessment of the Essex Coast (October 2005). Local Landscape Designations including Citations and descriptions relating to historic parks and	County level coverage of landscape designations

Data Sources	Summary	Spatial coverage of VE
	gardens & Local Council Planning Portals and Development Plans.	
Tendering District Council	Tendring District Landscape Character Assessment, Volumes One and Two, Landscape Character Area and Landscape Guidelines (November 2001, Land Use Consultants);	District level coverage of landscape character assessments in Tendering District.
Magic.gov	There are two National Landscape Designations within the LVIA study area; the Dedham Vale AONB and Suffolk Coast and Heaths AONB on the northern edge of the OnSS study areas.	National landscape designations specific to the area.
Essex County Council	Identification of PROW, footpaths cycleways and bridleway networks will be assessed using Essex County Council's Highway's Information Map.	County level coverage of PROWs within Essex.
Suffolk County Council	> East of England Landscape Framework; > Suffolk Landscape Assessment, Suffolk County Council (2011, updated 2018); > Touching the Tide Landscape Character Assessment (Alison Farmer Associates for the Touching the Tide Partnership, August 2012); > Suffolk Coastal Landscape Character Assessment (Alison Farmer Associates for Suffolk Coastal District Council, July 2018); and > Citations and descriptions relating to historic parks and gardens and Local Council Planning Portals/ Development Plans.	County level coverage of landscape designations within LVIA buffers.
Suffolk Coast and Heaths AONB Management Partnership	> Suffolk Coast and Heaths AONB Management Plan 2018-2023; > Suffolk Coast and Heaths AONB – Natural Beauty and Special Qualities Indicators (LDA Design for Suffolk Coast and Heaths AONB Partnership, Suffolk County Council and EDF Energy, V1.8, November 2016); > The Suffolk Coast and Heaths – Landscape Guidelines (Suffolk Coast and Heaths Partnership, 2001); and > Development in the setting of the Suffolk Coast and Heaths AONB (Suffolk Coast and Heaths AONB Partnership, December 2015).	County level landscape planning context and designations within LVIA buffers.

Data Sources	Summary	Spatial coverage of VE
Mid Suffolk District Council	> The Joint Babergh and Mid Suffolk District Council Landscape Guidance, August 2015.	District level landscape planning context and designations within LVIA buffers.
Colchester Borough Council	> The Colchester Borough Landscape Character Assessment, Colchester Borough Council, November 2005.	Borough level landscape planning context and designations within LVIA buffers.

ASSESSMENT METHODOLOGY

TYPES OF EFFECT

2.4.15 The LVIA predicts, describes and assesses the likely significant effects that VE will have on the landscape and visual resource, and covers the following types of effect which may arise during construction, operation or decommissioning of the onshore elements of VE.

LANDSCAPE EFFECTS

2.4.16 Landscape effects potentially arise from the introduction of new onshore elements which may be visible and may therefore affect the perceived character of the landscape. This may also include effects on designated landscapes.

2.4.17 GLVIA 3, paragraph 5.4, advises that Landscape Character Assessment should be regarded as the main source for baseline studies and identifies the following factors which combine to create areas of distinct landscape character:

"the elements that make up the landscape in the study area including:

- *physical influences – geology, soils, landform, drainage and water bodies;*
- *landcover, including different types of vegetation and patterns and types of tree cover; and*
- *the influence of human activity, including landuse and management, the character of settlements and buildings, and pattern and type of fields and enclosure.*

The aesthetic and perceptual aspects of the landscape – such as, for example, its scale, complexity, openness, tranquillity or wildness;

The overall character of the landscape in the study area, including any distinctive Landscape Character Types or Areas that can be identified, and the particular combinations of elements and aesthetic and perceptual aspects that make each distinctive, usually by identification as key characteristics of the landscape."

VISUAL EFFECTS

2.4.18 Visual effects potentially arise from the introduction of onshore elements in views and the resultant effects on visual amenity experienced by people from representative viewpoints and principal visual receptors, for example groups of people within settlements, using transport routes or recreational trails.

CUMULATIVE EFFECTS

2.4.19 In addition to the above, cumulative effects may arise where the study areas for two or more projects overlap so that they are experienced at a proximity where they may have a greater incremental effect, or where projects may combine to have a sequential effect. The LVIA assesses the cumulative effects that would arise through the development of VE.

FIELD SURVEY

2.4.20 Field survey work was undertaken during periods of clear visibility in February, March and June 2021, February and September 2022 and September 2023. This has allowed the landscape character and the visual amenity of the study area to be experienced in a range of different conditions and seasons. Field surveys were carried out throughout the LVIA study area from publicly accessible locations.

2.4.21 For the OnSS, the focus of the field survey has been on landscape and visual receptors shown on the ZTVs in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figures 2.8 to 2.11 to have theoretical visibility. For the onshore ECC and landfall, the focus of the field survey has been on landscape and visual receptors within the 1 km onshore ECC with potential to be directly or indirectly affected. The field survey has enabled the assessors to judge the likely scale, distance, extent and prominence of the onshore elements of VE directly.

2.4.22 The landscape of the area surrounding the proposed onshore elements of VE has been assessed for any particular features that contribute to landscape character or that are important to the wider landscape setting. The field surveys have provided an experience of the character areas of the LVIA study area and verification of how these areas might be affected by the onshore elements of VE.

2.4.23 The visual amenity of the LVIA study area was surveyed from receptors representative of the range of views and viewer types likely to experience the onshore elements of VE, including mostly residents, road-users and walkers. Views from a variety of distances, aspects, elevations and extents are included.

GUIDANCE

2.4.24 Guidance relevant to the LVIA is set out in the following documents:

- Landscape Institute and Institute of Environmental Management and Assessment (2013) – Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3);
- Natural England (2014). An Approach to Landscape Character Assessment;
- Planning Inspectorate (2018) Advice Note Nine: Rochdale Envelope;
- Planning Inspectorate (2019). Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects – Version 2;

- NatureScot (2021). Assessing the Cumulative Impact of Onshore Wind Energy Developments;
- Landscape Institute (2019). Visual Representation of Development Proposals; and
- NatureScot (2017) – Visual Representation of Windfarms, Guidance (Version 2.2).

2.4.25 Although some of this guidance is from publications by bodies located in other UK nations it is commonly drawn on for work carried out in England where no equivalent guidance exists. The preparation of visual representations has been carried out in accordance with guidance set out in the Landscape Institute's 'Visual Representation of Development Proposals, as agreed with stakeholders as part of the LVIA ETG consultations.

2.5 ASSESSMENT CRITERIA AND ASSIGNMENT OF SIGNIFICANCE

APPROACH TO ASSESSMENT

2.5.1 The LVIA is undertaken using the following steps:

- The features of the onshore elements of VE that may result in landscape and visual effects are described;
- The overall scope of the assessment is defined, including the study area and range of possible landscape and visual effects;
- The landscape baseline is established using landscape character assessment and the ZTV maps, to identify landscape receptors that may be affected and their key characteristics and value;
- The visual baseline is established by identifying the extent of possible visibility, identifying the people who may be affected, and selecting viewpoints;
- A preliminary assessment is undertaken of landscape and visual receptors using ZTV analysis, to identify which landscape and visual receptors are unlikely to be significantly affected and those that are more likely to be significantly affected, which require to be assessed in more detail;
- Interactions are identified between the proposed onshore elements of VE and landscape and visual receptors, to predict potentially significant effects arising and measures are proposed to mitigate effects;
- An assessment of the susceptibility of landscape and visual receptors to specific change and the value attached to landscape receptors and views is undertaken, combining these judgements to assess the sensitivity of the landscape and visual receptor to the proposed onshore elements of VE;
- An assessment of the size or scale of landscape effect, the degree to which landscape elements are altered and the extent to which the effects change the key characteristics of the landscape is undertaken, combining these judgements to assess the magnitude of change on the landscape receptor;
- An assessment of the size or scale of visual effect, the extent to which the change will affect views, whether this is unique or representative of a wider area, the position of the proposed onshore elements of VE in relation to the principal orientation of the view and activity of the receptor. These judgements are combined to assess the magnitude of change on the visual receptor; and
- The assessments of sensitivity to change and magnitude of change are combined to assess the significance of landscape and visual effects.

2.5.2 GLVIA3 sets out an approach to the assessment of magnitude of change in which three separate considerations are combined within the magnitude of change rating. These are the size or scale of the effect, its geographical extent and its duration and reversibility. Notably GLVIA3 provides guidance and not a prescriptive methodology. The guidance suggests that this approach is to be applied in respect of both landscape and visual receptors. It is considered that the process of combining all three considerations in one rating can distort the aim of identifying likely significant effects of development. For example, a high magnitude of change, based on size or scale, may be reduced to a lower rating if it occurred in a localised geographical area and for a short duration. This might mean that a potentially significant effect will be overlooked if effects are diluted down due to their limited geographical extents and/ or duration or reversibility.

2.5.3 As advocated by GLVIA3 the assessment has used professional judgement in defining the methodology for the LVIA. The consideration of the size or scale of the effect, its geographical extent and its duration and reversibility has therefore been undertaken separately, by basing the magnitude of change on size or scale to determine where significant and not significant effects occur, and then describing the geographical extents of these effects and their duration and reversibility separately. Duration and reversibility are stated separately in relation to the assessed effects, for example as short, medium or long-term and temporary or permanent.

2.5.4 The assessment methodology utilises six scales of magnitude of change – high, medium-high, medium, medium-low, low and negligible; which are preferred to the 'maximum of five categories' suggested in GLVIA3 as a means of clearly defining and summarising magnitude of change judgements. Where there is no effect, the assessment will state there is no magnitude of change.

2.5.5 The assessment methodology also broadly follows the EIA Methodology set out in Volume 6, Part 1, Chapter 3: EIA Methodology. An exception relates to the matrix presented in Table 2.4 which includes six categories for magnitude of change, as described above, and five categories for sensitivity. This greater range of categories reflects the greater variability in respect of sensitivity and magnitude of change that will be experienced and enables greater accuracy in the assessment of landscape and visual effects.

DEFINING IMPACT SIGNIFICANCE – LANDSCAPE

SENSITIVITY OF LANDSCAPE RECEPTOR

2.5.6 The sensitivity of a landscape character receptor is a combination of the judgements made about the value associated with that receptor and the susceptibility of the receptor to the development proposed.

VALUE OF THE LANDSCAPE RECEPTOR

2.5.7 The value of a landscape character receptor is a reflection of the value that society attaches to that landscape. The assessment of the landscape value is classified as high, medium-high, medium, medium-low or low and the basis for this assessment is made clear using evidence and professional judgement, based on the following range of factors.

2.5.8 **Landscape designations** – A receptor that lies within the boundary of a recognised landscape related planning designation is of increased value, depending on the proportion of the receptor that is affected and the level of importance of the designation which may be international, national, regional or local. The absence of designations does not however preclude value, as an undesignated landscape character receptor may be valued as a resource in the local or immediate environment.

2.5.9 **Landscape quality** – The quality of a landscape character receptor is a reflection of its attributes, such as scenic quality, sense of place, rarity and representativeness and the extent to which its valued attributes have remained intact. A landscape with consistent, intact, well-defined and distinctive attributes is considered to be of higher quality and, in turn, higher value, than a landscape where the introduction of elements has detracted from its character.

2.5.10 **Landscape experience** – The experiential qualities that can be evoked by a landscape receptor can add to its value and relates to a number of factors including:

- The perceptual responses it evokes;
- The cultural associations that may exist in literature or history, or the iconic status of the landscape in its own right;
- The recreational value of the landscape; and
- The contribution of other values relating to the nature conservation or archaeology of the area.

LANDSCAPE SUSCEPTIBILITY TO CHANGE

2.5.11 The susceptibility of a landscape character receptor to change is a reflection of its ability to accommodate the changes that will occur as a result of the addition of the proposed development. Some landscape receptors are better able to accommodate change as a result of the development than others due to certain characteristics that are indicative of capacity to accommodate change. These characteristics may or not also be special landscape qualities that underpin designated landscapes.

2.5.12 The assessment of the susceptibility of the landscape receptor to change is classified as high, medium-high, medium, medium-low or low and the basis for this assessment has been made clear using evidence and professional judgement. The following indicators of landscape susceptibility are considered in the context of the development proposed:

2.5.13 **Overall strength and robustness:** Collectively the overall characteristics and qualities of a particular landscape result in a strong and robust landscape that is capable of reasonably accommodating the influence of the onshore elements of VE without undue adverse effects on the special landscape qualities (in the case of a designated landscape) or the key characteristics;

2.5.14 **Landscape scale and topography:** The scale and topography are large enough to physically accommodate the influence of the onshore elements of VE. Topographical features such as more complex, distinctive or small-scale coastal landforms are likely to be more susceptible than simple, broad and homogenous coastal landforms;

2.5.15 **Openness and enclosure:** Openness in the landscape may increase susceptibility to change because it can result in wider visibility, however an open landscape may also be larger scale and simple, which will decrease susceptibility. Conversely, enclosed landscapes can offer more screening potential, limiting visibility to a smaller area, however they may also be smaller scale and more complex which will increase susceptibility;

2.5.16 **Skyline:** Prominent and distinctive skylines and horizons with important landmark features that are identified in the landscape character assessment, are generally considered to be more susceptible to development in comparison to broad, simple skylines which lack landmark features or contain other infrastructure features;

2.5.17 **Relationship with other development and landmarks:** Contemporary landscapes where there are existing similar developments or other forms of development (industry, mineral extraction, masts, urban fringe/ large settlement, major transport routes) that already have a characterising influence result in a lower susceptibility to development in comparison to areas characterised by limited development or smaller scale, historic development and landmarks;

2.5.18 **Perceptual qualities:** Notable landscapes that are acknowledged to be particularly scenic, wild or tranquil are generally considered to be more susceptible to development in comparison to ordinary, cultivated or farmed/ developed landscapes where perceptions of 'wildness' and tranquillity are less tangible. Landscapes which are either remote or appear natural may vary in their susceptibility to development; and

2.5.19 **Landscape context and association:** The extent to which the onshore elements of VE will influence the character of landscape receptors across the study area relates to the associations that exist between the landscape receptor within which the onshore elements of VE are located and the landscape receptor from which the onshore elements of VE are experienced. In some situations, this association is strong, where the landscapes are directly related, and in other situations weak, where the landscape association is weak. The context and visual connection to areas of adjacent landscape character or designations has a bearing on the susceptibility to development.

LANDSCAPE SENSITIVITY RATING

2.5.20 An overall sensitivity assessment of the landscape receptor is made by combining the assessment of the value of the landscape character receptor and its susceptibility to change. The evaluation of landscape sensitivity has been applied for each landscape receptor – high, medium-high, medium, medium-low and low – by combining individual assessments of the value of the receptor and its susceptibility to change.

LANDSCAPE MAGNITUDE OF CHANGE

2.5.21 The magnitude of change affecting landscape receptors is an expression of the scale of the change that will result from the onshore elements of VE and is dependent on a number of variables regarding the size or scale of the change and the geographical extent over which the change will be experienced.

SIZE OR SCALE OF CHANGE

2.5.22 This criterion relates to the size or scale of change to the landscape that will arise as a result of the onshore elements of VE, based on the following factors.

2.5.23 **Landscape elements:** The degree to which the pattern of elements that makes up the landscape character is altered by the onshore elements of VE, by removal or addition of elements in the landscape. The magnitude of change will generally be higher if the features that make up the landscape character are extensively removed or altered, and/or if many new elements are added to the landscape.

2.5.24 **Landscape characteristics:** The extent to which the effect of the onshore elements of VE changes, physically or perceptually, the key characteristics of the landscape that may be important to its distinctive character. This may include, for example, the scale of the landform, its relative simplicity or irregularity, the nature of the landscape context, the grain or orientation of the landscape, the degree to which the receptor is influenced by external features and the juxtaposition of the onshore elements of VE in relation to these key characteristics. If the onshore elements of VE are located in a landscape receptor that is already affected by other similar development, this may reduce the magnitude of change, particularly if there is a high level of integration and the developments form a unified and cohesive feature in the landscape.

2.5.25 **Landscape designation:** In the case of designated landscapes, the degree of change is considered in light of the effects on the special landscape qualities which underpin the designation and the effect on the integrity of the designation. All landscapes change over time and much of that change is managed or planned. Often landscapes will have management objectives for ‘protection’ or ‘accommodation’ of development. The scale of change may be localised, or occurring over parts of an area, or more widespread affecting whole landscape receptors and their overall integrity.

2.5.26 **Distance:** The size and scale of change is also strongly influenced by the proximity of the onshore elements of VE to the receptor. Distance may be an influential factor to the extent that over a long range the scale of the influence on landscape receptors may be small or very limited. Conversely, landscapes closest to the development are likely to be most affected. Where the development is located within a ‘host’ landscape character area this will be directly affected whilst adjacent areas of landscape character will be indirectly affected.

2.5.27 **Amount and nature of change:** The amount of the onshore elements of VE that is seen. Generally, the greater the amount of the onshore elements of VE that can be seen, the higher the scale of change. Generally, the magnitude of change is likely to be lower where VE is largely perceived to be at a distance, rather than ‘within’ the landscape being considered.

GEOGRAPHICAL EXTENT

2.5.28 The geographic extent over which the landscape effects are experienced is also assessed, which is distinct from the size or scale of effect. This evaluation is not combined in the assessment of the level of magnitude, but instead expresses the extent of the receptor that will experience a particular magnitude of change and therefore the geographical extents of the significant and non-significant effects.

2.5.29 The extent of the effects will vary depending on the specific nature of the onshore elements of VE and is principally assessed through analysis of the extent of perceived changes to the landscape character through visibility of the onshore elements of VE.

DURATION AND REVERSIBILITY

2.5.30 The duration and reversibility of landscape effects is based on the period over which onshore elements of VE are likely to exist during construction and operation and the extent to which these elements are removed during decommissioning and its effects reversed at the end of that period. Long-term, medium-term and short-term landscape effects are defined as follows:

- Long-term – more than 10 years (may be defined as permanent or reversible);
- Medium-term – 5 to 10 years; and
- Short-term – up to 5 years.

LANDSCAPE MAGNITUDE OF CHANGE RATING

2.5.31 The 'magnitude' or 'degree of change' resulting from the onshore elements of VE is described as 'high', 'medium-high', 'medium', 'medium-low' 'low' or 'negligible'. In assessing magnitude of change, the assessment focuses on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects, for example as short, medium or long-term and temporary or permanent.

EVALUATING LANDSCAPE EFFECTS AND SIGNIFICANCE

2.5.32 The level of landscape effect is evaluated primarily through the combination of landscape sensitivity and magnitude of change. Once the level of effect has been assessed, a judgement is then made as to whether the level of effect is 'significant' or 'not significant' as required by the EIA Regulations. This process is assisted by the matrix in Table 2.4 which is used to guide the assessment. Geographical extent and duration/ reversibility are considered relevant in drawing conclusions about significance, combining with other judgements on sensitivity and magnitude, to allow a final judgement to be made on whether each effect is significant or not significant.

2.5.33 Further information is also provided about the nature of the effects, whether these will be direct or indirect, temporary, permanent, or reversible; beneficial, neutral or adverse, and cumulative.

2.5.34 A significant effect occurs where the combination of the variables results in the onshore elements of VE having a defining effect on the landscape receptor, or where changes of a lower magnitude affect a landscape receptor that is of particularly high sensitivity. A major loss or irreversible effect over an extensive area or landscape character, affecting landscape elements, characteristics and/ or perceptual aspects that are key to a nationally valued landscape are likely to be significant, particularly if they are of long duration and irreversible.

2.5.35 A non-significant effect will occur where the effect of the onshore elements of VE is not defining, and the landscape character of the receptor continues to be characterised principally by its baseline characteristics. Equally a small-scale change experienced by a receptor of high sensitivity may not significantly affect the special landscape quality or integrity of a designation. Reversible effects, on elements, characteristics and character that are of small-scale or geographical extent or affecting lower value receptors, are unlikely to be significant.

DEFINING IMPACT SIGNIFICANCE – VISUAL

VISUAL SENSITIVITY TO CHANGE

2.5.36 Visual Effects are concerned wholly with the effect of the onshore elements of VE on views, and the general visual amenity. Visual Effects are defined by the Landscape Institute in GLVIA 3, paragraphs 6.1 as follows:

"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern ... is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views."

2.5.37 Visual effects are identified for different receptors (people) who will experience the view at their place of residence, within their community, during recreational activities, at work, or when travelling through the area. The visual effects may include the following:

- Visual effect: a change to an existing static view, sequential views, or wider visual amenity as a result of development or the loss of particular landscape elements or features already present in the view; and
- Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a cumulative visual effect.

2.5.38 The level of visual effect, and whether this is significant, is determined through consideration of the sensitivity of the visual receptor and their view, and the magnitude of change that will be brought about by the onshore elements of VE.

ZONE OF THEORETICAL VISIBILITY (ZTV)

2.5.39 Plans mapping the ZTV are used to analyse the extent of theoretical visibility of the OnSS. The ZTVs provide a starting point in the assessment process and tend towards giving a 'worst case' or greatest calculation of the theoretical visibility. ZTV production for the LVIA, including limitations, is described in Section 2.6 of this report.

VIEWPOINT ANALYSIS

2.5.40 Viewpoint analysis is used to assist the assessment and is conducted from selected viewpoints within the study area. The purpose of this is to assess both the level of visual effect for particular receptors and to help guide the design process and focus of the assessment. A range of viewpoints are examined in detail and analysed to determine whether a significant visual effect will occur.

2.5.41 The assessment involves visiting the viewpoint location and viewing visualisations prepared for each viewpoint location. The fieldwork is generally conducted in periods of fine weather with good visibility and considers seasonal changes such as reduced leaf cover or hedgerow maintenance. The viewpoint analysis is used to assist in the assessment of effects on visual receptor locations as well as landscape character effects reported in the LVIA.

EVALUATING VISUAL SENSITIVITY TO CHANGE

2.5.42 In accordance with paragraphs 6.31 to 6.37 of GLVIA3, the sensitivity of visual receptors is determined by a combination of the value of the view and the susceptibility of the visual receptors to the change likely to result from the onshore elements of VE on the view and visual amenity.

VALUE OF THE VIEW

2.5.43 The value of a view or series of views reflects the recognition and the importance attached either formally through identification on mapping or being subject to planning designations, or informally through the value which society attaches to the view(s). The value of a view has been classified as high, medium-high, medium, medium-low or low and the basis for this assessment has been made clear using evidence and professional judgement, based on the following criteria.

2.5.44 **Formal recognition**: The value of views can be formally recognised through their identification on OS or tourist maps as formal viewpoints, sign-posted and with facilities provided to add to the enjoyment of the viewpoint such as parking, seating and interpretation boards. Specific views may be afforded protection in local planning policy and recognised as valued views. Specific views can also be cited as being of importance in relation to landscape or heritage planning designations, for example the value of a view has been increased if it presents an important vista from a designed landscape or lies within or overlooks a designated area, which implies a greater value to the visible landscape.

2.5.45 **Informal recognition**: Views that are well-known at a local level and/or have particular scenic qualities can have an increased value, even if there is no formal recognition or designation. Views or viewpoints are sometimes informally recognised through references in art or literature, and this can also add to their value. A viewpoint that is visited or appreciated by a large number of people will generally have greater importance than one gained by very few people.

SUSCEPTIBILITY TO CHANGE

2.5.46 Susceptibility relates to the nature of the viewer experiencing the view and how susceptible they are to the potential effects of the onshore elements of VE. A judgement to determine the level of susceptibility therefore relates to the nature of the viewer and their experience from that particular viewpoint or series of viewpoints, classified as high, medium-high, medium, medium-low or low and based on the following criteria:

2.5.47 **Nature of the viewer**: The nature of the viewer is defined by the occupation or activity of the viewer at the viewpoint or series of viewpoints. The most common groups of viewers considered in the visual assessment include residents, motorists, and people taking part in recreational activity or working. Viewers, whose attention is focused on the landscape, or with static long-term views, are likely to have a higher susceptibility. Viewers travelling in cars or on trains will tend to have a lower susceptibility as their view is transient and moving. The least sensitive viewers are usually people at their place of work as they are generally less susceptible to changes in views.

2.5.48 **Experience of the viewer**: The experience of the visual receptor relates to the extent to which the viewer's attention or interest may be focused on the view and the visual amenity they experience at a particular location. The susceptibility of the viewer to change arising from the onshore elements of VE may be influenced by the viewer's attention or interest in the view, which may be focused in a particular direction, from a static or transitory position, over a long or short duration, and with high or low clarity. For example, if the principal outlook from a settlement is aligned directly towards the onshore elements of VE, the experience of the visual receptor is altered more notably than if the experience relates to a glimpsed view seen at an oblique angle from a car travelling at high speed. The visual amenity experienced by the viewer varies depending on the presence and relationship of visible elements, features or patterns experienced in the view and the degree to which the landscape in the view may accommodate the influence of the onshore elements of VE.

VISUAL SENSITIVITY RATING

2.5.49 An overall level of sensitivity is applied for each visual receptor or view – high, medium-high, medium, medium-low or low by combining individual assessments of the value of the view and the susceptibility of the visual receptor to change. Each visual receptor, meaning the particular person or group of people likely to be affected at a specific viewpoint, is assessed in terms of their sensitivity.

VISUAL MAGNITUDE OF CHANGE

2.5.50 The visual magnitude of change is an expression of the scale of the change that will result from the onshore elements of VE and is dependent on a number of variables regarding the size or scale of the change and the geographical extent over which the change will be experienced. A separate assessment is also made of the duration and reversibility of visual effects.

SIZE OR SCALE OF CHANGE

2.5.51 An assessment is made regarding the size or scale of change in the view that is likely to be experienced as a result of the onshore elements of VE, based on the following criteria:

2.5.52 **Distance:** the distance between the visual receptor/viewpoint and the onshore elements of VE. Generally, the greater the distance, the lower the magnitude of change, as the onshore elements of VE will constitute a smaller scale component of the view.

2.5.53 **Size:** the amount and size of the onshore elements of VE that is seen. Visibility may range from small or partial visibility of the onshore elements of VE, to all of the onshore elements being visible. Generally, the larger and greater number of the onshore elements of VE that appear in the view, the higher the magnitude of change. This is also related to the degree to which the onshore elements of VE may be wholly or partly screened by landform, vegetation (seasonal) and/ or built form. Conversely open views are likely to reveal more of the onshore elements of VE, particularly where this is a key characteristic of the landscape context.

2.5.54 **Scale**: the scale of the change in the view, with respect to the loss or addition of features in the view and changes in its composition. The scale of the onshore elements of VE may appear larger or smaller relative to the scale of the receiving landscape.

2.5.55 **Field of view**: the vertical/ horizontal field of view and the proportion of the view that is affected by the onshore elements of VE. Generally, the more of the proportion of a view that is affected, the higher the magnitude of change. If the onshore elements of VE extend across the whole of the open part of the outlook, the magnitude of change is higher as the full view has been affected. Conversely, if the onshore elements of VE cover just a narrow part of an open, expansive and wide view, the magnitude of change is likely to be reduced as it will not affect the whole open part of the outlook. This can in part be described objectively by reference to the horizontal/ vertical field of view affected, relative to the extent and proportion of the available view.

2.5.56 **Contrast:** the character and context within which the onshore elements of VE are seen and the degree of contrast or integration of any new features with existing landscape elements, in terms of scale, form, mass, line, height, colour, luminance and motion. Developments which contrast or appear incongruous in terms of colour, scale and form are likely to be more visible and have a higher magnitude of change.

2.5.57 **Consistency of image:** the consistency of image of the onshore elements of VE in relation to other developments. The magnitude of change of onshore elements of VE is likely to be lower if its layout design is broadly similar to other developments in the landscape, in terms of its scale, form and general appearance. New development is more likely to appear as logical components of the landscape with a strong rationale for their location.

2.5.58 **Skyline/ background:** Whether the onshore elements of VE will be viewed against the skyline, or a background landscape may affect the level of contrast and magnitude. If the onshore elements of VE add to an already developed skyline the magnitude of change will tend to be lower.

2.5.59 **Number:** generally, the greater the number of separate onshore elements of VE seen simultaneously or sequentially, the higher the magnitude of change. Further effects will occur in the case of separate developments and their spatial relationship to each other will affect the magnitude of change. For example, development that appears as an extension to an existing development will tend to result in a lower magnitude of change than a separate, new development.

2.5.60 **Nature of visibility**: the nature of visibility is a further factor for consideration. The onshore elements of VE may be subject to various phases of development change and the manner in which the onshore elements of VE may be viewed could be intermittent or continuous and/ or vary seasonally, due to periodic management or leaf fall.

GEOGRAPHICAL EXTENT

2.5.61 The geographic extent over which the visual effects has been experienced is also assessed, which is distinct from the size or scale of effect and is described in terms of the physical area or location over which it is experienced (described as a linear or area measurement). The extent of the effects varies according to the specific nature of the onshore elements of VE and is principally assessed through ZTV, field survey and viewpoint analysis of the extent of visibility likely to be experienced by visual receptors.

DURATION AND REVERSIBILITY

2.5.62 The duration and reversibility of visual effects are based on the period over which the onshore elements of VE are likely to exist during construction and operation and the extent to which the onshore elements of VE are removed during decommissioning and the effects reversed at the end of that period.

2.5.63 Long-term, medium-term and short-term visual effects are defined as follows:

- Long-term – more than 10 years (may be defined as permanent or reversible);
- Medium-term – 5 to 10 years; and
- Short-term – up to 5 years.

VISUAL MAGNITUDE OF CHANGE RATING

2.5.64 The 'magnitude' or 'degree of change' resulting from the onshore elements of VE is described as 'high', 'medium-high', 'medium', 'medium-low' 'low' and 'negligible'. In assessing the magnitude of change the assessment focuses on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects, for example as short, medium or long-term, and temporary or permanent. The basis for the assessment of magnitude for each receptor is made clear using evidence and professional judgement.

EVALUATING VISUAL EFFECTS AND SIGNIFICANCE

2.5.65 The level of visual effect is evaluated through the combination of visual sensitivity and magnitude of change. Once the level of effect has been assessed, a professional judgement is then made as to whether the level of effect is 'significant' or 'not significant' as required by the relevant EIA Regulations. This process is assisted by the matrix in Table 2.4 which is used to guide the assessment. Geographical extent and duration and reversibility are considered as part of drawing conclusions about significance, combining with other judgements on sensitivity and magnitude, to allow a final judgement to be made on whether each effect is significant or not significant.

2.5.66 Further information is also provided about the nature of the effects, whether these will be direct or indirect; temporary, permanent or reversible; beneficial, neutral or adverse; and cumulative).

2.5.67 A significant effect is more likely to occur where a combination of the variables results in the onshore elements of VE having a defining effect on the view or visual amenity or where changes affect a visual receptor that is of high sensitivity.

2.5.68 A non-significant effect is more likely to occur where a combination of the variables results in the onshore elements of VE having a non-defining effect on the view or visual amenity or where changes affect a visual receptor that is of low sensitivity.

DEFINING IMPACT SIGNIFICANCE – CUMULATIVE, LANDSCAPE AND VISUAL

2.5.69 NatureScot's guidance, Assessing the Cumulative Impact of Onshore Wind Energy Developments (2021) is widely used across the UK to inform the specific assessment of the cumulative landscape and visual effects of different types of development. Both GLVIA3 and NatureScot's guidance provides the basis for the methodology for the cumulative LVIA. The NatureScot (2021) guidance defines:

'The purpose of a Cumulative Landscape and Visual Impact Assessment (CLVIA) is to describe, visually represent and assess the ways in which a proposed wind farm would have additional impacts when considered with other consented or proposed wind farms. It should identify the significant cumulative impacts arising from the proposed wind farm.

The assessment should be proportionate to the likely impacts and all CLVIA should accord with the guidelines within GLVIA3. The emphasis should be on the production of relevant and useful information, highlighting why the proposals assessed have been included and why others have been excluded, rather than the provision of a large volume of information.' (NatureScot 2021, p8);

'Cumulative impacts can change either the physical fabric of character of the landscape, or any special values attached to it' (NatureScot 2021, p7); and

'Cumulative impacts on visual amenity can be caused by 'combined visibility' and/or 'sequential impacts'. (NatureScot 2021, p7).

2.5.70 In line with this guidance therefore, the objective of the cumulative assessment is different from the assessment of effects of VE alone. In the cumulative assessment the intention is to establish whether or not the addition of VE, in combination with other relevant consented or proposed developments, may lead to a significant cumulative landscape or visual effect.

EVALUATION OF SIGNIFICANCE

2.5.71 The matrix presented in Table 2.4 is used as a guide to help inform the threshold of significance when combining sensitivity and magnitude to assess significance. On this basis potential effects are assessed as major, major/ moderate, moderate, moderate/ minor, minor or negligible. In those instances where the magnitude of change has been assessed as 'no change', the level of effect is recorded as 'no effect'.

2.5.72 For the purposes of this assessment, any effects with a significance level of major and major/ moderate have been deemed significant in EIA terms, as highlighted by the pink shaded boxes in Table 2.4. 'Moderate' levels of effect have the potential, subject to the assessor's professional judgement, to be considered as significant or not significant, depending on the sensitivity and magnitude of change factors evaluated, as shown by the orange shaded boxes in Table 2.4: Matrix to guide assessment of significant effects.. These assessments are explained as part of the assessment, where they occur. Significance can therefore occur at a range of levels depending on the magnitude and sensitivity, however in all cases, a significant effect is considered more likely to occur where a combination of the variables results in the onshore elements of VE having a defining effect on the landscape character or view. Definitions are not provided for the individual categories of significance shown in the matrix and the reader should refer to the detailed definitions provided for the factors that combine to inform sensitivity and magnitude

2.5.73 Effects assessed as being either moderate/ minor, minor or negligible level are assessed as not-significant, as shown by the white shaded boxes in Table 2.4).

2.5.74 In line with the emphasis placed in GLVIA3 upon the application of professional judgement, an overly mechanistic reliance upon a matrix is avoided through the provision of clear and accessible narrative explanations of the rationale underlying the assessment made for each landscape and visual receptor. Such narrative assessments provide a level of detail over and above the outline assessment provided by use of the matrix alone.

2.5.75 The landscape and visual assessment, unavoidably, involves a combination of quantitative and qualitative assessment and wherever possible cross reference has been made to objective evidence, baseline figures and/ or to photomontage visualisations to support the assessment conclusions. Often a consensus of professional opinion has been sought through consultation, internal peer review, and the adoption of a systematic, impartial, and professional approach. Importantly, each effect results from its own unique set of circumstances and has been assessed on a case-by-case basis. The matrix, as presented in Table 2.4, should, therefore, be considered as a guide and any deviation from this guide has been clearly explained in the assessment

Table 2.4: Matrix to guide assessment of significant effects.

	Magnitude of change					
Sensitivity	**High**	**Medium – high**	**Medium**	**Medium – low**	**Low**	**Negligible**
High	Significant (Major)	Significant (Major)	Significant (Major-moderate)	Significant or not significant (Moderate)	Not significant (Moderate-minor)	Not significant (Minor)
Medium – high	Significant (Major)	Significant (Major-moderate)	Significant or not significant (Moderate)	Significant or not significant (Moderate)	Not significant (Moderate-minor)	Not significant (Minor)
Medium	Significant (Major-moderate)	Significant or not significant (Moderate)	Significant or not significant (Moderate)	Not significant (Moderate-minor)	Not significant (Minor)	Not significant (Minor)
Medium – low	Significant or not significant (Moderate)	Significant or not significant (Moderate)	Not significant (Moderate-minor)	Not significant (Minor)	Not significant (Minor)	Not significant (Negligible)
Low	Not significant (Moderate-minor)	Not significant (Moderate-minor)	Not significant (Minor)	Not significant (Minor)	Not significant (Negligible)	Not significant (Negligible)

NATURE OF EFFECTS

2.5.76 The EIA Regulations 2017, at Schedule 4, Paragraph 5, state that the ES should define *'the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development'.*

2.5.77 In accordance with the EIA Regulations 2017, in this assessment the nature of effects refers to whether the landscape and/ or visual effect of the onshore elements of VE is positive or negative (herein referred to as 'beneficial', 'neutral' or 'adverse').

2.5.78 Guidance provided in GLVIA3 on the nature of effect states that 'in the LVIA, thought must be given to whether the likely significant landscape and visual effects are judged to be positive (beneficial) or negative (adverse) in their consequences for landscape or for views and visual amenity', but it does not provide guidance as to how that may be established in practice. The nature of effect is therefore one that requires interpretation and, where applied, this involves reasoned professional opinion.

2.5.79 In this LVIA a precautionary approach has been adopted, which assumes that significant landscape and visual effects are weighed on the adverse side of the planning balance, unless otherwise stated. Beneficial or neutral effects may, however, arise in certain situations and are stated in the assessment where relevant, based on the following definitions.

2.5.80 **Beneficial effects** – contribute to the landscape and visual resource through the enhancement of desirable characteristics or the introduction of new, beneficial attributes. The development contributes to the landscape by virtue of good design or the introduction of new landscape planting. The removal of undesirable existing elements or characteristics can also be beneficial, as can their replacement with more appropriate components.

2.5.81 **Neutral effects** – occur where the development fits with the existing landscape character or visual amenity. The development neither contributes to nor detracts from the landscape and visual resource and can be accommodated with neither beneficial or adverse effects, nor where the effects are so limited that the change is hardly noticeable. A change to the landscape and visual resource is not considered to be adverse simply because it constitutes an alteration to the existing situation.

2.5.82 **Adverse effects** – are those that detract from the landscape character or quality of visual attributes experienced, through the introduction of elements that contrast, in a detrimental way, with the existing characteristics of the landscape and visual resource, or through the removal of elements that are key in its characterisation.

2.6 UNCERTAINTY AND TECHNICAL DIFFICULTIES ENCOUNTERED

ONSS ZONE OF THEORETICAL VISIBILITY ANALYSIS

2.6.1 The ZTVs (Volume 6, Part 7, Annex 2.1, LVIA Figures, Figures 2.8 to 2.11), have been generated using Geographic Information Systems software to demonstrate the extent to which the OnSS may theoretically be seen from any point in the OnSS study area.

2.6.2 The OnSS technology will employ either AIS or GIS. The choice of switchgear affects both the total land area required and the size and type of buildings which will be needed.

2.6.3 If a GIS option is selected, the land area required for the OnSS will be up to 45,000 m^2. The maximum height of the GIS building will be 15 m and the maximum height of other electrical equipment will be 15 m, both excluding lightning masts at 18 m and any land raising.

2.6.4 If an AIS option is selected, the land area required for the OnSS will be up to 58,800 m^2. The maximum height of electrical infrastructure will be 15 m and the maximum height of buildings will be 7 m, both excluding lightning masts at 18 m and any land raising.

2.6.5 The finished ground level of the OnSS has been calculated at 35.775 m Above Ordnance Datum (AOD), such that the maximum height of any buildings or external electrical infrastructure will be 50.775 m AOD, excluding lightning masts at 18 m.

2.6.6 ZTVs are primarily calculated based on the visibility at 2 m above the height of the landform relative to the height of the project, which means a viewer height of 2 m. The ZTVs shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figures 2.8a, 2.9a, 2.10a and 2.11a, reflect bare ground theoretical visibility across the OnSS study area. The ZTVs shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figures 2.8b, 2.9b, 2.10b and 2.11b, also factor in the potential screening effect of areas of woodland within the OnSS study area. An average height of 10 m has been attributed to all woodlands. These woodland heights are based on observations during fieldwork and are considered to be a conservative average. The ZTVs do not take into account the screening effect of smaller groups of trees, hedgerows, hedgerow trees, buildings or other local features. As a result, the ZTVs present a conservative worst-case assumption in respect of theoretical visibility.

2.6.7 There are limitations in the production of the ZTV, and these should be borne in mind in its consideration and use:

- The ZTVs are based on 5 m data grid (Ordnance Survey Terrain 5) with a viewer height of 2 m above ground level;
- The bare ground ZTV does not take into account the screening effects of woodlands, vegetation, buildings, or other local features that may prevent or reduce visibility;
- The screened ZTV illustrates the bare ground situation with major woodland blocks reflected, but does not take into account the screening effects of other vegetation, buildings, or other local features that may prevent or reduce visibility;
- The woodland blocks included in the screened ZTV may differ to the actual height of woodland in the OnSS study area. Based on fieldwork, it is considered that the assumed heights used in the screened ZTV represent a conservative average;
- The ZTV does not indicate the decrease in visibility that occurs with increased distance from the OnSS. The nature of what is visible from 1 km away will differ markedly from what is visible from 5 km away, although both are indicated on the ZTV as having the same level of visibility; and
- There is a wide range of variation within the visibility shown on the ZTV. For example, an area shown as having visibility of the OnSS may only gain views of the smallest extremity rather than all of it as may be the case elsewhere.

2.6.8 These limitations mean that while the ZTV is used as a starting point in the assessment, providing an indication of where the OnSS will theoretically be visible, the information drawn from the ZTV is not completely relied upon to accurately represent visibility of the OnSS.

VISUALISATIONS

2.6.9 The viewpoint assessment of the OnSS is illustrated by a range of visualisations, including photographs, Rochdale envelope photomontages and model photomontages, which are in line with current best practice and the guidance provided in Landscape Institute – Visual Representation of Development Proposals (2019). Visualisations have a number of limitations when using them to form a judgement on a development. These include:

- The images provided give a reasonable impression of the scale of and distance to the OnSS, but can never be 100% accurate;

- The viewpoints illustrated are representative of views in the area but cannot represent visibility at all locations;
- To form the best impression of the visual impacts of the OnSS these images are best viewed at the viewpoint location shown; and
- The visualisations must be printed at the right size to be viewed properly (A1 width) and viewed at a comfortable viewing distance.

2.6.10 The photographs used to produce the photomontages have been taken using Canon EOS 5D and 6D Digital SLR cameras, with a fixed lens and a full-frame (35 mm negative size) CMOS sensor. The photographs are taken on a tripod with a pano-head at a height of approximately 1.5 m above ground. To create the baseline panorama, the frames are individually cylindrically projected and then digitally joined to create a planar projected panorama with a 53.5-degree field of view. Tonal alterations are made using Adobe software to create an even range of tones across the photographs once joined.

2.6.11 The photographs and photomontages used in this assessment are for illustrative purposes only and, whilst useful tools in the assessment, are not considered to be completely representative of what will be apparent to the human eye. The assessments are carried out from observations in the field and therefore may include elements that are not visible in the photographs.

2.6.12 It is not possible to visit every part of the study area when undertaking an LVIA and, therefore, some aspects of the assessment are based on desk-based study and professional experience.

SUMMARY

2.6.13 While there is some small degree of uncertainty in carrying out fieldwork, preparing ZTVs and photomontage visualisations, and understanding the cumulative context, there has been sufficient information available to carry out a detailed assessment and cumulative assessment.

2.7 EXISTING ENVIRONMENT

INTRODUCTION

2.7.1 This section identifies aspects of the landscape and visual resource that may be significantly affected by the onshore elements of VE and provides a description of the existing landscape and visual conditions in the area that may be affected, which is referred to as the landscape and visual baseline. When reviewed alongside the description of the onshore elements of VE provided in Volume 6, Part 3, Chapter 1: Onshore Project Description the established baseline will form the basis for the identification and description of landscape and visual effects.

2.7.2 The baseline description of the landscape and visual receptors that may be affected is primarily determined by the physical footprint of the onshore elements of VE and the extent to which the OnSS will be visible, as illustrated in the ZTVs (Volume 6, Part 7, Annex 2.1, LVIA Figures, Figures 2.8 to 2.11).

2.7.3 The baseline also describes current pressures that may cause change in the landscape in the future, and which need to be considered cumulatively with VE, in particular drawing on information for other developments that are not yet present in the landscape but are at other stages in the planning process.

2.7.4 A preliminary assessment has identified those landscape and visual receptors that may have the potential to experience significant effects, and which require to be assessed in full. This section provides a baseline overview, with a detailed baseline description provided separately within the Sections 2.10, 2.11 and 2.12 for each receptor that is assessed in detail.

LANDSCAPE BASELINE OVERVIEW

SITE CONTEXT

2.7.5 The onshore elements of VE are located entirely within the administrative boundary of Tendring District Council, in Essex. The offshore export cables will make landfall at Sandy Point between Holland-on-Sea and Frinton-on-Sea on the Essex coast. The onshore export cables will extend 22 km inland to join the landfall on the coast with the OnSS, which will be sited to the west of Little Bromley, and between Lawford to the north and the A120 to the south.

2.7.6 This part of Essex has a distinct coastal landscape broadly characterised by the towns and resorts which extend along much of its coastline, where there are extensive beaches, sea walls and sand dunes, and with coastal marshes along the estuaries to the north and south. Inland from the coastline. The onshore ECC and OnSS study areas are characterised by agricultural lowland landscapes which are typically flat to gently undulating and low-lying. They provide a rural backdrop to the coast where parts have been reclaimed from marshland. Further, inland the farmed landscape covers a mix of shallow river valleys and low-lying plateaux, such that the elevation of the landscape seldom rises above 30 m.

2.7.7 Within the context of the onshore ECC study area, the landscape transitions from the beach and coastal landscape across a predominantly rural landscape which mostly comprises fields of arable crops with some enclosure from hedgerows and localised tree cover. Whilst the landscape of the LVIA study area is rural in nature, it also has a concentration of activity along the many transport routes traversing the area, including the A120, A133 and Colchester to Clacton-on-Sea railway.

2.7.8 The onshore cables will be installed underground. The onshore ECC will follow a 22 km route to connect the landfall near Holland Haven with the OnSS on Ardleigh Road, as presented in Volume 3, Chapter 1: Onshore Project Description. Under Scenario 1, the width will be 60 m in Sections 1 to 5, 72 m in Section 6 and 7, and increasing up to around 130 m in sections of trenchless crossing with associated compounds on either side. The OnSS will be co-located with the NF OnSS, with the National Grid EACN OnSS located in a site to the immediate west. These are both subject to separate planning applications. The location of the onshore infrastructure is shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.1a, 2.1b and 2.1c.

LANDSCAPE CHARACTER

2.7.9 The English landscape is classified at the national level by National Landscape Character Areas (NLCAs). The NLCAs cover large areas characterised by a broad landscape type, each of which are described using ‘character profiles’. The onshore elements of VE and the associated LVIA study area which surrounds them, all broadly lie within the following NLCAs:

- Landfall – NLCA 81 Greater Thames Estuary;

- Onshore ECC – NLCA 111 Northern Thames Basin; and
- OnSS – NLCA 111 Northern Thames Basin.

2.7.10 The wider LVIA study area lies within the following two additional NLCAs as shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.2:

- NLCA 86 South Suffolk and North Essex Clayland; and
- NLCA 82 Suffolk Coast and Heaths.

2.7.11 As these NLCAs cover a broad scale, the more detailed County and District Landscape Character Assessments are mainly referred to in this assessment.

2.7.12 The Essex Landscape Character Assessment (2003) presents a landscape character assessment which covers the areas of Essex County Council and Southend-on-Sea Borough Council as shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.3. This shows the Substation Zone being located in the E2 South Colchester Farmland subset of Landscape Character Type (LCT) 3a London Clay Landscape, which also covers the majority of the OnSS study area.

2.7.13 The key characteristics of E2 South Colchester Farmland are presented in the landscape character assessment as follows;

- *'Mix of small regular pasture and large arable fields.*
- *Dense woodland in the Roman River valley.*
- *Enclosed, intimate character in the north, more open in the south.*
- *Complex settlement pattern of nucleated and linear villages/hamlets, and farmsteads along dispersed lanes.*
- *Distinctive elongated large waterbody of Abberton Reservoir within a shallow valley.'*

2.7.14 This county level landscape character assessment presents a relatively high-level overview in terms of landscape character and lacks the detailed information required for a detailed assessment of effects on landscape character. The landscape character assessment highlights the fact that it presents a framework for a more detailed LCA at the district level with reference made to the Tendring District Landscape Character Assessment (2001).

2.7.15 The assessment presented in this LVIA is, therefore, largely based on the Tendring District LCA (2001) which covers the landfall, onshore ECC, the OnSS and most of the surrounding LVIA study area as shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.4. Reference is also made to the LCAs which cover Babergh District to the north and Colchester Borough to the west, although it is unlikely that these more distant landscapes will be affected by the onshore components.

- Tendring District Landscape Character Assessment Volumes One and Two – Landscape Character Assessment and Landscape Guidelines prepared by Land Use Consultants (November 2001);
- The Joint Babergh and Mid Suffolk District Council Landscape Guidance, (August 2015); and
- The Colchester Borough Landscape Character Assessment, Colchester Borough Council, (November 2005).

2.7.16 The Tendring District Landscape Character Assessment separates the landscape into landscape types, which are further sub-divided into character areas. This local character assessment forms the basis for the baseline landscape character assessment for the OnSS study area. The landscape types and character areas that lie within the OnSS study area are shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.3. The Substation Zone and much of the OnSS study area are covered by 7A Bromley Heaths subset of the Plateaux Heathland LCT.

2.7.17 The Tendring Peninsula, which lies at the edge of the London Basin coincides with a large part the LVIA study area. It is drained by numerous rivulets flowing northwards or eastwards to the sea. The area comprises a mosaic of intensive farmland and pasture, small woodland plantations, heathland, drained estuaries, clay valleys and associated rivers and coastline, with sandy beaches and a string of popular tourist resorts along the coast. It is a predominately lowland plateau landscape with levels falling gradually towards the east. The coastline is largely drained coastal marsh, protected by sea walls with long views extending over the hinterland from this coastal area.

2.7.18 There is a range of cultural heritage assets in the Tendring District area, including Saxon burial mounds and military features such as Second World War pillboxes. The settlement pattern inland comprises a mix of dispersed villages and hamlets, such as Bromley, Little Bromley, Tendring, Weeley, Thorpe-le-Soken, Landemere and Great Holland, as well as farmsteads and other rural properties, while larger towns, such as Clacton-on-Sea and Frinton-on-Sea, extend along the coast.

2.7.19 The Joint Babergh and Mid Suffolk District Council Landscape Guidance, August 2015 separates the landscape into landscape typologies. This local character assessment has used the Landscape Character Assessment areas as defined by Suffolk County Council and specific descriptions to ensure each Landscape Character is clearly relating to Babergh District. This document contributes to the baseline landscape assessment for the OnSS study area and the landscape character areas that lie within the LVIA study area are shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.3.

2.7.20 Babergh District is largely characterised by large regular fields located to the north of the River Stour. It contains part of the designated Dedham Vale AONB, comprising plateaux that are flat or gently rolling with areas of ‘ancient’ countryside and old, sinuous hedge lines. Valley sides of deep loams, with parklands plantations and ancient woodlands line the saltmarsh and intertidal flats with areas of rolling valley farmlands further inland. To the west of the River Stour lie areas of valley meadowland.

2.7.21 The Colchester Borough Landscape Character Assessment (Colchester Borough Council produced by Chris Blandford Associates, November 2005) separates the landscape into landscape types, which are sub-divided into character areas. This document contributes to the baseline landscape assessment for the OnSS study area and the landscape types and character areas that lie within the OnSS study area are shown in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.3.

LOCAL LANDSCAPE CHARACTER

2.7.22 The information presented in the Tendring District Landscape Character Assessment (2001) has been supplemented by site survey to enable a more detailed assessment of local landscape character. A detailed description is presented in Section 2.11 where the effects of the OnSS on local landscape character are presented in more detail.

LANDSCAPE DESIGNATIONS

2.7.23 A landscape designation is an area of landscape identified as being of importance at international, national or local level, either defined by statute or identified in development plans or other documents. The landscapes are designated in relation to their special qualities or features which warrant special consideration through the planning system.

2.7.24 There are three ways in which such designations are relevant to the LVIA:

- The presence of a designation can provide an indication of a recognised value that may increase the sensitivity of a landscape character receptor, viewpoint or visual receptor, and may therefore affect the significance of the effect on that receptor;
- The presence of a relevant designation can lead to the selection of a representative viewpoint within the designated area, as the viewpoint will provide a representative outlook from that area; and
- Designated areas may be included as landscape character receptors so that the effects of the proposed onshore elements of VE on the landscapes that have been accorded particular value can be specifically assessed.

2.7.25 There are two Landscape Designations that overlap the OnSS study area; Dedham Vale AONB overlaps the OnSS study area to the north-west and the Suffolk Coast and Heaths AONB overlaps the OnSS study area to the north-east. Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.5 shows the location and extent of the designations in relation to the OnSS study area, while Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.10a and 2.10b show the designations in conjunction with the OnSS bare ground and screened ZTV.

2.7.26 The ZTVs show the very limited extent to which visibility of the OnSS will arise across Dedham Vale AONB and the Suffolk Coast and Heaths AONB. The combination of the limited visibility of the OnSS, the extent of tree cover and vegetation in the AONBs, their separation distance from the ONSS and the baseline influence from other intermediate developments, including the town of Lawford and Foxash Estate, means that the special qualities of the AONBs will not be significantly affected by VE. The Dedham Vale AONB and the Suffolk Coast and Heaths AONB have, therefore, not been assessed in detail in the LVIA.

VISUAL BASELINE OVERVIEW

2.7.27 Principal visual receptors found within the LVIA study area include roads, railways, individual properties, settlements and recreational routes. Principal Visual Receptors within the LVIA study area are generally larger and more concentrated along the coast, and smaller and sparser across the rural hinterland. Principal visual receptors are mapped in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.6 and with the viewpoints and OnSS bare ground and screened ZTV in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.11a and 2.11b.

SETTLEMENT

2.7.28 Settlement pattern within the LVIA study area is generally dispersed, with farmsteads and individual or small clusters of residential properties, scattered across the rural landscape. There are also a number of small villages and occasional small towns in this rural area, with larger towns concentrated along the coast. The popular coastal resorts of Frinton-on-Sea, lies to the north-east, and Clacton-on-Sea, lies to the south-west of the landfall, with the village of Great Holland set inland to the north-east of the onshore ECC. The onshore ECC also passes by the eastern and northern side of Thorpe-le-Soken and the northern side of Thorpe Green and passes by the north-eastern side of Tendring Green and Tendring Heath before crossing under the A120.

2.7.29 The closest main settlement to the OnSS is the town of Lawford at a minimum of approximately 1.6 km to the north-east. There are also the smaller villages of Little Bromley at a minimum of approximately 1.1 km to the east and Bromley Cross at a minimum of approximately 1.7 km to the south-west. The occurrence of intervening tree cover and occasional built development means that visibility of the OnSS from these settlements will be limited.

LEISURE AND RECREATION

2.7.30 Across the LVIA study area, there are a large number of ProWs and Bridleways, areas of Open Access Land, and promoted cycling routes that provide access to the countryside and coastlines.

2.7.31 Two long distance walking routes overlap with the OnSS and onshore ECC study areas. These include Lasso Essex – Sunny Sands Stands and the Tendring Hundred Hinterland. There are also routes at the Essex Way, Lasso Essex Way (various sections), Nelson Way and Walks in Colne Zolne and several other locally promoted routes, Public Rights of Way, bridleways and byways.

2.7.32 The one National Cycle Route within the onshore ECC study area is the National Cycle Route 150, which runs along the coast between Frinton-on-Sea and Clacton-on- Sea. An on-road route cuts across the onshore ECC study area between Raven's Green in the west towards Stones Green to the east. National Cycle Routes 1 and National Cycle Route 51 also lie within the OnSS study area.

2.7.33 Other opportunities for leisure and recreation in the LVIA study area occur on the coast between and beyond Frinton-on-Sea and Clacton-on-Sea, as well as further inland, and include AONBs, Country Parks, nature conservation sites, and caravan and camping sites. Visitor locations notable for their ecological and scenic interest, present within the onshore ECC and OnSS study areas, include;

- The Holland Haven Marshes SSSI and the Holland Haven Country Park between Clacton-on-Sea and Frinton-on-Sea;
- Various pockets of nationally important ancient broadleaf woodland;
- The Hamford Water SPA, SAC and Ramsar;
- Dedham Vale AONB;
- Stour and Orwell SPA and Ramsar;
- The Colne Estuary (Mid-Essex Coast Phase 2) Ramsar and SPA;
- The Suffolk Coast and Heaths AONB; and
- Highwoods Country Park.

2.7.34 Visual receptors associated with offshore leisure facilities, such as ferry and sailing routes, are not considered in the LVIA owing to the very limited visibility of the landfall and onshore ECC from these locations.

TRANSPORT ROUTES

2.7.35 There is a network of transport routes present within the LVIA study area. The A120 Harwich Road crosses into the northern part of the onshore ECC study area near Great Bromley and Thorley Cross and forms the Wix Bypass. The A133 Colchester Road crosses the western section of the OnSS study area forking south from the A120 and passing south-east to Clacton-on-Sea. There are multiple secondary and minor roads occurring across the LVIA study area, providing access to and connections between the settlements.

2.7.36 There is one passenger railway line, the Great Eastern Mainline spur, which enters the western edge of the OnSS study area near Great Bentley passing towards Great Holland where it forks into two lines; one towards Frinton-on-Sea in the east and one towards Clacton-on-Sea in the west. A further passenger railway line lies within the LVIA study area connecting Colchester in the west to Manningtree and beyond to Ipswich to the north.

2.7.37 Visual receptors associated with offshore transport, such as ferry and sailing routes, are not considered in the LVIA owing to the very limited visibility of the landfall and onshore ECC from these locations.

ONSHORE ECC VISUAL ASSESSMENT

2.7.38 As the cables are proposed to be buried there will be little or no visual effects resulting from the onshore ECC once operational. In addition, the relatively small scale and ground-based nature of the onshore ECC means that only the views of close-range receptors will be affected during construction. The effects will also occur over relatively short periods of time as the construction of the onshore ECC will follow a ‘rolling programme’ along its length.

2.7.39 The effects of the onshore ECC on the visual amenity of residents, road-users, walkers and horse-riders, is presented in Section 2.12. While the focus of this assessment is the effects arising during the construction phase, it also considers the residual effects that may extend into the operational phase owing to vegetation removals carried out in the construction phase.

2.7.40 The built infrastructure proposed for the OnSS has a greater extent of visibility than the landfall and onshore ECC. This means that visual receptors over a wider area will potentially be affected, and visual effects will also occur during the operational, as well as construction and decommissioning phases.

2.7.41 The viewpoints identified for the assessment of the OnSS have been selected to cover a variety of landscape character areas; roads; recreational routes; points from different directions and distances; and to inform the definition of the likely extent of significant visual effects from the identified principal visual receptors. The viewpoints have also been selected to cover the cumulative effects with the NF OnSS and National Grid EACN Substation.

2.7.42 Representative viewpoints for the landscape and visual assessment of the OnSS have been selected through consultation and agreement with statutory consultees and are identified in Table 2.5 below and are mapped in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.7. The precise locations of the 11 viewpoints have been finalised based on site survey and potential visibility of the OnSS. Visualisations of the OnSS are presented in Volume 6, Part 7, Annex 2.2.1-16, LVIA Visualisations, Figures 2.16 to 2.26.

Table 2.5: Representative Viewpoints for the OnSS

ID	Viewpoint	Grid Reference	Distance (km)	Representation
1	Ardleigh Road near Norman's Farm	608069E 228546N	0.19	Road-users/ rural residents
2	Barn Lane ProW/ Bridleway	608858E 229158N	0.79	Walkers/ horse-riders
3	Grange Road ProW	608576E 229783N	0.95	Walkers
4	Ardleigh Road near Jenning's Farm	608972E 228679N	0.83	Road users/ rural residents
5	Barlon Road near Little Bromley	609030E 227737N	1.39	Road users/ rural residents
6	Badley Hall Road	608725E 226769N	2.08	Walkers
7	Little Bromley PRoW	609348E 228588N	1.22	Walkers/ residents
8	Lilley's Farm	607763E 227991N	0.73	Walkers/ residents
9	Essex Way, Dedham Road	608071E 231563N	2.59	Walkers/ road users

ID	Viewpoint	Grid Reference	Distance (km)	Representation
10	Waterhouse Lane	607076E 228332N	0.93	Road users/ rural residents
11	Bounds Farm, Hungerdown Lane	607076E 228332N	0.89	Road users/ rural residents

CUMULATIVE BASELINE

2.7.43 Existing developments are included in the baseline for both the landscape and visual effects assessments in Section 2.11 and Section 2.12. These developments have an existing influence on the baseline landscape and visual environment. The UK Power Network (UKPN) Lawford Substation lies immediately to the south of the OnSS, with a number of overhead electricity power lines crossing the OnSS study area to converge at this location. This existing substation and the associated overhead electricity power lines are the only examples of large-scale energy development in this local area, with much of the development being relatively small in scale and rural in character.

2.7.44 Adjacent developments may complement one another, or may be discordant with one another, and it is the increased or reduced level of significance of effects which arises as a result of this change that is assessed. Where this occurs, the magnitude of change varies according to cumulative effect factors such as the consistency of image and degree of contrast or integration with the onshore elements of VE, as well as other 'non-cumulative' factors, such as its distance, lateral spread and amount of visibility.

EVOLUTION OF THE BASELINE

2.7.45 The baseline character of the landscapes associated with the LVIA study area could evolve in the future as a result of land use policy, environmental improvements and development pressures. This has the potential to alter the baseline assessment of the landscape and visual resource over time relating to the onshore elements of VE.

2.7.46 The most likely evolution of the baseline that is predicted to occur over the time between the point of assessment and the time over which VE will be built and become operational is through the introduction of future developments. Future developments are considered in the assessment of cumulative effects, see Section 2.14.

CLIMATE CHANGE

2.7.47 In respect of climate change, the main considerations of the LVIA are the potential landscape and visual impacts associated with the OnSS. The landscape of the Substation Zone and surroundings is characterised by intensive arable agricultural practices with more natural landscape elements such as woodland and grassland very limited in occurrence and extent. There is the potential that climate change could affect the growth rates and survival of mitigation planting proposed around the OnSS for screening purposes. To mitigate against these potential risks, the mitigation planting will be designed to ensure that plant species are suitably drought and flood tolerant, and the growing conditions are optimised to counteract extremities. The effects of climate change on the LVIA are presented at section 2.15.

2.8 KEY PARAMETERS FOR ASSESSMENT

CO-LOCATION

2.8.1 A collaborative approach to the design of the landfall, onshore ECC and OnSS for both VE and North Falls has been taken. This approach allows for opportunities to minimise environmental and community disruption through coordinated delivery and will enable a more coordinated appearance.

2.8.2 The onshore ECCs of the two projects will run immediately adjacent to one another and the substations have been co-located on the same site to the west of Little Bromley. Due to electrical requirements, separate cables and transformers are required for each project and, therefore, while the projects have considered physical sharing of assets it is not considered to yield significant benefits.

2.8.3 Three scenarios for the construction of the onshore components of VE in coordination with North Falls are foreseen:

- Scenario 1 – VE proceeds to construction and undertakes the additional onshore cable trenching and ducting works for NF as part of a single programme of works (ducting for four electrical circuits). VE may also carry out some ground works (vegetation clearance, levelling, grading) in the wider substation zone where the North Falls substation will be located. VE would undertake the cable installation and OnSS build for its project only (two electrical circuits). The two projects would share access from the public highway for cable installation and substation construction. The projects would utilise and share the site accesses, haul roads and Temporary Construction Compounds (TCC) with North Falls for the cable installation works.
- Scenario 2 – Both VE and North Falls projects proceed to construction on different but overlapping timescales (between 1 and 3 years apart). Civil works would be undertaken independently but opportunities for reuse of enabling infrastructure e.g. haul roads, temporary construction compounds and site accesses are utilised with the other project reinstating.
- Scenario 3 – North Falls does not proceed to construction; or both VE and North Falls projects proceed to construction on significantly different programmes (over 3 years apart). In the latter case the significantly different programmes would mean that haul roads and TCC's are reinstated prior to the second project proceeding. In such case cumulative impacts are for a potential construction period of 6 years+. No reduction in overall impacts for the schemes from sharing of infrastructure.

2.8.4 Scenario 1 is assumed to be the MDS for the LVIA assessment owing to the larger widths of open-cut trenching that will be required to accommodate the onshore ECCs of both VE and North Falls under Scenario 1, compared to just VE under Scenarios 2 and 3. This judgement also takes into account the longer programmes that would occur under Scenarios 2 and 3. The parameters of this MDS are set out in Table 2.6 below.

2.8.5 The MDS for Scenarios 2 and 3 are set out in Table 2.6 to cover the scenarios in which the onshore ECC for VE is constructed independently from the onshore ECC for North Falls. For this reason Table 2.5 only presents information in respect of the construction of the onshore ECC with the remaining parameters being the same as presented in Table 2.6 in respect of Scenario 1. Further information on the assessment approach is included in Volume 6, Part 1, Chapter 3: Methodology and further detail on the scenarios and proposed construction activities is provided in Volume 6, Part 3, Chapter 1: Onshore Project Description.

2.8.6 The assessment of physical effects presented at Section 2.10 and the assessment of visual effects presented at Section 2.12 are based on the Scenario 1 MDS as this will lead to the greatest loss of trees and hedgerows during the construction phase. Reference is also made in these sections to the Scenario 1 and 2 MDS to ensure that comparatively no greater effects would arise than assessed in respect of Scenario 1.

2.8.7 The LVIA is based on the Rochdale Envelope described in Volume 6, Part 3, Chapter 1: Onshore Project Description. The parameters relevant to the LVIA are set out in this section. In compliance with EIA regulations, the likely significant effects of the MDS which represents a worst-case assessment scenario are assessed and illustrated in the LVIA.

2.8.8 The finished ground level of the OnSS will be 35.775 m AOD for both the AIS and GIS options. The maximum height of buildings will be 7 m for the AIS option and 15 m for the GIS option. External electrical equipment could extend up to 15 m in height for the AIS option, although shown in the model to extend up to 12.6 m. It should be noted that the components of the AIS and GIS options will vary in height, but as their final location is not fixed, the maximum parameter height has been applied to the whole OnSS footprint to create the LVIA Rochdale Envelope. This is shown in the LVIA visualisations and used in the ZTV calculations. This results in an overestimation of the height of the block model in parts of the OnSS maximum parameter but represents the MDS in terms of the assessment. The exception to this will be lightning masts which due to their slender design are not included in the overall consideration of maximum infrastructure height in the LVIA, but which will extent to a height of 18 m above the finished ground level.

2.8.9 Visualisations of the LVIA MDS for the OnSS are presented in Volume 6, Part 7, Annex 2.2.1-16, LVIA Visualisations, Figures 2.16 to 2.26, in order to illustrate the maximum potential visual envelope of the OnSS from each of the agreed viewpoint locations. The figures also show an indicative model of the OnSS, and the indicative model with the proposed mitigation planting, representing the approximate height of mitigation planting after 15 years, estimated to be in the range of 6.8 to 8.3 m. This is based on whips being planted at a height of 800 mm and with growth rates of between 400 and 500 mm per annum, taken from ‘A woody plant selection guide’ (D.Skinner, 1987).

2.8.10 Volume 6, Part 3, Chapter 1: Onshore Project Description provides more detail on the OnSS, the onshore ECC and landfall. Under Scenario 1, the assessment of construction, operational and decommissioning effects is based on the MDS for the LVIA presented in Table 2.6.

Table 2.6: Maximum Design Scenario for Scenario 1.

Potential impact/ effect	Maximum adverse scenario assessed	Justification
Construction		
Landfall Landscape and Visual Effects	Trenchless crossing length up to 1,100 m seaward of MHWS. Up to 2 Transition Joint Bays (TJBs) of dimensions 20 m x 5 m with a permanent landtake of 30 m x 20 m each and a total construction land take of 75 m x 150 m (up to 1,200 m^2).	The MDS includes the maximum dimensions of the landfall TCC and therefore, the greatest area of land disturbance and visible construction activity.
Onshore ECC Landscape and Visual Effects	The onshore ECC comprises a 90 m corridor with a 60 m working width over Sections 1 to 5 (Landfall to Bentley Road), and a 72 m working width over Sections 6 and 7. The onshore ECC widens at landfall, at OnSS and will widen up to 130 m in sections of trenchless crossing and will reduce down to 30 m where hedgerows are crossed. It will be up to 22 km in length and will comprise up to 12 trenches, each 3.5 m wide and of variable depth along with haul road and stockpiling areas associated with cable construction. There will be up to 196 joint bays along the length of the onshore ECC, each 15 x 4 m and buried underground.	The MDS includes the maximum widths of the onshore ECC and, therefore, the greatest area of disturbance and visible construction activity. The assessment considers the 60 m or 72 m wide onshore ECC reducing to 30 m at hedgerow crossings with effects considered in relation to hedgerow and tree losses to ensure the worst case is being considered.
Onshore ECC Construction Compounds Landscape and Visual Effects	An indicative number of 7 main and 3 minor TCCs will be required along the route.. Minor TCCs will also be required for the beach works and substation marshalling. Main TCCs 150 m x 150 m and minor TCCs 100 m x 100 m with two larger TCCs up to 45,000m^2 at TCC4 and TCC6. Trenchless crossings are anticipated to be required at up to 40 locations along the route. Maximum compound dimensions are 130 x 50 m for long or moderate trenchless crossings and 90 x 50 m for short trenchless crossings.	The MDS includes the maximum dimensions and number of TCCs and therefore, the greatest area of land disturbance and visible construction activity.
OnSS Construction access and compounds Landscape and Visual Effects	1x OnSS TCC with an area of 37,500 m^2. Temporary 20 m wide access road taken from Bentley Road and following route of onshore ECC to OnSS.	The MDS includes the maximum area of the TCC and temporary access road and therefore, the greatest area of land disturbance and visible construction activity.
OnSS Landscape and Visual Effects	GIS OnSS with a 250 m x 180 m footprint and maximum height of buildings of 15 m.	The MDS is based on the AIS footprint and GIS height to represent the greatest visible construction

Potential impact/ effect	Maximum adverse scenario assessed	Justification
	AIS OnSS with a 280 m x 210 m footprint and maximum height of electrical infrastructure of 15 m.	activity. The ZTVs and visualisations are based on this MDS to ensure the maximum visibility is considered.
Construction Period	12 hour working day (07:00 – 19:00 Monday to Saturday) 18 to 27 months for Onshore ECC 27 months for OnSS Construction of Onshore ECC and OnSS will coincide with total onshore construction period of 27 months.	Construction lighting will be required during working hours in the winter months, the lights of construction vehicles will also add to the levels of lighting and a lower level of lighting will remain overnight for security purposes.
Operation		
Onshore ECC and landfall Landscape and visual effects	Joints pits will be required approximately every 500 m resulting in a maximum of 196 joint pits each with indicative dimensions of 15 x 4 m ($60m^2$) and 1.5 m deep and buried underground. Link boxes will consist of concrete chambers and where access is needed may have a $2m^2$ manhole(s) set in a concrete plinth at ground level.	The MDS covers the maximum amount of visible above ground onshore ECC infrastructure.
OnSS Landscape and visual effects	Maximum area of AIS OnSS – 58,800 m^2 on a platform of 280 x 210 m. Maximum area of GIS OnSS – 45,000 m^2 on a platform measuring approximately 250 x 180 m. 6 x indicative number of OnSS buildings – 1 x 400kV GIS building: c.40 x 28 x 15 m high (only required for GIS substation, not for AIS) (as per drawing 004781326-01) 1 x 275kV GIS building: c.60 x 27 x 15 m high (only required for GIS substation, not for AIS) (as per drawing 004781326-01) 2 x STATCOM (Control & Valve) buildings: 55 x 15 x 7 m 1 x Control building (possibly several adjacent containerised buildings): 50 x 20 x 5 m 1 x Storage/Amenity building: 20 x 9 x 4 m. Maximum building height in the AIS option is 7 m and maximum infrastructure height is 15 m.	The Rochdale Envelope for the OnSS is based on the larger AIS OnSS footprint and larger GIS OnSS height to give the MDS. The Rochdale Envelope is shown in the visualisations as a white dashed line and with a model of the GIS OnSS inset to represent the potential appearance of the OnSS. The GIS OnSS model has been used as it includes more buildings and buildings of a greater height than the AIS OnSS. The larger AIS OnSS footprint and larger GIS OnSS height are used in the production of the ZTVs to ensure maximum extents of visibility are represented.

Potential impact/ effect	Maximum adverse scenario assessed	Justification
OnSS Landscape and visual effects	The largest structure within the OnSS will be the OnSS building, with a maximum height of 15 m above existing ground level (assuming a GIS design). All other equipment (e.g. transformers, switchgear) will not exceed a height of 15 m above ground level. The exception to this will be lightning masts (which extend up to 18m) which due to their slender design are not included in the overall consideration of maximum infrastructure height in the LVIA. The OnSS platform has a finished ground level of 35.775 m for both the AIS and GIS options.	The maximum parameter model of 15 m is considered to represent the worst case parameter in line with the Rochdale Envelope approach.
Decommissioning		
Onshore ECC and landfall Landscape and visual effects	Cable ducts likely be left in situ underground with cables removed.	Effects will relate principally to the decommissioning process, associated plant, materials, infrastructure and temporary structures, as well as the presence of dismantled structures, where they will be visible above ground.
OnSS Landscape and Visual Effects	Removal of the OnSS.	Effects will relate principally to the decommissioning process, associated plant, and materials to remove the OnSS.
Cumulative Effects		
Cumulative Landscape and visual effects	The LVIA considers the potential for significant cumulative effects to arise as a result of the addition of VE in the context of other large-scale developments that are consented or at application or scoping stage, and that are located or proposed within the LVIA study area. These will arise in respect of the OnSS in conjunction with NF OnSS and National Grid EACN Substation. The MDS comprising the AIS OnSS footprint and GIS OnSS height will be used as the cumulative MDS.	The AIS OnSS footprint and GIS OnSS height will be used as the cumulative MDS to ensure the maximum extents of the OnSS are assessed.

POTENTIAL EFFECTS FOR ASSESSMENT

2.8.11 This Section sets out the potential effects that are considered within the assessment Sections 2.10, 2.11, 2.12, 2.13 and 2.14.

POTENTIAL EFFECTS DURING CONSTRUCTION

2.8.12 The potential effects of the onshore elements of VE during construction will include effects on the physical elements of the sites where construction will take place, as well as effects on the landscape character and visual amenity of the construction works and surrounding area.

2.8.13 The effects will relate principally to the construction process, associated plant, TCCs, materials, infrastructure and temporary structures. Construction effects will also relate to the presence of the emerging structures of the OnSS and cranes used in their construction, as well as the use of construction lighting during the hours of darkness (see Volume 6, Part 3, Chapter 1: Onshore Project Description). External lighting of the construction site will be of a low intensity and designed/ positioned to provide the necessary levels for safe working, minimise light spillage or pollution; and avoid disturbance to adjoining residents and occupiers. The principles to control this will be set out in Volume 9, Report 21, Code of Construction Practice (CoCP).

2.8.14 Construction working hours are proposed to be from 07:00 to 19:00. The use of construction lighting, if required, will therefore be limited to morning or early evening during winter months. Illuminations may also be needed for occasional activities which require continuous working during night time. This may occur where continuous working is necessary for matters such as concrete pours and Horizontal Directional Drilling (HDD) works (or other trenchless crossing techniques). Low level security lighting may also be required at night throughout the construction period within some TCC's.

2.8.15 A number of methods will be adhered to where temporary lighting is used during the construction phase, including the use of hoods and cowls to reduce the spillage of light and the use of low intensity LED lighting that can be automatically switched off using sensors. Volume 9, Report 21, CoCP sets out the details of the construction lighting.

2.8.16 The visual effects of night time lighting during the construction phase will be limited by the infrequent and short term occurrence, the localised areas that will be affected, and the measures that will be adhered to in order to mitigate potential effects. The effect of construction during the hours of darkness is, therefore, considered to be the same or less than the effect of construction activities during daylight hours. Taking this into account, effects associated with OnSS construction lighting are not considered further in the assessment of construction effects.

POTENTIAL EFFECTS DURING OPERATION

2.8.17 The potential effects of the onshore elements of VE during operation relate principally to the presence of the OnSS. The LVIA assesses the potential effects of the OnSS in year 0, once construction activity has been completed, and in year 15 which allows time for landscape mitigation planting to establish and mature. While there will be lighting associated with the OnSS during the operational phase, this will be limited in extent and usage, and of a low intensity such that it will not give rise to any likely significant effects.

2.8.18 Visible operational elements of the onshore cable route are limited to marker posts at field boundaries, the ground level concrete access hatches of TJBs at landfall, and link boxes along the route. Link boxes will be located in discreet locations such as at the edge of fields or in hedgerows, where possible and owing to the 2m x 2m manhole being the only evident component, the effects will be especially limited. Following the construction phase, the land will be reinstated to its former agricultural use and disrupted hedgerows will be replaced. On this basis, it is anticipated that once operational, the potential effects of the buried onshore cable will be negligible as a result of the presence of the majority of the components below ground level. Where unplanned replacement or maintenance of onshore ECC infrastructure is required, this will result in only very localised and temporary effects of a much-reduced scale to the effects assessed for construction. Taking this into account, operational effects of the onshore ECC and landfall are not considered further in the assessment of operational effects.

2.8.19 The one exception to this approach relates to the few localised areas where trees or hedgerow trees may be removed but not replaced owing to their location over the onshore ECC, adjacent to the Bentley Road improvements or on the site of the western OnSS. It should be noted that the majority of trees and hedge trees will be retained because of the careful micro-siting within the onshore ECC. In the small number of instances where trees or hedgetrees may be lost, the protracted effects of these removals are assessed in Section 2.10 under the heading ‘Physical Elements: Detailed Assessment’. This approach is in line with PINS consultation in Section 2.3, see Table 2.2.

POTENTIAL EFFECTS DURING DECOMMISSIONING

2.8.20 The potential effects of the proposed development during decommissioning will relate principally to the removal of the OnSS. These effects will be of a similar or lesser effect than the effects associated with the construction phase.

2.8.21 The decommissioning of the onshore ECC and landfall will have a lesser effect, as the ducts will be left in situ underground, while only the cables will be removed, such that the trenches will not be re-opened. Decommissioning will include potential effects on the landscape character and visual amenity of the sites and surrounding area. The effects will relate principally to the decommissioning process, associated plant, materials, infrastructure and temporary structures, as well as the presence of dismantled structures, where they will be visible above ground.

POTENTIAL CUMULATIVE EFFECTS

2.8.22 Potential cumulative effects may arise due to the addition of VE to the existing and proposed electrical grid infrastructure and energy developments in the area and the degree to which the OnSS has additional effects on views and landscape character. The Lawford Substation lies immediately to the south of the OnSS, with a number of overhead electricity power lines crossing the OnSS study area to converge at this location. Potential effects of the onshore elements of VE in combination with these existing baseline energy developments are considered in the main assessment.

2.8.23 The LVIA considers the potential for significant cumulative effects to arise as a result of the addition of VE in the context of other large-scale developments. There are no consented or application stage large-scale developments within the OnSS study area (Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.13). There are, however, two notable scoping stage projects of particular relevance; namely North Falls, with which VE is co-located, and National Grid EACN, which will lie within close proximity, although the exact location is not currently defined.

POTENTIAL EFFECTS SUMMARY

2.8.24 Table 2.7 sets out a summary of the potential landscape and visual effects that may arise from the introduction of the onshore elements of VE. It should be noted that their inclusion does not imply that they will occur or will be significant.

Table 2.7 : Summary of Potential Effects to be assessed

Specific Element	Potential Effect	Potential Sensitive Receptors
Construction		
Construction plant, temporary construction facilities, construction cranes, construction of OnSS and OnSS building, trenching and cable laying construction activities, removal of landscape features, material stock piles, fences, haul and access road construction, Bentley Road improvements, movement of construction vehicles in and around the OnSS, construction activities during hours of darkness including lighting.	Temporary physical effects on landscape fabric Permanent and temporary physical effects on landscape fabric (i.e. permanent/ short-term removal of vegetation/ ground cover) Temporary effects on landscape character Temporary effects on views Temporary cumulative effects	Physical landscape features Landscape character receptors Visual receptors
Operation		
OnSS platform, OnSS structures and OnSS buildings	Long term effects on landscape character Long term effects on views Long term cumulative effects	Landscape character receptors Visual receptors
Decommissioning		

Specific Element	Potential Effect	Potential Sensitive Receptors
Construction plant, temporary construction facilities, construction cranes, removal of OnSS platform, structures and buildings.	Temporary physical effects on landscape fabric Temporary effects on landscape character Temporary effects on views	Physical landscape features Landscape character receptors Visual receptors

2.8.25 The effects of the onshore elements of VE on landscape and visual receptors will arise principally from the construction, operation and decommissioning of the OnSS, and from the construction of the landfall and onshore ECC. The temporary construction facilities, such as cranes, construction vehicles, TCCs, delivery vehicles and construction lighting required during the construction process will also have effects on the landscape and visual resource.

2.8.26 It is currently anticipated that the construction of the onshore ECC is likely to start in 2027 or 2028 and anticipated to last approximately 18 to 27 months for the onshore ECC and approximately 27 months for the OnSS (see Volume 6, Part 3, Chapter 1: Onshore Project Description). The construction effects identified are, therefore, predicted to occur during this period and end at the start of the operational period when the restoration of the onshore ECC will commence. It is anticipated that the onshore elements of VE will be in operation for a project lifespan of up to 40 years.

2.9 MITIGATION

2.9.1 Mitigation measures seek to avoid, reduce or offset temporary and permanent environmental effects, including those affecting landscape and visual receptors. Mitigation measures typically use landscape elements such as woodland planting and earthworks to reduce the effects by integrating the development into its landscape context and/ or providing screening. Landscape and visual effects change over time as mitigation, such as planting and restoration of habitat types, establish and mature.

2.9.2 Mitigation in respect of the onshore elements of VE has involved the careful siting of the onshore infrastructure during the search area selection process and development of the layout, to ensure potential impacts are avoided or reduced.

2.9.3 The mitigation presented in this section are mitigation measures or commitments that have been identified and adopted as part of the evaluation of the project design of relevance to this topic, these include project design measures, compliance with elements of good practise, and use of standard protocols.

2.9.4 The site selection process considered a range of environmental and technical constraints, including ensuring a good separation from settlement and rural properties, avoiding landscape elements, such as woodlands, trees and hedgerows, and considering issues such as surface water flooding. The sensitivity of the surrounding landscape and of residents, road-users, workers and recreational users of the landscape was also a key consideration. The capacity of the landscape to accommodate the onshore elements of VE is assessed in relation to the natural screening afforded by landform, woodlands and trees and the degree to which other surrounding infrastructure and buildings influence visual screening.

2.9.5 The close proximity of existing electricity overhead lines to the OnSS and the relatively close proximity of existing electrical infrastructure at the Lawford Substation provides a context of electrical infrastructure in the area immediately adjacent to the OnSS. The influence of these baseline energy developments has been considered in the site selection and therefore locating in these areas is also considered to be a form of mitigation.

2.9.6 Indicative mitigation planting has been attributed to the layout of the OnSS and comprises a framework of on-site planting that wraps around all sides of the site. The planting has been designed to fulfil a number of functions including creating a screen around the OnSS, meeting enhancing biodiversity, accommodating drainage requirements and enabling farm production to continue in most parts. The layout creates a landscape framework following existing field boundaries, road-sides and new edges formed by the OnSS and also takes into account constraints formed by both underground and overhead cables.

CONSTRUCTION PHASE MITIGATION

2.9.7 Mitigation opportunities during the construction phase of works will be limited and primarily relate to the restrictions imposed on the working areas and measures identified in the Volume 9, Report 21, CoCP. Sensitive siting of the landfall, onshore ECC, TCCs, trenchless crossing compounds, and access routes away from exposed locations and settlements has also helped to reduce potential effects, with existing planting used to help screen these areas where possible.

2.9.8 Volume 9, Report 22, OLEMP sets out the principles and key landscape and ecology elements for the onshore elements of VE. Volume 9, Report 22, OLEMP and CoCP seek to stipulate measures to avoid, reduce or offset environmental effects of the construction works, including those related to landscape elements, landscape character and visual amenity. Since the Preliminary Environmental Impact Report (March 2023), the selection of a single option for the landfall and OnSS and the detailed routing of a single option for the onshore ECC, has meant that more detailed mitigation measures have been developed.

SUBSTATION MITIGATION

2.9.9 The OnSS occupies a relatively open and exposed area of arable farmland set at an elevation of approximately 35 m AOD with little variance in topography. The area bounded by Ardleigh Road to the south and east, Grange Road to the west and north-west, and Barn Lane to the north, is occupied by four large fields with very little internal enclosure other than occasional trees set along field boundaries. The OnSS occupies the western part of this farmland area and the NF OnSS occupies the land to the immediate east.

2.9.10 In respect of the roads and PRoW around the OnSS, there is no enclosure along either side of Ardleigh Road although there is young hedgerow planting along the north-western, western and southern road-side boundaries which will eventually afford some low-level enclosure along the southern side of the Substation Zone, albeit insufficient to screen the OnSS. The OnSS will still form a notable and close range feature from these surrounding roads and mitigation planting will provide a screen along these road-sides where possible.

2.9.11 Barn Lane is the PRoW to the north of the OnSS. The northern side of the lane and some parts of the southern side are enclosed by existing tree and shrub cover that forms some degree of screening from the wider landscape to the north, although views of walkers from the PRoW will be largely exposed to the close-range OnSS to the south or south-west. Mitigation measures will introduce screening along the southern side of the PRoW.

2.9.12 Grange Road wraps around the western and north-western boundaries of the OnSS and although there is a relatively high hedgerow on the western side of the road, on the eastern side there is currently only intermittent trees, leaving this aspect mostly open in the views of road-users. Hedgerow planting has been implemented along much of this eastern roadside which will provide a low level screen. Mitigation measures look to increase the depth and final height of planting on this aspect to ensure a more substantial screen. While the presence of proposed underground cables and existing overhead lines presents a constraint to planting on the northern side of the OnSS, there is sufficient space to create some screening.

CABLE ROUTE AND LANDFALL MITIGATION

2.9.13 The onshore ECC has been carefully routed to avoid sensitive features in the landscape. This process involved the careful siting of the route to ensure a good separation distance from settlements and rural properties. Furthermore, it is anticipated that the design of the onshore ECC will include up to 40 locations along the approximate 22 km route, where trenchless crossing techniques have been committed to, thus avoiding the physical and visual effects associated with open cut trenching across a substantial length of the route. Although the order limits are predominately 90 m wide, Scenario 1 considers 60 m construction width in Sections 1 to 5 and 72 m width in Sections 6 and 7, narrowing down to 30 m where open cut trenching crosses hedgerows. The width where trenchless techniques will be used will be around 90 m., except for major trenchless crossings e.g. at the railway crossing.

2.9.14 The routing of the onshore ECC has been based on the following criteria and will be refined to ensure these criteria are taken into account:

- Achievement of the best environmental fit of the onshore ECC where practicable, particularly in relation to maintaining separation from settlement and rural properties;
- Locating trenchless techniques to reduce the loss of hedgerows, trees and woodland along the cable route;
- Reinstatement of removed sections of hedgerows, or suitable replacement hedgerows provided for displaced or severed sections of hedgerows where practical;
- Sensitive siting of TCCs and Trenchless drilling compounds such that the locations have been carefully selected taking into account landscape and visual receptors to reduce impacts during the construction period where practicable;
- Restoration of all temporary works and construction areas in relation to re-establishment of ground cover;
- Protection of all retained trees during the construction phase where practicable; and

- Footpaths or cycleways that are temporarily disrupted by the proposed onshore ECC or landfall will be temporarily diverted and then reinstated as part of the mitigation strategy.

2.9.15 Following the installation of the onshore cables, disturbed landcover and habitats will be reinstated. The overall aim of the reinstatement will be the re-establishment of existing ground cover or returning the disturbed ground to its original agricultural use.

OLEMP

2.9.16 Volume 9, Report 22, OLEMP sets out the principles that have been applied in the design of the landscape and ecological plans for VE, including the approach and process for landscape restoration at landfall and along the onshore ECC and indicative plans for mitigation planting and BNG in and around the Substation Zone. The Applicant will submit this OLEMP for approval as a requirement of the DCO.

2.9.17 Volume 9, Report 22, OLEMP sets out indicative mitigation plans for the OnSS to complement the existing landscape elements found in this local area, and includes areas of proposed woodland, hedgerows and grasslands, areas identified for ecological mitigation and areas identified for possible attenuation ponds. The extent of the indicative proposed woodland and hedgerow planting is presented in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.12 and is also shown at the predicted height after 15 years' establishment on the LVIA visualisations.

2.9.18 The proposed woodland mostly comprises indigenous woodland species and will be located around the OnSS. The mitigation woodland planting will be designed to comprise a mix of faster growing 'nurse' species and slower growing 'core' species. Essex County Council have set out guidance on the appropriate selection of tree species in their 'Essex Tree Palette: A guide to choosing the most appropriate tree species for Essex sites according to landscape character and soil type' (January 2018). 'London Clay' is the relevant category in respect of the Substation Zone. Recommended tree species include field maple, hazel, hornbeam, hawthorn, wild cherry, blackthorn and common oak. Species will also be selected in light of their ability to tolerate periods of drought and flooding associated with the effects of climate change.

2.9.19 Nurse species, such as field maple, hornbeam, hazel and wild cherry, will grow quicker so that after 15 years they will be approximately 6.8 to 8.3 m in height. They will provide shelter to bring on core species, such as oak. Whilst the nurse species will be sufficiently fast growing to provide substantial screening of the OnSS after 15 years, the core species will outlive the nurse species and provide a preferred native woodland with a more robust structure closer in character to other nearby woodlands associated with the local landscape.

2.9.20 In locations where it is possible to undertake planting that will not interfere with construction works and where practical to do so, mitigation woodland could be planted during the early phases of the OnSS construction to ensure robust screening as quickly as possible. This woodland planting, if implemented at the start of the construction phase will give the woodland in these areas additional growth prior to completion of construction and commencement of operation of the OnSS

2.9.21 Earthworks used to create the OnSS platform will result in surplus soil and excavation material and this will be used in the creation of low bunding and sensitive reprofiling within those parts of the site area where woodland or grassland planting is proposed. The combination of raised ground levels and woodland planting will contribute to the screening of the OnSS and provide further landscape and visual mitigation.

2.9.22 In order to ensure a worst case scenario is being represented in this assessment, the inclusion of advanced planting and the raising of planting through the use of earth bunds is not considered.

2.9.23 Mitigation measures that were identified and adopted as part of the evolution of the project design (embedded into the project design) and that are relevant to LVIA are listed in Table 2.8. General mitigation measures, which will apply to all parts of VE, are set out first. Thereafter mitigation measures that will apply specifically to LVIA issues associated with the Onshore ECC, OnSS and TCCs are described separately.

Table 2.8: Mitigation relating to LVIA

Project phase	Mitigation measures
General	
Landfall	Use of trenchless crossing techniques will ensure that there will be no landscape or visual effects on the coastal edge.
Onshore ECC	Project decision to underground onshore ECC will notably reduce potential landscape and visual effects. Use of trenchless crossing techniques and careful routing of onshore ECC will minimise loss of trees, hedgerows and other landscape elements.
OnSS	The site of the OnSS has been selected to avoid proximity to settlements and national level landscape planning designations, such as AONBs. Co-location of the OnSS and NF OnSS helps to contain landscape and visual effects in one area and mitigate against wider cumulative effects.
Bentley Road	The Bentley Road improvements, including road widening, have been designed to minimise loss of trees along the road-side edge.
Construction	
Onshore ECC	Use of trenchless crossing techniques and micro-routing of onshore ECC to avoid loss of trees and hedgerows where practical.
Construction compounds	Detailed location and layout of compound to avoid loss of trees and hedgerows where practical.
Onshore ECC/ OnSS	Replacement planting of all removed hedgerows in-situ. Replacement planting of all removed trees with replacement of those from permanent onshore ECC or OnSS within Order Limits. Planting to be implemented during or at end of construction period.

Project phase	Mitigation measures
OnSS	Implementation of mitigation planting around OnSS including woodland planting, tree belts and hedgerows for screening. Planting to be implemented during or at end of construction period.
Operation	
Onshore ECC/ OnSS	Ongoing management of plant establishment to ensure mitigation potential realised.
OnSS	Ongoing management of plant establishment to ensure mitigation potential realised.
Decommissioning	
OnSS	Protection of landscape elements during decommissioning of OnSS to avoid loss of trees, hedgerows and other landscape elements.

2.10 ENVIRONMENTAL ASSESSMENT: PHYSICAL ELEMENTS EFFECTS

INTRODUCTION

2.10.1 The proposed building of the OnSS and access road, open trenching relating to the onshore ECC, and creation of temporary access and TCCs, will have effects on the physical landscape elements of the coastal land, agricultural land, trees and hedgerows. There are some small woodlands within the LVIA study area, however, direct impacts to these have been avoided through the routing of the onshore ECC to avoid these or the use of trenchless crossings to install cables beneath woodlands and so avoid disturbance. Coastal land, agricultural land, trees and hedgerows are the four physical elements that have been identified for the purposes of this assessment.

2.10.2 As described in the Scope of the Assessment in Section 2.4, the onshore ECC is only considered to have potential for significant effects during the construction phase due to the disturbance of landscape features required to construct the underground infrastructure. Once construction is complete, there will be no further effect on the physical landscape elements. Re-establishment of trees and hedgerows will take some time, with these residual effects extending into the operational phase. These residual effects are also considered in this assessment.

2.10.3 The potential for significant effects to arise during the construction of the landfall and onshore ECC are limited owing to the following factors;

- the extent of land affected will be limited to the TCCs and the 60 to 72 m working width of the onshore ECC for open trenching (under Scenario 1);
- the construction works will occur on land that is routinely worked by machinery and where there is very little permanent vegetation;
- the onshore ECC has been routed to avoid woodland or has the flexibility in the order limits to micro-site around it;
- the extensive use of trenchless crossings means that the majority of the land will remain undisturbed, including the trees and hedgerows associated with the roads and drains that will be drilled under; and

- The combination of the baseline characteristics of the rural landscape, the relatively small scale of the construction works and the sensitive routing of the onshore ECC means that there will be very few changes to the physical elements of the landscape.

2.10.4 The assessment of the landfall and onshore ECC takes into account three different scenarios which relate to the timing of the construction works.

- Scenario 1: construction of VE and NF being carried out at the same time - projects constructed together with commonality and maximum opportunity to share infrastructure and reduce the construction period.
- Scenario 2: construction of VE and NF being carried out consecutively albeit independently, such that there are opportunities for reuse of enabling infrastructure without the other project reinstating for example, haul roads and site accesses. The construction period will be longer than that of Scenario 1 albeit with a reduction in overall impacts compared to Scenario 3.
- Scenario 3: construction of VE and NF being carried out sequentially, with projects on separate programmes such that haul roads and TCCs are reinstated prior to the second project proceeding. There will be a potential construction period of 6 years or more and no reduction in overall impacts through the sharing of infrastructure.

2.10.5 As detailed at Section 2.8, Scenario 1 presents the MDS owing to largest width for open-cut trenching and, therefore, has been considered in the assessment below.

PHYSICAL ELEMENTS DETAILED ASSESSMENT

COASTAL LAND

BASELINE

2.10.6 This landscape element is made up of several distinct elements that together create the coastal land found at the south-eastern extent of the onshore ECC, where the landfall occurs. The distinct elements include the beach, modern sea walls, dunes, historic sea bank, golf course, coastal marsh and coastal farmland. The farmland comprises small to medium sized fields of arable crops in an open landscape with very little enclosure from hedgerows or tree cover. The enclosure in this coastal area is formed by the modern sea wall and historic sea bank which create a raised divide between the beach to the east and the farmland and coastal marshland to the west.

2.10.7 The landfall is located at Holland Haven, which lies on the coast between Frinton-on-Sea and Holland-on-Sea. This area is characterised by the natural features of a sandy beach and areas of marsh and coastal scrub. There are also the man-made features of the extensive sea wall with its raised walkway and protective strip of large rocks, the sea bank with a footpath to the east and minor road to the west, Frinton Golf Course and surrounding arable farmland. The coastline follows a broadly north-east to south-west orientation with the beach, sea wall, sea bank, paths and road following this alignment.

2.10.8 The effects on the coastal landscape relate to the minor TCC associated with the landfall and the section of the onshore ECC which extends north from the landfall towards Clacton Road, where open cut trenching or some similar technique will occur.

SENSITIVITY

2.10.9 The value of the coastal land is medium-high. Although there are no national or county level landscape planning designations which would otherwise denote a special value, the coastal land does present a special character with value associated with its nature conservation and recreational assets.

2.10.10 The susceptibility of the coastal land is medium-high. While a number of natural elements have been preserved, including the beach, dunes and marshland, much of this coastal landscape has been modified by the introduction of the extensive sea wall. Arable farmland also extends close up to the coastal edge, such that only a narrow strip of unmodified or semi-unmodified marsh or scrub remains. The susceptibility of the coastal land is also moderated by the ease with which the agricultural land affected will be restored following the completion of construction.

2.10.11 The medium-high value and the medium-high susceptibility of the coastal land gives rise to an overall **medium-high** sensitivity.

MAGNITUDE OF CHANGE

2.10.12 The landfall will involve trenchless crossing techniques to install ducts within which the offshore power cables will be pulled through and joined to the onshore cables at a transition joint bay located in a farm field on the western side of Frinton Golf Course. Each drill would start from where the TJBs and minor TCC will be located, eastward below the sea defence, and beach, exiting in the subtidal zone at a suitable depth seaward of the mean low water spring (MLWS) and at a maximum distance of 1,100 m. This avoids disturbance to the features of the coastal land, including the beach, sea wall, dunes, marshland, coastal path, sea bank and road. While machinery may require access to operate on the beach, this will have a limited effect on the beach as a physical landscape element.

2.10.13 The effect of the landfall construction will, therefore, relate principally to the alteration of the coastal farmland which will accommodate the TJBs and TCC. The area of land affected will be 1,200 m^2 (75 m x 150 m) and will be replaced following the overall 18 to 27 month duration of the construction works. The field is farmed for arable crops and there is limited hedgerow enclosure with vegetation concentrated around the north-eastern corner and western side. This land is routinely disturbed through ploughing and harvesting and there is no permanent or natural vegetation. The farmland will be easily reinstated post construction.

2.10.14 Taking into account the fact that the more sensitive physical landscape elements of the coastal land will not be disturbed owing to the use of trenchless technique, and only a field of the coastal farmland will be disturbed but will be easily reinstated, the magnitude of change on the coastal land will be **low**.

SIGNIFICANCE OF EFFECT

2.10.15 The effect of the landfall on the coastal land will be **not significant** in EIA terms and at a **moderate** level. Despite the medium-high sensitivity of this physical landscape element, the magnitude of change will be low. The effect will be adverse, short-term and reversible.

AGRICULTURAL LAND

BASELINE

2.10.16 Agricultural farmland is the predominant land use along the length of the onshore ECC. The medium to large fields contain arable crops and farm practices are intensive with the land being constantly disturbed through ploughing, planting and harvesting. The changing appearance of the agricultural landscape and the activities associated with ploughing fields, planting and harvesting crops is, therefore, a common and integral characteristic of the agricultural landscape. The presence and activity of farm machinery is also a feature of the arable farmland and on the surrounding rural roads.

SENSITIVITY

2.10.17 The onshore ECC does not coincide with any designated landscapes and the agricultural land has no special value in relation to its characteristics as a landscape element. The value of the agricultural land is considered to be medium-low. Arable crops and grassland are easily replaced and due to the level of existing disruption as a result of crop cultivation, combined with the widespread occurrence of agricultural land as a landscape element, susceptibility is considered to be low. The combination of the medium-low value and the low susceptibility gives rise to an overall medium-low sensitivity.

MAGNITUDE OF CHANGE

2.10.18 On the sections between trenchless crossing techniques, open cut trenching will mean that the agricultural land will be temporarily disturbed for the laying of the cables. This will occur in a 60 to 72 m working width (under Scenario 1). The level of change relating to cable route trenching, construction of running tracks, and presence of soil bunds within the onshore ECC will form a relatively small-scale and localised disturbance to the agricultural land. After the cable has been laid, the trench will be backfilled and temporary working areas and haul roads removed. The agricultural land will then return to its previous use. Re-instatement is therefore considered relatively straightforward with minimal disruption required to return the land to its previous uses and productivity. The magnitude of change associated with the onshore ECC will be **low** within the areas where open cut trenching will occur.

2.10.19 Under Scenario 1 there will be seven Main TCCs and 3 Minor TCCs, located strategically along the length of the onshore ECC. A further two Minor TCCs will be required for the beach access near the landfall and for traffic marshalling near the OnSS. The Main TCCs will be up to 22,500m^2 (150 m x 150 m) and the Minor TCCs will be up to 10,00m^2 (100 m x 100 m). TCC4 and TCC6 will be larger, measuring up to 45,000m^2. In locations along the onshore ECC where trenchless crossing techniques will be deployed, compounds will occur at either end of the trenchless crossing. Under Scenario 1, theses will be 6,500 m^2 (50 m x 130 m) for long or moderate trenchless crossing sections and 4,500m^2 (50 m x 90 m) for short sections.

2.10.20 TCCs will have more of an impact on the agricultural land than the open cut trenching owing to the laying of a temporary hard surface, as well as the stripping and storage of topsoil. Reinstatement will involve the removal and disposal of the temporary hard surface and the relaying of the topsoil to bring the agricultural land back into production. The magnitude of change associated with the Main, Minor and trenchless crossing TCCs will be **medium-low** within the areas where the TCCs will be located.

2.10.21 Agricultural land will also be affected by the construction of the OnSS. The AIS option will require a permanent landtake of 58,800m^2 (280 m x 210 m) for the OnSS footprint while the GIS option will require 45,000m^2 (250 m x 180 m). There will be a TCC covering an area of 37,500 m^2 for both AIS and GIS options. There will also be wider works within the Order Limits associated with the OnSS and including the implementation of landscape proposals, which will be managed and delivered through Volume 9, Report 21, CoCP and Volume 9, Report 22, OLEMS. The footprints associated with the AIS and GIS options will remove a notable area of agricultural land from production over the 27-month construction phase and 40-year operational phase of VE. The magnitude of change associated with the OnSS will be **medium-high** within the area of the footprint and is prevented from being rated high owing to the ease with which the farmland will ultimately be reinstated following decommission over the long-term. The magnitude of change associated with the TCC will be **medium-low** owing to the ease with which the agricultural land can be reinstated within the short-term.

2.10.22 Taking these factors into account, the magnitude of change on the agricultural land relating to the open cut trenching will be low, relating to the TCCs will be medium-low and relating to the OnSS will be medium-high.

SIGNIFICANCE OF EFFECT

2.10.23 The effect of the onshore ECC open cut trenching on the agricultural land will be **not significant** in EIA terms at a **minor** level, and the effect of the TCCs on the agricultural land will be **not significant** in EIA terms at a **moderate/ minor** level. This assessment is based on the medium-low sensitivity and the low or medium/ low magnitude of change. The effect will be adverse, short-term and reversible.

2.10.24 In respect of the OnSS, the medium-low sensitivity and the medium-high magnitude of change will result in a **significant** effect in EIA terms at a **moderate** level. The effect will be adverse, long-term and reversible.

HEDGEROWS

BASELINE

2.10.25 Hedgerows are a common feature in the rural landscape in which the onshore ECC crosses, albeit varying in height, continuity and condition. Some hedgerows appear more formally managed, others have a scrubbier form often with a fragmented appearance.

SENSITIVITY

2.10.26 Hedgerows form an important component of the rural and historic landscape character but are also a widespread and abundant feature. Value is considered to be medium. The sections of hedgerow lost to construction works will be reinstated post construction and as this can be achieved with relative ease this reduces their overall susceptibility to the onshore ECC. Susceptibility for hedgerows is considered to be medium-low. The combination of the medium value and the medium-low susceptibility gives rise to an overall **medium** sensitivity.

MAGNITUDE OF CHANGE

2.10.27 The combination of the extensive use of trenchless crossing techniques and careful consideration of cable routing has minimised the amount of hedgerow removal along the onshore ECC. The location of hedgerows typically adjacent to roads, water features or drains where trenchless crossing technique will be deployed has meant that there will be very few losses incurred. The few locations where hedgerow removal may be required relates to either field boundaries, road-sides or to the installation of access routes into the onshore ECC. Furthermore, reinstatement of removed sections of hedgerows will mitigate the effects of lost hedgerows by infilling gaps and completing the enclosure, taking low hedgerows approximately 3 to 5 years to grow to a low height of 1.5 to 2.0 m.

2.10.28 Hedgerow losses will give rise to a **low** magnitude of change, reflecting the very limited losses that will be incurred along the approximate 22 km length of the onshore ECC, their low height, fragmented or scrubby condition, and the ease with which they will be replaced. There will be very few hedgerows removed along the length of the onshore ECC and typically these removals will occur within wider extents of arable farmland and occasionally along roadsides where temporary widening or access for construction vehicles is required.

SIGNIFICANCE OF EFFECT

2.10.29 In respect of the majority of hedgerows along the onshore ECC there will be no effect as the use of trenchless crossing techniques will ensure hedgerows will not be removed.

2.10.30 The effect of the onshore ECC on the hedgerows will be **not significant** in EIA terms at a **moderate/ minor** level. This assessment is based on the medium-high sensitivity and the low magnitude of change. The effect will be adverse, short term and reversible.

2.10.31 While the construction phase of the onshore ECC is programmed over a 18-month period, and the reinstatement of the hedgerows will be implemented during the next planting season following construction, it will take 3 to 5 years for the hedgerows to fill the gaps created by the losses, extending this effect from the construction phase into the operational phase, although still termed short term as occurring within 5 years.

TALLER HEDGEROWS AND HEDGEROW TREES

BASELINE

2.10.32 Taller hedgerows and hedgerow trees are also a common feature in the rural landscape in which the onshore ECC crosses. Taller hedgerows tend to be more informally managed as they are left to grow beyond the typical 1 to 2 m height of formally managed hedgerows. Where trees are found within hedgerows they vary in size, age frequency and condition.

SENSITIVITY

2.10.33 Hedgerows and hedgerow trees form an important component of the rural and historic landscape character. All trees, but particularly mature trees play an important role in relation to the need to reduce carbon emissions and this adds to their value. Value is considered to be medium-high.

2.10.34 The susceptibility of hedgerow trees and better condition, taller hedgerows is higher than other hedgerows, as their loss would be more apparent and their reinstatement longer term. Furthermore, restrictions mean that only hedgerow species and not tree species could be planted within the final cable easement associated with the onshore ECC. For these taller hedgerows and trees, susceptibility is considered to be medium-high.

2.10.35 The combination of the medium-high value and the medium-high susceptibility gives rise to an overall **medium-high** sensitivity for hedgerow trees and better condition, taller hedgerows.

MAGNITUDE OF CHANGE

2.10.36 Careful consideration of cable routing and the anticipated inclusion of up to 40 locations for trenchless crossing technique has sought to reduce the amount of hedgerow and hedgerow tree removal along the onshore ECC, with the opportunity to micro-site at the detailed design stage to further reduce losses. Hedgerows and hedgerow trees along roadsides where trenchless crossing techniques will be deployed will not be affected. Reinstatement of lost hedgerows will mitigate the effects of lost hedgerows by infilling gaps and completing the enclosure, taking 5 to 10 years for taller hedgerows to grow to their original height. While restrictions to planting over cable easements will restrict the locations where hedgerow trees will be replanted, there will still be opportunities for replanting within the onshore ECC.

2.10.37 Taking all of these factors into account, for better condition, taller hedgerows, often with hedgerow trees present, the magnitude of change is considered to be **medium**. There will be very few taller hedgerows and hedgerow trees removed along the length of the onshore ECC and with very localised removals occurring along roadsides where temporary widening or access for construction vehicles is required.

SIGNIFICANCE OF EFFECT

2.10.38 The impact of the onshore ECC on taller hedgerows and hedge trees to be removed is considered to be of a medium magnitude, and the sensitivity of receptors affected is considered to be medium-high. The significance of the residual effect is therefore concluded to be **moderate**, which is **significant** in EIA terms. The effect will be adverse, long-term and reversible. There will be no effect on taller hedgerows and hedge trees that will not be removed. Trees removed over the onshore ECC will be unable to be replanted within the project lifespan of up to 40 years, and only reversible following decommissioning

TREES

BASELINE

2.10.39 Mature trees are found along sections of the onshore ECC and within the Substation Zone. Compared to other parts of rural England, tree cover is relatively limited, owing largely to the suitability of the land for farming and the intensification of arable farming which has led to an increased size in farm fields and the loss of trees along field boundaries. While trees do occur, they are limited in extents with very few areas of woodland occurring. Trees typically occur around residential properties to provide shelter and occasionally along roadsides, field boundaries and water courses. These trees provide a notable contribution to the landscape character of the area around the onshore ECC and OnSS, especially in terms of the enclosure they provide in an otherwise open and largely featureless agricultural landscape.

SENSITIVITY

2.10.40 Trees are of importance to the historical pattern and character of the landscape. All trees, and particularly mature trees are important in terms of the contribution they make to landscape character, especially in landscapes, such as this, that have been heavily modified by intensive agricultural practices. The value of trees as a landscape element is considered to be medium-high.

2.10.41 Re-establishment of trees will take 15 to 20 years to reach semi-maturity in those locations where replanting will be permitted, such as where access roads or TCCs have required tree removals. Where tree removal occurs over the onshore ECC, replanting will not be permitted, and the loss of trees will be long-term over the 40-year operational phase of VE. These factors heighten the overall susceptibility of the trees and as such, susceptibility is considered to be medium-high.

2.10.42 The combination of the medium-high value and the medium-high susceptibility gives rise to an overall **medium-high** sensitivity.

MAGNITUDE OF CHANGE

2.10.43 The combination of the extensive use of trenchless crossing techniques and careful consideration of cable routing has minimised the number of tree removals along the onshore ECC and at the OnSS with the opportunity to micro-site at the detailed design stage to further reduce losses. The limited occurrence of trees in this open agricultural landscape combined with their location typically adjacent to roads or water courses where trenchless crossing techniques will be deployed has meant that there will be very few losses incurred. Where woodland occurs and cannot be avoided through rerouting, trenchless crossing has been deployed to avoid any tree losses in these areas. The few locations where tree removal will be required relates to occasional field boundaries and the installation of access routes into the onshore ECC. While the replanting of trees in these areas will be permitted, it will take 15 to 20 years for these trees to reach semi-maturity making these effects long-term.

2.10.44 The magnitude of change for tree losses will give rise to a **medium-high** magnitude of change, reflecting the very limited losses that will be incurred along the approximate 22 km length of the onshore ECC, but also taking into account the importance of trees within such an open and exposed agricultural landscape and the length of time that it will take for them to reach a suitable stature to replace the lost trees. Tree removals could potentially be associated with the construction of access or haul roads, and will only involve the removal of small numbers in localised areas where access from the road network is required for construction vehicles or where the substation access road is required to cross tree-lined field boundaries.

SIGNIFICANCE OF EFFECT

2.10.45 In respect of the majority of trees and all woodland along the onshore ECC there will be no effect as careful routing and the use of trenchless crossing techniques will ensure trees and woodland will not be removed.

2.10.46 The effect of the onshore ECC and OnSS on the limited number of trees that will potentially be removed, will be **significant** in EIA terms and at a **major/ moderate** level. This assessment is based on the medium-high sensitivity and the medium-high magnitude of change relating to tree removals. The effect will be adverse, long-term and reversible. The limited number of trees that will potentially be removed over the onshore ECC and on the site of the OnSS will be unable to be replanted in the same location within the lifespan of VE. There will, however, be the potential for replanting to occur adjacent to the onshore ECC or OnSS.

2.10.47 While the construction phase of the onshore ECC is programmed over an 18 to 27 month period, and the reinstatement of the trees will be implemented during the next planting season following construction, it will take 15 to 20 years for them to reach the height of the trees removed, making this effect long-term rather than short-term and extending the effect from the construction phase into the operational phase.

SUMMARY OF EFFECTS ON PHYSICAL ELEMENTS

2.10.48 There will be no significant effects on the coastal land as a result of the landfall and there will be no significant effects on the agricultural land or the hedgerows as a result of the onshore ECC. Where hedgerows are removed during the construction phase, there will be a medium-term effect as these will be replaced post construction and will reach a sufficient height within 3 to 5 years.

2.10.49 The OnSS will give rise to a significant effect on the loss of agricultural land over the construction and operational phases but this effect will be reversible as the agricultural land will be reinstated at decommissioning. Where trees are removed during the construction phase, the effect will be significant and long-term, owing to the 15-to-20-year period it will take for the trees to reach semi-maturity.

2.10.50 The predominance of arable farmland and the very limited occurrence of hedgerows and trees, combined with the extensive use of trenchless crossing techniques, careful routing of the onshore ECC and careful location of the landfall and OnSS, means that effects on the physical elements will be very limited in occurrence and extents.

2.11 ENVIRONMENTAL ASSESSMENT: LANDSCAPE CHARACTER EFFECTS

LANDSCAPE CHARACTER PRELIMINARY ASSESSMENT

2.11.1 Landscape character receptors within the study area, including LCAs and landscape designations, are assessed to identify which have potential to be significantly affected by the onshore elements of VE.

PRELIMINARY ASSESSMENT LANDSCAPE CHARACTER– ONSHORE ECC AND LANDFALL

2.11.2 In considering the potential effects of the construction of the landfall and onshore ECC on the LCAs, there are a number of factors that ensure these effects will not be significant.

2.11.3 Firstly, the extent of land affected by the construction of the landfall and onshore ECC will be limited to those localised areas in and around the landfall, the 60 to 72 m working width of the onshore ECC within a 90m corridor, and the extents of the associated TCCs and access roads. Secondly, the construction works will all be at or below ground level with the most visible elements formed by the machinery required for open cut trenching and trenchless crossing operations. These first two factors combine to ensure that the construction works are relatively small in scale and contained. Thirdly, the construction works associated with the landfall and onshore ECC will occur in landscapes characterised by arable farming, where the disturbance of soil and presence of machinery is a common feature in relation to agricultural land-uses. The construction works will occur on land that is routinely worked by machinery and the construction works will typically not have a sufficient influence to redefine the character of these landscapes.

2.11.4 It should also be noted that the occurrence and extent of tree cover and hedgerows is limited within the LVIA study area, and as assessed at Section 2.10, the loss of hedgerows and trees will be very localised and limited. These factors, therefore-moderate the susceptibility of the LCAs to changes in character that might otherwise arise. Fourthly, where the landfall or onshore ECC is located in the LCA and direct effects will arise, the construction works will occupy an especially small proportion of the much wider LCA, and where the landfall or onshore ECC is located outwith the LCA and indirect effects occur, the influence will be even weaker. It is in this context that the construction works will not have a sufficient influence to redefine the character of these extensive LCAs.

2.11.5 Whilst some very limited permanent tree removal will occur as a result of the onshore ECC, the effect will be limited when considered within the overall characteristics of the wider areas. It is considered that whilst these effects will have some association with the LCAs in which the proposed onshore ECC and landfall will occur, these LCAs are only likely to experience a low scale of change and/ or effects experienced over limited geographic areas.

2.11.6 As a result, it is considered that the construction of the proposed onshore ECC and landfall will not become a prevailing or defining element or characteristic within the context of the existing landscape character and, therefore, do not have potential to give rise to significant effects and are, therefore, not assessed in the LVIA.

2.11.7 This section of the LVIA focusses on the effects of the LCAs during the construction and operational phases relating to the OnSS.

2.11.8 The landscape effects of the landfall, onshore ECC and OnSS during the decommissioning phase will be the same or less than those identified during the construction phase, as described at Section 2.10 and are, therefore, not assessed in detail in this assessment.

PRELIMINARY ASSESSMENTS LANDSCAPE CHARACTER

2.11.9 The OnSS has potential to give rise to significant effects on landscape character owing to its large sale, modern appearance, and the relatively open and rural character of the receiving landscape.

2.11.10 Table 2.9 identifies which landscape character receptors have the potential to undergo significant effects and require to be assessed in detail.

Table 2.9: Preliminary Assessment of Effects on Landscape Character

Landscape Receptor	Potential for significant effects
Heathland Plateaux LCT	Yes –the OnSS will be located in this LCA and the ZTV in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.8a shows that the OnSS will be readily visible from large parts of this LCA.
Clay Valleys LCT	No - the ZTV in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.8a shows that the OnSS will not be readily visible from this LCA. There will, therefore, be no potential for significant effects to arise.
Clay Plateaux LCT	No - the ZTV in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.8a shows that the OnSS will not be readily visible from this LCA. There will, therefore, be no potential for significant effects to arise.
Open Estuarine Coastal Marsh LCT	No - the ZTV in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.8a shows that the OnSS will not be readily visible from this LCA. There will, therefore, be no potential for significant effects to arise.
Dedham Vale AONB	No - the ZTV in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.8a shows that the OnSS will not be readily visible from this AONB. There will, therefore, be no potential for significant effects to arise.
Suffolk Coast and Heaths AONB	No - the ZTV in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.8a shows that the OnSS will not be readily visible from this AONB. There will, therefore, be no potential for significant effects to arise.

2.11.11 The finding of this preliminary assessment is that only one LCA has the potential to be significantly affected; namely the Heathland Plateaux LCT. 7A Bromley Heaths is the LCA of this LCT and is assessed in detail below. The other LCAs and landscape designations have been discounted from the detailed assessment owing to the very limited potential for significant effects to arise.

2.11.12 In light of the relatively broad extent of the Heathland Plateaux LCT/ 7A Bromley Heaths LCA, the assessment below focuses in on the local landscape character of the area around the OnSS to present a more detailed assessment of effects on landscape character.

LANDSCAPE CHARACTER DETAILED ASSESSMENT

HEATHLAND PLATEAUX LCT – 7A BROMLEY HEATHS

BASELINE

2.11.13 The Heathland Plateaux LCT occupies most of the western half of Tendring District. It extends from the Clay Valleys LCT associated with the River Stour in the north down to the Coastal Slopes LCT, Coastal Ridges and Peninsula LCT, and Drained Estuarine/ Coastal Marshes LCT associated with the River Colne in the south. To the east, the Heathland Plateaux LCT meets with the Clay Plateaux LCT, beyond which there are more extensive coastal landscapes and the North Sea. The Heathland Plateaux LCT is divided into 7A Bromley Heaths LCA in the north and west and 7B St Osyth/ Great Bentley Heaths in the south. 7A Bromley Heaths LCA covers the Substation Zone and a large part of the OnSS study area.

2.11.14 The key characteristics of 7A Bromley Heaths LCA are presented in the Tendring District Landscape Character Assessment as follows;

"Exposed and windswept plateau corresponding to the highest parts of the district, with deep loamy soils.

Extensive arable landscape of large productive fields divided by low, gappy hedgerows where hedgerow oaks stand out as silhouettes against the skyline.

Apple orchards around Ardleigh, Elmstead and Frating are sheltered by belts of poplar or fast growing leylandii.

Areas of former heath have been converted to small holdings or appear as areas of regenerated woodland.

Low density, rural settlement pattern of scattered farms and halls, hamlets, villages and small market towns.

A network of narrow lanes connects the scattered farms and villages and roadside verges often contain gorse and bracken.

Dominating skyscape."

2.11.15 These key characteristics have been verified on site and in particular the *"extensive arable landscape of large productive fields"* presents the defining characteristic of this landscape. Despite some cover from woodland and field boundaries, it does appear as an open landscape, with many fields enlarged by the removal of hedgerow enclosure and a general lack of natural vegetation. With the elevation of landform between 30 to 40 m, it is not an especially high landscape and the landform ranges between flat and gently undulating. While the rural character is reinforced by the sparse rural settlements and narrow country lanes, there are also a number of overhead electricity transmission lines, the Lawford Substation on Ardleigh Road, the A133 and the A120 which present a more developed character in the local area around the OnSS.

2.11.16 The extents of 7A Bromley Heaths LCA is relatively broad and the description above is relatively general. For the purposes of this assessment, greater detail regarding local landscape character is required and to that end, a more detailed description of the area around the OnSS is set out below. Significant effects on landscape character are likely to be contained within the first couple of kilometres of the OnSS owing to a combination of the screening effect of intervening vegetation and buildings, and the notable reduction in perceived scale over these extents. By defining a more localised area around the OnSS, not only is this approach enabling a more detailed assessment, but it is also defining an area within which significant effects may arise but beyond which they will be unlikely to arise.

2.11.17 Within 7A Bromley Heaths LCA there is little distinction in landform and land use that would otherwise enable more detailed landscape character classification. The landform is relatively level and the land use comprises medium and large fields of arable farmland. The distinction between local landscapes is therefore defined in a subtle way by the particular arrangement of fields, trees and hedgerows and in a more definitive way through built development, including roads, settlements, agriculture and business developments and energy infrastructure.

2.11.18 In the area around the OnSS, a boundary, in terms of local landscape character can be defined, whereby the local area is characterised by arable farmland and relatively sparse rural settlement, while the wider area is characterised by built development or a mix of built and rural development.

2.11.19 To the north and north-west, there is an area of market gardening, named on O.S. maps as Foxash Estate, which is set along Hungerdown Lane and extending north to Harwich Road. This area is characterised by glasshouses and polytunnels, as well as other light industrial land uses and intermittent small fields. This area sets a boundary to the rural landscape around the OnSS at a range of approximately 1 km to the north-west. The enclosure of the development on Hungerdown Lane and Harwich Road to reduces the association between this area and the Substation Zone.

2.11.20 To the west, the landscape character changes within a range of approximately 0.6 km owing to the extent of mature tree cover around Badley Hall and the presence of woodland blocks and belts around the adjacent fields to the west. The enclosure of the mature tree cover reduces the association between this area and the Substation Zone.

2.11.21 Similarly, to the south-west, there is a greater presence of mature tree cover around the Lawford Substation on Ardleigh Road and with substantial tree belts around the fields adjacent to Waterhouse Lane. As a result, landscape character is still predominantly rural, albeit with a greater degree of enclosure and a reduced association with the Substation Zone within the close range between approximately 0.2 and 1.0 km. Beyond this range there is a greater influence from built development in the form of farm complexes and residential properties, which create a more developed character, greater sense of enclosure and increased dissociation from the Substation Zone.

2.11.22 To the south and south-east, there is a greater extent of rural farmland where the influence from built development is limited to farmsteads, occasional rural properties and the cluster comprising St Mary's Church and Little Bromley Hall to the south-east. While this continuity in character extends out to approximately 2 to 3 km, there is sufficient enclosure from tree boundaries and occasional woodland blocks to create collective enclosure across the middle ground and contain the extent of visibility. There is a close association across the farmland to the south and south-east of the Substation Zone. out to approximately 0.8 km and then reducing beyond owing to the collective effect of tree cover.

2.11.23 To the east, there is a relatively open extent of rural farmland across a range of 0.8 to 1.0 km between the Substation Zone. and the village of Little Bromley, beyond which the combination of tree cover along Ardleigh Road and built development in the village present a change in character from farmed to settled and also increase the degree of enclosure. These factors reduce the association between this area and the Substation Zone.

2.11.24 To the north-east the rural farmland extends out to the southern edge of the town of Lawford at a range of 2 km. Within this area, while the fields are relatively large and open, there is sufficient field boundary vegetation to create some degree of enclosure which when combined with the rounded landform, forms a subtle disassociation between the area towards Lawford and the Substation Zone.

2.11.25 This description defines the extent of the rural farmland which is susceptible to the effects of the OnSS and which is considered in the assessment below.

SENSITIVITY

2.11.26 The value of 7A Bromley Heaths LCA is medium. This reflects the fact that there are no national, county or district level landscape planning designations covering this area, which would otherwise denote a special scenic value. The susceptibility of this LCA to the potential effects of the OnSS is medium-high. This reflects the location of the OnSS within this LCA but is prevented from being rated high owing to the extent to which this landscape has been modified by intensive agricultural practices and the existing influence from the overhead electricity transmission lines in this area.

2.11.27 The combination of the medium value and the medium-high susceptibility gives rise to an overall **medium-high** sensitivity.

MAGNITUDE OF CHANGE

2.11.28 During the construction phase, the magnitude of change will be **high**, **medium-high** or **medium** within the local area defined broadly by Hungerdown Lane approximately 0.7 km to the west, Grange Road PRoW approximately 0.9 km to the north, Little Bromley approximately 1.2 km to the east and Barlon Road, Manning Grove and Lilley's Farm approximately 1.0 to 1.3 km to the south. These effects will relate to the presence of the emerging OnSS, the access road and the TCC and includes the presence and activity of the plant, equipment and materials required for construction. While there is a baseline influence from overhead electricity transmission lines through this LCA, as well as the relatively well screened Lawford Substation on Ardleigh Road, the scale of the Substation Zone, TCC, and the emerging structures will present a notable addition that will appear at variance with the predominantly rural character of this local area.

2.11.29 During the operational phase, the magnitude of change will be **high, medium-high** or **medium** within the local area defined broadly by Hungerdown Lane approximately 0.7 km to the west, Grange Road PRoW approximately 0.9 km to the north, Little Bromley approximately 1.2 km to the east and Barlon Road, Manning Grove and Lilley's Farm approximately 1.0 to 1.3 km to the south. These effects will relate to the presence of the OnSS which will occupy a footprint of up to 280 m x 210 m and contain substation buildings up to a maximum height of 15 m above ground level. This will present a large-scale energy development that will appear at variance within the context of the relatively small scale and rural landscape, despite the baseline influence from the existing overhead electricity transmission lines and Lawford Substation. While there is some substantial screening from vegetation along field boundaries and in small blocks within the wider landscape, within the local area this is a relatively exposed site and the OnSS will have a notable influence in redefining local landscape character.

2.11.30 During both the construction and operational phases, the magnitude of change on those parts of the LCA beyond the immediately local area described above will be **medium-low** or **low** depending on the extent to which the OnSS will be readily visible relative to the screening effect of intervening tree cover and built form. The magnitude of change on the remining parts of the LCA will be either **low** or **negligible** or there will be **no change** across the majority of the LCA where there will be no visibility.

2.11.31 Mitigation planting around the Substation Zone will gradually reduce the magnitude of change on local landscape character from high, medium-high or medium to **medium-low**, **low**, **negligible** or **no change** over an approximate period of 10 to 15 years. The visualisations presented in Volume 6, Part 7, Annex 2.2.1-16, LVIA Visualisations, Figures 2.16 to 2.26 illustrate the extent to which the mitigation planting will grow to screen the OnSS from the close-range surrounding landscape. The mitigation planting will not only reduce the influence of the OnSS on landscape character but will also restore enclosure and enhance biodiversity in this degraded agricultural landscape.

SIGNIFICANCE OF EFFECT

2.11.32 The combination of the medium-high sensitivity of the local landscape and the high, medium-high or medium magnitude of change that will arise as a result of the OnSS will lead to a **major** or **major/ moderate** effect that will be **significant** in EIA terms within the area around the OnSS defined broadly by Hungerdown Lane approximately 0.7 km to the west, Grange Road PRoW approximately 0.9 km to the north, Little Bromley approximately 1.2 km to the east and Barlon Road, Manning Grove and Lilley's Farm approximately 1.0 to 1.3 km to the south. The localised significant effect will gradually reduce to a **moderate** or **moderate/ minor** and **not significant** effect over an approximate period of 10 to 15 years owing to the screening effect of mitigation planting.

2.11.33 The impact of the OnSS on all remaining parts of the LCA is considered to be of a medium-low, low or negligible magnitude giving rise to a **moderate** or **moderate/ minor** effect that will be **not significant** in EIA terms. There are also large parts of 7A Bromley Heaths LCA where there will be **no effect** owing to no visibility and therefore no change. All effects will be adverse, long-term and reversible.

SUMMARY OF EFFECTS ON LANDSCAPE CHARACTER

2.11.34 No significant effects on landscape character will arise as a result of the construction of the landfall or onshore ECC or as a result of operational effects associated with these components of the onshore infrastructure. This assessment relates to the relatively small scale of the construction works in respect of the broad landscape character areas and their baseline character which is defined by arable farmland which is routinely disturbed by heavy machinery as part of agricultural practices.

2.11.35 In respect of the OnSS, this is situated in 7A Bromley Heaths LCA which extends across the majority of the OnSS study area. For the purposes of the LVIA, the assessment focuses on the local landscape around the OnSS where there is greatest potential for significant effects on landscape character to arise.

2.11.36 The assessment has shown that there will be localised effects on 7A Bromley Heaths LCA within which the OnSS will be located. These effects will be major or major/ moderate and significant out to an area defined broadly by Hungerdown Lane approximately 0.7 km to the west, Grange Road PRoW approximately 0.9 km to the north, Little Bromley approximately 1.2 km to the east and Barlon Road, Manning Grove and Lilley's Farm approximately 1.0 to 1.3 km to the south. The effects beyond these extents will either be moderate, moderate/ minor or minor and not significant or where there will be no visibility there will be no change and no effect. The effects will be adverse, short-term and reversible in respect of the construction phase and adverse, long-term and reversible in respect of the operational phase.

2.11.37 Where significant effects on landscape character occur, these will be reduced to not significant within the 10 to 15 year period during which mitigation planting will grow and mature to reduce the influence of the OnSS within the local landscape.

2.11.38 There will be no significant effects on landscape planning designations, such as AONBs and RPGs, owing to none occurring within the LVIA study area.

2.12 ENVIRONMENTAL ASSESSMENT: VISUAL EFFECTS

VISUAL EFFECTS DETAILED ASSESSMENT

2.12.1 Visual receptors within the LVIA study area, including residents, road-users and walkers, are assessed to identify which have potential to be significantly affected by the onshore elements of VE. The assessment of effects on visual amenity is considered firstly, in respect of the landfall and onshore ECC and secondly, in respect of the OnSS.

LANDFALL AND ONSHORE ECC

2.12.2 In considering the potential effects of the construction of the landfall and onshore ECC on visual receptors, these are likely to be limited in occurrence and extent owing to the following factors;

- the extent of land affected will be limited to the TCCs and the 60 to 72 m working width of the onshore ECC (under Scenario 1);
- the construction works will all be at, or below, ground level with the most visible elements being the TCCs and the machinery required for the construction of trenches and trenchless crossings;
- the construction works will occur on land that is routinely worked by machinery and where there is very little permanent vegetation;

- farms typically comprise large sheds and the arable farming uses heavy machinery in the fields and HGVs to transport goods to and from the farms, which give the rural landscape a more developed character;
- settlement along the onshore ECC is typically small in scale, contained in extent and sparse in occurrence, with vegetation often enclosing the outer boundaries;
- rural properties typically have enclosure from vegetation intended to provide shelter but which also reduces the extent of views of the surrounding landscape;
- the onshore ECC has been routed to avoid settlement and keep a minimum 100 m separation from most rural properties;
- farms typically comprise large sheds which give the rural landscape a more developed character; and
- the extensive use of trenchless crossings means that the majority of the land will remain undisturbed, including the trees and hedgerows associated with the roads railway and river courses that will be drilled under.

2.12.3 The combination of the baseline characteristics of the rural landscape, the relatively small scale of the construction works and the sensitive routing of the onshore ECC means that there will be very few changes to the physical elements of the landscape, as assessed in Section 2.10. The limited change to the landscape means that in turn there will be a limited change to people's visual amenity and the potential for significant effects will only arise in particular situations where the TCCs or construction works occur in close proximity to visual receptors, such as residents, road-users or walkers and/ or where mature tree cover or hedgerow is removed.

2.12.4 Table 2.10 sets out those visual receptors with potential to be significantly affected by the landfall or onshore ECC in respect of the seven sections which the onshore construction works are divided into.

Table 2.10: Assessment of Visual Effects of Landfall and Onshore ECC

Receptor/ baseline	Onshore component	Sensitivity	Scenario 1: Magnitude of Change	Scenario 1: Significance of Effect
Walkers on Short Lane (PRoW Frinton and Walton 3) which connects the coast with the village of Great Holland to the north, passing through the western part of Frinton Golf Course next to the coast and passing through farm fields on the approach to Great Holland.	Landfall Primary TCC Holland Haven	The sensitivity of walkers will be **medium-high**. The value of their views will be medium as there are no formal viewpoints and no landscape designations which would otherwise denote a scenic value. The susceptibility of their views will be medium-high as they have a heightened awareness of their surroundings, although their views will be temporary and influenced by the modifications of the farmland and golf course.	The magnitude of change will be **high.** The path passes as close as 60 m to the TCC and although there will be some screening from vegetation at the closest section, there will be open views into the TCC from the farm fields to the north and the golf course to the south. The temporary hard surface, combined with the presence of vehicles, plant, materials, site offices and welfare facilities will appear at variance with the predominantly rural character of the baseline coastal landscape.	The combination of the medium-high sensitivity and the high magnitude of change will lead to a **major** and **significant** effect. This effect will be localised over the approximate 500 m length of Short Lane that extends to the north and south of the closest section to the landfall TCC. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.
Road-users on Clacton Road which connects Clacton and the village of Great Holland and passes adjacent to the TCCs on the eastern and western sides of the road, albeit with mature tree cover and hedgerows lining most of both roadsides.	Primary TCC Clacton Road (B1032)	The sensitivity of road-users will be **medium**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be medium owing to the predominantly rural character of views in this area and the short-term and transitory nature of the views.	The magnitude of change will be **medium-high**. The TCCs will be located adjacent to Clacton Road, the eastern main TCC extending along approximately 350 m of the roadside and the western minor TCC extending along approximately 50 m. While the effect will be moderated by the extent of roadside planting to the east, which will screen much of the main TCC, views open up where gaps and lower hedges occur and when the vegetation is bare in the winter months. The minor TCC on the western side closer towards Greater Holland will also be visible owing to the presence of a lower hedge in this section.	The combination of the medium sensitivity and the medium-high magnitude of change will lead to a **moderate** and **significant** effect. This effect will be localised over the approximate 500 m length of Clacton Road from where the adjacent TCCs will potentially be visible. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.
Residents on Clacton Road who live in the cluster of buildings on the western side of the road, which is largely enclosed by trees and hedgerow on both sides of the road. In this cluster there is a mix of residential properties, business sheds, parking, works area and gardens.	Primary TCC Clacton Road (B1032)	The sensitivity of residents will be **medium-high**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be high owing to the long-term and potentially long duration of views from internal and external living spaces.	The magnitude of change will be **medium-high**. The TCCs will be located adjacent to Clacton Road, the eastern main TCC extending along approximately 350 m of the roadside and the western minor TCC extending along approximately 50 m. While the effect will be moderated by the extent of roadside planting to the east, which will screen much of the main TCC, views open up where gaps and lower hedges occur and when the vegetation is bare in the winter months. The minor TCC on the western side closer towards Greater Holland will not be visible owing to the screening effect of mature trees to the north of the residential properties.	The combination of the medium-high sensitivity and the medium-high magnitude of change will lead to a **major/ moderate** and **significant** effect. This effect will be localised around the cluster of properties from where open views across Clacton Road and to the adjacent TCC will be experienced. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.
Road-users on Thorpe Road which is the main road linking Frinton-on-Sea and Weely. The TCC will be located on a section of the road where there is no roadside	Primary TCC Thorpe Road (B1035)	The sensitivity of road-users will be **medium**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be medium owing to the predominantly rural	The magnitude of change will be **medium-high**. The TCC will be located adjacent to Thorpe Road, along approximately 90 m and with access laybys on either side of the road to the east. There is no roadside vegetation and views into the TCC will be open. The temporary hard surface, combined with the presence of vehicles,	The combination of the medium sensitivity and the medium magnitude of change will lead to a **major/ moderate** and **significant** effect. This effect will be localised over the approximate 150 m length of Clacton Road from where the adjacent TCC will have a notable influence, with an influence also from the access laybys. The effect will be adverse, short-term over the 18 to 27

Receptor/ baseline	Onshore component	Sensitivity	Scenario 1: Magnitude of Change	Scenario 1: Significance of Effect
vegetation and open views across the large arable farm fields are experienced by road-users.		character of views in this area and the short-term and transitory nature of the views.	plant, materials, site offices and welfare facilities will appear at variance with the predominantly rural character of the baseline coastal landscape. The magnitude of change is prevented from being rated high owing to the influence from the busy road and the intensively farmed farmland.	month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.
Road-users on Tendring Road which is the main road between Frinton-on-Sea and Weely. The TCC will be located to the east of the road where there is no roadside vegetation and open views across the large arable farm fields are experienced by road-users.	Primary TCC Tendring Road (B1035)	The sensitivity of road-users will be **medium**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be medium owing to the predominantly rural character of views in this area and the short-term and transitory nature of the views.	The magnitude of change will be **medium-high**. The TCC will be located adjacent to the eastern side of Tendring Road, along an approximate 320 m length. While there is a low hedgerow on the western side, there is no roadside vegetation on the eastern side and open views into the TCC will be experienced by road-users. The temporary hard surface, combined with the presence of vehicles, plant, materials, site offices and welfare facilities will appear at variance with the predominantly rural character of the baseline coastal landscape. The magnitude of change is prevented from being rated high owing to the influence from the road and the intensively farmed landscape.	The combination of the medium sensitivity and the medium-high magnitude of change will lead to a **major/ moderate** and **significant** effect. This effect will extend over the approximate 320 m length of Tendring Road from where the adjacent TCC will have a notable influence, with an influence along a further 50 m to the north, while to the south, intervening vegetation will screen visibility further in this direction. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.
Road-users on Tendring Road which is the main road between Frinton-on-Sea and Weely and Swan Road which connects the B1035 with the village of Beaumont. The TCC will be located to the north of Tendring Road and the west of Swan Road. There is roadside vegetation that partly screens views experienced by road-users of the wider farmed landscape.	Primary TCC Swan Road/ Tendring Road (B1035)	The sensitivity of road-users will be **medium**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be medium owing to the predominantly rural character of views in this area and the short-term and transitory nature of the views.	The magnitude of change will be **medium**. The TCC will be located approximately 140 m north of Tendring Road and seen at an oblique angle to both directions of road travel and although partly screened by roadside vegetation, will be readily visible from open sections owing to the rising landform on this side of the road. The TCC will be located approximately 70 m west of Swan Road and although the views of road-users will be partly screened by roadside vegetation, there will be views in and the TCC will appear at variance with the surrounding rural character.	The combination of the medium sensitivity and the medium magnitude of change will lead to a **moderate** and **significant** effect. Although the TCC will be recessed from the roads and partly screened by vegetation, it will still be visible, especially in the winter months, and have a notable influence on the views of road-users. This effect will extend over an approximate 120 m length of Tendring Road and an approximate 100 m length of Swan Road. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.
Residents on Tendring Road, set to the immediate west of the junction with Swan Road and with rears of the properties facing towards the TCC which will be set within the arable farmland. There is limited screening from vegetation, but with a 140 m separation distance between the properties and the TCC.	Primary TCC Swan Road/ Tendring Road (B1035)	The sensitivity of residents will be **medium-high**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be high owing to the long-term and potentially long duration of views from internal and external living spaces.	The magnitude of change will be **medium**. The TCC will be located approximately 140 m north of the properties and readily visible owing to the limited screening of vegetation and the rising landform on this side of the road. The temporary hard surface, combined with the presence of vehicles, plant, materials, site offices and welfare facilities will appear at variance with the predominantly rural character of the baseline agricultural landscape. The magnitude of change is prevented from being rated medium-high owing to the separation distance and the influence of the intensively farmed landscape.	The combination of the medium sensitivity and the medium magnitude of change will lead to a **moderate** and **significant** effect. Although the TCC will be recessed from the properties, it will be readily visible and will have a notable influence on the views of residents. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.

Receptor/ baseline	Onshore component	Sensitivity	Scenario 1: Magnitude of Change	Scenario 1: Significance of Effect
Road-users on Clacton Road which connects Clacton-on-Sea to the south with Manningtree to the north and road-users on the A120 connecting Harwich and Colchester. Both these sections of road are largely enclosed by hedgerow and occasional trees, but with gaps and low hedges allowing road-users to experience views of the wider farmed landscape.	Primary TCC Clacton Road (B1035)/ A120	The sensitivity of road-users will be **medium**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be medium owing to the predominantly rural character of views in this area and the short-term and transitory nature of the views.	The magnitude of change will be **medium**. The TCC will be located adjacent to the eastern side of Clacton Road, along an approximate 410 m length. While there is a hedgerow and occasional trees on the eastern side, there are gaps and sections of low hedge which will allow road-users to experience views of this large TCC. While the TCC is not positioned adjacent to the A120, it will be visible also where there are gaps and low hedgerows in the roadside vegetation. The temporary hard surface, combined with the presence of vehicles, plant, materials, site offices and welfare facilities will appear at variance with the predominantly rural character of the baseline agricultural landscape. The magnitude of change is prevented from being rated medium-high owing to the extent of screening from road-side vegetation.	The combination of the medium sensitivity and the medium magnitude of change will lead to a **moderate** and **significant** effect. Although the TCC will be screened by roadside vegetation, there will be sufficient views in, especially during the winter months when the vegetation is bare, to ensure the TCC will form a notable influence on the views of road-users. The effect will extend along the approximate 410 m of Clacton Road that lies adjacent to the TCC and along an approximate 200 m of the A120 from where the TCC will be visible. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.
Residents on Clacton Road where there are a couple of properties mixed in with a complex of farm buildings situated on the western side of the road, opposite the TCC. There is enclosure along both sides of the road from hedgerows and tree cover with occasional gaps and low sections and more open views in the winter months when the vegetation is bare.	Primary TCC Clacton Road (B1035)/ A120	The sensitivity of residents will be **medium-high**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be high owing to the long-term and potentially long duration of views from internal and external living spaces.	The magnitude of change will be **medium**. The TCC will be located adjacent to the eastern side of Clacton Road, along an approximate 410 m length. While there is a hedgerow and occasional trees on the eastern and western sides, there are gaps and sections of low hedge which, especially during the winter months when the vegetation is bare, will potentially allow residents to experience views of this TCC. The temporary hard surface, combined with the presence of vehicles, plant, materials, site offices and welfare facilities will appear at variance with the predominantly rural character of the baseline agricultural landscape. The magnitude of change is prevented from being rated medium-high owing to the extent of screening from road-side vegetation.	The combination of the medium-high sensitivity and the medium magnitude of change will lead to a **moderate** and **significant** effect. Although the TCC will be screened by roadside vegetation there will be sufficient openings, especially during the winter months when the vegetation is bare, to ensure the TCC will form a notable influence on the views of residents. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.
Road-users on Clacton Road which connects Clacton-on-Sea to the south with Manningtree to the north in the section to the north of the A120. There is a low hedgerow on the eastern side of the road and no enclosure on the western side of the road, such that road-users experience relatively open views of the surrounding agricultural landscape.	Minor TCCs Clacton Road (B1035) north of the A120	The sensitivity of road-users will be **medium**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be medium owing to the predominantly rural character of views in this area and the short-term and transitory nature of the views.	The magnitude of change will be **medium-high**. The minor TCCs will be located adjacent to the western and eastern side of Clacton Road, along an approximate 50 m length either side of where trenchless crossings will pass under the road. While there is a low hedgerow on the eastern side, road-users will gain clear visibility of these two minor TCCs. The temporary hard surface, combined with the presence of vehicles, plant and materials, will appear at variance with the predominantly rural character of the baseline agricultural landscape. The magnitude of change is prevented from being rated high owing to the smaller size of the minor TCCs and	The combination of the medium sensitivity and the medium-high magnitude of change will lead to a **moderate** and **significant** effect. Although the minor TCCs are smaller than the main TCCs, they will be readily visible from an approximate 170 m section of the Clacton Road and will have a notable influence on the predominantly rural baseline character experienced by road-users. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.

Receptor/ baseline	Onshore component	Sensitivity	Scenario 1: Magnitude of Change	Scenario 1: Significance of Effect
			the influence from the busy road and intensively farmed landscape.	
Road-users on Bentley Road which connects the A120 at Pellen's Corner with the village of Little Bromley to the north. The road passes through a rural landscape characterised by large fields containing arable crops. There are intermittent trees spaced mainly on the eastern roadside and young hedgerow planted along both sides, such that there is some enclosure but that road-users still experience relatively open views of the surrounding landscape.	Main TCC and minor TCC Bentley Road	The sensitivity of road-users will be **medium**. The value of their views will be medium owing to the absence of formal viewpoints and absence of scenic landscape designations in this rural area. The susceptibility of their views will be medium owing to the predominantly rural character of views in this area and the short-term and transitory nature of the views.	The magnitude of change will be **medium-high**. The main TCC will be located adjacent to the western side of Bentley Road, along an approximate 380 m length. While there is a new hedgerow on the western roadside, the views of road-users remain relatively open and clear views of the main TCC will be experienced. The minor TCC will be located on the eastern side, occupying a roadside length of approximately 90 m and also readily visible to road-users despite the roadside hedgerow. Part of the Bentley Road improvements will involve road widening and this may involve the loss of a small number of trees on the western side of the road. The magnitude of change is prevented from being rated high owing to the partial screening from road-side vegetation and the baseline influence from the road and intensively farmed landscape.	The combination of the medium sensitivity and the medium-high magnitude of change will lead to a **moderate** and **significant** effect. The main and minor TCCs will be readily visible from an approximate 450 m section of the Bentley Road and will have a notable influence on the predominantly rural baseline character experienced by road-users. The effect will be adverse, short-term over the 18 to 27 month construction period and reversible. The land will be reinstated as arable farmland post construction reducing the significant effect to not significant.

ONSS

2.12.5 This section of the LVIA focusses on the visual effects of the OnSS during the construction and operational phases. The OnSS is located on land between Grange Road and Ardleigh Road, and this is shown, along with the indicative layout for the mitigation planting, on Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.12. The assessment considers a MDS based on the footprint of the AIS and the height of the GIS and is illustrated in the photomontages in Volume 6, Part 7, Annex 2.2.1-16, LVIA Visualisations, Figures 2.16 to 2.26 as a white dashed line defining the maximum extents of the OnSS. Indicative models have been included in the photomontages for the GIS OnSS but these are purely to give an impression of the typical appearance of these types of development.

2.12.6 The visual effects of the OnSS during the decommissioning phase will be the same or less than those identified during the construction phase, as described at Section 2.12 and are, therefore, not assessed in detail in this assessment.

VIEWPOINT 1: ARDLEIGH ROAD, NEAR NORMAN'S FARM

BASELINE

2.12.7 This viewpoint is located on Ardleigh Road, to the west of Norman's Farm and the east of Lawford Substation on Ardleigh Road. The viewpoint is representative of the views of road-users on this quiet minor road, as well as the small number of local residents in the nearby Norman's Farm and Cattsgreen Farm.

2.12.8 The view looks north and north-north-east over the rural farmed landscape, which characterises this area. The landform is relatively flat and low-lying with a gentle rise to the north. There is currently no hedgerow enclosure along both the northern and southern sides of this section of Ardleigh Road, although new hedgerow planting has been implemented on the southern side. The medium to large fields contain arable crops or improved pasture that are contained by hedgerows of variable condition, with mature hedgerow and occasional field boundary trees on the far side of the fields. These form the horizon within the short range. There are a small number of mature, deciduous field boundary trees to the north-north-east.

2.12.9 Ardleigh Road is a narrow minor road with low traffic flows. While this section provides access to a small number of local farmsteads, there are no settlements in this local area. Access across the farmland is limited to a small number of PRoWs to the south and although there is no access to the immediate north, there is a ProW along Barn Lane further to the north, as represented by Viewpoint 2. Large scale development is evident from this viewpoint in the form of a number of overhead electricity transmission lines converging at Lawford Substation on Ardleigh Road, although the substation itself is fairly well concealed by surrounding tree planting particularly during the summer months when trees are in leaf. The transmission towers and field boundary trees to the north-north-east add vertical elements to a landscape with an otherwise strong horizontal emphasis.

SENSITIVITY

2.12.10 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.11 The susceptibility of residents to the effects of the OnSS is high. This reflects the long duration and long-term nature of the views experienced by residents, as well as their proximity to the OnSS and the openness of the surrounding landscape which means that the OnSS is likely to be readily visible. The susceptibility of road-users to the effects of the OnSS is medium. This reflects the shorter duration and shorter-term transitory nature of the views experienced by road-users, although they will also experience close range views across an open landscape in which the OnSS is likely to be readily visible.

2.12.12 The combination of the medium value and the high susceptibility of residents gives rise to an overall **medium-high** sensitivity, while the combination of the medium value and the medium susceptibility of road-users gives rise to a **medium** sensitivity.

MAGNITUDE OF CHANGE

2.12.13 The magnitude of change during the construction phase will be **high**. The change will relate to the presence of the TCC and the emerging OnSS and the construction works associated with the development of the OnSS. The TCC and the OnSS will be located minimum distances of 210 m and 190 m from the viewpoint respectively and will occupy a large proportion of the north and north-easterly sectors of the view. This close proximity and broad horizontal extents will make the TCC and the OnSS the defining features in the views of residents and road-users represented by this viewpoint. The field boundary trees to the north-east will be seen adjacent to the OnSS and in close proximity to it such that they will act as scale markers indicating that the OnSS is large scale.

2.12.14 The magnitude of change during the operational phase will be **high**. The change will relate to the presence of the OnSS which will be located a minimum distance of 190 m from the viewpoint as shown on photomontages on Volume 6, Part 7, Annex 2.2.2, LVIA Visualisations, Figures 2.16d. This will form a large-scale substation that will be 15 m in height and occupy a notable proportion of the northerly sector of the view. Although there is a baseline influence from the overhead transmission lines in the area, the close proximity of the OnSS, and its large scale and industrial character relative to the small scale and predominantly rural character of the baseline landscape, will have a notable effect on the views of residents and road-users on this section of Ardleigh Road. The field boundary trees to the north-east will be seen adjacent to the OnSS and in close proximity to it such that they will act as scale markers indicating that the OnSS is large scale.

2.12.15 The magnitude of change after an approximate 5 to 10 year period will be **negligible**. This takes into account the screening effect of the existing hedgerow and proposed mitigation planting adjacent to Ardleigh Road which will screen visibility of the OnSS, as shown in the photomontage in Volume 6, Part 7, Annex 2.2.2, LVIA Visualisations, Figure 2.16f.

SIGNIFICANCE OF EFFECT

2.12.16 The impact of the OnSS on Viewpoint 1: Ardleigh Road near Norman's Farm is considered to be of a high magnitude during both the construction and operational phases, and the sensitivity of receptors affected is considered to be medium-high or medium. The significance of the residual effect is therefore concluded to be **major** for residents and **major/ moderate** for road-users, which are **significant** in EIA terms. The effect will be adverse, long-term and reversible.

2.12.17 The significant effect will gradually reduce to a **not significant** effect at a **minor** level after an approximate 5 to 10 year period during which existing and mitigation planting will grow to screen visibility of the OnSS and the magnitude of change will reduce to negligible.

VIEWPOINT 2: BARN LANE PROW/ BYWAY

BASELINE

2.12.18 This viewpoint is located on Barn Lane, which is a short section of PRoW 170_57 connecting Grange Road in the west and Ardleigh Road in the east. The viewpoint is representative of the views of walkers on this PRoW, horse-riders on the byway and the small number of residents living on Ardleigh Road, where it joins with Barn Lane.

2.12.19 The view looks west-south-west over the rural farmed landscape which characterises this area. The landform is relatively flat and low-lying with a gentle fall to the south. There is hedgerow enclosure along the northern side of this section of PRoW/ byway but none on the southern side, ensuring an open and close-range view towards the Substation Zone. The medium to large fields which surround this viewpoint, contain arable crops or improved pasture, such that the landscape is predominantly open, albeit with some intermittent enclosure from hedgerows and tree cover.

2.12.20 Barn Lane provides a short section of PRoW/ byway and is used by local residents. There is a small cluster of residential properties on Ardleigh Road at the eastern end of the PRoW/ byway, and although there is some enclosure from surrounding vegetation, visibility of the fields to the west can be experienced from the closer properties and garden grounds. While the settlement of Little Bromley lies further to the east, there is limited intervisibility owing to the screening effect of tree cover along the road and in gardens. The character of the view from Barn Lane is predominantly small scale and rural although a number of overhead transmission lines can be seen converging at Lawford Substation to the south-west, where the substation itself is fairly well concealed by surrounding tree planting particularly during the summer months when trees are in leaf.

SENSITIVITY

2.12.21 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.22 The susceptibility of residents to the effects of the OnSS is high. This reflects the long duration and long-term nature of the views experienced by residents, despite the partial enclosure from surrounding vegetation. The susceptibility of walkers and horse-riders to the effects of the OnSS is medium-high, which reflects the openness of the landscape and the heightened awareness of walkers and horse-riders to their surroundings, despite the shorter duration and shorter-term nature of the views experienced compared to residents. Horse-riders will have a more elevated view of the landscape than walkers allowing them to see above hedges and lower growing vegetation. However, this slight difference in viewing height does not markedly change their susceptibility, which remains medium-high.

2.12.23 The combination of the medium value of the view and the high susceptibility of the residents, walkers and horse-riders gives rise to an overall **medium-high** sensitivity.

MAGNITUDE OF CHANGE

2.12.24 The magnitude of change during the construction phase will be **medium-high**. The change will relate to the presence of the TCC and the emerging OnSS and the construction works associated with the development of the OnSS. The TCC and the OnSS will be located minimum distances of 1080 m and 790 m from the viewpoint and will form a notable feature in the west-south-westerly sector of the view. The relatively close proximity and large-scale will make the emerging OnSS and the construction cranes the defining features in the views of walkers, horse-riders and residents represented by this viewpoint. The TCC will have a lesser effect owing to its smaller scale and greater separation distance and as the OnSS emerges it will come to screen the TCC from this viewpoint.

2.12.25 The magnitude of change during the operational phase will be **medium-high**. The change will relate to the presence of the OnSS which will be located a minimum distance of 790 m from the viewpoint, as shown on photomontages on Volume 6, Part 7, Annex 2.2.4, LVIA Visualisations, Figures 2.17d. This will form a large-scale substation that will be 15 m in height and form a notable feature in the west-south-westerly sector of the view. Although there is a baseline influence from the overhead electricity transmission lines in the area, the relatively close proximity of the OnSS, and its large scale and industrial character relative to the small scale and predominantly rural character of the baseline landscape, will have a notable effect on the views of walkers and horse-riders on the PRoW and residents on the nearby section of Ardleigh Road.

2.12.26 The magnitude of change after an approximate 15 year period will be **negligible**. This takes into account the screening effect of proposed mitigation planting adjacent to the southern side of Barn Lane and along the field boundary to the east of the Substation Zone. These will screen visibility of the OnSS, as shown in the photomontage in Volume 6, Part 7, Annex 2.2.4, LVIA Visualisations, Figure 2.17f.

SIGNIFICANCE OF EFFECT

2.12.27 The impact of the OnSS on Viewpoint 2: Barn Lane PRoW is considered to be of a medium-high magnitude during both the construction and operational phases, and the sensitivity of walkers, horse-riders and residents affected is considered to be medium-high. The significance of the residual effect is therefore concluded to be **major/ moderate**, which is **significant** in EIA terms. The effect will be adverse, long-term and reversible.

2.12.28 The significant effect will gradually reduce to a **not significant** effect at a **minor** level after an approximate 15 year period during which mitigation planting will grow to largely screen visibility of the OnSS and the magnitude of change will reduce to negligible.

VIEWPOINT 3: GRANGE ROAD PROW

BASELINE

2.12.29 This viewpoint is located on the Grange Road PRoW 170_23 which connects the midpoint on Grange Road with the midpoint on Barn Lane PRoW. It represents the views of walkers on the PRoW, occasional riders as the Prow connects to the byway 170_57, as well as road-users on Grange Road, although views from the road are largely enclosed by road-side vegetation whilst those from the PRoW are open. There are few residents in this area, other than those occupying the farmsteads further to the north on Grange Road, from where visibility south is limited by intervening landform and vegetation.

2.12.30 The view looks west-south-west over the rural farmed landscape which characterises this area. The landform is relatively flat and low-lying with a gentle fall to the south. There is hedgerow enclosure along the northern side of the PRoW but none on the southern side, ensuring an open and relatively featureless view towards the Substation Zone. The medium to large fields which surround this viewpoint, contain arable crops or improved pasture, such that the landscape is predominantly open, albeit with some enclosure from hedgerows and tree cover across the middle range.

2.12.31 This short section of PRoW is used by local residents. There is very little settlement in this local area with the exception of Grange Farm to the north and Lawfordhouse Farm to the north-east, although both located on the northern side of the subtle ridgeline that reduces visibility of the Substation Zone. The character of the view from the PRoW is predominantly small scale and rural although an overhead electricity transmission line crosses over the PRoW and, along with a number of other lines, can be seen converging at Lawford Substation on Ardleigh Road to the south-west, although the substation is concealed by surrounding and intervening tree cover.

SENSITIVITY

2.12.32 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.33 The susceptibility of walkers and occasional riders to the effects of the OnSS is medium-high, which reflects the openness of the landscape and the heightened awareness of walkers to their surroundings, despite the shorter duration and shorter-term nature of their views compared to residents. Horse-riders will have a more elevated view of the landscape than walkers allowing them to see above hedges and lower growing vegetation. However, this slight difference in viewing height does not markedly change their susceptibility, which remains medium-high.

2.12.34 The susceptibility of road-users to the effects of the OnSS is medium, which reflects the extent to which clear views from Grange Road are precluded by the enclosure of roadside vegetation, as well as also the shorter duration and shorter-term nature of their transitory views.

2.12.35 The combination of the medium value of the view and the medium-high susceptibility of walkers and occasional horse-riders gives rise to an overall **medium-high** sensitivity, while the medium value and medium susceptibility of road-users gives rise to an overall **medium** sensitivity.

MAGNITUDE OF CHANGE

2.12.36 The magnitude of change during the construction phase will be **medium**. The screening effect of the intervening vegetation means that the TCC and some of the ground level construction works will not be readily visible from this viewpoint. There will, however, be a notable change to the views of walkers and occasional horse-riders owing to the effect of the emerging OnSS and the activity of plant involved in its construction. These features will appear at variance with the relatively small scale and rural character of the baseline landscape, despite the baseline influence of the nearby overhead electricity transmission line. The OnSS will be located a minimum distance of 950 m from the viewpoint and will form a readily visible feature in the southerly sector of the view. The relative proximity and contrasting scale and appearance will make the construction of the OnSS the defining feature in the views of walkers and riders represented by this viewpoint. The magnitude of change on the views of road-users will be **medium-low** owing to the extent of screening formed by the existing road-side vegetation.

2.12.37 The magnitude of change during the operational phase will be **medium**. The change will relate to the presence of the OnSS which will be located a minimum distance of 950 m from the viewpoint, as shown on photomontage on Volume 6, Part 7, Annex 2.2.6, LVIA Visualisations, Figures 2.18d. This will form a group of structures that will be 15 m in height and form a readily visible feature in the southerly sector of the view, albeit with the lower parts screened by the intervening vegetation. Although there is a baseline influence from the nearby overhead transmission line, the industrial character of the OnSS relative to the predominantly rural character of the baseline landscape, will have a notable effect on the views of walkers and horse-riders on the PRoW. The magnitude of change on the views of road-users will be **medium-low** owing to the extent of the screening effect of existing road-side vegetation.

2.12.38 The magnitude of change following 15 years growth on mitigation planting will be **low**. The photomontages in Volume 6, Part 7, Annex 2.2.6, LVIA Visualisations, Figures 2.18f shows that following 15 years of growth, the intervening mitigation planting will have grown to a sufficient scale to partially screen the OnSS with only the roof tops visible above the tree tops. This will notably reduce the influence of the OnSS on walkers, horse-riders and road-users represented by this viewpoint and will help to integrate the OnSS into the landscape setting.

SIGNIFICANCE OF EFFECT

2.12.39 The sensitivity of receptors affected is considered to be medium-high for walkers and occasional horse-riders, and medium for road-users and the magnitude of change is considered to be of a medium magnitude for walkers and horse-riders and a medium-low magnitude for road-users during the construction and operational phases. The significance of the residual effect is therefore concluded to be **moderate** for walkers and occasional horse-riders during the construction and operational phases and is considered **significant** in EIA terms. It is considered to be **moderate/ minor** and **not significant** in EIA terms for road-users due to the screening effect of roadside vegetation along Grange Road. The effect will be adverse, long-term and reversible.

2.12.40 The significant effect will gradually reduce to a **not significant** effect at a **moderate/ minor** or **minor** level after an approximate 15 year period during which mitigation planting will grow to partially screen visibility of the OnSS and the magnitude of change will reduce to low.

VIEWPOINT 4: ARDLEIGH ROAD NEAR JENNING'S FARM

BASELINE

2.12.41 The viewpoint is located on Ardleigh Road to the north-east of Jenning's Farm where the road is orientated south-west to north-east. It is situated at a bend in the road from where PRoW 172_12 extends east towards the village of Little Bromley. This viewpoint is representative of the views of road-users on Ardleigh Road, of walkers on the PRoW and of residents at Jenning's Farm.

2.12.42 The view looks west-north-west across the open farmland towards the proposed location of the OnSS The extent of the view is contained within the middle ground by trees and hedgerows along Barn Lane and Grange Road. To the south-west, there is closer range enclosure from vegetation around Jenning's Farm, while to the east, the open farmland extends as far as the western edge of Little Bromley, which is partially enclosed by tree cover.

2.12.43 The view is characterised by medium to large fields of arable farmland, with farmsteads and dispersed properties adding to the rural image. A boulevard of trees lines this section of Ardleigh Road, adding character and some degree of enclosure. There is also an influence from the pole mounted transmission line that crosses the view from north-east to south-west and the larger overhead electricity transmission line following the same direction, albeit at a slightly longer range.

SENSITIVITY

2.12.44 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.45 The susceptibility of walkers to the effects of the OnSS is high, which reflects the openness of the landscape and the heightened awareness of walkers to their surroundings, despite the shorter duration and shorter-term nature of their views compared to those of residents. The susceptibility of residents to the effects of the OnSS is high owing to the longer duration and longer-term nature of their views, despite the partial enclosure from surrounding vegetation and other buildings.

2.12.46 The susceptibility of road-users to the effects of the OnSS is medium, which reflects the shorter duration and shorter-term nature of their transitory views, the oblique angle of their views relative to the direction of the road and the partial enclosure by tree cover, although the views of road-users will largely be open.

2.12.47 The combination of the medium value of the view and the high susceptibility of residents and medium-high susceptibility of walkers leads to an overall **medium-high** sensitivity for residents and walkers. The medium value of the view and medium susceptibility of road-users leads to a **medium** sensitivity for road-users.

MAGNITUDE OF CHANGE

2.12.48 The magnitude of change during the construction phase will be **medium-high**. The change will relate to the presence of the TCC and the emerging OnSS, and the construction works associated with the development of the OnSS. The TCC and the OnSS will be located minimum distances of 1120 m and 830 m from the viewpoint respectively and will occupy a notable proportion of the westerly sector of the view. This relatively close proximity of the OnSS will make it the defining feature in the views of walkers, residents and road-users represented by this viewpoint, although as the OnSS emerges it will come to screen the more distant TCC from this viewpoint as it lies to the west of the emerging OnSS.

2.12.49 The magnitude of change during the operational phase will be **medium-high**. The change will relate to the presence of the OnSS which will be located a minimum distance of 830 m from the viewpoint, as shown on the photomontage on Volume 6, Part 7, Annex 2.2.7, LVIA Visualisations, Figure 2.19d. This will form a large-scale development that will be 15 m in height and will form a readily visible feature in the westerly sector of the view. Although there is a baseline influence from the overhead transmission lines in the area, the closer proximity of the OnSS, and its large scale and industrial character relative to the small scale and predominantly rural character of the baseline landscape, will have a notable effect on the views of road-users on Ardleigh Road, walkers on the PRoW from Little Bromley and residents in Jenning's Farm.

2.12.50 The magnitude of change after an approximate 15 year period will be **negligible**. This takes into account the screening effect of proposed mitigation planting along the field boundary to the east of the OnSS, which will screen visibility of the OnSS, as shown in the photomontage in Volume 6, Part 7, Annex 2.2.7, LVIA Visualisations, Figure 2.19f. The reduced extent to which the OnSS will be visible will reduce the influence it has on the views of walkers, road-users and residents

SIGNIFICANCE OF EFFECT

2.12.51 The impact of the OnSS on Viewpoint 4: Ardleigh Road near Jenning's Farm is considered to be of a medium-high magnitude during both the construction and operational phase, and the sensitivity of receptors affected is considered to be medium-high for residents and walkers and medium for road-users. The significance of the residual effect is therefore concluded to be **major/ moderate** for residents and walkers and **moderate** for road-users, which is significant in EIA terms. The effect will be adverse, long-term and reversible.

2.12.52 The significant effect will gradually reduce to a **not significant** effect at a **minor** level after an approximate 15 year period during which mitigation planting will grow to screen visibility of the OnSS and reduce the magnitude of change to negligible.

VIEWPOINT 5: BARLON ROAD NEAR LITTLE BROMLEY

BASELINE

2.12.53 This viewpoint is located on Barlon Road, to the south-west of St Mary's Church and Little Bromley Hall. The view is representative of the views of road-users on Barlon Road, as well as walkers on PRoW 172_12 which extends east to west from St. Mary's Church to Lilley's Farm. It is also representative of residents in Little Bromley Hall and surrounding properties, although some of these are enclosed by garden vegetation.

2.12.54 The view looks north-west across the adjacent fields of arable farmland towards the Substation Zone. The fields are medium to large and while an accumulation of tree cover encloses the middle to distant landscape, the limited presence of hedgerows, and intermittent presence of trees leads to a relatively open fore to middle-ground landscape. Farmsteads are evident across the middle-ground with Cattsgreen Farm visible to the left, Norman's Farm in the centre and Jenning's Farm visible to the right.

2.12.55 As well as the rural developments and intensive farming practices, there is also an influence from larger-scale developments in the form of overhead electricity transmission lines and the Lawford Substation, although both these features lie beyond 1.5 km and with the substation largely screened by tree cover particularly in the summer when trees are in leaf.

SENSITIVITY

2.12.56 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.57 The susceptibility of walkers to the effects of the OnSS is medium-high, which reflects the openness of the landscape and the heightened awareness of walkers of their surroundings, despite the shorter duration and shorter-term nature of the views experienced by walkers compared to residents. The susceptibility of residents to the effects of the OnSS is high owing to the longer duration and longer-term nature of their views, despite the potential partial enclosure from surrounding vegetation and other buildings.

2.12.58 The susceptibility of road-users to the effects of the OnSS is medium, which reflects the shorter duration and shorter-term nature of their views, the oblique angle of their views relative to the direction of the road and the occasional enclosure by buildings and hedgerows, although the views of road-users will largely be open.

2.12.59 The combination of the medium value of the view and the high susceptibility of residents and medium-high susceptibility of walkers leads to an overall **medium-high** sensitivity for residents and walkers. The medium value of the view and medium susceptibility of road-users leads to a **medium** sensitivity for road-users.

MAGNITUDE OF CHANGE

2.12.60 The magnitude of change during the construction phase will be **medium-high**. The change will relate to the presence of the TCC and the emerging OnSS and the construction works associated with the development of the OnSS. The TCC and the OnSS will be located minimum distances of approximately 1.58 km and 1.39 km from the viewpoint, with the OnSS forming a readily visible feature in the north-westerly sector of the view. The construction of the emerging OnSS and associate construction cranes will form the defining features in the views of walkers, residents and road-users because of the contrast in scale and appearance it will present relative to the small scale and rural character of the baseline landscape. This is also taking into account the considerations that there will be favourable scale comparisons with closer range tree cover and from this range the emerging OnSS will occupy a fairly contained extent of this view.

2.12.61 The magnitude of change during the operational phase will be **medium-high**. The change will relate to the presence of the OnSS which will be located a minimum distance of approximately 1.39 km from the viewpoint, as shown on photomontages on Volume 6, Part 7, Annex 2.2.9, LVIA Visualisations, Figure 2.20d. Although there is a baseline influence from the existing overhead electricity transmission lines and substation in this sector, the closer proximity of the OnSS, and its large scale and industrial character relative to the small scale and predominantly rural character of the baseline landscape, will have a notable effect on the views of road-users on Barlon Road, walkers on the PRoW and residents next to St Mary's church. In particular, the horizontal and vertical scale of the OnSS relative to the scale of nearby Norman's Farm will accentuate the differences.

2.12.62 The magnitude of change after an approximate 15 year period will be **low**. This takes into account the screening effect of proposed mitigation planting to the south of the OnSS, which will screen visibility of most of the OnSS, with the exception of the roof tops of the converter buildings, as shown in the photomontage in Volume 6, Part 7, Annex 2.2.9, LVIA Visualisations, Figure 2.20f. The reduced extent to which the OnSS will be visible will reduce the influence it has on the views of walkers, road-users and residents.

SIGNIFICANCE OF EFFECT

2.12.63 The impact of the OnSS on Viewpoint 5: Barlon Road near Little Bromley is considered to be of a medium-high magnitude during both the construction and operational phases, and the sensitivity of receptors affected is considered to be medium-high for residents and walkers, and medium for road-users. The significance of the residual effect is therefore concluded to be **major/ moderate** for walkers and residents, which is **significant** in EIA terms. It is concluded to be **moderate** and **significant** in EIA terms for road users due to the large scale and industrial nature of the OnSS which contrasts with the small scale rural landscape surrounding the viewpoint. The effect will be adverse, long-term and reversible.

2.12.64 The significant effect will gradually reduce to a not significant effect at a **moderate/ minor** or **minor** level after an approximate 15 year period during which mitigation planting will grow to largely screen visibility of the OnSS and the magnitude of change will reduce to low.

VIEWPOINT 6: BADLEY HALL ROAD

BASELINE

2.12.65 The viewpoint is located on PRoW Great Bromley 4 which extends north-east from Badley Hall Road to meet with Spratt's Lane to the east of Little Bromley Hall. The viewpoint is situated approximately 0.6 km to the north-east of the village of Great Bromley and 0.3 km south-west of Badley Hall, which comprises a large complex of farm buildings. The viewpoint is representative of the views of walkers on the PRoW, as well as residents in the rural farmsteads and other dispersed properties in this local area.

2.12.66 The view looks north-northwest across the adjacent fields of arable farmland which are open between the fore and middle-ground and enclosed by hedgerows and trees along middle range field boundaries and around Lawford Substation, such that more distant views are largely screened. While the existing substation is well screened by the enclosing tree cover, the overhead electricity transmission line to the north is visible above the treetops and more fully visible across the centre and right of the view. Barlon House is visible to the north with Norman's Farm slightly further west beyond it, marking the dispersed and low-density pattern of rural development.

SENSITIVITY

2.12.67 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.68 The susceptibility of walkers to the effects of the OnSS is medium-high, which reflects the openness of the landscape and the heightened awareness of walkers to their surroundings, despite the shorter duration and shorter-term nature of their views. The susceptibility of residents to the effects of the OnSS is high owing to the longer duration and longer-term nature of the views experienced by residents, despite the potential partial enclosure from surrounding vegetation and other buildings.

2.12.69 The combination of the medium value of the view and the high susceptibility of residents and medium-high susceptibility of walkers leads to an overall **medium-high** sensitivity for residents and walkers.

MAGNITUDE OF CHANGE

2.12.70 The magnitude of change during the construction phase will be **low**. The change will relate principally to the emerging OnSS and the construction works associated with the development of the OnSS. The OnSS will be located a minimum distance of approximately 2.08 km from the viewpoint and will form a feature in the north-north-west sector of the view, albeit partially screened by the intervening middle-range tree cover particularly during the summer months when trees are in leaf. The location of the TCC to the west of the OnSS means that it will be screened by the intervening tree cover. The limited extent to which the construction of the OnSS will be visible combined with the separation distance will reduce the scale of the OnSS in the view, which will moderate the overall effect during the construction phase.

2.12.71 The magnitude of change during the operational phase will be **low**. The change will relate to the presence of the OnSS which will be located a minimum distance of 2.08 km from the viewpoint. The photomontages in Volume 6, Part 7, Annex 2.2.11, LVIA Visualisations, Figures 2.21d shows the limited extent to which the OnSS will be visible owing to the screening effect of the intervening tree cover and its comparatively smaller scale owing to the greater separation distance from the viewer. The perceived scale of the OnSS will also be moderated through comparison with the closer range trees which help to make the converter buildings appear to sit low in the landscape.

2.12.72 The magnitude of change following 15 years growth on mitigation planting will be **negligible**. The photomontages in Volume 6, Part 7, Annex 2.2.11, LVIA Visualisations, Figures 2.21f shows that the mitigation planting will add to the existing screening provided by the intervening tree planting and will help to further integrate the OnSS into the landscape setting, such that it will be almost fully screened.

SIGNIFICANCE OF EFFECT

2.12.73 The impact of the OnSS on Viewpoint 6: Badley Hall Road is considered to be of a low magnitude during both the construction and operational phases, and the sensitivity of receptors affected is considered to be medium-high. The significance of the residual effect is therefore concluded to be **moderate/ minor**, which is considered to be **not significant** in EIA terms due to the intervening vegetation which provides effective screening and the close-range trees which help to make the converter buildings appear to sit low in the landscape. The effect will be adverse, long-term and reversible.

2.12.74 Mitigation planting will further aid in screening of the OnSS as it matures and persists throughout the project lifespan of up to 40 years, reducing the magnitude of change to negligible and the level of effect to **minor** and **not significant** in EIA terms.

VIEWPOINT 7: LITTLE BROMLEY PROW

BASELINE

2.12.75 The viewpoint is located on PRoW Little Bromley 12 that connects Bromley Road at Little Bromley to Ardleigh Road near Jenning's Farm (see viewpoint 4: Ardleigh Road near Jenning's Farm). Bromley Road runs north south through Little Bromley with the majority of properties found to the west of the road. The PRoW turns off from Bromley Road in the southern part of the village and runs east-west through an agricultural field. The viewpoint is representative of walkers on the PRoW and of residents of properties on the western side of Little Bromley, however back garden vegetation partially screens views towards the Substation Zone.

2.12.76 The view looks west-north-west over the rural farmed landscape, which characterises this area. The landform is relatively flat and low-lying with a gentle rise to the north. The straight line of the PRoW that crosses through the medium to large agricultural field draws the eye towards the boulevard of trees that line Ardleigh Road in the middle ground. Jenning's Farm is visible to the left of the view and adjacent to a small patch of deciduous woodland. Trees can be seen beyond the boulevard along the horizon, above which wood pole mounted electricity lines and overhead transmission line towers can be seen. The view north and south looks across the field, to the south the view extends across neighbouring fields that are bounded by scrub, hedges and occasional trees. North the view is enclosed by trees and hedges surrounding properties that line Ardleigh Road having curved around the field to the north. East the view looks across the field towards the back gardens of the houses along the western edge of Little Bromley. Most gardens have trees or mature shrubs partially screening views to the west.

SENSITIVITY

2.12.77 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.78 The susceptibility of walkers to the effects of the OnSS is medium-high, which reflects the openness of the landscape and the heightened awareness of walkers of their surroundings, despite the shorter duration and shorter-term nature of the views experienced by walkers compared to residents. The susceptibility of residents to the effects of the OnSS is high owing to the longer duration and longer-term nature of their views, despite the potential partial enclosure from surrounding vegetation and other buildings.

2.12.79 The combination of the medium value of the view and the high susceptibility of residents and medium-high susceptibility of walkers leads to an overall **medium-high** sensitivity for residents and walkers.

MAGNITUDE OF CHANGE

2.12.80 The magnitude of change during the construction phase will be **low**. The change will relate principally to the emerging OnSS and the construction works associated with the development of the OnSS. The OnSS will be located a minimum distance of approximately 1.22 km from the viewpoint and will form a feature in the west-north-westerly sector of the view, albeit partially screened by the intervening middle-range tree cover particularly during the summer months when trees are in leaf. The location of the TCC to the west of the OnSS means that it will be screened by the intervening tree cover and the emerging OnSS. The limited extent to which the construction of the OnSS will be visible combined with the separation distance will reduce the scale of the OnSS in the view, which will moderate the overall effect during the construction phase.

2.12.81 The magnitude of change during the operational phase will be **low**. The change will relate to the presence of the OnSS which will be located a minimum distance of 1.22 km from the viewpoint. The photomontages in Volume 6, Part 7, Annex 2.2.12, LVIA Visualisations, Figures 2.22d shows the limited extent to which the OnSS will be visible owing to the screening effect of the intervening tree cover and its comparatively smaller scale owing to the greater separation distance from the viewer. The perceived scale of the OnSS will also be moderated through comparison with the closer range trees which help to make the converter buildings integrate into the baseline landscape.

2.12.82 The magnitude of change following 15 years growth on mitigation planting will be **negligible**. The photomontages in Volume 6, Part 7, Annex 2.2.12, LVIA Visualisations, Figures 2.22f shows that the mitigation planting will add to the existing screening provided by the intervening tree planting and such that the OnSS will not be readily visible from this viewpoint.

SIGNIFICANCE OF EFFECT

2.12.83 The impact of the OnSS on Viewpoint 7: Little Bromley PRoW is considered to be of a low magnitude during both the construction and operational phases, and the sensitivity of receptors affected is considered to be medium-high. The significance of the residual effect is therefore concluded to be **moderate/ minor**, which is considered to be **not significant** in EIA terms due to the intervening vegetation which provides some screening and the closer range trees which help to make the converter buildings integrate into the baseline landscape. The effect will be adverse, long-term and reversible.

2.12.84 Mitigation planting will further aid in screening of the OnSS as it matures and persists throughout the project lifespan of up to 40 years reducing the magnitude of change to negligible and the level of effect to **minor** and **not significant** in EIA terms.

VIEWPOINT 8: LILLEY'S FARM

BASELINE

2.12.85 This viewpoint is located on PRoW Great Bromley 3 that connects Lilley's Farm (accessed from Carringtons Road) with Ardleigh Road near Cattsgreen Farm. The PRoW runs south to north-north-east across an arable field. It is representative of walkers and of residents of the nearby Lilley's Farm, however garden trees and agricultural buildings screen views to the north, in the direction of the Substation Zone.

2.12.86 The view looks north-north-east over the rural farmed landscape, which characterises this area. The landform is relatively flat and low-lying with a gentle rise to the north. While dense tree cover to the north screens views of the Lawford Substation there are a number of steel lattice transmission towers readily visible and seen to converge at this location. Intervening trees on the far side of the field form a partial screen, although gaps allow views of the wider landscape where the horizon is formed by more distant trees. Overhead transmission lines and wood pole mounted electricity lines criss-cross the distant landscape. To the east and south, the view opens across the rural landscape, where less enclosure allows for longer distance views. These views include surrounding scattered farmsteads, including nearby Lilley's Farm. The view west is enclosed by a hedge and mature field boundary trees.

SENSITIVITY

2.12.87 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.88 The susceptibility of walkers to the effects of the OnSS is medium-high, which reflects the openness of the landscape and the heightened awareness of walkers of their surroundings, despite the shorter duration and shorter-term nature of the views experienced by walkers compared to residents. The susceptibility of residents to the effects of the OnSS is medium-high owing to the longer duration and longer-term nature of their views, despite the potential partial enclosure from surrounding vegetation and other buildings.

2.12.89 The combination of the medium value of the view and the medium-high susceptibility of residents and medium-high susceptibility of walkers leads to an overall **medium-high** sensitivity for residents and walkers.

MAGNITUDE OF CHANGE

2.12.90 The magnitude of change during the construction phase will be **medium**. The change will relate to the emerging OnSS and the construction works associated with the development of the OnSS. The TCC will be screened by intervening vegetation and the OnSS will be partly screened such that only the central part will be visible at a minimum distance of approximately 730 m and seen in the north-north-easterly sector of the view. The construction of the emerging OnSS will form the defining feature in the views of walkers and residents represented by this viewpoint, because of the contrast in scale and appearance it will present relative to the small scale and rural character of the baseline landscape. This is also taking into account the considerations that there will be favourable scale comparisons with closer range tree cover and steel lattice transmission towers and from this range the emerging OnSS will occupy a fairly contained extent of this view being bookended between field boundary trees.

2.12.91 The magnitude of change during the operational phase will be **medium**. The change will relate to the presence of the OnSS which will be located a minimum distance of approximately 730 m from the viewpoint, as shown on photomontages on Volume 6, Part 7, Annex 2.2.13, LVIA Visualisations, Figure 2.23d. Although there is a baseline influence from the existing overhead electricity transmission lines in this sector of the view, the large scale and industrial character of the OnSS relative to the small scale and predominantly rural character of the baseline landscape will have a notable effect on the views of walkers on the PRoW and residents of Lilley's Farm. This is also taking into account the considerations that there will be favourable scale comparisons with closer range tree cover and steel lattice transmission towers, and from this range the OnSS will occupy a fairly contained extent of this view being bookended between field boundary trees.

2.12.92 The magnitude of change after an approximate 15-year period will be **low**. This takes into account the screening effect of proposed mitigation planting to the south of the OnSS, which will screen visibility of most of the OnSS, with the exception of the roof tops of the converter buildings, as shown in the photomontage in Volume 6, Part 7, Annex 2.2.13, LVIA Visualisations, Figure 2.23f. The reduced extent to which the OnSS will be visible will reduce the influence it has on the views of walkers and residents.

SIGNIFICANCE OF EFFECT

2.12.93 The impact of the OnSS on Viewpoint 8: Lilley's Farm is considered to be of a medium magnitude during both the construction and operational phase, and the sensitivity of receptors affected is considered to be medium-high for residents and walkers. The significance of the residual effect is therefore concluded to be **moderate** for walkers and residents and considered to be **significant** in EIA terms.

2.12.94 The significant effect will gradually reduce to a **not significant** effect at a **minor** level after an approximate 15 year period during which mitigation planting will grow to largely screen visibility of the OnSS and the magnitude of change will reduce to low.

VIEWPOINT 9: ESSEX WAY, DEDHAM ROAD

BASELINE

2.12.95 The viewpoint is located on Dedham Road that connects the A137 with Mill Hill, to the west of Lawford. The A137 runs west to north-east to the south of the viewpoint. Dedham road is orientated north-west to south-east for a short section where the viewpoint is located. The Essex Way and PRoW Lawford 55 follow a small section of the road where the viewpoint is located. The viewpoint is representative of walkers on the Essex Way and the PRoW, and of road users on Dedham Road.

2.12.96 The view looks south over the rural farmed landscape, which characterises this area. The landform is relatively flat and low-lying with a gentle rise to the north. The view south looks across a large agricultural field enclosed on the far side by boundary trees in the middle ground beyond which roofs of houses that line the A137 are occasionally glimpsed. Wood pole mounted electricity lines and large-scale overhead transmission lines cross the landscape from north to south in the west of the view. In the distance to the south other overhead electricity transmission lines are visible. The view to the north-west and south-east looks along the road corridor that is lined by gappy roadside vegetation to its northern side at this location. There is no roadside vegetation to its southern side allowing for open views to the south and in the direction of the Substation Zone. The view north is largely contained by roadside vegetation; however, gaps allow for views across arable fields.

SENSITIVITY

2.12.97 The value of the view is high. Although the viewpoint is not a formal viewpoint, the surrounding area is covered by the Dedham Vale AONB which denotes the national scenic value of the local landscape.

2.12.98 The susceptibility of walkers to the effects of the OnSS is medium-high, which reflects the openness of the landscape and the heightened awareness of walkers to their surroundings, despite the shorter duration and shorter-term nature of their views.

2.12.99 The susceptibility of road-users to the effects of the OnSS is medium, which reflects the shorter duration and shorter-term nature of their views, the oblique angle of their views relative to the direction of the road and the occasional enclosure by roadside vegetation, although the views of road-users will largely be open.

2.12.100 The combination of the high value of the view and medium-high susceptibility of walkers leads to an overall **high** sensitivity. The high value of the view and medium susceptibility of road-users leads to a **medium-high** sensitivity for road-users.

MAGNITUDE OF CHANGE

2.12.101 In terms of the magnitude of change during construction, operation and after approximately 15 years, there will be **no change**. This is due to the intervening tree cover and landform screening views of the TCC, emerging OnSS and operational OnSS which will be located a minimum of 2.59 km from the viewpoint, as shown in Volume 6, Part 7, Annex 2.2.14, LVIA Visualisations, Figure 2.24b.

SIGNIFICANCE OF EFFECT

2.12.102 In terms of the significance of effect of the OnSS on Viewpoint 9: Essex Way, Dedham Road there will be **no effect** during construction, operation and after approximately 15 years. This is due to the intervening tree cover and landform screening views of the TCC, emerging OnSS and operational OnSS in the views of walkers on the Essex Way and PRoW and road users on Dedham Road

VIEWPOINT 10: WATERHOUSE LANE

BASELINE

2.12.103 The viewpoint is located on Waterhouse Lane, which connects Morrow Lane to the south and Little Bromley Road to the north. The road follows field boundaries and doglegs from south-west to north where the lane that leads from Waterhouse Farm branches off, close to the viewpoint location. The viewpoint is representative of residents of the nearby properties including those at Waterhouse Farm, however these are enclosed by boundary vegetation, particularly along the northern and eastern boundaries. It is also representative of road users on Waterhouse Lane.

2.12.104 The view looks north-east over the rural farmed landscape, which characterises this area. The landform is relatively flat and low-lying with a gentle rise to the north. The view looks across a medium sized field that is enclosed on the far side by a narrow strip of boundary woodland that continues around the field also enclosing Waterhouse Farm to the east. The view north and west is contained by the hedge that lines Waterhouse Lane, and south by the vegetation surrounding the property at the junction with the lane leading to Waterhouse Farm. Despite the containment in the fore to middle ground the view is open owing to the flat landscape with few vertical features. Beyond the boundary woodland to the north-east a large-scale overhead electricity transmission line is visible above the tree tops.

SENSITIVITY

2.12.105 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.106 The susceptibility of residents to the effects of the OnSS is high owing to the longer duration and longer-term nature of their views, despite the partial enclosure from surrounding vegetation and other buildings. The susceptibility of road-users to the effects of the OnSS is medium, which reflects the shorter duration and shorter-term nature of their transitory views, although the views of road-users will largely be open.

2.12.107 The combination of the medium value of the view and the high susceptibility of residents leads to a **medium-high** sensitivity. The medium value of the view and medium susceptibility of road-users leads to a **medium** sensitivity.

MAGNITUDE OF CHANGE

2.12.108 In terms of the magnitude of change during construction, operation and after approximately 15 years, there will be **no change**. This is due to the intervening tree cover screening views of the TCC, emerging OnSS and operational OnSS which will be located a minimum of 0.93 km from the viewpoint, as shown in Volume 6, Part 7, Annex 2.2.15, LVIA Visualisations, Figure 2.25b.

SIGNIFICANCE OF EFFECT

2.12.109 In terms of the significance of effect of the OnSS on Viewpoint 10: Waterhouse Lane there will be **no effect** during construction, operation and after approximately 15 years. This is due to the intervening tree cover screening views of the TCC, emerging OnSS and operational OnSS in the views of residents and road users on Waterhouse Lane.

VIEWPOINT 11: BOUNDS FARM, HUNGERDOWN LANE

BASELINE

2.12.110 The viewpoint is located on Hungerdown Lane next to Bounds Farm that connects the A137 near Lawford to the north with Little Bromley Road to the south. It is located south of Foxash Estate. It is representative of residents of Bounds Farm and the cluster of properties and farms further north, however roadside and boundary vegetation to the south and east and intervening agricultural structures including polytunnels, screen views to the wider landscape. It is also representative of road users on Hungerdown Lane.

2.12.111 The view looks east-south-east across arable fields with strips of boundary woodland enclosing the middle ground view. Distant large scale overhead electricity transmission lines are visible above tree canopies beyond the woodland strips. Views north and south are long along the road corridor that is lined by vegetation enclosing the view. The view west is enclosed by a large agricultural shed.

SENSITIVITY

2.12.112 The value of the view is medium. The viewpoint is not a formal viewpoint, and the surrounding area is not covered by any scenic landscape planning designations, which would otherwise denote a special value.

2.12.113 The susceptibility of residents to the effects of the OnSS is high owing to the longer duration and longer-term nature of their views, despite the potential partial enclosure from surrounding vegetation and other buildings.

2.12.114 The susceptibility of road-users to the effects of the OnSS is medium, which reflects the shorter duration and shorter-term nature of their views, the oblique angle of their views relative to the direction of the road and the occasional enclosure by roadside vegetation, although the views of road-users will largely be open.

2.12.115 The combination of the medium value of the view and the high susceptibility of residents leads to a **medium-high** sensitivity. The medium value of the view and medium susceptibility of road-users leads to a **medium** sensitivity for road-users.

MAGNITUDE OF CHANGE

2.12.116 In terms of the magnitude of change during construction, operation and after approximately 15 years, there will be **no change**. This is due to the intervening tree cover and landform screening views of the TCC, emerging OnSS and operational OnSS which will be located a minimum of 0.85 km from the viewpoint, as shown in Volume 6, Part 7, Annex 2.2.16, LVIA Visualisations, Figure 2.26b.

SIGNIFICANCE OF EFFECT

2.12.117 In terms of the significance of effect of the OnSS on Viewpoint 11: Bounds Farm, Hungerdown Lane, there will be **no effect** during construction, operation and after approximately 15 years. This is due to the intervening tree cover and landform screening views of the TCC, emerging OnSS and operational OnSS in the views of residents and road users on Hungerdown Lane.

SUMMARY OF EFFECTS ON VIEWS

2.12.118 The OnSS is the component of the onshore infrastructure with greatest potential to give rise to significant visual effects, owing to its large-scale and modern appearance which will be at variance with the predominantly rural character of the receiving landscape. Eleven viewpoints have been selected to represent the views of residents, road-users, walkers and horse-riders in the local area.

2.12.119 The assessment has found that the effect of the OnSS on six of the 11 viewpoints will be significant during the construction and operational phases. The six viewpoints that are assessed to undergo significant effects occur within 1.4 km of the OnSS making significant visual effects localised. There are also two viewpoints within this 1.4 km radius that will not be significantly affected, demonstrating the variable extents of visibility within the close range. The three remaining viewpoints which lie between 1.4 and 2.6 km will also not be significantly affected owing to the screening effect of intervening vegetation combined with the reduction in scale as a result of the increase in separation distance. Where significant visual effects arise, these relate to the scale and appearance of the OnSS, as well as the relatively open and exposed nature of the flat and low-lying farmed landscapes where the OnSS will be located.

2.12.120 Mitigation forms part of VE and extensive mitigation planting is proposed for the local landscape surrounding the OnSS. Mitigation planting has been designed to create an effective screen around the OnSS and will remove all significant effects on surrounding visual receptors within the first 15 years of operation.

2.12.121 In respect of the construction of the landfall and the onshore ECC, the occurrence of significant effects on visual receptors will occur in localised areas typically where main and minor TCCs occur. The effects will occur where road-users pass adjacent to or between TCCs or where residents will experience relatively close range views of TCCs. The careful siting of the onshore ECC, combined with the location of almost all open-cut trenching in arable farmland and the extensive use of trenchless crossing technique has greatly reduced the potential for significant effects on visual receptors to arise along the length of the onshore ECC.

2.13 ENVIRONMENTAL ASSESSMENT: DECOMMISSIONING PHASE

2.13.1 This section describes the potential impacts of the decommissioning of the onshore elements of VE with regard to impacts on landscape and visual receptors.

2.13.2 No decision has been made regarding the final decommissioning policy for the onshore cables, as it is recognised that industry best practice, rules and legislation change over time. It is likely the onshore cables will be pulled through the ducts and removed, with the ducts themselves left in situ in order to minimise further ground disturbance.

2.13.3 In relation to the OnSS, the programme for decommissioning is expected to be similar in duration to the construction phase. The detailed activities and methodology will be determined later within the project lifespan, but a standard approach will include:

- Dismantling and removal from site of outside electrical equipment located within the OnSS compound and removal of cabling from site;
- Dismantling and removal of electrical equipment from within the OnSS buildings and removal of OnSS buildings;
- Removal of areas of hard standing; and
- Reinstatement of the OnSS footprint and platform areas to agricultural land-uses and hedgerows.

2.13.4 Whilst details regarding the decommissioning of the OnSS are currently unknown, considering the worst-case assumption (which will be the removal and reinstatement of the current land use at the Substation Zone) it is anticipated that the impacts will be similar to or less than those assessed during construction. The difference at the decommissioning phase will be that mitigation planting will have matured over the 40 years of the operational life of the onshore elements of VE and will therefore screen the decommissioning works from many of the surrounding landscape and visual receptors.

2.13.5 The decommissioning methodology will need to be finalised nearer to the end of the lifetime of the onshore elements of VE so as to reflect current guidance, policy and legislation at that point. Any such methodology will be agreed with the relevant authorities and statutory consultees.

2.14 ENVIRONMENTAL ASSESSMENT: CUMULATIVE EFFECTS

CUMULATIVE SITES FOR CONSIDERATION IN THE LVIA

2.14.1 Cumulative effects refer to effects upon receptors arising from the onshore elements of VE, when considered alongside other proposed developments and activities and any other reasonably foreseeable project(s) proposals.

2.14.2 GLVIA3 (Landscape Institute and Institute of Environmental Management and Assessment, 2013, p120) defines cumulative landscape and visual effects as those that *'result from additional changes to the landscape and visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.'*

2.14.3 Other proposed developments that have the potential for cumulative effects in combination with the Onshore elements of VE are considered to be those developments that are found within the OnSS study area. Beyond the OnSS study area cumulative effects are limited by distance and lack of intervisibility with other proposed developments. This is in line with guidance (NatureScot 2021, p8) which states that *'The assessment should be proportionate to the likely impacts and all CLVIA should accord with the guidelines within GLVIA3. The emphasis should be on the production of relevant and useful information, highlighting why the proposals assessed have been included and why others have been excluded, rather than the provision of a large volume of information.'*

2.14.4 A comprehensive list of projects that have the potential to contribute to cumulative impacts of the onshore elements of VE has been compiled and this 'long list' and the approach to compiling this list is described in Volume 6, Part 1, Chapter 3 EIA Methodology. Those cumulative projects listed within the 'long list' that lie within the OnSS study area are listed below in Table 2.12.

2.14.5 In assessing the potential cumulative impacts for VE, it is important to bear in mind that projects, predominantly currently 'proposed' may or may not be, ultimately taken forward for development. To build in some consideration of certainty (or uncertainty) the projects and plans have been allocated into 'Tiers' reflecting their current status within the planning and development process, and these are outlined in Table 2.11.

Table 2.11: Description of Cumulative Tiers

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

2.14.6 Cumulative developments are shown in Volume 6, Part 7, Annex 2.2, LVIA Visualisations, Figure 2.13. This shows that no cumulative developments fall within the 1 km study area for the landfall. There is, therefore, no potential for cumulative effects to arise in respect of this onshore component of VE and the assessment of these effects has been scoped out of the LVIA.

2.14.7 In respect of the onshore ECC, Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.13 shows that there are a number of cumulative developments that lie within the 1 km study area of the onshore ECC. In respect of the OnSS, Volume 6, Part 7, Annex 2.1, LVIA Figures, Figure 2.13 shows that there are a number of cumulative developments that lie within the 5 km study area of the OnSS.

2.14.8 A preliminary assessment has been carried out in order to highlight those cumulative developments that have potential to interact with the onshore ECC and give rise to significant cumulative effects. Table 2.12 highlights those cumulative developments which are relevant to the cumulative assessment and discounts those that are not - mostly owing to the separation distance from the OnSS or onshore ECC.

CO-ORDINATION WITH NORTH FALLS OFFSHORE WINDFARM

2.14.9 In accordance with the provisions of NPS EN-5 to seek to develop co-ordination solutions for onshore grid connections, VE has been working with North Falls on a co-ordinated solution to reduce the overall environmental and community impacts of the proposals. The project includes almost fully overlapping, or combined Onshore ECCs and a co-located site for the OnSS to the west of Little Bromley. It is proposed the two projects' ducts will be installed adjacent to each other within the corridor. The level of co-ordination between the two projects has led to a higher degree of understanding and interactions with the North Falls proposals that can be used within the cumulative assessment than would be normal for other developments at a similar stage in the planning process.

2.14.10 Due to the independent timescales for each project, three delivery scenarios have been developed (details of each scenario can be found within Volume 6, Part 3, Chapter 1: Onshore Project Description). For the purposes of the cumulative assessment of VE and North Falls, the worst-case delivery scenario, with limited co-ordination has been assessed for the direct and indirect impacts.

Table 2.12: Cumulative Developments

Project Name/ Type	Status	Distance from OnSS	Project Description	Relevance to Cumulative Assessment	Tier
1. 50MW BESS Ardleigh Road 21/02070/FUL	Approved	0.4 km	Battery Energy Storage System located to the immediate west of UKPN Lawford Substation on Ardleigh Road	Proposed close proximity is likely to give rise to cumulative interactions with the OnSS.	Tier 1
2. 132kV Overhead	Permitted development	0 km	Application of Smartwire	Relatively small-scale construction	Tier 1

Project Name/ Type	Status	Distance from OnSS	Project Description	Relevance to Cumulative Assessment	Tier
Line Modifications 18/00832/OHL			installation on towers to the north of UKPN Lawford Substation on Ardleigh Road.	with limited potential to give rise to significant cumulative effects and therefore not considered further in this assessment.	
3. National Grid EACN Substation	Pre-planning	0.5 km	Large scale substation located on the same site as VE OnSS – to the immediate east.	Proposed close proximity is likely to give rise to cumulative interactions with the OnSS.	Tier 2
4 North Fall OnSS	Scoping	0 km	Large scale substation located in the farmland to the immediate west of VE OnSS.	Proposed close proximity is likely to give rise to cumulative interactions with the OnSS.	Tier 2
5. Land south of Long Road, Lawford 21/00197/DETAIL	Approved	2.6 km	Development of 485 dwellings, up to 2 ha of employment land.	Potential for significant cumulative effects limited by separation distance of over 2.6 km, very limited potential for inter-visibility and different types of development that are not comparable, and therefore not considered further in this assessment.	Tier 1
6. Martell's Quarry, Slough Lane, Ardleigh ESS/42/22/TEN	Approved	2.9 km	Installation of a landfill gas fuelled electricity generating station.	Potential for significant cumulative effects limited by separation distance of over 2.9 km and no potential for inter-visibility, and therefore not considered further in this assessment.	Tier 1

Project Name/ Type	Status	Distance from OnSS	Project Description	Relevance to Cumulative Assessment	Tier
7. Ardleigh Caravan and Camping Park, Dead Lane, Ardleigh 21/01184/LUEX	Decided	3.6 km	Storage of up to 250 motorhomes / towed caravans.	Potential for significant cumulative effects limited by separation distance of over 3.6 km and no potential for inter-visibility, and therefore not considered further in this assessment.	Tier 1
8. Land North and South of A133 Clacton Road at Finches Lane, Elmstead 22/02076/FUL	Awaiting decision	4.8 km	Development of 86 dwellings north of the A133 and 40 dwellings to the south.	Potential for significant cumulative effects limited by separation distance of over 4.8 km and no potential for inter-visibility, and therefore not considered further in this assessment.	Tier 1
9. Low Voltage Overhead Line Modification 19/00497/OHL	Permitted development	4.4 km	Proposed diversion and relocation of existing low voltage overhead power line.	Potential for significant cumulative effects limited by separation distance of over 4.4 km and no potential for inter-visibility, and therefore not considered further in this assessment.	Tier 1
10. The Farm Office, Allens Farm, Tye Road, Elmstead 22/01782/FUL B8	Approved	3.6 km	Proposed erection of class B8 storage and distribution network.	Potential for significant cumulative effects limited by separation distance of over 3.6 km and no potential for inter-visibility, and therefore not considered further in this assessment.	Tier 1

Project Name/ Type	Status	Distance from OnSS	Project Description	Relevance to Cumulative Assessment	Tier
11. A120 CC/TEN/31/21	Approved	3.0 km	Installation of new heating plant (VRV condensers) and photovoltaic solar panels.	Potential for significant cumulative effects limited by separation distance of over 3.0 km and no potential for inter-visibility, and therefore not considered further in this assessment.	Tier 1
12. Tendring Colchester Garden Community	Allocated within the local plan	4.8 km	Provision of suitable sites for gypsies and travellers with 30% affordable housing.	Potential for significant cumulative effects limited by separation distance of over 4.8 km and no potential for inter-visibility, and therefore not considered further in this assessment.	Tier 1
13. Land south-west of Horsley Cross Roundabout, Clacton Road 22/01047/FUL	Approved	0 km	Development of industrial park comprising 11 industrial / prime logistics units.	Potential for significant cumulative effects to arise in relation to a main TCC associated with the onshore ECC being located in close proximity to this development.	Tier 1
14. Land east of Lodge Road, Thorpe le Soken 21/00393/EIASCR	Screening Opinion	0 km	Proposed solar energy scheme on land to the west and south of the East Coast main line spur.	Potential for significant cumulative effects to arise in relation to the onshore ECC being located in close proximity to this development.	Tier 3

2.14.11 The LVIA has undertaken a process of scoping out projects and activities from the long list, based on professional judgement, assessment rationale and guidance relevant to landscape and visual impacts.

2.14.12 The filtering of the cumulative developments show that three projects are relevant to the cumulative assessment of the OnSS and two to the cumulative assessment of the onshore ECC. These cumulative developments are considered in the detailed cumulative assessments presented below.

CUMULATIVE SCENARIOS

2.14.13 Cumulative effects refer to effects upon receptors arising from the OnSS or onshore ECC when considered alongside other proposed developments and activities and any other reasonably foreseeable projects or proposals.

2.14.14 All relevant operational and under construction developments have been included as part of the baseline situation in the main assessment. The cumulative effect of the OnSS and onshore ECC are considered in relation to the following three cumulative scenarios:

- **Cumulative Scenario 1** assesses the effects of adding the OnSS or onshore ECC to a cumulative situation comprising all operational, under construction and consented large-scale developments;
- **Cumulative Scenario 2** assesses the effects of adding the OnSS or onshore ECC to a cumulative situation comprising all operational, under construction, consented and application stage large-scale developments; and
- **Cumulative Scenario 3** assesses the effects of adding the OnSS or onshore ECC to a cumulative situation comprising all operational, under construction, consented, application stage and scoping stage large-scale developments.

2.14.15 These three cumulative scenarios reflect the different stages at which the cumulative developments are at in the planning system, with generally more certainty that those developments which are consented will be built out and less certainty surrounding application stage developments and less again surrounding scoping stage developments.

2.14.16 Assessment of the long list of projects has concluded that there are no relevant under construction developments with potential to give rise to cumulative effects with the OnSS or the onshore ECC. In respect of the OnSS, the three relevant projects include the consented BESS on Ardleigh Road and the pre-planning stage NF OnSS and National Grid EACN Substation. In respect of the onshore ECC, the two relevant projects are Horsley Cross Industrial Estate near the A120 and the Lodge Road Solar Farm near Thorpe le Soken. This means that Cumulative Scenario 1 and Cumulative Scenario 3 need to be assessed for both the OnSS and the onshore ECC.

2.14.17 Projects that are at the pre-planning or scoping stage are generally not considered in the assessment of cumulative effects because firm information on which to base the assessment is not available. The two projects that are of particular relevance to the cumulative assessment of the OnSS are the NF OnSS, with which the OnSS is co-located, and the National Grid EACN Substation, which is located in close proximity to the west. The co-location of VE with North Falls has meant proposals have been developed through collaborative working and, therefore, there has been access to a good level of information regarding the North Falls Substation. Whilst collaborative working has also involved participation with the National Grid EACN team, the later development of their proposals means there is not the same level of information currently available with regard to the EACN Substation.

2.14.18 A detailed cumulative assessment of the OnSS is presented below. This covers the Cumulative Scenario 1 in which the OnSS is added to a cumulative baseline comprising the consented BESS on Ardleigh Road and Cumulative Scenario 3 in which the OnSS is added to a cumulative baseline comprising the pre-planning stage NF OnSS and National Grid EACN Substation.

2.14.19 An indicative layout and model of the NF OnSS have been provided which have enabled a detailed assessment of the cumulative interactions between these projects. In respect of the National Grid EACN, National Grid has supplied the following information.

2.14.20 In order for VE to connect to the National Grid, the proposed National Grid Norwich to Tilbury Reinforcement Project and the associated EACN substation must be operational. National Grid has defined a construction and operational zone within which their EACN substation will be situated. This is adjacent to the VE OnSS zone.

2.14.21 Despite its stage in the planning process, due to VE's reliance on this project for its connection to the National Grid, it has been given detailed consideration and treated with more certainty than other cumulative projects at similar stage in the planning process in the CEA. To assist with the assessment, it has been necessary to make assumptions as to the siting, scale, form and construction of the project, particularly the EACN substation. These assumptions have been checked and agreed to be appropriate and reasonable by National Grid and for the EACN Substation are based on an approximate footprint of 500 m x 250 m with a maximum equipment height of approximately 15 m, although the site will contain equipment at a variety of heights and be surrounded by security fencing.

2.14.22 In order to enable a meaningful cumulative assessment, and in the absence of National Grid being in a position to share a fixed location, the visualisations in Volume 6, Part 7, Annex 2.2.1-16, LVIA Visualisations, Figures 2.16 to 2.26 are based on an indicative location for the 500 m x 250 m footprint which has been placed relatively centrally within the National Grid Land and at an approximate ground level of 36 m AOD. The area is included in the visualisations as a grey 3D box with an annotated umbrella marker above to indicate its potential extent.

2.14.23 The EACN Substation is part of the wider National Grid Norwich to Tilbury Reinforcement Project. As part of this project, a new 400kV circuit is proposed into and out of the west of the EACN substation. In the current proposals, one of these circuits is currently 400kV overhead electricity transmission line (the other is underground). This route for the overhead electricity transmission line is currently only indicative and owing to this uncertainty given the stage of National Grid in their development process and the lack of available information at the time of writing, has not been included in the detailed cumulative assessment. Although, given the location of the route, on the far side of the EACN it would not be expected to change the findings of the VE assessment.

LANDSCAPE CHARACTER – DETAILED CUMULATIVE ASSESSMENT

HEATHLAND PLATEAUX LCT – 7A BROMLEY HEATHS

MAIN ASSESSMENT

2.14.24 In the main assessment, the sensitivity attributed to this LLCA is assessed as medium-high, the magnitude of change ranges from high to no change and the effect is major or major/ moderate and significant in the area defined broadly by Hungerdown Lane approximately 0.7 km to the west, Grange Road ProW approximately 0.9 km to the north, Little Bromley approximately 1.2 km to the east and Barlon Road, Manning Grove and Lilley's Farm approximately 1.0 to 1.3 km to the south. The effects beyond these extents will either be moderate, moderate/ minor or minor and not significant or where there will be no visibility there will be no change and no effect. The effects will be adverse, short-term and reversible in respect of the construction phase and adverse, long-term and reversible in respect of the operational phase

SCENARIO 1 – CUMULATIVE ASSESSMENT

2.14.25 Under Scenario 1 the cumulative magnitude of change will be **low**. The addition of the OnSS to a cumulative baseline comprising the BESS adjacent to UKPN Lawford Substation will have a limited effect on local landscape character owing chiefly to the limited influence of the BESS. This is because it will be screened by existing planting surrounding the UKPN Lawford Substation which will limit not only its influence across the local landscape but also its inter-visibility with the OnSS. Furthermore, the BESS will form a comparatively small-scale and compact development and its influence will be moderated by its location adjacent and its close association with UKPN Lawford Substation.

2.14.26 The cumulative effect will be **not significant** at a **moderate/ minor** level owing principally to the limited influence of the BESS on local landscape character. The effect will be long-term, adverse and reversible.

SCENARIO 3 CUMULATIVE ASSESSMENT

2.14.27 The cumulative assessment considers the effect on 7A Bromley Heaths from adding the OnSS to a cumulative context comprising the pre-planning stage NF OnSS and National GridNational Grid EACN. All three substations will be located in 7A Bromley Heaths and located in especially close proximity of one another; with the NF OnSS located on the same site and to the immediate east of the OnSS and the National Grid EACN Substation located in the field to the west, on the opposite side of Grange Road. The cumulative assessment focuses on the 123ble123cter parts of 7A Bromley Heaths that surround the OnSS.

2.14.28 The cumulative magnitude of change will be high, medium-high or medium in the area defined broadly by Hungerdown Lane approximately 0.7 km to the west, Grange Road ProW approximately 0.9 km to the north, Little Bromley approximately 1.2 km to the east and Barlon Road, Manning Grove and Lilley's Farm approximately 1.0 to 1.3 km to the south. Across this 124ble124cter part of 7A Bromley Heaths there will be a strong cumulative baseline influence from the presence of the NF OnSS in the same Substation Zone and the National Grid EACN Substation on the land to the immediate west. The addition of the OnSS will further increase this influence and owing to the general openness of the landscape will contribute to substations forming the defining characteristic of this local landscape over the extents set out above. The OnSS will add to the physical extent of energy infrastructure present in this local landscape and through its industrial appearance will further detract from the rural character.

2.14.29 The cumulative effect within these extents will be **major**, **major/ moderate** or **moderate** and **significant** in EIA terms. The effects will be adverse, long-term and reversible.

2.14.30 The cumulative magnitude of change will be **medium-low**, **low**, **negligible** or with **no effect** in all remaining parts of 7A Bromley Heath owing to the reduced influence of the OnSS and reduced influence of the NF OnSS and National Grid EACN Substation The effects either be **moderate**, **moderate/ minor** or **minor** and **not significant** in EIA terms and where there will be no visibility there will be **no change** and **no effect**.

2.14.31 Mitigation planting will mature to create a screen around the OnSS and the NF OnSS. As this planting matures and gradually reduces the visibility and influence of the OnSS, it will reduce the cumulative magnitude of change from high, medium-high or medium down to **low** and this will reduce the cumulative effects from **significant** at a **major**, **major/ moderate** or **moderate**, to not significant at a **moderate/ minor** or **minor** level.

VISUAL EFFECTS – DETAILED CUMULATIVE ASSESSMENT ONSHORE ECC

2.14.32 There is the potential for a significant cumulative effect to arise as a result of the onshore ECC in conjunction with the following proposed developments;

- Lodge Lane Solar Farm near Thorpe-le-Soken; and
- Horsleycross Roundabout Industrial Estate near A120.

2.14.33 There will be no cumulative effect on landscape character owing to the relatively small scale of the onshore ECC construction, the intensively farmed nature of the land that the majority of the onshore ECC is routed through, the extensive use of trenchless crossing techniques and the broad expanse of the LCTs. These factors ensure that the onshore ECC will occupy only a small proportion and will have a limited influence on the overall character.

2.14.34 There is the potential that the onshore ECC in conjunction with the proposed solar farm and industrial estate listed above, may give rise to significant cumulative effects on the views of visual receptors, such as nearby residents, walkers, horse-riders or road-users.

2.14.35 The potential for cumulative visual effects to arise in respect of the onshore ECC are limited by the factors set out in the introduction to Section 2.12 and will only have potential to arise during construction in instances where the onshore ECC is located close to visual receptors, such as residents, road-users and walkers, as well as close to the cumulative developments, and /or where tree or hedgerow losses are notable.

2.14.36 The cumulative assessment considers the worst-case scenario as presented by Scenario 1 in which the onshore ECC occupies a 60 m working width over Sections 1 to 5 and 72 m over Sections 6. The effects of the onshore ECC during the operational phase will be limited to the residual effects relating to tree or hedgerow loss which are limited owing to careful routing and extensive use of trenchless crossing techniques as described in Section 2.10.

LODGE LANE SOLAR FARM NEAR THORPE-LE-SOKEN

BASELINE

2.14.37 The proposed solar farm and onshore ECC come within close proximity in the area around the East Coast Main Line Spur. This is a predominantly rural landscape, 125ble125cterized by open fields of arable farmland. The rail lines create a physical divide which means that there are few roads or ProWs in this area with only Pork Lane connecting Great Holland and Thorpe Road to the east, and Harwich Road to the west of the developments and well separated from the proposed onshore ECC. These is a network of ProWs further south which connect Great Holland with Great Holland Pits Nature Reserve, albeit with mature tree cover forming an intervening screen. There are few properties in this area and where they do occur, they are typically enclosed by tree cover of surrounded by farm buildings, as is the case with Birch Hoe Farm.

2.14.38 The proposed solar farm is located adjacent to the Colchester train line, close to the spur where it splits to connect with Frinton-on-Sea and Clacton-on-Sea. The solar farm would be located along the southern side of the rail line, extending in a long strip of land between Thorpe-le-Soken Rail Station and Holland Brook with also a separate site occurring on the land between the spur. The capacity of the solar farm would be 50 MW. The proposal is currently at screening stage and so there is limited information available and uncertainty with regard to whether it will be consented. There is, however, the possibility that the construction of the solar farm could overlap with the construction of the onshore ECC.

2.14.39 The onshore ECC overlaps with the eastern part of the solar farm that sits between the spurs. This section of the onshore ECC comprises a series of trenchless technique crossings such that the influence of construction will be limited to the TCCs associated with these works.

SENSITIVITY

2.14.40 The value of the view is medium. There are no formal viewpoints or landscape planning designations in this area which would otherwise denote a special visual amenity value.

2.14.41 The susceptibility of residents is medium-high. While there is the potential that views from internal and external spaces associated with properties on Pork Lane have the potential to be affected by the onshore ECC and the proposed solar farm, for a long duration on a daily and yearly basis, their susceptibility is moderated by the separation distance of approximately 250 to 290 m from the onshore ECC and beyond this distance for the proposed solar farm, and the enclosure formed around many of the properties by built form and vegetation.

2.14.42 The susceptibility of walkers and horse-riders on the ProWs to the south is medium-high. Walkers and horse-riders will be in the open and with potential to experience views of the onshore ECC construction passing north to south through this valley and with the proposed solar farm to the north-west. While their views will be temporary and short to medium in duration, they will have a heightened awareness of their surroundings.

2.14.43 The susceptibility of road-users is medium, with the susceptibility of road-users being moderated by the short-term and transitory nature of their views. While Pork Lane is routed parallel to the onshore ECC, trenchless crossing technique is used along most of this section such that it will be the associated TCCs that will give rise to the visual effect. The susceptibility of road-users will also be moderated by the separation distance of 270 m and the screening effect of roadside vegetation.

2.14.44 The combination of the medium value and the medium-high susceptibility of residents, walkers and horse-riders gives rise to a **medium-high** sensitivity, while the combination of the medium value and the medium susceptibility of road-users gives rise to a **medium** sensitivity.

CUMULATIVE MAGNITUDE OF CHANGE

2.14.45 The solar farm will comprise the construction of 50MW worth of solar panels along the southern side of the Great Eastern Mainline and on the land between the spurs. The onshore ECC will comprise trenchless crossing technique along most of the section between great Holland and Thorpe Road, such that the most notable impact on visual receptors will relate to the associated TCCs.

2.14.46 The cumulative magnitude of change on residents will be **medium-low**. There are few properties on Pork Lane from which views of both the proposed solar farm and the TCCs of the onshore ECC will be experienced. Views from most of the properties are partially screened by hedgerows or tree cover or other buildings. In the few instances where both the proposed solar farm and the TCCs of the onshore ECC will be visible from internal or external spaces, at a minimum of 250 m, the TCCs of the onshore ECC will form a relatively distant and small scale influence, that will limit the cumulative magnitude of change to medium-low. Furthermore, they will be seen adjacent to the construction of the extensive proposed solar farm and this will moderate the cumulative interaction, along with the location of the proposed solar farm beyond 250 m.

2.14.47 The cumulative magnitude of change on walkers and horse-riders will be **medium-low**. The ProWs are concentrated on the southern side of the Holland Brook valley and while there is some screening from mature tree cover there is the potential that walkers and horse-riders will experience views of the developments. The magnitude of change will however be moderated by the extensive use of trenchless crossing technique through this valley which means there will be practically no open cut trenching and the only above ground features will be the TCCs. These will occur at a minimum separation of 250 m and will appear relatively small scale and compact, especially in contrast to the extensive site of the proposed solar farm.

2.14.48 The cumulative magnitude of change on road-users will be **low**. The combination of the minimum separation distance of 250 m combined with the partial enclosure owing to roadside vegetation will limit the influence of both developments on the views of road-users. The cumulative influence will also be moderated by the extensive use of trenchless crossing techniques through this valley which will mean the cumulative effects will be limited to the addition of the associated TCCs.

CUMULATIVE SIGNIFICANCE OF EFFECT

2.14.49 The cumulative effect will be **not significant** at a **moderate** level for residents, walkers and horse-riders and at a **moderate / minor** level for road-users. The effect will be adverse, short-term and reversible.

HORSLEYCROSS ROUNDABOUT INDUSTRIAL ESTATE NEAR A120

BASELINE

2.14.50 Residents on Clacton Road where there are a couple of properties mixed in with a complex of farm buildings situated on the western side of the road, opposite the TCC. There is enclosure along both sides of the road from hedgerows and tree cover with occasional gaps and low sections and more open views in the winter months when the vegetation is bare.

2.14.51 Road-users on Clacton Road which connects Clacton-on-Sea to the south with Manningtree to the north in the section to the north of the A120. There is a low hedgerow on the eastern side of the road and no enclosure on the western side of the road, such that road-users experience relatively open views of the surrounding agricultural landscape.

SENSITIVITY

2.14.52 The value of the view is medium. There are no formal viewpoints or landscape planning designations in this area which would otherwise denote a special visual amenity value.

2.14.53 The susceptibility of residents is medium-high. While there is the potential that views from internal and external spaces associated with properties on Clacton Road have the potential to be affected by the main TCC and the proposed industrial estate, for a long duration on a daily and yearly basis, their susceptibility is moderated by the separation distances between the properties and the industrial park and the enclosure formed around many of the properties by built form and vegetation.

2.14.54 The susceptibility of road-users is medium, with the susceptibility of road-users being moderated by the short-term and transitory nature of their views. While Clacton Road lies adjacent to both the main TCC and the industrial estate, there is some screening effect from roadside vegetation.

2.14.55 The combination of the medium value and the medium-high susceptibility of residents gives rise to a **medium-high** sensitivity, while the combination of the medium value and the medium susceptibility of road-users gives rise to a **medium** sensitivity.

CUMULATIVE MAGNITUDE OF CHANGE

2.14.56 The industrial estate will comprise the construction of 11 industrial sheds set to the immediate south of the A120 and south-west of the Horsleycross Roundabout. The northern side of the A52 and to the west of Thames Street. The onshore ECC will comprise trenchless technique to the west of Bracken Lane but also a TCC set to the north of the A52 to the west of the onshore ECC.

2.14.57 The cumulative magnitude of change on residents in the northern property will be **medium** and in respect of residents in the southern property there will be **no effect**. The TCC will be located adjacent to the eastern side of Clacton Road, along an approximate 410 m length. While there is a hedgerow and occasional trees on the eastern and western sides, there are gaps and sections of low hedge which, especially during the winter months when the vegetation is bare, will potentially allow residents to experience views of this TCC. The industrial estate will be located to the immediate north of the northern property making it especially close range and although there is intervening tree cover there will be the potential that resident's views will be affected. The southern property will not be affected owing to the greater separation distance and extent of intervening buildings and tree cover that separate it from the industrial estate.

2.14.58 The cumulative magnitude of change on road-users will be **medium**. The TCC will be located adjacent to the eastern side of Clacton Road, along an approximate 410 m length. While there is a hedgerow and occasional trees on the eastern side, there are gaps and sections of low hedge which will allow road-users to experience views of this large TCC. While the TCC is not positioned adjacent to the A120, it will be visible also where there are gaps and low hedgerows in the roadside vegetation. The TCC will be seen in addition to the industrial estate which will occupy land on the opposite side of Clacton Road, with the combined extents spanning a 720 m section of the A120, with the sections around Horsleycross Roundabout screened by roadside vegetation. The cumulative magnitude of change is prevented from being rated medium-high owing to the influence from the roads and existing developments, as well as the extent of screening from road-side vegetation on both sides of Clacton Road and along parts of the A120.

CUMULATIVE SIGNIFICANCE OF EFFECT

2.14.59 The cumulative effect will be **significant** at a **moderate** level for road-users and residents associated with the northern property and with **no effect** for residents associated with the southern property. The effect will be adverse, short-term and reversible.

VISUAL EFFECTS – DETAILED CUMULATIVE ASSESSMENT ONSS

VIEWPOINT 1: ARDLEIGH ROAD NEAR NORMAN'S FARM

MAIN ASSESSMENT

2.14.60 In the main assessment, the sensitivity attributed to residents is assessed as medium-high and to road-users is assessed as medium, the magnitude of change during both construction and operational phases is assessed as high and the effect on residents and road-users is assessed as significant at a major or major/ moderate level respectively. The magnitude of change will reduce to low following 15 years of growth for the proposed mitigation planting and the effect will reduce from significant to not significant at a moderate/ minor or minor level.

SCENARIO 1 – CUMULATIVE ASSESSMENT

2.14.61 There will be **no cumulative effect** under the Scenario 1 cumulative assessment as the consented BESS on Ardleigh Road will be screened by the intervening planting that currently screens the adjacent UKPN Lawford Substation.

SCENARIO 3 – CUMULATIVE ASSESSMENT

2.14.62 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.63 The cumulative magnitude of change will be **high**. The visualisations in Volume 6, Part 7, Annex 2.2.2, LVIA Visualisations, Figure 2.16e show that the addition of the OnSS will be seen set to the immediate west of the NF OnSS and at a minimum distance of 190 m and 280 m respectively. While both substations will be seen in close proximity to this viewpoint, the OnSS will be closer and will be seen to more than double the visible horizontal extent of the NF OnSS. The visualisation in Volume 6, Part 7, Annex 2.2.2, LVIA Visualisations, Figure 2.16g shows that the National Grid EACN Substation will be visible to the left of the OnSS, seen at a greater distance and partly screened by the OnSS and the intervening vegetation such that only the upper parts of the substation will be visible.

2.14.64 While there will be continuity in terms of the type, scale and appearance of the OnSS and the NF OnSS, the addition of the OnSS will further increase the influence of large-scale energy developments within this view and further reduce the 129haracterizing influence of the rural landscape. These substations in the north-west sector of the view will become the defining feature in the views of residents and road-users represented by this viewpoint. While the field boundary trees seen in front of the NF OnSS will present a relatively favourable scale comparison, the substations will still appear large in scale.

2.14.65 The cumulative effect on residents and road-users will be **significant**. This is due to the especially close range and clear visibility of the OnSS and North Fall Substation in this view and limited visibility of the National Grid EACN Substation. The addition of the OnSS will contribute to this view being redefined by the presence and influence of large-scale energy developments. The significant cumulative effect will be at a **major** level for residents and **major/ moderate** level for road-users.

2.14.66 The cumulative magnitude of change will reduce from high to **negligible** following the 15-year period from the start of the operational phase. During this time, mitigation planting will establish and grow such that the OnSS, NF OnSS and National Grid EACN Substation will be screened by the intervening planting. The effect will gradually reduce from significant to **not significant** at a **minor** level over the 15-year period.

VIEWPOINT 2: BARN LANE PROW/ BRIDLEWAY

MAIN ASSESSMENT

2.14.67 In the main assessment, the sensitivity attributed to residents and walkers is assessed as medium-high, the magnitude of change during both construction and operational phases is assessed as medium-high and the effect on residents and walkers is assessed as significant at a major/ moderate level. The magnitude of change will reduce to low following 15 years of growth for the proposed mitigation planting and the effect will reduce from significant to not significant at a moderate/ minor level.

SCENARIO 1 – CUMULATIVE ASSESSMENT

2.14.68 There will be **no cumulative effect** under the Scenario 1 cumulative assessment as the consented BESS on Ardleigh Road will be screened by the intervening planting that currently screens the adjacent UKPN Lawford Substation.

SCENARIO 3 – CUMULATIVE ASSESSMENT

2.14.69 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.70 There will be no cumulative magnitude of change. The visualisations in Volume 6, Part 7, Annex 2.2.4, LVIA Visualisations, Figure 2.17e and g show that the addition of the OnSS will not be visible from this viewpoint as it will be screened by the closer range NF OnSS and despite the fact that the National Grid EACN Substation will also be visible to the right of the NF OnSS, albeit at a greater distance and partly screened by the intervening vegetation.

2.14.71 There will be **no cumulative effect** on the residents and walkers represented by this viewpoint, as the OnSS will be screened in views from this section of the PRoW and properties at the eastern end of the PRoW by the intervening NF OnSS.

VIEWPOINT 3: GRANGE ROAD PROW

MAIN ASSESSMENT

2.14.72 In the main assessment, the sensitivity attributed to walkers and occasional riders is assessed as medium-high and to road-users is assessed as medium, the magnitude of change during the construction phase is assessed as medium and the effect on walkers and occasional riders and road-users is assessed as significant at a moderate level during construction. The magnitude of change will reduce to low following 15 years of growth for the proposed mitigation planting to partially screen visibility of the OnSS and the effect will reduce to not significant at a moderate level for walkers and occasional riders, and moderate/ minor level for road-users.

SCENARIO 1 - CUMULATIVE ASSESSMENT

2.14.73 There will be **no cumulative effect** under the Scenario 1 cumulative assessment as the consented BESS on Ardleigh Road will be screened by the intervening planting that currently screens the adjacent UKPN Lawford Substation.

SCENARIO 3 - CUMULATIVE ASSESSMENT

2.14.74 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.75 The cumulative magnitude of change will be **medium-low**. The visualisation in Volume 6, Part 7, Annex 2.2.6, LVIA Visualisations, Figure 2.18e shows that the addition of the OnSS will be seen set to the immediate west of the NF OnSS and at a minimum distance of 950 m and 710 m respectively. While both substations will be seen within the middle range from this viewpoint, the NF OnSS will be closer and more readily visible than the OnSS, which will be largely screened by intervening trees and hedgerows. The visualisation in Volume 6, Part 7, Annex 2.2.6, LVIA Visualisations, Figure 2.18g shows that the National Grid EACN Substation will be visible to the right of the OnSS, seen at a greater distance and largely screened by the intervening vegetation such that only the some upper parts of the substation will be visible.

2.14.76 While the OnSS will add to the extent of development visible from this viewpoint, the cumulative effect will be limited by the fact that the NF OnSS will already establish this type of development as a feature of the cumulative baseline view, and also by the limited extent to which the OnSS will be visible from this viewpoint. This assessment also takes into account, the comparatively greater extent to which the NF OnSS will be visible and the continuity in terms of the type, scale and appearance of the OnSS and the NF OnSS, which will also reduce the cumulative effect.

2.14.77 The cumulative effect on walkers and road-users represented by this viewpoint will be **not significant** at a **moderate** level due to the screening provided by intervening NF OnSS, trees and hedgerows, and that it will not be uncharacteristic feature in the landscape due to the NF OnSS and National Grid EACN Substation.

2.14.78 The cumulative magnitude of change will reduce from medium-low to **low** following the 15-year period from the start of the operational phase. During this time, mitigation planting will establish and grow such that the OnSS, NF OnSS and National Grid EACN will be screened by the intervening planting. The effect will be **not significant** at a **moderate/ minor** level following the 15-year period.

VIEWPOINT 4: ARDLEIGH ROAD NEAR JENNING'S FARM

MAIN ASSESSMENT

2.14.79 In the main assessment, the sensitivity attributed to residents and walkers is assessed as medium-high and to road-users is assessed as medium, the magnitude of change during both construction and operational phases is assessed as medium-high and the effect on residents and walkers is assessed as significant at a major/ moderate level and on road-users is assessed as significant at a moderate level. The magnitude of change will reduce to low following 15 years of growth for the proposed mitigation planting and the effect will reduce from significant to not significant at a moderate/ minor or minor level.

SCENARIO 1 - CUMULATIVE ASSESSMENT

2.14.80 There will be **no cumulative effect** under the Scenario 1 cumulative assessment as the consented BESS on Ardleigh Road will be screened by the intervening planting that currently screens the adjacent UKPN Lawford Substation.

SCENARIO 3 - CUMULATIVE ASSESSMENT

2.14.81 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.82 The cumulative magnitude of change will be **medium**. The visualisation in Volume 6, Part 7, Annex 2.2.7, LVIA Visualisations, Figure 2.19e shows that the addition of the OnSS will be seen set to the immediate west of the NF OnSS and at a minimum distance of 830 m and 560 m respectively. While both substations will be seen in relatively close proximity to this viewpoint, the NF OnSS will be closer and more readily visible than the OnSS, which will be partly screened by intervening trees and hedgerows. The visualisation in Volume 6, Part 7, Annex 2.2.7, LVIA Visualisations, Figure 2.19g shows that the National Grid EACN Substation will be screened by the OnSS and NF OnSS, such that it will have a limited influence on this cumulative assessment.

2.14.83 While there will be continuity in terms of the type, scale and appearance of the OnSS and the NF OnSS, the addition of the OnSS will further increase the influence of large-scale energy developments within this view and further reduce the characterising influence of the rural landscape. While the visualisation shows that the OnSS will be partially screened, the extent of visibility will increase in the winter months when the trees are bare.

2.14.84 The cumulative effect on residents and walkers will be **significant**. This is due to the close range and clear visibility of the OnSS to this viewpoint and also the close range and clear visibility of the NF OnSS. The addition of the OnSS will contribute to this view being redefined by the presence and influence of large-scale energy developments. The significant cumulative effect will be at a **moderate** level for residents and walkers. The effect on road-users will be **not** significant at a **moderate** level, owing to their slightly lower sensitivity and the transitory nature of their views.

2.14.85 The cumulative magnitude of change will reduce from medium to **negligible** following the 15-year period from the start of the operational phase. During this time, mitigation planting will establish and grow such that the OnSS and NF OnSS will be screened by the intervening planting. The effect will gradually reduce from significant to **not significant** at a **minor** level over the 15-year period for walkers and residents, and road-users respectively.

VIEWPOINT 5: BARLON ROAD NEAR LITTLE BROMLEY

MAIN ASSESSMENT

2.14.86 In the main assessment, the sensitivity attributed to residents and walkers is assessed as medium-high and to road-users is assessed as medium, the magnitude of change during both construction and operational phases is assessed as medium-high and the effect on residents and walkers is assessed as significant at a major/ moderate level and on road-users is assessed as significant at a moderate level. The magnitude of change will reduce to low following 15 years of growth for the proposed mitigation planting and the effect will reduce from significant to not significant at a moderate/ minor or minor level for walkers and residents, and road-users respectively.

SCENARIO 3 - CUMULATIVE ASSESSMENT

2.14.87 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.88 The cumulative magnitude of change will be **medium**. The visualisation in Volume 6, Part 7, Annex 2.2.9, LVIA Visualisations, Figure 2.20e shows that the addition of the OnSS will be seen set to the immediate west of the NF OnSS and at a minimum distance of 1.39 km and 1.31 km respectively. While both substations will be seen at a similar range from this viewpoint, the OnSS will be slightly closer and with extents slightly more visible than the NF OnSS, although both substations will be partly screened by intervening trees and hedgerows. The visualisation in Volume 6, Part 7, Annex 2.2.9, LVIA Visualisations, Figure 2.20g shows that the National Grid EACN Substation will be partly screened by the OnSS and intervening vegetation, albeit with the upper parts of the development visible to the left of the OnSS.

2.14.89 While there will be continuity in terms of the type, scale and appearance of the OnSS and the NF OnSS, the addition of the OnSS will further increase the influence of large-scale energy developments within this view and further reduce the characterising influence of the rural landscape. While the visualisation shows that the OnSS will be partially screened, the extent of visibility will increase in the winter months when the trees are bare.

2.14.90 The cumulative effect on residents and walkers will be **significant**. Although the extent of visibility of both substations will be reduced by the screening effect of intervening trees and hedgerows, the OnSS will form a notable addition to this north-westerly view. The addition of the OnSS will contribute to this view being redefined by the presence and influence of large-scale energy developments. The significant cumulative effect will be at a **moderate** level for residents and walkers. The effect on road-users will be **not significant** at a **moderate** level, owing to their lower sensitivity and the transitory nature of their views.

2.14.91 The cumulative magnitude of change will reduce from medium to **low** following the 15-year period from the start of the operational phase. During this time, mitigation planting will establish and grow such that the OnSS and NF OnSS will be screened by the intervening planting. The effect will gradually reduce from significant to **not significant** at a **minor/ moderate** or **minor** level over the 15-year period.

VIEWPOINT 6: BADLEY HALL ROAD

MAIN ASSESSMENT

2.14.92 In the main assessment, the sensitivity attributed to residents and walkers is assessed as medium-high and to road-users is assessed as medium, the magnitude of change during both construction and operational phases is assessed as medium-low and the effect on residents and walkers is assessed as not significant at a moderate level and on road-users is assessed as not significant at a moderate/ minor level. The magnitude of change will reduce to negligible following 15 years of growth for the proposed mitigation planting and the effect will reduce to not significant at a moderate/ minor and minor level for walkers and residents, and road-users respectively.

SCENARIO 3 - CUMULATIVE ASSESSMENT

2.14.93 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.94 The cumulative magnitude of change will be **low**. The visualisation in Volume 6, Part 7, Annex 2.2.11, LVIA Visualisations, Figure 2.21e shows that the NF OnSS will be more readily visible than the OnSS which will be partly visible owing to the screening effect of the intervening trees and hedgerows. The OnSS will be visible at a minimum distance of 2.08 km and the NF OnSS at 2.01 km. The visualisation in Volume 6, Part 7, Annex 2.2.11, LVIA Visualisations, Figure 2.21g shows that the National Grid EACN Substation will be screened by intervening tree cover. The limited visibility of the OnSS means that its addition to a baseline context comprising NF OnSS will give rise to a **not significant** cumulative effect at a **minor** level.

2.14.95 The cumulative magnitude of change will reduce from low to **no effect** following the 15 year period from the start of the operational phase. During this time, mitigation planting will establish and grow such that the OnSS and NF OnSS will be screened by the intervening planting.

VIEWPOINT 7: LITTLE BROMLEY PROW

MAIN ASSESSMENT

2.14.96 In the main assessment, the sensitivity attributed to residents and walkers is assessed as medium-high, the magnitude of change during both construction and operational phases is assessed as medium-low and the effect on residents and walkers is assessed as not significant at a moderate level. The magnitude of change will reduce to low following 15 years of growth for the proposed mitigation planting to partially screen the OnSS and the effect will be not significant at a moderate/ minor level.

SCENARIO 3 - CUMULATIVE ASSESSMENT

2.14.97 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.98 The cumulative magnitude of change will be l**ow**. The visualisation in Volume 6, Part 7, Annex 2.2.12, LVIA Visualisations, Figure 2.22e shows that the addition of the OnSS will be seen set to the immediate west of the NF OnSS and at a minimum distance of 1.22 km and 0.95 km respectively. While both substations will be seen in relative close proximity to this viewpoint, the NF OnSS will be closer and more readily visible than the OnSS, which will be largely screened by intervening trees and hedgerows. The National Grid EACN Substation will be screened by the OnSS and NF OnSS.

2.14.99 While there will be continuity in terms of the type, scale and appearance of the OnSS and the NF OnSS, the addition of the OnSS will further increase the influence of large scale energy developments within this view and further reduce the characterising influence of the rural landscape. While the visualisation shows that the OnSS will be largely screened, the extent of visibility will increase in the winter months when the trees are bare.

2.14.100 The cumulative effect on residents and walkers will be not significant. This is due to NF OnSS and intervening vegetation screening view of the OnSS. The addition of the OnSS will contribute to this view being redefined by the presence and influence of large scale energy developments. The cumulative effect will be **not significant** at a **moderate/ minor** level for residents and walkers.

2.14.101 The cumulative magnitude of change will reduce from low to **negligible** following the 15 year period from the start of the operational phase. During this time, mitigation planting will establish and grow such that the OnSS and NF OnSS will be screened by the intervening planting. The effect will be **not significant** at a **minor** level following the 15 year period.

VIEWPOINT 8: LILLEY'S FARM

MAIN ASSESSMENT

2.14.102 In the main assessment, the sensitivity attributed to residents and walkers is assessed as medium-high, the magnitude of change during both construction and operational phases is assessed as medium and the effect on residents and walkers is assessed as significant at a moderate level. The magnitude of change will reduce to low following 15 years of growth for the proposed mitigation planting to partially screen the OnSS and the effect will be not significant at a moderate/ minor level.

CUMULATIVE ASSESSMENT

2.14.103 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.104 The cumulative magnitude of change will be **medium**. The visualisation in Volume 6, Part 7, Annex 2.2.13, LVIA Visualisations, Figure 2.23e shows that the addition of the OnSS will be seen set to the immediate west of the NF OnSS and at a minimum distance of 730 m and 910 m respectively. While both substations will be seen in close proximity to this viewpoint, the OnSS will be closer and more visible than North Falls which will be largely screened behind intervening trees, particularly in the summer when trees are in leaf. National Grid EACN Substation will be fully screened by intervening tree cover.

2.14.105 The large buildings associated with NF OnSS will be screened by intervening trees (particularly in the summer) or seen beyond unhoused elements. The OnSS will be visible as a large building beyond unhoused electrical elements seen between a gap in field boundary trees such that although there will be continuity in terms of the type, scale and appearance of the OnSS and the NF OnSS, the addition of the OnSS will introduce the main influence of large scale energy developments within this view. These elements combine to further reduce the characterising influence of the rural landscape. The trees and steel lattice transmission towers provide ameliorating scale markers.

2.14.106 The cumulative effect on residents and walkers will be **significant**. This is due to the OnSS, and to a more limited extent the NF OnSS, introducing large scale energy development to the view. The addition of the OnSS will be the defining feature in this view being redefined by the presence and influence of large scale energy developments. The significant cumulative effect will be at a **major/ moderate** level for walkers and residents.

2.14.107 The cumulative magnitude of change will reduce from high to **low** following the 15 year period from the start of the operational phase. During this time, mitigation planting will establish and grow such that the OnSS, NF OnSS will be screened by the intervening planting. The effect will gradually reduce from significant to not significant at a moderate/ minor level over the 15 year period.

VIEWPOINT 9: ESSEX WAY DEDHAM VALE

MAIN ASSESSMENT

2.14.108 In the main assessment, the sensitivity attributed to walker is assessed as medium-high and to road-users is assessed as medium, the magnitude of change during both construction and operational phases is assessed as no change and the effect on walkers and on road-users is assessed as no effect. This will be the same throughout the lifespan of the project.

CUMULATIVE ASSESSMENT

2.14.109 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.110 There will be no cumulative magnitude of change. The visualisation in Volume 6, Part 7, Annex 2.2.14, LVIA Visualisations, Figure 2.24c shows that the OnSS, NF OnSS and National Grid EACN Substation will not be visible from this viewpoint as they will be screened by intervening landform and vegetation.

2.14.111 There will be **no cumulative effect** on the walkers and road-users represented by this viewpoint as the OnSS, NF OnSS and National Grid EACN Substation will be screened in views from this path and road.

VIEWPOINT 10: WATERHOUSE LANE

MAIN ASSESSMENT

2.14.112 In the main assessment, the sensitivity attributed to residents is assessed as medium-high and to road-users is assessed as medium, the magnitude of change during both construction and operational phases is assessed as no change and the effect on residents and on road-users is assessed as no effect. This will be the same throughout the lifespan of the project.

CUMULATIVE ASSESSMENT

2.14.113 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.114 There will be no cumulative magnitude of change. The visualisation in Volume 6, Part 7, Annex 2.2.15, LVIA Visualisations, Figure 2.25c shows that both the OnSS and NF OnSS will not be visible from this viewpoint as they will be screened by intervening vegetation.

2.14.115 There will be **no cumulative effect** on the residents and road users represented by this viewpoint as the OnSS and NF OnSS will be screened in views from this road and from properties by intervening vegetation.

VIEWPOINT 11: BOUNDS FARM, HUNGERDOWN LANE

2.14.116 In the main assessment, the sensitivity attributed to residents is assessed as medium-high and to road-users is assessed as medium, the magnitude of change during both construction and operational phases is assessed as no change and the effect on residents and on road-users is assessed as no effect. This will be the same throughout the lifespan of the project.

CUMULATIVE ASSESSMENT

2.14.117 The cumulative assessment considers the effect on the view from adding the OnSS to a cumulative context comprising the NF OnSS and National Grid EACN Substation.

2.14.118 There will be no cumulative magnitude of change. The OnSS and NF OnSS will not be visible from this viewpoint as they will be screened by the National Grid EACN OnSS and intervening vegetation.

2.14.119 There will be **no cumulative effect** on the residents and road users represented by this viewpoint as the OnSS and NF OnSS will be screened in views from this road and from properties by the closer range National Grid EACN OnSS.

SUMMARY OF CUMULATIVE EFFECTS

2.14.120 The assessment of cumulative effects has considered the effects of the onshore ECC in conjunction with an adjacent proposed solar farm and consented industrial estate and the effects of the OnSS in conjunction with the co-located NF OnSS and National Grid EACN Substation. The construction of the onshore ECC in conjunction with the proposed wind farm south of Thorpe-le-Soken will not give rise to a significant cumulative effect on residents, road-users, walkers and horse-riders owing to the relatively small scale of the onshore ECC, the limited influence of the onshore ECC in relation to the separation distances from the receptors and the baseline influence from the settlements, roads and modified farmland. The construction of the onshore ECC in conjunction with the proposed industrial estate south of the A120 will give rise to a significant cumulative effect on road-users on an approximate 410 m section of Clacton Road and approximate 720 m section of the A120, and residents in the adjacent property owing to the close range influence of these developments and the notable change they will make to the baseline rural character.

2.14.121 In respect of the OnSS, there will be significant cumulative effects across the localised part of 7A Bromley Heaths defined broadly by Hungerdown Lane approximately 0.7 km to the west, Grange Road PRoW approximately 0.9 km to the north, Little Bromley approximately 1.2 km to the east and Barlon Road, Manning Grove and Lilley's Farm approximately 1.0 to 1.3 km to the south. Across this localised part of 7A Bromley Heaths there will be a strong cumulative baseline influence from the presence of the NF OnSS in the same Substation Zone and the National Grid EACN Substation on the land to the immediate west. The addition of the OnSS will further increase this influence and owing to the general openness of the landscape will contribute to substations forming the defining characteristic of this local landscape over the extents set out above. The OnSS will add to the physical extent of energy infrastructure present in this local landscape and through its industrial appearance will further detract from the rural character.

2.14.122 Significant cumulative effects will arise in respect of five of the 11 representative viewpoints; namely Viewpoint 1: Ardleigh Road near Norman's Farm in respect of residents and road-users, Viewpoint 2: Barn Lane PRoW in respect of residents, walkers and horse-riders, Viewpoint 3: Grange Road PRoW in respect of walkers and horse-riders, Viewpoint 4: Ardleigh Road near Jenning's Farm in respect of residents and walkers, Viewpoint 5: Barlon Road near Little Bromley in respect of residents and walkers and Viewpoint 8: Lilley's Farm in respect of residents and walkers. The OnSS will add to the influence of large-scale energy developments visible from these viewpoints and through its industrial appearance will further detract from the rural character.

2.15 CLIMATE CHANGE

2.15.1 Climate change has the potential to affect the potential landscape and visual impacts associated with the OnSS. This section assesses the following aspects:

- The effect of climate change on the local area in which the proposed development will take place; and
- The likely impacts of climate change and the project in-combination on the receiving environment.

2.15.2 The information provided in this section will be drawn upon and summarised in Volume 6, Part 4, Chapter 1: Climate change. As outlined in Volume 6, Part 4, Chapter 1: Climate Change, the operational phase of VE would enable the use of renewable electricity which would result in a positive greenhouse gas impact, resulting in a significant beneficial effect.

EFFECT OF CLIMATE CHANGE ON THE LOCAL ENVIRONMENT

2.15.3 In respect of climate change, the main considerations of the LVIA are the potential landscape and visual impacts associated with the OnSS. United Kingdom Climate Projections 2018 (UKCP18) for the area of the onshore substations generally predict warmer and wetter winters and hotter and drier summers but also with increased occurrence of extreme weather events. The landscape of the Substation Zone and surroundings is characterised by intensive arable agricultural practices with more natural landscape elements such as woodland and grassland very limited in occurrence and extent. The arable farmland presents a landscape system in which water levels are modified by irrigation and drainage, which, to some extent, will moderate the effects of drought and flooding and prevent a notable change to landscape character.

EFFECT OF CLIMATE CHANGE AND THE PROJECT ON THE LOCAL ENVIRONMENT

2.15.4 There is the potential that flooding associated with wetter winters and more frequent occurrence of extreme weather events and drought associated with hotter and drier summers could affect the growth rates and survival of mitigation planting proposed around the OnSS for screening purposes. To mitigate against these potential risks, the mitigation planting will be designed to ensure that plant species are suitably drought and flood tolerant, and the growing conditions are optimised to counteract extremities. Taking these factors into account, the effects of climate change will not alter the conclusions of the LVIA.

2.16 INTER-RELATIONSHIPS

2.16.1 Inter-relationships are considered to be the impacts and associated effects of different aspects of the proposal on the same receptor. Table 2.13 provides a summary of assessed inter-relationships on the receptors assessed in this Chapter.

Table 2.13: Inter-relationships between the LVIA and other chapters in the ES

Topic Chapter	Where addressed in the LVIA	Rationale
Volume 6, Part 3, Chapter 4: Onshore Biodiversity and Nature Conservation	Section 2.9 mitigation Sections 2.10, 2.11 and 2.14.	Both chapters consider the potential effects of hedgerow and tree removal, the LVIA considering the impact on hedgerows and trees as landscape elements, and the Onshore Ecology assessment considering the impact on hedgerows and trees as ecological assets. Both chapters consider the mitigation of hedgerow and tree loss in respect of planting proposed as outline landscape mitigation principles.

Topic Chapter	Where addressed in the LVIA	Rationale
Volume 6, Part 3, Chapter 7: Onshore Archaeology and Cultural Heritage	Section 2.11.	Both chapters consider the potential effects of the onshore elements of VE on the historic character of the landscape.
Volume 6, Part 3, Chapter 3: Socio-economics, Tourism and Recreation	Section 2.12.	Both chapters consider the potential effects of the onshore elements of VE on the visual amenity of recreational users in the local area including walkers on PRoWs and horse-riders on bridleways.
Volume 6, Part 2, Chapter 10: Seascape, Landscape and Visual Impact Assessment (SLVIA)	Section 10.14 of Volume 6, Part 2, Chapter 10: SLVIA.	The SLVIA considers the inter-relationship between the LVIA and the SLVIA.

2.17 TRANSBOUNDARY EFFECTS

2.17.1 In relation to this chapter, it is considered that no transboundary effects will arise. The scoping out of transboundary effects in respect of the LVIA has been agreed with PINS on behalf of SoS and relates to the considerable separation between the onshore components of VE and international boundaries, as well as the relatively small scale and localised nature of potentially significant effects.

2.18 SUMMARY OF EFFECTS

2.18.1 The potential effects on the landscape and visual receptors that will arise as a result of the onshore components of VE have been assessed in this Chapter. The process has involved identifying those receptors with the potential to be significantly affected and assessing the potential effects that the onshore components of VE will give rise to. The significance of these effects has been assessed through combining the sensitivity of each receptor with a prediction of the magnitude of change that will occur as a result of the onshore components of VE. The findings of the assessment are presented in summary in Table 2.14 below and highlight the localised extent within which significant effects will occur.

2.18.2 In respect of the LVIA, the maximum design scenario for the OnSS is based on the AIS maximum footprint of 280 m x 210 m and the GIS maximum building height of 15 m. The AIS footprint and GIS height are used in the production of the ZTVs and shown on the visualisations as a 'Rochdale Envelope' marked using a white dashed 3D box, with a model of the GIS option used to indicate the worst case scenario as a result of the greater height and mass of the buildings compared to the AIS option.

2.18.3 The LVIA study area for the OnSS covers a radius of 5 km and within this area, those receptors with the potential to be significantly affected have been assessed in detail. This has included one LCA and 11 viewpoints. Six photomontages have been prepared for each of the 11 viewpoints to illustrate the following information;

- the maximum design scenario using a Rochdale Envelope to mark out the AIS footprint and GIS height of the OnSS;
- the indicative model of the GIS OnSS set within the Rochdale Envelope;
- the indicative model of the GIS OnSS set within the Rochdale Envelope and with mitigation planting showing 15 years growth;
- the maximum design scenario using a Rochdale Envelope to mark out the AIS footprint and GIS height of the OnSS for VE and for North Falls;
- the indicative model of the GIS OnSS set within the Rochdale Envelope for VE and indicative model of the AIS OnSS set within the Rochdale Envelope for North Falls;
- the indicative model of the GIS OnSS set within the Rochdale Envelope for VE and with mitigation planting showing 15 years growth and indicative model of the AIS OnSS set within the Rochdale Envelope for North Falls.

2.18.4 The Figures are presented in Volume 6, Part 7, Annex 2.1, LVIA Figures, Figures 2.1 to 2.15 show plans of the LVIA study area, landscape receptors, visual receptors and ZTVs of the OnSS, whilst Volume 6, Part 7, Annex 2.2, LVIA Visualisations, Figures 2.16 to 2.26 show the photographs and photomontages from the representative viewpoints. The focus of the assessment has been the effects of the indicative OnSS during the construction and operational phase, with an assessment also of the physical and visual effects associated with the landfall and the onshore ECC.

2.18.5 The assessment of effects on landscape character found that significant effects will arise as a result of the indicative OnSS locations within one of the five LCTs that occur in the LVIA study areas; namely LCT Heathland Plateaux LCT 7A Bromley Heaths LCA. The assessment has found that 7A Bromley Heaths LCA as a whole will not be significantly affected but that there will be significant effects within localised parts of the LCA around the OnSS. These effects will be major or major/ moderate and significant out to an area defined broadly by Hungerdown Lane approximately 0.7 km to the west, Grange Road PRoW approximately 0.9 km to the north, Little Bromley approximately 1.2 km to the east and Barlon Road, Manning Grove and Lilley's Farm approximately 1.0 to 1.3 km to the south. The effects beyond these extents will either be moderate, moderate/ minor or minor and not significant or where there will be no visibility there will be no change and no effect. The effects will be adverse, short-term and reversible in respect of the construction phase and adverse, long-term and reversible in respect of the operational phase.

2.18.6 The assessment of effects on visual amenity found that significant effects will occur within a localised area the OnSS. The effect of the OnSS on six of the 11 viewpoints will be significant during the construction and operational phases. The six viewpoints that are assessed to undergo significant effects occur within 1.4 km of the OnSS making significant visual effects localised. There are also two viewpoints within this 1.4 km radius that will not be significantly affected, demonstrating the variable extents of visibility within the close range. The three remaining viewpoints which lie between 1.4 and 2.6 km will also not be significantly affected owing to the screening effect of intervening vegetation combined with the reduction in scale as a result of the increase in separation distance. Where significant visual effects arise, these relate to the scale and appearance of the OnSS, as well as the relatively open and exposed nature of the flat and low-lying farmed landscapes where the OnSS will be located.

2.18.7 Indicative plans for mitigation planting have been set out with the intention of providing screening around the OnSS. An assessment of the reduction in landscape and visual effects taking into account 15 years growth of mitigation planting, found that the effects on landscape character will be reduced within the local area from significant to not significant, and that the effects on visual amenity will also be reduced within the local area from significant to not significant. Volume 9, Report 22, OLEMP presents the plan of indicative mitigation planting and the principles behind the layout and design with reference to the ecological aims as well as the landscape aims of the plan.

2.18.8 The assessment of physical effects relating to the landfall, onshore ECC and OnSS found that there will be no significant effects in relation to the coastal land, or the hedgerows that will potentially be disturbed or removed during the construction phase. There will, however, be significant effects in respect of the removal of taller hedgerows, hedgerow trees and trees in the localised areas where these might arise during the construction of the onshore ECC or OnSS and on the agricultural land where large areas will be removed form production during the construction and operational phases. In locations where vegetation will be removed, replacement planting will be implemented where practical, although over cables and within wayleaves this will be restricted to the planting of hedgerows and not trees. An overview of the approach to this replacement planting is presented in the Volume 9, Report 22: OLEMP.

2.18.9 In respect of the construction of the landfall and the onshore ECC, the occurrence of significant effects on visual receptors will occur in localised areas typically where main and minor TCCs occur. The effects will occur where road-users pass adjacent to or between TCCs or where residents will experience relatively close range views of TCCs. The careful siting of the onshore ECC, combined with the location of almost all open-cut trenching in arable farmland and the extensive use of trenchless technique at up to 40 locations has greatly reduced the potential for significant effects on visual receptors to arise along the length of the onshore ECC.

2.18.10 The assessment of cumulative effects has considered the effects of the onshore ECC in conjunction with an adjacent proposed solar farm and consented industrial estate and the effects of the OnSS in conjunction with the co-located NF OnSS and National Grid EACN Substation. The construction of the onshore ECC in conjunction with the proposed wind farm south of Thorpe-le-Soken will not give rise to a significant cumulative effect, while the construction of the onshore ECC in conjunction with the proposed industrial estate south of the A120 will give rise to localised significant cumulative effect on road-users and residents.

2.18.11 In respect of the OnSS, there will be significant cumulative effects across the localised part of 7A Bromley Heaths defined broadly by Hungerdown Lane approximately 0.7 km to the west, Grange Road PRoW approximately 0.9 km to the north, Little Bromley approximately 1.2 km to the east and Barlon Road, Manning Grove and Lilley's Farm approximately 1.0 to 1.3 km to the south. Significant cumulative effects will arise in respect of five of the 11 representative viewpoints; namely Viewpoint 1: Ardleigh Road near Norman's Farm in respect of residents and road-users, Viewpoint 2: Barn Lane PRoW in respect of residents, walkers and horse-riders, Viewpoint 3: Grange Road PRoW in respect of walkers and horse-riders, Viewpoint 4: Ardleigh Road near Jenning's Farm in respect of residents and walkers, Viewpoint 5: Barlon Road near Little Bromley in respect of residents and walkers and Viewpoint 8: Lilley's Farm in respect of residents and walkers. The OnSS will add to the influence of large-scale energy developments visible from these viewpoints and through its industrial appearance will further detract from the rural character.

2.18.12 The visualisations in Volume 6, Part 7, Annex 2.2.1-16, LVIA Figures, Figures 2.16 to 2.26 show Rochdale Envelopes and indicative models for these three developments.

2.18.13 In summary, the onshore components of VE will give rise to some significant effects and significant cumulative effects on landscape character and visual amenity in the local area around the OnSS extending out to approximately 1.3 km and 1.4 km respectively. These significant effects will occur during construction and operation and are likely to be mitigated by proposed mitigation planting following 5 and 15 years of growth. There will be significant effects relating to the localised removal of physical elements although the majority of these will be avoided through careful routing of the onshore ECC and OnSS and use of trenchless crossing techniques in up to 40 locations. And significant effects and significant cumulative effects relating to the construction of the onshore ECC in localised parts where main TCCs occur.

2.18.14 The localised nature of these effects means that the majority of the physical elements, landscape receptors and visual receptors across the wider LVIA study area will either undergo not significant effects or will not be affected.

Table 2.14: Summary of effects for LVIA.

Receptor	Sensitivity	Magnitude of change (construction)	Significance of effect (construction)	Magnitude of change (operation)	Significance of effect (operation)	Magnitude of change (+15 years)	Significance of effect (+15 years)
Landfall/ Onshore ECC/ OnSS							
Coastal land	Medium	Medium-low No change	Moderate/ minor (not significant) No effect	N/A	N/A	N/A	N/A
Agricultural land	Medium	Medium-low No change	Moderate/ minor (not significant) No effect	N/A	N/A	N/A	N/A
Hedgerows	Medium	Medium-low No change	Moderate/ minor (not significant) No effect	N/A	N/A	N/A	N/A
Taller hedgerows and hedgerow trees	Medium-high	Medium-high No change	**Major/ moderate (significant)** where taller hedgerows or hedgerow trees are removed No effect	N/A	N/A	N/A	N/A

Receptor	Sensitivity	Magnitude of change (construction)	Significance of effect (construction)	Magnitude of change (operation)	Significance of effect (operation)	Magnitude of change (+15 years)	Significance of effect (+15 years)
Trees	Medium-high	High No change	**Major (significant):** where trees are removed No change	N/A	N/A	N/A	N/A
OnSS							
7A Bromley Heath LCA	Medium	High and medium-high – approximately 1.0 km west, 0.9 km north, 1.2 km east and 1.3 km south. Medium/ Medium-low/ Low/ No change	**Major/ moderate (significant)** – approximately 1.0 km west, 0.9 km north, 1.2 km east and 1.3 km south. Moderate or moderate/ minor (not significant)	High and medium-high – approximately 1.0 km west, 0.9 km north, 1.2 km east and 1.3 km south. Medium/ Medium-low/ Low/ No change	**Major/ moderate (significant)** – approximately 1.0 km west, 0.9 km north, 1.2 km east and 1.3 km south. Moderate or moderate/ minor (not significant)	Medium/ Medium-low/ Low/ Negligible/ No change	Moderate or moderate/ minor (not significant)
VP1: Ardleigh Road near Norman's Farm	Medium-high: residents Medium: road-users	High	**Major (significant)** **Major/ moderate (significant)**	High	**Major (significant)** **Major/ moderate (significant)**	Negligible	Minor (not significant)

Receptor	Sensitivity	Magnitude of change (construction)	Significance of effect (construction)	Magnitude of change (operation)	Significance of effect (operation)	Magnitude of change (+15 years)	Significance of effect (+15 years)
VP2: Barn Lane PRoW	Medium-high: residents, walkers and riders	Medium-high	**Major/ moderate (significant)**	Medium-high	**Major/ moderate (significant)**	Negligible	Minor (not significant)
VP3: Grange Road PRoW	Medium-high: walkers and occasional riders Medium: road-users	Medium: walkers and occasional riders Medium-low: road-users	**Moderate (significant)** Moderate/ minor (not significant)	Medium: walkers and occasional riders Medium-low: road-users	**Major/ moderate (significant)** Moderate/ minor (not significant)	Low	Moderate/ minor (not significant) Minor (not significant)
VP4: Ardleigh Road near Jenning's Farm	Medium-high: walkers and residents Medium: road-users	Medium-high	**Major/ moderate (significant)** **Moderate (significant)**	Medium-high	**Major/ moderate (significant)** **Moderate (significant)**	Negligible	Minor (not significant)
VP5: Barlon Road near Little Bromley	Medium-high: walkers and residents Medium: road-users	Medium-high	**Major/ moderate (significant)** **Moderate (significant)**	Medium-high	**Major/ moderate (significant)** **Moderate (significant)**	Low	Moderate/ minor (not significant) Minor (not significant)
VP6: Badley Hall Road	Medium-high: walkers and residents	Low	Moderate/ minor (not significant)	Low	Moderate/ minor (not significant)	Negligible	Minor (not significant)
VP7 Little Bromley Henge PRoW	Medium-high: walkers and residents	Low	Moderate/ minor (not significant)	Low	Moderate/ minor (not significant)	Negligible	Minor (not significant)

Receptor	Sensitivity	Magnitude of change (construction)	Significance of effect (construction)	Magnitude of change (operation)	Significance of effect (operation)	Magnitude of change (+15 years)	Significance of effect (+15 years)
VP8 Lilley's Farm	Medium-high: walkers and residents	Medium	**Moderate (significant)**	Medium	**Moderate (significant)**	Low	Minor (not significant)
VP9 Essex Way, Dedham Vale	High: walkers Medium: road-users	No change	No effect	No change	No effect	No change	No effect
VP10 Waterhouse Lane	Medium-high: residents Medium: road-users	No change	No effect	No change	No effect	No change	No effect
VP11 Bounds Farm, Hungerdown Lane	Medium-high: residents Medium: road-users	No change	No effect	No change	No effect	No change	No effect
Short Lane (PRoW Frinton and Walton 3)	Medium-high: walkers	High	**Major (significant)**	No change	No effect	No change	No effect
Clacton Road (B1032)	Medium-high: residents Medium: road-users	Medium-high	**Major/ moderate (significant)** **Moderate (significant)**	No change	No effect	No change	No effect
Thorpe Road (B1035)	Medium: road-users	Medium-high	**Major/ moderate (significant)**	No change	No effect	No change	No effect

Receptor	Sensitivity	Magnitude of change (construction)	Significance of effect (construction)	Magnitude of change (operation)	Significance of effect (operation)	Magnitude of change (+15 years)	Significance of effect (+15 years)
Tendring Road (B1035)	Medium: road-users	Medium-high	**Major/ moderate (significant)**	No change	No effect	No change	No effect
Swan Road/ Tendring Road (B1035)	Medium-high: residents Medium: road-users	Medium	**Moderate (significant)** **Moderate (significant)**	No change	No effect	No change	No effect
Clacton Road (B1035)/ A120	Medium-high: residents Medium: road-users	Medium	**Moderate (significant)** **Moderate (significant)**	No change	No effect	No change	No effect
Clacton Road (B1035) north of the A120	Medium	Medium-high	**Moderate (significant)**	No change	No effect	No change	No effect
Bentley Road	Medium	Medium-high	**Moderate (significant)**	Medium-high	**Moderate (significant)**	No change	No effect

Table 2.15: Summary of cumulative effects for Onshore ECC.

Receptor	Sensitivity	Scenario 1 Cumulative magnitude of change	Scenario 1 Cumulative significance of effect	Scenario 2 Cumulative magnitude of change	Scenario 2 Cumulative significance of effect	Scenario 3 Cumulative magnitude of change	Scenario 3 Cumulative significance of effect
Onshore ECC							
Residents, walkers, horse-riders, road-users / Lodge Lane Solar Farm	Medium-high – residents, walkers, horse-riders Medium – road-users	Medium-low	Moderate and moderate / minor (not significant)	As set out for Scenario 1	As set out for Scenario 1	As set out for Scenario 1	As set out for Scenario 1
Residents, road-users / Horsleycross Roundabout Industrial Estate	Medium-high – residents Medium – road-users	Medium - road-users and residents in northern property No effect – residents in southern property	**Moderate (significant)** No effect	As set out for Scenario 1	As set out for Scenario 1	As set out for Scenario 1	As set out for Scenario 1

Table 2.16: Summary of cumulative effects on OnSS.

Receptor	Sensitivity	Scenario 1 + 2 Cumulative magnitude of change	Scenario 1 + 2 Cumulative significance of effect	Scenario 3 Cumulative magnitude of change	Scenario 3 Cumulative significance of effect	Scenario 3 cumulative magnitude of change (year 15)	Scenario 3 Cumulative significance of effect (year 15)
OnSS							
7A Bromley Heath LCA	Medium-high	Low	Moderate/ minor (not significant)	High, medium-high, medium – approximately 1.0 km west, 0.9 km north, 1.2 km east and 1.3 km south. Medium/ Medium-low/ Low / Negligible No change	**Major/ moderate (significant)** – approximately 1.0 km west, 0.9 km north, 1.2 km east and 1.3 km south. Moderate or moderate/ minor (not significant) No effect	Low/ Negligible/ No change	Moderate or moderate/ minor (not significant) No effect
VP1: Ardleigh Road near Norman's Farm	Medium-high: residents Medium: road-users	No change	No effect	High	**Major (significant)** **Major/ moderate (significant)**	Negligible	Minor (not significant)

Receptor	Sensitivity	Scenario 1 + 2 Cumulative magnitude of change	Scenario 1 + 2 Cumulative significance of effect	Scenario 3 Cumulative magnitude of change	Scenario 3 Cumulative significance of effect	Scenario 3 cumulative magnitude of change (year 15)	Scenario 3 Cumulative significance of effect (year 15)
VP2: Barn Lane PRoW	Medium-high: residents, walkers and riders	No change	No effect	No change	No effect	No change	No effect
VP3: Grange Road PRoW	Medium-high: walkers and occasional riders Medium: road-users	No change	No effect	Medium-low	**Moderate (not significant)** Moderate/ minor (not significant)	Low	Moderate/ minor (not significant) Minor (not significant)
VP4: Ardleigh Road near Jenning's Farm	Medium-high: walkers and residents Medium: road-users	No change	No effect	Medium	**Moderate (not significant)** Moderate (not significant)	Negligible	Minor (not significant)
VP5: Barlon Road near Little Bromley	Medium-high: walkers and residents Medium: road-users	No change	No effect	Medium	**Moderate (significant)** Moderate (not significant)	Low	Moderate/ minor (not significant) Minor (not significant)
VP6: Badley Hall Road	Medium-high: walkers and residents	No change	No effect	Negligible	Minor (not significant)	No change	No effect

Receptor	Sensitivity	Scenario 1 + 2 Cumulative magnitude of change	Scenario 1 + 2 Cumulative significance of effect	Scenario 3 Cumulative magnitude of change	Scenario 3 Cumulative significance of effect	Scenario 3 cumulative magnitude of change (year 15)	Scenario 3 Cumulative significance of effect (year 15)
VP7 Little Bromley PRoW	Medium-high: walkers and residents	No change	No effect	Low	Moderate/ Minor (not significant)	Negligible	Minor (not significant)
VP8 Lilley's Farm	Medium-high: walkers and residents	No change	No effect	Medium	**Moderate (significant)**	Low	Moderate/ minor (not significant)
VP9 Essex Way, Dedham Vale	Medium-high: walkers Medium: road-users	No change	No effect	No change	No effect	No change	No effect
VP10 Waterhouse Lane	Medium-high: residents Medium: road-users	No change	No effect	No change	No effect	No change	No effect
VP11 Bounds Farm, Hungerdown Lane	Medium-high: residents Medium: road-users	No change	No effect	No change	No effect	No change	No effect

2.19 REFERENCES

Alison Farmer Associates for the Touching the Tide Partnership, (2012), Touching the Tide Landscape Character Assessment.

Alison Farmer Associates for Suffolk Coastal District Council (2018), Suffolk Coastal Landscape Character Assessment.

Colchester Borough Council (2005),The Colchester Borough Landscape Character Assessment.

Chris Blandford Associates for Essex County Council (2003), Essex Landscape Assessment.

Department for Energy, Security and Net Zero (2023), Overarching National Policy Statement for Energy (EN-1 (2023)).

Department for Energy, Security and Net Zero (2023), National Policy Statement for Renewable Energy Infrastructure (EN-3 (2023)).

Department for Energy, Security and Net Zero (2023), Electricity Networks Infrastructure (EN-5 (2023)).

Essex County Council (October 2005), The Landscape Character Assessment of the Essex Coast.

Landscape Institute and Institute of Environmental Management and Assessment (2013), Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3).

Landscape Institute (2019), Visual Representation of Development Proposals.

Land Use Consultants (November 2001), Tendring District Landscape Character Assessment, Volumes One and Two.

LDA Design for Suffolk Coast and Heaths AONB Partnership, Suffolk County Council and EDF Energy, V1.8 (2016), Suffolk Coast and Heaths AONB – Natural Beauty and Special Qualities Indicators

Ministry of Housing, Communities and Local Government (2021), National Planning Policy Framework.

Natural England (2014), An Approach to Landscape Character Assessment.

NatureScot (2021), Assessing the Cumulative Impact of Onshore Wind Energy Developments.

NatureScot (2017), Visual Representation of Windfarms, Guidance (Version 2.2).

Planning Inspectorate (2018), Advice Note Nine: Rochdale Envelope.

Planning Inspectorate (2019), Advice Note Seventeen: Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects - Version 2.

Skinner, D., (1987), A Woody Plant Selection Guide. 1st ed. Edinburgh: Edinburgh College of Art + Heriot-Watt University.

Suffolk County Council (2011, updated 2018), Suffolk Landscape Assessment.

Suffolk Coast and Heaths Partnership (2018), Suffolk Coast and Heaths Area of Outstanding Natural Beauty Management Plan 2018-2023.

Suffolk Coast and Heaths s Area of Outstanding Natural Beauty Partnership (2001), The Suffolk Coast and Heaths – Landscape Guidelines.

Suffolk Coast and Heaths Area of Outstanding Natural Beauty Partnership (December 2015), Development in the setting of the Suffolk Coast and Heaths AONB.

Tendring District Council (January 2021), Tendring District Local Plan 2013 – 2033 and beyond.

The Joint Babergh and Mid Suffolk District Council (2015), Landscape Guidance.

UK Government (2008), Planning Act 2008.

FIVE ESTUARIES
OFFSHORE WIND FARM

PHONE 0333 880 5306
EMAIL fiveestuaries@rwe.com
WEBSITE www.fiveestuaries.co.uk
ADDRESS Five Estuaries Offshore Wind Farm Ltd
Windmill Hill Business Park
Whitehill Way, Swindon, SN5 6PB
COMPANY NO Registered in England and Wales
company number 12292474