

East Anglia THREE

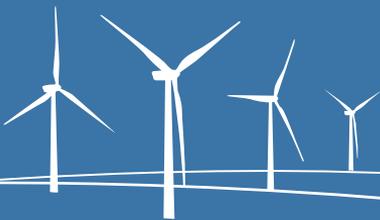
Chapter 29

Seascape, Landscape and Visual
Amenity

Environmental Statement
Volume 1

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Appendix number	Title
29.1	Seascape, Landscape and Visual Assessment Methodology
29.2	Seascape, Landscape and Visual Environmental Baseline
29.3	Landscape and Visual Assessment of Landfall Location and Onshore Cable Route
29.4	Landscape and Visual Assessment of Substation Location
29.5	Assessment of Haul Road Remaining in situ between Projects

29 SEASCAPE, LANDSCAPE AND VISUAL AMENITY

29.1 Introduction

1. This Chapter of the Environmental Statement (ES) presents the Seascape, Landscape and Visual Amenity Assessment for the proposed East Anglia THREE project. This includes assessment of onshore and offshore elements of the project during the construction, operation and decommissioning phases.
2. The assessment has been undertaken by Chartered Landscape Architects at Optimised Environments (OPEN) on behalf of East Anglia THREE Limited (EATL). The assessment has been prepared in accordance with National Policy Statements with specific reference to Overarching NPS for Energy (NPS EN-1) (July 2011).
3. There are four technical appendices which should be read in conjunction with this Chapter and which are included in Volume 3 of the ES.
4. Figures are contained in Volume 2 of the ES and include GIS mapping of the study area, Zone of Theoretical Visibility (ZTV) maps, and visualisations.
5. The following elements have been assessed in detail as part of the Landscape and Visual Assessment (LVIA) of the onshore electrical transmission works:
 - Landfall Location: the LVIA assesses the landfall of the offshore cable together with its onshore underground jointing bay;
 - Onshore Cable Route: the LVIA assesses the potential impacts of the onshore cable route on landscape character and visual amenity; and
 - Substation Location: the LVIA assesses the potential impacts of the substation on landscape character and visual amenity.
6. The seascape assessment of the offshore electrical transmission works has been scoped out of the LVIA. An explanation of the scope of the assessment is presented in section 29.3.1.

29.2 Consultation

7. Consultee responses to the East Anglia THREE Scoping Report (East Anglia Offshore Wind 2012) and Section 42 Consultee responses to the Preliminary Environmental Report (PEIR) are presented in *Table 29.1* below. Previous consultations made in relation to the Zone or the Environmental Impact Assessment (EIA) for the East Anglia ONE project, and which are considered relevant to the proposed East Anglia THREE project have also been included. The response column indicates how the comment has been addressed, with reference to the relevant section of the ES.

Table 29.1.Consultation Responses

Consultee	Comment	Response / where addressed in the ES
Scoping opinion		
Planning Inspectorate	The Applicant needs to take account of updates to regulations, in particular need to reference National Planning Policy Framework	Chapter 3 details the application of planning policy in the ES. Chapter 29 outlines the relevance of planning policy to the LVIA.
	The potential impacts during the operation of the onshore cable route need to be assessed owing to the loss of vegetation and potential time required for re-establishment.	<i>Appendix 29.3</i> presents a detailed assessment of the impacts of the onshore cable route during operation.
	The potential onshore impacts need to be assessed, with information provided on methodology, survey work, models used and with ZTVs utilised where appropriate.	<i>Appendix 29.1</i> presents the methodology; <i>Appendix 29.3</i> and <i>Appendix 29.4</i> present a detailed assessment of potential onshore impacts.
	Photomontages and wireframes should be presented which should be verified and accord with industry standards. The location of the viewpoints should be agreed with the relevant local authorities.	Volume 2 contains photomontages and computer generated models in accordance with industry standards. Agreement made with Suffolk County Council (SCC) and Mid Suffolk District Council (MSDC) regarding viewpoint selection.
	The LVIA should include assessment of access roads, jointing bays and temporary / permanent lighting.	<i>Appendix 29.3</i> and <i>Appendix 29.4</i> present detailed assessment of all potential impacts.
	Careful consideration should be given to the form, siting and use of colours / materials of the substation.	An Outline Landscape and Ecological Management Strategy (OLEMS) will be prepared for the proposed East Anglia THREE project which will detail proposed planting and bunding mitigation measures, coinciding with measures which apply to East Anglia ONE. OLEMS will be presented as a separate document to the ES.
English Heritage	The LVIA should consider the change to historic landscape and seascape character from the cumulative development of the East Anglia Zone.	Reference is made to the historic seascape and seascape characterisation in <i>Appendix 29.2 – Environmental Baseline</i> and summarised in Section 29.3.1 below.
	Reference should be made to the Historic Seascape Characterisation work undertaken by English Heritage.	Reference is made to the Historic Seascape Characterisations and Seascape Characterisations in <i>Appendix 29.2 – Environmental</i>

Consultee	Comment	Response / where addressed in the ES
		Baseline and summarised in Section 29.3.1 below.
	Reference should be made to the English Heritage Action Plan 2008-2013 to support implementation of the European Landscape Convention.	Reference made to the European Landscape Convention and English Heritage Action Plan 2008-2013 in <i>Appendix 29.2 – Environmental Baseline</i> .
Suffolk County Council	The EIA needs to distinguish between the impacts of two scenarios; one in which existing ducts from East Anglia ONE would be used for pulling through of cables; and the other in which existing ducts are not present and HDD and open-cut trenching methods for the laying of the onshore cable route would be used.	The consent of East Anglia ONE eliminates the second scenario from the assessment as it can now be assumed the ducts for the proposed East Anglia THREE project would be installed during the construction of East Anglia ONE.
	With reference to landscape mitigation and the substation, consideration should also be given to the potential for landscape bunding, reducing the bed level and off-site planting. An assessment of the cumulative impacts with existing (and proposed) infrastructure in the locality should be undertaken.	An Outline Landscape and Ecological Management Strategy (OLEMS) will be prepared for the proposed East Anglia THREE project which will detail proposed planting and bunding mitigation measures, coinciding with measures which apply to East Anglia ONE. OLEMS will be presented as a separate document to the ES.
Little Bealings Parish Council	Consideration should be given to an alternative onshore cable route through Little Bealings to avoid Queech Wood.	East Anglia ONE considered alternative routings and in order to minimise landscape and visual impacts along the whole route, the route of the East Anglia THREE onshore cable route would follow that of East Anglia ONE now a consented route for three projects. The alternative route through Little Bealings was investigated by PINS but not supported.
	The LVIA should include an assessment of the impacts as a result of tree and hedgerow loss whether temporary or permanent.	<i>Appendix 29.3</i> presents a detailed assessment of the tree and hedgerow loss.
	The LVIA should include a comparison of using HDD construction to cross Lodge Road.	The East Anglia THREE onshore cables would be pulled through existing ducts such that HDD construction would not be required.
Pre-PEIR consultation		
Suffolk County	Proposed study areas of landfall, onshore cable route and substation agreed as 1km around onshore cable route, construction	These study areas are shown on Figure 29.1 and applied in the assessment presented in <i>Appendix 29.3</i> and

Consultee	Comment	Response / where addressed in the ES
Council / Mid Suffolk District Council / Suffolk County District Council	consolidation sites and access tracks and 4km around substation location.	<i>Appendix 29.4.</i>
	Agreement made with Suffolk County Council (SCC) and Mid Suffolk District Council (MSDC) to use the 16 viewpoints used previously in the East Anglia ONE project.	These viewpoints are used in the visual assessment presented in <i>Appendix 29.4.</i>
	Agreement made that the potential for cumulative effects would relate principally to the converter station location for East Anglia ONE and East Anglia FOUR.	Following the consent of East Anglia ONE, the substation forms part of the predicted baseline and is therefore not considered in the cumulative assessment. A future EAOW substation is considered in the cumulative assessment.
Section 42 consultation		
Suffolk County Council / Mid Suffolk District Council / Suffolk Coastal District Council	The local landscape designations of Special Landscape Areas (SLA) are not included.	SLAs are shown in Figure 29.2 with reference to the designation in 29.6.3.2 and in the assessment of the onshore cable route in Appendix 29.3.
	Off-site planting works included in the Section 106 agreement for EA ONE should be reviewed in terms of applicability to EA THREE. On-site planting and mounding also to be reviewed. The potential effects of ash die back in Gobert's Grove will need to be reviewed.	An Outline Landscape and Ecological Management Strategy (OLEMS) will be prepared as part of the proposed East Anglia THREE project which will detail proposed planting and bunding mitigation measures, coinciding with measures which apply to East Anglia ONE. OLEMS will be presented as a separate document to the ES.
	The potential for cumulative impacts with SITA's Energy from Waste Plant, need to be reviewed.	The potential cumulative impacts are reviewed in <i>Table 29.12</i> with comment provided in Section 29.8.1. Significant cumulative effects would not arise in relation to the SITA development owing to the distance of 4.2km that separates it from the East Anglia THREE substation and the extent of intervening landform and vegetation which limit the potential for inter-visibility between the two developments.
Martlesham Parish Council	Request made to use ducts rather than open-trenching on Waldringfield Road near Thatched Cottage and on the farm track opposite Howe's Farm entrance.	Onshore cable routes would be pulled through existing ducts for the length of the cable route so there would be no open trenching used in the construction process.

Consultee	Comment	Response / where addressed in the ES
National Grid	Planting proposals beneath and adjacent to existing overhead lines should comprise only low and slow growing species to conform to statutory safety clearances.	The detailing of planting in relation to existing overhead lines will be addressed in the OLEMS.
Foot Antsey Solicitors (on behalf of the Woolf family)	The LVIA needs to take into account the off-site location of existing woodland that is referenced in terms of its screening effect of the East Anglia ONE, THREE and FOUR converter stations, especially as the continued maintenance and presence of these woodlands cannot be relied upon.	The OLEMS contains proposals for woodland management, subject to necessary agreements..
	The LVIA does not adequately consider the impact of the converter station in relation to the criteria set out in the Scoping Opinion para 754 - (<i>The impact assessment will take into account the size, the location, the height, the colour and frequency of the new structure</i>).	All these criteria have been considered in the LVIA.
Consultation on draft ES		
Suffolk County Council / Suffolk Coastal District Council	Level of confidence unreasonably low for AONB and Historic Parks and Gardens designations.	Level of confidence raised for both in respect of evidence of designation process.
	The definitions of long, medium and short term duration need to be added into <i>Appendix 29.1 – Methodology</i> . Suggestion to add very short term.	The definitions of long, medium, short term and very short term duration have been added into <i>Appendix 29.1 – Methodology</i> with reference updated in Section 29.5.3.4 of this Chapter.
	The methodology for graphic production needs to be set out in <i>Appendix 29.1 - Methodology</i> .	The methodology for graphic production has been included in <i>Appendix 29.1</i> with reference added in 29.5.5 of this Chapter.
	Clarification required regarding the difference in sensitivity ratings presented in East Anglia ONE SLVIA and East Anglia THREE SLVIA.	Clarification presented in Section 29.5.3 of this Chapter, with reference to updated GLVIA3 and the alteration of the baseline by the consent of East Anglia ONE.
	Review required of the assessment relating to the duration of effects occurring periodically over a longer period of time, especially in relation to the onshore cable route.	Duration is kept as a separate consideration to the magnitude of change which is based on the size and scale of the impact. Explanation is presented in Section 29.5.3 of this Chapter.
	Review required of the visual assessment in respect of the anticipated loss of all ash	It has been agreed with the Local Authorities that this LVIA should

Consultee	Comment	Response / where addressed in the ES
	trees to ash die back.	consider the baseline as at the date of production of the LVIA (i.e. without potential future effects of ash die back). Notwithstanding this, EATL has agreed to continue discussions with the Local Authorities in relation to the potential future effects of ash die back, including considering whether it is appropriate to mitigate such effects (if any).
	Review required of sensitivity ratings of agricultural landscapes especially in relation to AONB.	Sensitivity ratings of agricultural landscapes reviewed and ratings increased where appropriate.
	Review required of the description of the sub-station site to explain how the character has been altered by the presence of energy infrastructure.	Description reviewed and amended to reflect limited visibility of substations / converter station and visibility of electricity transmission lines.
	As East Anglia ONE is established as part of the baseline, reference to it in the CLVIA Table 29.12 requires to be removed.	Reference removed.
	Insufficient acknowledgement is made of the potentially protracted construction period, taking into account overall impact of the EA Array on the onshore cable route.	The extended duration of the impact is considered in Section 29.7.1.2.
	Greater acknowledgement is required with regard to the seascape character assessments that have been carried out for the coast and seascape of East Anglia	A baseline description of the seascape character is included in Section 29.3.1.
	Review required of Special Landscape Areas in terms of their sensitivity ratings.	The sensitivity rating of high is preserved for those landscapes of national value. The SLAs are afforded either medium to high or medium sensitivities. This also factors in their susceptibility to the proposed East Anglia THREE project.
Section 42 Phase III Consultation		
Suffolk County Council	If the Two Phased approach were to be taken, there is concern regarding the condition of the landscape in the interim period between the two phases when there would be no restorative works.	Although no planting would take place in the interim the site areas would be kept in a tidy condition and restoration planting would be phased to take place at the earliest date (taking into account seasonal requirements for planting). Furthermore, the areas for haul roads would be kept to a maximum of 5.5m and so the area

Consultee	Comment	Response / where addressed in the ES
		would be limited.
	It is recognised that the extent of the redline boundary provides the potential to undertake mitigation planting at the earliest opportunity.	A substantial area of mitigation planting would already be implemented as part of East Anglia ONE. The extent of the red line boundary is utilised with substantial planting proposed to the north.
	Concern regarding the potential effects of ash die back are reiterated.	It has been agreed with the Local Authorities that this LVIA should consider the baseline as at the date of production of the LVIA (i.e. without potential future effects of ash die back). Notwithstanding this, EATL has agreed to continue discussions with the Local Authorities in relation to the potential future effects of ash die back, including considering whether it is appropriate to mitigate such effects (if any).
Suffolk Preservation Society	The potential effects of the kiosks associated with the onshore cable route should be addressed through careful design.	The detailed positioning of the kiosks would take advantage of the screening effect of hedegrows and trees and the kiosks would be of a subtle colour to blend in with the landscape.
	Concern regarding the design of the converter station (now referred to as a substation) in terms of siting, scale and massing.	The siting of the substation utilises the screening effect of existing woodland, and mitigation planting. Other design issues are addressed in the Design and Access Statement which will be presented as a separate document to the ES.

29.3 Scope

29.3.1 Offshore

- The offshore assessment addresses seascape, landscape and visual impacts during the construction, operation and decommissioning phases of the project. This section of the SLVIA examines the potential for significant impacts to arise in relation to the offshore components of the proposed East Anglia THREE project. The offshore components have the potential to affect landward, coastal and seaward receptors, with the seaward area described in terms of the inshore and offshore areas. The offshore components of the proposed East Anglia THREE project comprise wind turbines, offshore electrical platforms, meteorological masts and underwater

cabling. The 100 to 172 wind turbines would be of a maximum tip height of 247m. The closest possible location a wind turbine would be located is 69km from the coastline. At this distant range, the wind turbines would not be visible from ground level along the coast owing to the curvature of the earth. From the highest point of 20m AOD on the cliff near Bawdsey, some sections of the blades of the closer wind turbines would be theoretically visible, although actual visibility would be unlikely as this would require excellent visibility conditions which occur very infrequently.

9. From coastal areas, there would potentially be views of construction vessels and cable laying vessels which would use lighting during hours of darkness as part of the construction process. The glow of construction lighting from vessels at more distant turbine sites may be visible at night. While there is an existing flow of vessels visible from the coast, the construction and cable laying vessels would add to the volume, but not to the extent that it would give rise to a significant impact on landscape or visual receptors along the coast. There is greater potential for impacts to occur from the seascape, with these impacts acting upon the seascape character as well as visual receptors on-board sea-borne vessels.
10. In terms of policy, the UK Marine Policy Statement (2011) makes reference to the definition of 'landscape' contained in the European Landscape Convention (2000), in the absence of a legal definition of seascape in the UK. It states *'In the context of this document, references to seascape should be taken as meaning landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other.'*
11. The UK Marine Policy Statement identifies the scope of the Marine Plans in terms of the considerations that would be required;
12. *'When developing Marine Plans, marine plan authorities should consider at a strategic level visual, cultural, historical and archaeological impacts not just for those coastal areas that are particularly important for seascape, but for all coastal areas, liaising with terrestrial planning authorities as necessary.'*
13. The Draft East Inshore and East Offshore Marine Plans (2014) have been prepared in response to the UK Marine Policy Statement and present a series of objectives aimed at balancing economic development against environmental protection. *'Objective 5 – To conserve heritage assets, nationally protected landscapes and ensure that decisions consider the seascape of the local area'* ensures that it is not only the coastal landscapes that are considered, but also the inshore area out to approximately 12 nautical miles and the offshore area out to the international maritime border with the Netherlands, Belgium and France.

14. The East Inshore and Offshore Character Areas identified in the Marine Plans that are of relevance to the LVIA for the proposed East Anglia THREE project are the Suffolk Coastal Waters (inshore) and the East Anglian Shipping Waters (offshore). Specific information with regard to the character of these areas is presented in the 'Seascape Characterisation around the English Coast' (Marine Plan Areas 3 and 4 and Part of Area 6 Pilot Study) (2012).
15. In terms of establishing a scope of those receptors that have the potential to undergo significant impacts, it must be remembered that the offshore components of the proposed East Anglia THREE project would be located an approximate distance of 69km from the coastline. This means that even in good viewing conditions, when there is the possibility that blade tips may be discernible from higher points along the coast, these would appear as extremely small and distant features, and seen in the context of one of the busiest shipping channels around the UK, where built artefacts are a common feature in seaward views. The magnitude of change would be negligible and the impact of the offshore components on coastal and landward receptors would be not significant. Even in respect of the higher sensitivity coastal landscapes, such as the AONB, the impact would not be significant owing to the negligible magnitude of change.
16. As distance from the shore increases and distance to the offshore components decreases, the influence of the proposed East Anglia THREE project on receptors would increase, although these would be seascape receptors and water-borne visual receptors rather than landscape or land-borne visual receptors. In terms of seascape character, the inshore and offshore areas are described in the Seascape Characterisation citation in terms of 'Key Characteristics', 'Physical Influences', 'Cultural Influences' and 'Aesthetic and Perceptual Responses'. For the inshore area of the 'Suffolk Coastal Waters' the citation refers to the coastal features as the principal influence on the seascape character, with comparatively little reference to the seascape features.
 - *'Suffolk Coast and Heaths AONB and Heritage coast designations recognise a rich mixture of unique and vulnerable coastal lowland landscapes;*
 - *Low-lying coastline dominated by coastal processes and estuarine influences;*
 - *Unified coastal interface with a nationally significant concentration of vegetated shingle structures and coastal lagoon habitats;*
 - *Colourful seafront coastlines lined by brightly painted beach huts;*
 - *Steeply sloping shelved shingle beaches;*

- *Prolific wildlife value, particularly bird life;*
 - *Dramatic and contrasting developments such as Sizewell nuclear power station, Orfordness transmitting station and commercial dock development at Felixstowe;*
 - *Historically heavily defended coastline;*
 - *Large scale panoramic views of the seascape dominated by busy offshore North Sea shipping waters;*
 - *Perception of seascape is often from the immediate coastal interface due to long estuaries, low landform and coastal shingle structures.'*
17. In respect of the extent of the seascape area, the influence of these coastal features would reduce with distance, such that there would be very little influence out at the boundary. The offshore components would be located a distance of 47km from the outer boundary of the inshore area, such that, despite their large scale, they would appear as relatively small scale elements and their influence on the character of the seascape would be limited. With a limited influence from the coastal landscapes the sensitivity of this seascape area would not be especially high and when combined with a low magnitude of change, the impact would be not significant.
18. The citation for the offshore 'East Anglian Shipping Waters' describes the seascape as a unified and expansive area of open water with few surface features, other than 'dense concentration of shipping activity' and the additional influence of offshore wind farms, gas fields and areas used for military practice, fishing and dredging. With the absence of any special seascape features and the presence of many human interventions, the sensitivity of this area to the proposed East Anglia THREE project would be low. Considering the impacts of the proposed East Anglia THREE project on the offshore seascape area of 'East Anglian Shipping Waters' as a whole, the impact would be not significant. This finding relates principally to the vast scale of the seascape area and the existing influence of many developments and other human artefacts which currently characterise the seascape.
19. The only other receptors with the potential to be affected by the construction, operation and decommissioning of the offshore components would be people on passing vessels including ferry passengers, merchant seamen, commercial fishermen and recreational sailors.
20. The potential offshore impacts during construction, operation and decommissioning include;

- The presence and visibility of wind turbine components being transported on barges to the offshore location during construction;
 - The presence and visibility of a variety of installation and support vessels as well as the activities associated with these and the installation of windfarm components during construction;
 - The presence and visibility of machinery and activities associated with the installation of wind turbine foundations, towers, nacelles and blades;
 - The cable laying vessels, vessels used in cable protection placement and their associated support vessels required for inter array cable and export cable installation during construction;
 - The presence and visibility of the wind turbines, ancillary offshore infrastructure and maintenance vessels during the 25 year operation;
 - The presence and visibility of a variety of large decommissioning and support vessels and the activities associated with these and the dismantling and removal of wind turbines and part removal of foundations during decommissioning; and
 - The presence and visibility of dismantled wind turbine components being transported on barges to the onshore location during decommissioning.
21. While there would be impacts on receptors at sea such as ferry passengers, merchant seamen, commercial fishermen and recreational sailors as a result of the construction, operation and decommissioning of the offshore wind turbines and associated infrastructure, these impacts are unlikely to be significant owing to the following factors;
- The absence of any scenic designations attached to the seascape as a receptor;
 - The relatively limited volume of sea-borne travellers who would gain visibility;
 - The transitory nature of the views of sea-borne travellers; and
 - The short-term duration of the construction and decommissioning phases.
22. Where water borne vessels pass the offshore components, the views would be transitory in nature and short in duration. Sea-borne travellers would not gain the type of long-term or permanent view, which for example residents next to an onshore windfarm may experience. While some recreational sailors and commercial fishermen may obtain views of the offshore components for longer durations, for

the majority of sea-borne travellers, views would last for only a small proportion of a much longer journey.

23. While there is limited guidance on the sensitivity of seascapes so remote from coastal edges, the absence of any scenic designations, combined with the absence of any sense of context, reduces the relative sensitivity. The seascape gives rise to a sense of vastness, which reduces any sense of scarcity and as a result the offshore components would be considered to occupy a small proportion of a wider entity. The seascape provides an environment with capacity to accommodate the wind turbines, owing to its scale, simplicity and the relative absence of features with which to reference the scale of the wind turbines.
24. Taking all these factors into account, this initial assessment concludes that it would be unlikely for significant impacts to arise as a result of the offshore components.
25. The East Anglia THREE Offshore Wind Farm Scoping Report (East Anglia Offshore Wind 2012), section 4.1.2 Seascape, Landscape and Visual Amenity establishes that owing to the distance between the onshore receptors and the nearest point of the East Anglia THREE site, there would be no impacts upon the onshore receptors. The East Anglia THREE Offshore Wind Farm Scoping Opinion (Planning Inspectorate 2012) responds with the following statement:

'The SOS notes that the offshore elements of the proposed development would be located at such a distance that there would not be views of the proposed windfarm from onshore receptors.'

26. There is the potential for the offshore components to impact on offshore receptors, but for the reasons presented above it is considered unlikely that these impacts would be significant. In respect of this assessment, for the reasons given above, the impacts of the offshore components of the proposed East Anglia THREE project are not considered further.

29.3.2 Onshore

27. The onshore assessment addresses the landscape, visual and cumulative impacts of the onshore components during the construction, operation and decommissioning phases of the project. The purpose of the assessment is to identify all significant impacts on landscape and visual receptors as a result of the proposed East Anglia THREE project. The assessment process follows a five stage approach which accords with the principles set out in GLVIA 3 (as detailed in *Appendix 29.1*);

- Establish the baseline conditions of landscape character and visual amenity within the study area, through a combination of desk based study and site reconnaissance.
 - Establish the potential impacts of the proposed East Anglia THREE project based on an understanding of the form and appearance of the components proposed, the processes involved in their construction, operation and decommissioning, and the extent to which embedded mitigation may reduce potential impacts.
 - Assess the sensitivity of the landscape and visual receptors to the proposed East Anglia THREE project, taking into account the value attributed to the receptor and its susceptibility to the potential impacts.
 - Assess the magnitude of change on the landscape and visual receptors, which is likely to arise as a result of the proposed East Anglia THREE project, taking into account embedded mitigation as well as the scale, geographical extent and duration of the potential impacts.
 - Apply professional judgement to combine the sensitivity of the receptor with the proposed magnitude of change to determine the significance of the impact.
28. The LVIA considers the impacts of the onshore electrical transmission works on the physical elements of the site and impacts on the landscape character and visual amenity of the site and surrounding area.
29. The LVIA considers two sets of alternatives, the first in respect of the proposed electrical solution to be applied, and the second in respect of the proposed process of phasing.
30. East Anglia THREE are currently considering both a High Voltage Direct Current (HVDC) and a Low Frequency Alternating Current (LFAC) electrical solution for the proposed East Anglia THREE project. The key difference of relevance to this assessment is that the LFAC solution would require a compound area for the onshore substation of 160m x 190m while for the HVDC solution it would be 150m x 190m. For both solutions the building dimensions would be 85m x 116m x 25m height. As the LFAC solution presents the worst case scenario in respect of the potential impacts, the larger compound dimensions would be used as the basis of the assessment and this is what is shown in the accompanying graphics. A detailed description of the electrical solutions is presented in Chapter 5: Project Description.

31. East Anglia THREE are currently considering constructing the project in either a Single Phase or a Two Phased approach. In the Single Phase approach the project would be constructed in one single build period lasting approximately 41 months. Under a Two Phased approach the project would be constructed in two phases, with the construction of phase two starting a maximum of 18 months after the start of the onshore construction of phase one giving an overall construction period lasting approximately 45 months.
32. The differences between the Single Phase and Two Phased approach only affects the assessment of the impacts relating to the construction of the proposed East Anglia THREE project. The impacts during operation and during decommissioning would be the same regardless of whether the proposed East Anglia THREE project is constructed in one or two phases. The assessment, therefore, only considers the difference between the Single Phase and Two Phased approach during construction.
33. It is assumed in the assessment that East Anglia ONE is constructed and is operational and that the proposed East Anglia THREE project would be added to this baseline situation. Note that for the purposes of this assessment, the dimensions of the East Anglia ONE converter station are taken to be those consented in the East Anglia ONE development consent order (DCO). The size of the East Anglia ONE converter station would be smaller if the currently consented position if the current application for a non-material change to the East Anglia ONE DCO is granted. EATL would undertake further assessment if required on the basis of the outcome of the decision upon the non-material change to the East Anglia ONE DCO.
34. In the cumulative assessment a further scenario is considered in which the East Anglia THREE substation is added to a situation which comprises East Anglia ONE and a future EAOW project's substation, with the assumption, for the purposes of the assessment that a future EAOW project is considered as a relevant project within the cumulative assessment.

29.3.3 Study Area

35. The Study Area for each component of the onshore works covers different geographical areas relating to the potential extent to which the impacts of that component may give rise to a significant impact.

29.3.3.1 Landfall

36. The Study Area for the landfall location has been set at a 500m radius from the centre of the site. This radius has been agreed with the local authorities during a pre-PEI meeting outlined in *Table 29.1*. The landfall forms a relatively small scale component which beyond 500m may be visible, but is unlikely to give rise to

significant landscape or visual impacts owing to the depreciation in its influence from this range.

29.3.3.2 Onshore Cable Route

37. The Study Area for the onshore cable route has been set at a 500m buffer either side, along the working widths of the route (1km in total). This extends across 37km from the landfall location at Bawdsey to the substation at Bramford, west of Ipswich. This buffer has been agreed with the local authorities in respect of East Anglia THREE (*Table 29.1 Consultation Responses*). The cables would be buried underground and the majority of the impacts would relate to the construction works required to pull the cables through the existing ducts. Machinery would be relatively small in scale and screening would occur by existing hedgerows and trees.

29.3.3.3 Substation

38. The Study Area for the substation has been set at a 4km radius from the edge of the substation location. This was applied in the assessment of the East Anglia ONE converter station and has been agreed with the local authorities in respect of East Anglia THREE (*Table 29.1*). Impacts would occur during the construction, operation and decommissioning stages.
39. Initial studies conducted as part of the East Anglia ONE LVIA (EAOL 2012), tested visibility within a 6km radius from the centre of the substation, but found that - owing to the extent of intervening mature woodland, tree belts, hedgerows, and, in fewer instances, buildings - it would be unlikely for significant impacts to arise beyond the 4km radius.

29.4 Potential Impacts

40. The construction, operation and decommissioning of the components of the proposed East Anglia THREE project have the potential to affect the physical elements of the sites, as well as the landscape character and visual amenity of the study areas around the sites. There is the potential for cumulative impacts in relation to other large scale infrastructure projects. A list of other relevant projects to be considered within the cumulative impact assessment has been provided in *Table 29.12*.
41. The potential impacts of the three components - landfall location, onshore cable route and substation - have been assessed at each of the three stages of the project; construction, operation and decommissioning. The potential impacts are determined through considering the worst case scenario, as well as the mitigation measures embedded in the proposed East Anglia THREE project.

29.4.1 Worst Case Scenario

42. Chapter 5 Description of the Development sets out a detailed description of the landfall location, onshore cable route and substation, as well as detailed information on their construction, operation and decommissioning. The worst case scenarios with regard to the LVIA are represented by the potential impacts in *Table 29.2* below. These parameters are applied in the assessment of potential impacts and ensure that it reflects the worst case scenario in every aspect.

Table 29.2. Worst Case Assumptions

Impact	Key design parameters forming realistic worst case scenario	Assumptions and Rationale
Construction		
Impacts of landfall construction on physical elements, landscape character and visual amenity.	<p>Single Phase: One Secondary Construction Consolidation Site (CCS) required.</p> <p>Two Phased: Two Secondary CCSs required - one during each phase.</p>	CCS would facilitate access to the route, allow storage of materials and accommodate site offices.
Impacts of landfall transition bays on physical elements, landscape character and visual amenity.	<p>Single Phase: Four transition bays constructed (each a maximum of 15m x 10m x 3m depth).</p> <p>Two Phased: Four transition bays constructed (each a maximum of 15m x 10m x 35m depth) - two constructed in each phase.</p>	East Anglia ONE would not install transition bays for subsequent projects.
Impacts of landfall construction period and working hours on landscape character and visual amenity.	<p>Single Phase: Construction period of up to 10 weeks, with maximum working days of 12 hours and 7 days a week.</p> <p>Two Phased: Construction period of two phases of up to 10 weeks each, with maximum working days of 12 hours. Phase 2 works would commence a maximum of 18 months after Phase 1 works with a maximum period between phases of 5 months.</p>	Includes the commencement and re-instatement works. Construction hours and days to be agreed with relevant planning authority in advance
Impacts of landfall construction lighting on landscape character and visual amenity.	Single Phase / Two Phased: There is potential for 24 hour lighting for security at all CCS sites.	Assumes 7 day week.
Impacts of onshore cable route construction on physical elements, landscape character and visual amenity.	<p>Single Phase: Excavation, construction and jointing operations at 2 bays at up to 62 jointing bay locations along the onshore cable route.</p> <p>Access to site where existing track not used, including up to 17.8km of haul road.</p> <p>Jointing bay dimensions of 10m x 5m x 5m depth.</p> <p>Two Phased: Excavation, construction and jointing operations at two bays (one during each phase) at up to 62 jointing bay locations</p>	Assumes haul road would be removed between phases in the Two Phased approach.

Impact	Key design parameters forming realistic worst case scenario	Assumptions and Rationale
	<p>along the onshore cable route.</p> <p>Access to site where existing track not used, including up to 17.8km of haul road.</p> <p>Jointing bay dimensions of 10m x 5m x 5m depth.</p> <p>Kiosk dimensions of 1m x 0.75m x 1m high.</p>	
Impacts of onshore cable route PRoW diversions on visual amenity.	Single Phase and Two Phased: Temporary diversions at up to 32 points on PRoWs.	
Impacts of onshore cable route construction period and working hours on landscape character and visual amenity.	<p>Single Phase: Construction period of up to 29 weeks, with maximum working days of 12 hours and 7 days a week.</p> <p>Two Phased: Total construction period of up to 31 months, with maximum working days of 12 hours. Phase 2 work would commence a max of 18 months after Phase 1 commences.</p>	<p>Includes the commencement and re-instatement works. Single Phase period would be continuous.</p> <p>Construction hours and days to be agreed with relevant planning authority in advance.</p>
Impacts of onshore cable route construction lighting on landscape character and visual amenity.	Single Phase / Two Phased: Flood lighting during hours of darkness at 7 CCS.	Requirement for lighting would be limited to times when particular CCS locations are active.
Impacts of substation construction period and working hours on landscape character and visual amenity.	<p>Single Phase: Maximum construction period of 55 weeks, with maximum working days of 12 hours.</p> <p>As a worst case scenario, it has been assumed that some periods of 24 hour construction may be required, for which task related flood lighting may be necessary.</p> <p>Two Phased: Maximum construction period of 123 weeks, with maximum working days of 12 hours. Construction period split into two phases with maximum interval with no construction of 5 months.</p>	<p>Includes the commencement and re-instatement works. Single phased period would be continuous.</p> <p>Construction hours and days to be agreed with relevant planning authority in advance.</p>
Operation		
Impacts on physical elements, landscape character and visual amenity as a result of vegetation	Single Phase / Two Phased: Area re-instated to former conditions with full agricultural activities able to continue with exception to those which penetrate the ground along the onshore cable route, e.g. to more than 0.5m.	.

Impact	Key design parameters forming realistic worst case scenario	Assumptions and Rationale
reinstatement along access roads and around CCS.	<p>3-5 years required for replanting to infill hedgerows. 20 years required for tree growth to reach 8m.</p> <p>Permanent easements of 35m retained through hedgerows and woodlands.</p>	
Impacts on physical elements, landscape character and visual amenity as a result of operations and maintenance of onshore cable route	<p>Single Phase / Two Phased: One annual visit to jointing bays to carry out routine integrity tests.</p> <p>Non-scheduled maintenance to address faults as and when these may arise would also be necessary, and this maintenance could be required in between jointing bay or kiosk locations.</p>	
Impacts on physical elements, landscape character and visual amenity as a result of substation.	<p>Single Phase: Maximum landtake 3.04ha (LFAC).</p> <p>Maximum compound dimensions 160m wide x 190m long (LFAC).</p> <p>Maximum Substation Buildings dimensions: two buildings of 58m wide x 85m long x 25m high to the roof ridge.</p> <p>Maximum height of equipment and ancillary buildings generally 15m or lower.</p> <p>Floor levels of substation buildings approximately 54m AOD.</p> <p>Proposed bunding approximately 5m above general ground levels. Tree planting with approximately 200-400mm growth per year (depending on species).</p> <p>Two Phased: As above but with Substation Buildings constructed separately – one in each phase. Dimensions of each 58m wide x 85m long x 25m high.</p>	<p>These dimensions would accommodate the various substation designs.</p> <p>The gradient of the roof is based on use of profile sheeting set at practical minimum falls.</p> <p>Ancillary buildings make up the external area to the south of the substation halls.</p>
Impacts of substation operational lighting on landscape character and visual amenity.	<p>Single Phase and Two Phased:</p> <p>Operational lighting requirements at the substation site may entail:</p> <p>Security lighting around perimeter fence of compound, to allow CCTV coverage;</p> <p>Car park lighting – as per standard car park lighting, possibly motion sensitive; and</p> <p>Repair and maintenance – task related flood lighting may be necessary.</p> <p>No additional lighting is proposed along Bullen Road or along the additional access</p>	

Impact	Key design parameters forming realistic worst case scenario	Assumptions and Rationale
	roads within the substation site boundary.	
Decommissioning		
Impacts of landfall location and onshore cable route on landscape character and visual amenity.	<p>Single Phase and Two Phased: Onshore cables de-energised and left in situ. Kiosks removed.</p> <p>Jointing bays left in- situ. Where pre-installed ducts are used, cables may be extracted once de-energised.</p>	
Impacts of substation on landscape character and visual amenity.	<p>Single Phase and Two Phased: Substation removed, components re-used and land returned to initial state.</p>	

29.4.2 Embedded Mitigation

43. Embedded mitigation forms an integral part of the proposal and moderates the worst case scenario. Mitigation measures are referenced in *Table 29.3*, highlighting where landscape elements are to be retained or restored.
44. Landscape works agreed to be undertaken as part of East Anglia ONE also form embedded mitigation. These works comprise planting and bunding and are summarised below. The detail of the works is covered in the OLEMS for East Anglia ONE ES (EAOL 2012).
45. Embedded mitigation for the proposed East Anglia THREE project has assumed the pulling through of cables into ducts already installed as part of East Anglia ONE. This would minimise the impacts on both landscape character and visual amenity. Overhead electricity transmission lines would have a much greater effect on both landscape character and visual amenity owing to the prominence of the supporting pylons as structures in the landscape, either appearing at variance with the rural character where other pylons are not present or adding to the cumulative impact where they are, especially around the existing Bramford Substation and converter station location where there is already a concentration of pylons.
46. The pulling through of the onshore cables is the most important mitigation measure undertaken, as it also notably reduces the potential for impacts when compared with the alternative processes of open-trenching and HDD. The potential for significant impacts during the short term of the construction and decommissioning stages and the long term of the operation stage are greatly reduced by the pull through process along the onshore cable route.

47. The final routing of cables connecting into the substation is not known at the current time. Therefore the pre-installed ducts would end just beyond the western boundary of the screening trees and bunding installed by East Anglia ONE to the east of the East Anglia THREE substation. Therefore the final stretch of cables would be open trenched from the end of the ducts to the substation. This would cover a maximum distance of 300m. Likewise, National Grid would install ducts to connect into the existing Bramford substation but these would end at the boundary of the National Grid land, therefore EATL would need to open trench up to the end of these ducts, a distance of up to 235m. In both cases the cables would be laid directly into trenches. The open trenching would occur during the construction phase of the proposed East Anglia THREE project, and would therefore occur in the context of the larger scale construction of the proposed East Anglia THREE substation. The open trenching would occur to the east of the proposed East Anglia THREE substation, in a location where a number of electricity transmission lines converge and the landscape is largely influenced by the existing presence of large scale energy infrastructure. The open trenching would be low lying and screened from many surrounding receptors by existing planting and planting established as part of East Anglia ONE. It would be in respect of this context that the relatively small scale works associated with the open trenching would have a limited influence on landscape and visual receptors.
48. Mitigation planting proposed for East Anglia ONE includes substantial woodland planting to screen the East Anglia THREE substation. The planting to be implemented as part of East Anglia ONE is to the south-west, immediate north and east of the East Anglia THREE substation. While existing woodland currently screens those aspects to the west, north-west and north-east, the mitigation planting would largely surround the East Anglia THREE substation location from almost all visual aspects. The mitigation planting to the south-west would be set on a 5m high bund and to the east on a 2m bund, which would add to the relative height of the trees.
49. The mitigation planting would be designed to comprise a mix of faster growing 'nurse' species and slower growing core 'species'. The core species would comprise a mix of preferred native species that would outlive the nurse species and characterise the woodland structure over the longer term. It is anticipated that the growth rate of these species would be 200-300mm per annum taking into account the clay soils and the 'made' nature of the land. The nurse species would be faster growing and shorter-lived, providing shelter to bring on the core species. The mix may contain species such as alder, birch, poplar and rowan, with average growth rates of 400mm per annum. It is anticipated that 8m growth would take 20 years and that at the end of the 25 year consent period the trees would have reached approximately 11m

(assuming planting height of 1m). The nurse species would be sufficiently fast growing to provide substantial screening of the East Anglia THREE substation towards the last 5 to 10 years of the consent period.

50. It is anticipated that the construction of East Anglia ONE, including mitigation planting, would commence in 2017. As the construction of the proposed East Anglia THREE project is due to commence at the earliest between 2020 and 2025, the mitigation planting would already have had a minimum of three years of growth which equates to approximately 1.2m in height on top of a base height of approximately 1m (for the faster growing nurse species). The mitigation planting to the south-west would be set on a 5m high bund, and to the east on a 2m high bund, which would add to the relative height of the trees. This would mean by the time the proposed East Anglia THREE project would be constructed, the nurse species in the mitigation planting would be at a height of approximately 7.2m in the area to the south-west, 4.2m in the area to the east and 2.2m in the area to the immediate north. It is anticipated that by the end of the 25 year consent period, the planting to the south-west, immediate north and east would be at a height of approximately 12.2m, although with the bunding to the west and east the total height would be 17.2m and 14.2m.
51. Mitigation planting proposed for East Anglia THREE includes substantial woodland planting to the north of the East Anglia THREE substation. This would add to the screening effect already provided by existing woodland and the narrow band of new woodland planting that would be implemented to the north as part of East Anglia ONE. The additional planting in the wider area to the north would be approximately 11m after 25 years. Detailed information on embedded mitigation in relation to the East Anglia THREE substation is contained within an *Outline Landscape and Ecological Management Strategy (OLEMS)*.
52. While a proportion of the woodland, cited in the LVIA as being of importance to the screening of the proposed East Anglia THREE project, is outwith the control of East Anglia THREE limited (EATL), it is subject to the protection afforded by the Forestry Act (1967).
53. Part II of the Forestry Act 1967 is entitled 'Commissioner's Power to Control Felling of Trees' which requires those with the intention of felling trees to apply to the commissioner for a licence. There are restrictions which would be applied in the consideration of issuing such a licence and ultimately the act seeks to protect forest areas.
54. Furthermore, Millers Wood, Bullen Wood, Bushey Grove and Fore Grove are all identified as Ancient Semi-Natural Woodland in the local plan and, therefore, also as

Country Wildlife Sites (CWS). While CWS are not protected under statute, their importance is recognised by local planning authorities in their consideration of related planning applications.

55. In light of the statutory protection afforded by the Forestry Act (1967) and the designation of the woodlands as CWS, it would be unlikely for these woodland areas to be intentionally removed and therefore such a scenario is not considered in the assessment.
56. It has been agreed with the Local Authorities that this LVIA should consider the baseline as at the date of production of the LVIA (i.e. without potential future effects of ash die back). Notwithstanding this, EATL has agreed to continue discussions with the Local Authorities in relation to the potential future effects of ash die back, including considering whether it is appropriate to mitigate such effects (if any). It is recognised that the disease is having a significant impact on ash trees within the Suffolk area. Initial indications are that the existing woodlands around the East Anglia THREE substation, but outwith the site boundary, contain ash species. Further information regarding the presence, location and health of the ash trees would be required as the basis for an accurate assessment.
57. East Anglia THREE are willing to consider working with the Local Authorities to help land owners implement woodland management plans to maintain the health and longevity of the woodland areas. This would involve an analysis of the existing condition of the woodland, and then selective and phased removal of diseased trees with careful management of replacement tree planting. In the long term this would help to produce a mixed age woodland with an overall longer life expectancy. The approach to management plans is set out in the OLEMS.
58. *Table 29.3* summarises the embedded mitigation for the proposed East Anglia THREE project and these measures are included in the East Anglia THREE OLEMS. These measures are consistent with the embedded mitigation set out in the East Anglia ONE OLEMS.

Table 29.3 Embedded Mitigation in Relation to Landscape and Visual Impacts

Embedded Mitigation in Relation to Landscape and Visual Impacts	
Parameter	Mitigation Measures
General	
Project design	Project decision from outset that cable would be underground not overhead, so as not to be part of the visible landscape and to minimise landscape and visual impacts. Use of pre-installed ducts would further reduce potential impacts during construction of East Anglia THREE.

Embedded Mitigation in Relation to Landscape and Visual Impacts	
Landfall	
Project design	Avoid vegetated shingle at landfall.
Construction	Temporary works would be within a single field accessed by existing road. Excavated material from the trenches (earth / sand / shingle) would be stockpiled on the fields or beach for short periods but re-laid to match existing profiles.
Onshore cable route	
Project design	Careful location of 2 primary and 5 secondary CCSs and 62 jointing bay locations (or 124 under Two Phased approach) including up to 248 kiosks to avoid mature trees, hedgerows and other sensitive features.
Construction	Replace any land drainage disturbed by the works. Carefully handle topsoil to British Standard BS3882: 2007. Reinstate bank profiles. Retain and re-lay vegetation to sides of ditches. Reinstatement of affected field boundaries in the same style or with the same species mix of the original and / or to match adjacent boundaries. Early installation of protective fencing would be utilised in order to minimise impacts to trees and their roots.
Substation	
Project design	Careful siting of substation location to the north of the existing Bramford Substation to ensure it is associated with existing large scale infrastructure development. Siting also ensures that the screening effect of surrounding woodland blocks is best utilised.
Construction	Limited 24 hour lighting at substation site during particular construction activities.
Operation	Planting and bunding. Operational lighting requirements at the substation site may entail: <ul style="list-style-type: none"> • Security lighting around perimeter fence of compound, to allow CCTV coverage; • Car park lighting – as per standard car park lighting, possibly motion sensitive; and • Repair and maintenance – task related flood lighting may be necessary. No additional lighting is proposed along Bullen Road or along the additional access roads within the Substation Site Boundary.

29.5 Assessment Methodology

29.5.1 Guidance

59. This section summarises the methodology contained in Volume 3: *Appendix 29.1 – Landscape and Visual Impact Assessment Methodology*. The methodology accords

principally with guidance set out in the updated GLVIA 3, as well as the other following reference documents;

- Guidelines for Landscape and Visual Impact Assessment: Third Edition (Landscape Institute and IEMA 2013);
- Guidance on the Impact of Offshore Wind Farms: Seascape and Visual Impact Report (DTI 2006);
- UK Offshore Energy Strategic Environmental Assessment (Department of Energy and Climate Change 2009);
- Guide to Best Practice in Seascape Assessment (CCW, Brady Shipman Martin and University College Dublin 2001);
- Visual Representation of Windfarms Good Practice Guidance Version 2 (Scottish Natural Heritage 2014);
- Advice Note 01/11 Photography and Photomontage in Landscape and Visual Impact Assessment (Landscape Institute 2011); and
- Landscape Character Assessment Guidance for England and Scotland (SNH and TCA 2002).

29.5.1.1 National Policy Statement

60. The assessment of potential impacts on the landscape and visual receptors has been made with reference to relevant National Policy Statements (NPS), as discussed in Chapter 3 Policy and Legislative Context. The most relevant NPSs to the LVIA are:

- National Policy Statement for Energy (NPS EN-1 July 2011);
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3 July 2011); and
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5 July 2011).

61. In NPS EN-1, para 5.9.5 states that the applicant should carry out an LVIA, which should include reference to any landscape character assessment and associated studies as a means of assessing impacts on landscape character relevant to the project. The applicant's assessment should also take into account relevant local development policies, which have been based on these assessments.

29.5.2 Data Sources

62. *Table 29.4* below sets out the features of the key data sources used in the assessment.

Table 29.4.Data Sources Features

Data	Year	Coverage	Confidence	Notes
Consultation with Suffolk County Council	03/2014	Agreement on issues relevant to East Anglia THREE project LVIA	High	Consultation with officers relevant to LVIA issues
National Character Areas	2014	Classification of English landscape into broad character types	High	Designation undertaken by Natural England.
Suffolk Landscape Character Assessment	2010	Classification of Suffolk landscape into character types	High	Based on Countryside Agency Guidelines
Suffolk Coasts and Heaths AONB	1970	Identification of a landscape of national importance	High	'Designation History Series Suffolk Coast and Heaths AONB' sets out justification for designation.
Register of Historic Parks and Gardens	Sep 2010	Listing of protected Parks and Gardens in England	High	Designation undertaken by Historic England with process set out on website.
Ordnance Survey 25,000 Raster from Vattenfall	Mar 2014	Mapping information	High	
Ordnance Survey 250,000 Raster from OS Open data	Jan 2014	Mapping information	High	
East Anglia ONE Environmental Statement	Nov 2012	Reporting impacts of East Anglia ONE project	High	Environmental Statement.
East Anglia THREE Scoping Report and Consultation Comments	Nov 2012 Dec 2012	Defining scope of East Anglia THREE project	High	Statutory and other Consultees provided feedback on scope of EA.

29.5.3 Impact Assessment Methodology

63. Chapter 6 Environmental Impact Assessment Methodology sets out the general method which has guided the assessment of landscape and visual impacts. *Appendix 29.1 Seascape, Landscape and Visual Assessment Methodology* sets out in detail the

methodology specific to the assessment. The methodology applied in the assessment of the proposed East Anglia THREE project differs in some respects from the methodology applied in East Anglia ONE. The East Anglia THREE methodology is based principally on GLVIA 3 which is an update of GLVIA 2 and which was published in 2013. The methodology applied in East Anglia ONE was based on a combination of GLVIA 2 and the DTI Guidance on the Impact of Offshore Windfarms.

64. The main changes include the consideration of the value and susceptibility of receptors as components of the overall sensitivity ratings, the consideration of visual receptors as people and assessing visual impacts more in respect of people's experiences, and defining the geographical extent of impacts rather than basing the assessment on specific locations.
65. GLVIA3 sets out an approach to the assessment of sensitivity which combines ratings of value with ratings of susceptibility. While GLVIA2 described sensitivity as the degree to which a landscape or visual receptor could accommodate change, this was assessed in relation to development generically. GLVIA3 highlights the importance of making reference to specific types of development, such that susceptibility is being assessed in respect of the features and attributes particular to the proposed development being assessed.
66. Sensitivity ratings assessed in the LVIA for East Anglia ONE are typically higher than the sensitivity ratings assessed in this, the LVIA for the proposed East Anglia THREE project. This is due to a combination of the change in methodology as described above, as well as the change in the baseline situation, brought about by the consent of East Anglia ONE. This consent affords a degree of certainty in relation to the construction of East Anglia ONE and, therefore, the assessment is based on a predicted baseline in which the components of this development are assumed to exist.
67. In respect of the landfall location and onshore cable route, the sensitivity would be typically lower than that assessed for the East Anglia ONE project as the cables would be pulled through existing ducts, avoiding the use of trenching or HDD. Receptors would therefore be less susceptible to this lower impact process. In respect of the substation, the sensitivity would also be typically lower as the East Anglia ONE converter station is assumed to be present¹ as part of the predicted baseline, establishing this type and scale of development as an integral part of the localised baseline character and, in instances where visibility occurs, fully or partially screening the East Anglia THREE substation. In specific instances, these factors

¹ As discussed previously in section 29.3.2 this is based on the consented dimensions of the East Anglia ONE converter station

reduce the susceptibility of the landscape and visual receptors to the East Anglia THREE substation.

68. OPEN's LVIA methodology accords with the guidance set out in the GLVIA3. Where it diverges from specific aspects of the guidance, in a small number of areas, reasoned professional justification for this is provided as follows.
69. GLVIA 3 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 impact, its geographical extent and its duration and reversibility. This approach is to be applied in respect of both landscape and visual receptors with reference made in paragraphs 5.48, 5.50-5.52, 6.38 and 6.40-6.41.
70. OPEN considers that the process of combining all three considerations in one rating can distort the aim of identifying significant impacts of large scale development. For example, an increased magnitude of change, based on size or scale, may be reduced to a lower rating if it occurred in a localised area and for a short duration. This might mean that a potentially significant impact would be overlooked if impacts are diluted down due to their geographical extents and/or duration or reversibility. Conversely, a low magnitude of change, based on size or scale, may be increased to a higher rating if it occurred across a wider area or for a longer duration, giving rise to a significant effect despite the inherently low magnitude of change.
71. OPEN has chosen to keep these three considerations separate, by basing the magnitude of change on size or scale to determine where significant and not significant impacts occur, and then describing the geographical extents of these impacts and their duration and reversibility separately.
72. Presented below is a summary of the methodology, highlighting the criteria used as the basis for the assessment, the considerations taken into account in rating these criteria, with definitions for the different levels of rating and an explanation of how these criteria are combined to determine whether the impacts are significant or not significant.

29.5.3.1 Types of Impact

73. The impacts are categorised into three types: impacts on landscape receptors; impacts on visual receptors; and cumulative impacts on landscape and visual receptors.

29.5.3.1.1 Landscape Impacts

74. The LVIA considers the impacts on the physical elements of the site and the impacts on the landscape character of the site and its surroundings.

- Physical elements are those parts of the landscape that may be removed or altered as a result of the proposed East Anglia THREE project, for example trees, hedges, grassland.
- Landscape character is the distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape and is often influenced by the way that landscape is perceived. Impacts on landscape character arise either through the introduction of new components that alter the pattern of existing elements, or through visibility of the proposed East Anglia THREE project, which may alter the way in which the pattern of elements is perceived. This category of impacts is considered in terms of landscape character receptors, which fall into two groups; landscape character types and landscape designations.

29.5.3.1.2 Visual Impacts

75. The LVIA considers the impact on people's views. Visual impacts include impacts on principal visual receptors and viewpoints.

- An assessment of the impacts on principal visual receptors includes residents of settlements, travellers using roads and railways, people using recreational routes, features and attractions throughout the study area.
- An assessment of the impacts on viewpoints representative of locations relevant to the principal visual receptors and from specific viewpoints, chosen because they are key or promoted viewpoints in the landscape.

29.5.3.2 Cumulative Impacts

76. Cumulative impacts arise where the study areas for two or more developments overlap so that both are experienced at proximity where they may have a greater incremental impact, or where developments may combine to have a sequential impact, irrespective of any overlap in study areas. This means that the addition of the proposed East Anglia THREE project to a situation where other developments are apparent in the baseline landscape and visual context may result in a greater impact than where the proposed East Anglia THREE project is seen in isolation.

29.5.3.3 Sensitivity

77. In accordance with GLVIA3, sensitivity is determined by the combination of the value of the receptor and its susceptibility to the proposed East Anglia THREE project. The basis for the assessment is made clear using evidence and applying professional judgement in the assessment of each receptor.

29.5.3.3.1 Value

78. The value of a landscape receptor is a reflection of the value which society attaches to that landscape and is influenced by the presence or not of landscape designations, the quality of the landscape and the experience of that landscape.
79. The value of a view or series of views is a reflection of 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 rating is determined through consideration of the formal or informal recognition of the view and its scenic quality.
80. Ratings of high, medium to high, medium, medium to low and low are used to describe the value of the receptors.

29.5.3.3.2 Susceptibility

81. The susceptibility of a landscape character receptor is a reflection of its ability to accommodate the changes that would occur as a result of the addition of the proposed East Anglia THREE project. The rating is determined through consideration of the character of that landscape and its association with the landscape where the proposed East Anglia THREE project is located. Susceptibility also considers the specific nature of the proposed East Anglia THREE project in terms of its potential impacts on the landscape receptor.
82. The susceptibility of a viewer relates to the nature of the viewer experiencing the view and how susceptible they are to the potential impacts of the proposed East Anglia THREE project. The rating is determined through consideration of the nature and experience of the viewer, as well as the principle characteristics of the view.
83. Ratings of high, medium to high, medium, medium to low and low are used to describe the susceptibility of the receptors.

29.5.3.4 Magnitude of Change

84. The magnitude of change on landscape and visual receptors is an expression of the scale of the change that would result from the proposed East Anglia THREE project, and is dependent principally on the size or scale of the change. The geographical extents and the duration and reversibility of the impacts are assessed separately but used to describe the area over which the impact would be experienced and how long that impact would last.

Table 29.5 Definitions of the Magnitude of Change Levels

Magnitude	Definition
High	A major alteration to the baseline characteristics of the landscape / view, introducing a new prevailing influence and / or components that are substantially uncharacteristic in the receiving landscape.
Medium	A moderate alteration to the baseline characteristics of the landscape / view, introducing a new and readily apparent influence and/or components that may be prominent but are not uncharacteristic in the receiving landscape.
Low	A minor alteration to the baseline characteristics of the landscape / view, introducing a new and slightly apparent influence and/or components that are characteristic in the receiving landscape.
Negligible	A negligible alteration to the baseline characteristics of the landscape / view, introducing a new and barely discernible influence and/or components that are substantially characteristic in the receiving landscape.

85. Intermediate ratings of medium to high and medium to low can also be applied.
86. The geographical extent over which the impacts of the proposed East Anglia THREE project would be experienced can be described using the following scales:
- At the site level, within the site of the proposed East Anglia THREE project itself;
 - At the localised level, within the immediate setting of the site;
 - At the receptor level, within the extents of the landscape or visual receptor; and
 - At the multiple receptors level, within the extents of a number of landscape or visual receptors.
87. Duration is a separate consideration, whereby the period of time over which the impact is experienced, does not alter the magnitude of change rating, but describes how long the impact would last. This is of particular relevance in respect of the Single Phase and Two Phased options, whereby the impacts of the Two Phased approach would be spread over a longer period of time.
88. In terms of the proposed East Anglia THREE project, very short-term relates to a period of 0 to 1 year and applies mostly to the initial construction and decommissioning works. Short-term relates to a period of 1 to 5 years covering the entire construction and decommissioning phases and the period for reinstatement. Medium term relates to a period of 5 to 10 years and relates mostly to the time required for the majority of the vegetation to re-establish and grow to a reasonable

size. Long term relates to a period of 10 to 25 years and relates to the operational phase of the proposed East Anglia THREE project. .

89. Reversibility is a judgement about the prospects and practicality of a particular impact being reversed. The majority of the impacts relating to the proposed East Anglia THREE project would be reversible.

29.5.3.5 Significance of the Impact

90. The objective in assessing the impacts of the proposed East Anglia THREE project is to predict the significant impacts of the proposed East Anglia THREE project on landscape and visual receptors. In accordance with the GLVIA 3, the landscape and visual impacts are assessed to be either significant or not significant. The LVIA does not define levels of significance as guidance does not provide for these.
91. The significance of impacts is assessed through a combination of the sensitivity of the landscape element, landscape character receptor or visual receptor, and the magnitude of change that would result from the proposed East Anglia THREE project.
92. OPEN’s methodology requires the application of professional judgement in accordance with the Landscape Institute’s GLVIA3. Although it is not reliant on the use of a matrix, the following matrix has been included to illustrate how combinations of the ratings for sensitivity and magnitude of change can give rise to significant impacts, as well as to give an understanding of the threshold at which significant impacts may arise. *Table 29.6* provides this illustration.

Table 29.6 Impact Significance Matrix

Sensitivity	Magnitude					
	High	Medium-High	Medium	Medium-Low	Low	Negligible
High	Significant	Significant	Significant	Significant or not significant	Not significant	Not significant
Medium-High	Significant	Significant	Significant or not significant	Significant or not significant	Not significant	Not significant
Medium	Significant	Significant or not significant	Significant or not significant	Not significant	Not significant	Not significant
Medium-Low	Significant or not significant	Significant or not significant	Not significant	Not significant	Not significant	Not significant
Low	Significant or not significant	Not significant	Not significant	Not significant	Not significant	Not significant

93. Impacts that are assessed in the red boxes in the matrix are assessed to be significant in terms of the requirements of the EIA Regulations. Those impacts that are assessed in the orange boxes may be significant, or not significant, depending on the specific factors and impact that is assessed in respect of a particular landscape or

visual receptor. Those impacts that are assessed in the green boxes are not judged to result in a significant impact. In accordance with the GLVIA3, experienced professional judgement is applied to the assessment of all impacts and reasoned justification is presented in respect of the findings in each case.

Table 29.7 Impact Significance Definitions

Impact Significance	Definition
Significant	A significant impact occurs where the proposed East Anglia THREE project has a defining impact on the landscape / visual receptor.
Not significant	An impact is not significant where the proposed East Anglia THREE project does not have a defining impact on the landscape / visual receptor.
No change	No change occurs where the proposed East Anglia THREE project has no impact on the landscape / visual receptor.

94. A significant impact would occur where the combination of sensitivity and magnitude of change results in the proposed East Anglia THREE project having a defining impact on the physical element, landscape character receptor or visual receptor, so that it becomes the defining characteristic, albeit where it may be one of a number of defining characteristics. A not significant impact would occur where the proposed East Anglia THREE project does not become the defining characteristic, and the baseline characteristics of the physical element, landscape character receptor or visual receptor continue to provide the definitive influence.

29.5.4 Cumulative Impact Assessment

95. Chapter 6 Environmental Impact Assessment Methodology presents the general method and summarises the different steps of the Cumulative Impact Assessment for this chapter. *Appendix 29.1* sets out the more detailed methodology specific to the requirements of the LVIA process.
96. The objective of the Cumulative Landscape and Visual Impact Assessment (CLVIA) is to describe, visually represent and assess the ways in which the proposed East Anglia THREE project would have additional impacts when considered together with other existing, consented or proposed East Anglia THREE projects and to identify related significant cumulative impacts arising as a result of the proposed East Anglia THREE project. The guiding principle in preparing the CLVIA is to ‘focus on the likely significant impacts and in particular those which are likely to influence the outcome of the consenting process’, in accordance with SNH guidance.
97. Projects with the potential to contribute to a significant cumulative impact are presented in Table 29.12 along with an initial assessment of their relevance to the

cumulative assessment. Potential cumulative impacts are most likely to relate to East Anglia ONE and future EAOW projects owing to their close proximity and scale.

29.5.5 Graphic Production

98. The written LVIA is accompanied by a set of graphics contained in Volume 2. Reference is made throughout the written text to these graphics, as they are an integral part of the overall assessment and of importance in illustrating specific issues. They should be viewed in accompaniment to the written text.
99. The graphics can be divided into two categories; maps and visualisations. The maps are based on the study area around the landfall location, onshore cable route, and substation, and present data of relevance to the assessment, such as the location and extent of landscape character types, landscape designations and principal visual receptors. A Zone of Theoretical Visibility ('ZTV') map is also included in relation to the substation. This digitally calculates the extent and level of theoretical visibility across a given area, using OS Terrain 5 mapping with 10 m contour intervals as the basis for the calculations. As this is based only on the 'bare earth', it does not take account of potential screening by vegetation or buildings, and is why it is referred to as 'theoretical visibility' and not 'actual visibility'.
100. The visualisations are based on the 16 viewpoint locations which are representative of the visual amenity of visual receptors in the surrounding area to the proposed substation. These viewpoints have been agreed with the statutory consultees. For each viewpoint there is a location plan and baseline photography. Beyond this, visualisations show the following scenarios;
- First phase of the Two Phased approach to the substation construction;
 - Second phase of the Two Phased approach / Single Phased approach;
 - Completed substation with mitigation planting and bunding after 15 years;
 - Completed substation with a future East Anglia project; and
 - Completed substation with a future East Anglia project with mitigation planting and bunding after 15 years.
101. The East Anglia THREE substation is shown to be added to a predicted baseline in which the East Anglia ONE converter station is already present² - the consent of the East Anglia ONE project affords certainty with regard to the presence of the converter station as part of predicted baseline. The first phase of the Two Phased

² As discussed previously in section 29.3.2 this is based on the consented dimensions of the East Anglia ONE converter station

approach shows only the western half of the substation developed. The second phase of the Two Phased approach shows the eastern half of the substation developed in addition to the western half. This equates to the Single Phased approach in which the whole substation would be developed in one phase.

102. Further visualisations are included which show the effect of mitigation planting and bunding 15 years after completion of the East Anglia THREE substation. This helps to visualise to what extent the substation would be screened from the different viewpoints. The cumulative visualisations show the effect of adding the East Anglia THREE substation to a cumulative scenario in which a future East Anglia project substation already exists. This scenario is also illustrated with mitigation planting and bunding after a 15 year period.
103. For those viewpoints with potential to undergo significant impacts, the visualisations have been prepared as photomontages, using the baseline photography and adding onto this a computer generated model of the substation. For the remaining viewpoints, the visualisations have been prepared as computer models. More detailed information on graphic production is included in the Assessment Methodology in *Appendix 29.1*.

29.6 Baseline Assessment

29.6.1 Introduction

104. The following section summarises the baseline condition of the study areas for the landfall, onshore cable route and substation. More detailed descriptions of the landscape and visual receptors associated with the assessment are contained in *Appendix 29.3* and *Appendix 29.4*.
105. The baseline conditions are the existing conditions of the site and study area prior to the introduction of the proposed East Anglia THREE project. Establishing the baseline conditions develops an understanding of the important components or characteristics, as well as how these are changing in response to existing forces for change. The baseline assessment helps to define the scope of the assessment by identifying those receptors which will require detailed assessment.
106. The baseline conditions are presented under the following three headings:
 - Landscape character;
 - Landscape related planning policies and designations; and
 - Visual receptors and views.

107. For the purposes of the assessment the onshore cable route is divided into nine sections, the boundaries mostly defined by major road or river crossings. These sections are used as the basis for the assessment of the onshore cable route. Each section comprises more than one Landscape Character Type (LCT) and where necessary, reference to these individual LCTs is made. The sections are shown in Figures 29.4a – 29.4d.

29.6.2 Landscape Character

108. Landscape Character Assessments are produced at the national level by Natural England and at the local level by Suffolk County Council. These publications categorise the landscape into Landscape Character Types; areas which share a distinct and recognisable set of characteristics and pattern of components.
109. Natural England, at a national level, has classified the English landscape into National Character Areas (NCA), each of which presents characteristics which make it distinct from the other NCAs. This information is documented in the National Character Areas Study and is useful as a background reference to the assessment.
110. A more local and detailed level of landscape classification has been carried out by local authorities. In respect of East Anglia THREE onshore works, Suffolk County Council's Local Character Types (LCTs) are of direct relevance to the assessment.
111. Those LCTs which occur within the Study Areas of the landfall location, the onshore cable route and the substation are shown in *Figure 29.3* and referenced in Volume 3: *Appendix 29.2 Landscape and Visual Impact Assessment Baseline*. It is accepted that the boundaries of each of these LCTs, while clearly defined on plan would not be so readily apparent on the ground, where characteristics of adjoining LCTs are likely to be present.

29.6.2.1 Overview of Landscape Character

112. The landscape character of Suffolk, where the onshore components of the proposed East Anglia THREE project are located, is predominantly low-lying, with a relatively flat landscape close to the coast, which becomes gently undulating inland. The coastal landscape is open and exposed, with a narrow band of low cliffs occurring to the north of Felixstowe. The estuary of the River Deben separates the landscape and is edged by saltmarshes and intertidal flats.
113. The majority of the landscape throughout the study area is agricultural, with intensive arable production being the main type of farming. While the majority of the landscape has been modified by agricultural practices, there are a number of areas where the special qualities of the natural landscape are evident, such as the beaches and cliff faces, the estuarine marshes and flats, the riverside edges and the

woodlands, many of which are ancient and which occur repeatedly across the wider landscape. The prolific extent of hedgerows and trees play an important role in providing enclosure and adding visual interest in an otherwise low and predominantly open landscape.

114. The relatively low-lying and level landform, combined with the extent of hedgerow and tree cover means that views within the study area are relatively limited in extent. This effect is accentuated in the shallow valleys which occur where views are especially intimate. More expansive views occur along the coast and across the marshlands where the scale of the landscape is broader and there are fewer intervening features to screen and filter views.

29.6.2.2 Landscape Character of Landfall

115. The landfall is located in the Rolling Estate Sandlands LCT which is associated with the coastal landscape to the north of Felixstowe and along the estuary of the River Deben. The coastline comprises narrow shingle beach and low cliffs, with farmland abutting hard onto the cliff tops. Expansive views are drawn out across the North Sea, and often feature passing vessels.

29.6.2.3 Landscape Character of Onshore Cable Route

116. The onshore cable route passes through eleven different LCTs. The landscape around the proposed East Anglia THREE project is predominantly farmed agricultural land. Large open fields feature extensively along the route, many used for arable crops. Field boundaries are often hedgerows with occasional hedgerow trees and intermittent woodlands or woodland shelterbelts. The gently undulating agricultural landscape continues for the majority of the study area making it difficult to discern subtle changes between landscape character types within the narrow confines of the 1km study area along the onshore cable route.
117. A noticeable change in character occurs where there is a change from large scale agricultural farmland to more intimate narrow valleys. In these areas the open fields are replaced with smaller scale fields consisting of rough grassland and native scrub woodland in places, and with generally a greater provision of enclosure from hedgerows and tree cover. The character of the landscape also changes as the route passes through the coastal levels at either side of the River Deben. Here the landscape is flat and open, allowing long range views across the landscape and the river estuary, with a strong influence from the large, expansive sky.

29.6.2.4 Landscape Character of Substation Location

118. The substation is located in the Ancient Plateau Claylands LCT which is characterised by a flat or gently rolling arable landscape of clay soils and a field pattern of ancient enclosure partially modified by agricultural improvement. There are also the

characteristic features of a dispersed settlement pattern of loosely clustered villages of medieval origin, albeit with some modern expansion. Hamlets and isolated farmsteads occur along the network of winding lanes and paths, often enclosed by associated mature hedgerows. Deciduous woodland, often ancient in origins, adds to the rural character of the landscape, as well as the containment of local views.

119. Built development in this landscape is typically small in scale and rural in character, such that the rural landscape defines the overall character of the LCT. The exception to this occurs around the Bramford substation, where also the consented East Anglia ONE converter station is to be located. Existing woodland in this area largely screens the substation and converter station such that the impact of these structures is limited to close range and localised parts of the LCT. In association with the Bramford Substation, there is a convergence of electricity transmission lines, in respect of which, the stanchions form readily visible structures, extending above the height of the woodland cover. The concentration of these structures comes to characterise this localised part of the LCT, although the effect dissipates with distance from the substation as the transmission lines disperse in different directions and intervening woodland screens the combined effect.

29.6.3 Landscape Designations

120. Landscape designations which occur within the Study Areas of the landfall location, the onshore cable route and the substation location are shown in *Figure 29.2* and referenced in Volume 3: *Appendix 29.2 Landscape and Visual Impact Assessment Baseline*. Reference is also made in these appendices to designations relating to archaeology and cultural heritage.

29.6.3.1 Area of Outstanding Natural Beauty (AONB)

121. AONBs are landscapes that are recognised to be of national importance. They are designated and protected under the Countryside and Rights of Way Act 2000, which places specific duties on local authorities to produce a management plan and places responsibility on all 'relevant authorities' in the area to conserve and enhance the natural beauty of the designated area. The first AONBs came into existence in 1956 and the designation of Suffolk Coast and Heaths AONB was confirmed in 1970.
122. The Suffolk Coast and Heaths AONB extends approximately 60km along the coast of Suffolk from the Stour Estuary in the south to Kessingland in the north. It is characterised by a low-lying coastal landscape including shingle beaches, crumbling cliffs, marshes, estuaries, heathland, forests and farmland. The AONB contains the few remaining fragments of Sandlings Heath and some of the least developed coastline in southern England. Neither of these areas occur within the onshore cable

route study area while a short section of the coastline occurs in the landfall location study area.

123. The part of the study area subject to the Suffolk Coast and Heaths AONB is the eastern part which extends from Bawdsey, on the coast, to Woodbridge where Martlesham Creek meets the River Deben. While the AONB designation predates the Suffolk Landscape Character Assessment, the special qualities of the AONB are based on the LCTs which occur in the area. The route passes through five of the eight LCTs which make up the AONB, of which four are agricultural landscapes, with the Saltmarsh and Intertidal Flats LCT being the only largely unmodified landscape.
124. At the coast, the landfall and initial section of the onshore cable route lie within an area of Rolling Estate Farmlands LCT, before passing into the Coastal Levels LCT, and then passing through a very narrow band of Saltmarsh and Intertidal Flats LCT, prior to crossing the River Deben. On the opposite bank, the route passes again through the Coastal Levels LCT and then a mix of different agricultural landscapes where subtle variations in character occur as a result of the changing topography and extent of enclosure afforded by mature tree cover and hedgerows.
125. Beyond the crossing of the River Deben, the onshore cable route lies on the western edge of the AONB where the influence of the Saltmarshes and Intertidal Flats LCT is not readily evident and the character of the landscape is largely influenced by the agricultural land uses. With the exception of small sections of Saltmarshes and Intertidal Flats and Valley Meadowlands LCTs, the location of the onshore cable route would be through an agricultural landscape where the extent of mature tree cover and hedgerows combined with the subtle variations in landform add to the rural identity. .

29.6.3.2 Special Landscape Areas (SLA)

126. SLAs are landscapes that are recognised to be of local importance. Saved Policy CL2 from the Mid Suffolk Local Plan (1998) states *'Within Special Landscape Areas, particular care will be taken to safeguard landscape quality, and where development does occur it should be sensitively designed, with high standards of layout, material and landscaping.'* With specific reference to utility installations and power lines, there is an expectation that these should be routed away from SLAs to avoid visual intrusion. Suffolk Coastal District Policy AP21 also states that: *'In the Area of Outstanding Natural Beauty and Special Landscape Areas the form of buildings, choice of materials, and colours must be sympathetic to the general character of the area and seek to reduce visual impact.'*
127. Mid Suffolk Core Strategy states in Paragraph 3.18: *'The Landscape Character Assessment does not replace the Special Landscape Area local designations. These*

designations will form part of the Development Control Policies DPD and will remain adopted until superseded by a level 3 Landscape Character Assessment of the District. The level 3 Landscape Character Assessment was not available for areas within the study area at the time of writing.

128. The SLAs are shown in *Figure 29.2* and referenced where relevant within the assessment in relation to the sensitivity of the landscape. The East Anglia THREE onshore cable route passes through areas designated as SLA, while the East Anglia THREE substation lies outwith the SLA designation.

29.6.4 Visual Receptors and Views

129. Principal visual receptors which occur within the Study Areas of the landfall location, the onshore cable route and the substation location are shown in *Figures 29.4a to 29.4d* and referenced in Volume 3: *Appendix 29.2 – Landscape and Visual Impact Assessment Baseline*.
130. Principal visual receptors include roads, settlements, Public Rights of Way (PROWs) and other features from which visual receptors would experience views. The relatively discreet nature of the landfall location and the onshore cable route means that only the views of close range receptors would be affected and that impacts would be most likely to occur during construction, when machinery, spoil heaps and stored materials would form a more visible feature than the restored land and small kiosks which would be the only visible features post construction. The substation is a larger scale development with a greater extent of visibility and therefore visual receptors over a wider area would potentially be affected, with impacts most likely to occur during operation, as well as construction and decommissioning.

29.6.4.1 Landfall Location

131. Starting at the landfall location, the principal visual receptor with the potential to be affected would be the Suffolk Coast Path which extends from Felixstowe to Lowestoft. Some visibility may also occur from the residential properties to the south of Bawdsey and the minor road which connects with the ferry point.

29.6.4.2 Onshore Cable Route

132. The main settlements which have the potential to be affected by the onshore cable route include the villages of Waldringfield and Martlesham on the west bank of the River Deben and the southern side of the town of Woodbridge to the north of Martlesham Creek. To the west of Woodbridge, the onshore cable route passes between the villages of Great Bealings and Little Bealings both of which have potential to be affected. Where the onshore cable route passes under the A14, the route is sufficiently south of Claydon that it is unlikely to lead to significant impacts.

133. The majority of the roads which cross the onshore cable route are minor roads which access rural areas and which carry low volumes of traffic. To the west of Woodbridge, the onshore cable route passes under the larger and busier A12, as well as the Lowestoft to Ipswich Rail Line. To the south of Claydon, the onshore cable route passes under the A14 and the Ipswich to Norwich Rail Line.
134. The onshore cable route crosses a large number of footpaths; the most important of these in relation to the hierarchy of footpaths are the Fynn Valley Walk and the Gipping valley River Path, both of which are long distance footpaths. National Cycle Route 1 crosses at various points along the onshore cable route and then passes around the northern side of the substation location.

29.6.4.3 Substation

135. The ZTV for the substation gives an initial indication of those principal visual receptors which have the potential to be affected. The valley location of a number of the villages reduces their potential to gain visibility of the substation location. It is only the villages set up on the higher ground that have the potential for visibility, such as the fringes of some of the villages, for example Burstall and Hintlesham. The extent of tree cover in and around most of the villages, combined with the screening effect of the village buildings, reduce actual visibility from many of the properties. The settled nature of this landscape means that a number of dispersed properties, such as farms, occur though the rural landscape and where open aspects occur there is the possibility of impacts arising.
136. There are no main roads in the study area, with the exception of the A14 which passes through the eastern edge and which is shown on the ZTV to gain very small patches of visibility. The ZTV shows that only sections of the rural minor road network would gain visibility of the substation. This would be greatly reduced by the extent of hedgerows, hedge-trees, hedge-banks and trees which align with most of the minor roads. It is only where these have been removed that open views from the road occur, for example to the south-west of Flowton and north-east of Elmsett.
137. Similar to the study area of the onshore cable route, there are many footpaths through the study area of the substation. The presence of hedgerows, hedge-trees, hedge-banks and trees alongside many of the footpaths and across the wider landscape reduce the extents to which the substation would be visible. There are a number of PRoWs which pass close to the site, and others which are slightly more distant but with short open sections, from which views of the substation may be gained.

29.7 Residual Impacts

138. The detailed assessment of impacts on landscape and visual receptors is presented in the following appendices;
- *Appendix 29.3: Landscape and Visual Impact Assessment of Landfall Location and Onshore Cable Route;* and
 - *Appendix 29.4: Landscape and Visual Impact Assessment of Substation.*
139. Presented below is text and tables which summarise the findings of these detailed assessments for the Single Phase and Two Phased approaches. In the Single Phase approach all construction works would take place within a relatively continuous period. In the Two Phased approach the construction works would occur in two separate phases with a defined gap period when no construction works would take place. In respect of the landfall location and onshore cable route, the main effect of the Two Phased approach would be the setting up of the seven CCSs and construction of jointing bays at 62 locations over two separate phases.
140. In respect of the substation, the main effect of the Two Phased approach would be the construction of half the overall built form in the first phase and the construction of the second half of the built form in the second phase. The Single Phase and Two Phased approaches would only have implications during the construction phase – during the operational and decommissioning phases the impacts would be the same regardless of whether the construction has taken place under a Single Phase or Two Phased approach.
141. In terms of the implications of the LFAC and HVDC electrical solutions on the assessment, for the landfall and onshore cable route there would be no visible differences (more cables will be used for the LFAC solution but these will be contained in the same number of ducts and buried underground). The HVDC solution would require a converter station while the LFAC solution would require a substation. Although the compound for the LFAC solution would be 10m wider, the buildings for both electrical solutions would be the same dimensions.
142. Where significant impacts have been identified, the assessments for the receptors being significantly affected are summarised with specific and relevant detail.

29.7.1 Potential Impacts of Landfall, Onshore Cable Route and Substation Construction

29.7.1.1 Potential Impacts of Landfall Location Construction

143. For the purposes of the assessment it is assumed that East Anglia ONE would be installed. HDD construction works would, therefore, already have taken place at the

landfall location, and as a result the impact of the East Anglia THREE construction works would be greatly reduced, requiring smaller scale of works than that required for East Anglia ONE. As the cable ducts would already be installed, the main feature of the construction process would be construction of the transition bays and pulling through of the onshore cables.

29.7.1.1.1 Potential Impacts of Landfall Construction on Physical Elements

144. The potential impacts of the landfall location on the physical elements of the cliffs and cliff tops would be reduced as the existing ducts would already be in place and no further disturbance to the cliffs or cliff tops would occur other than access to the beach, which would be required under the short HDD option (see Chapter 5 Description of the Development). Access onto the beach by plant would potentially be required, and the disturbance which the construction of a ramp would incur, despite its relatively short term duration prior to reinstatement and localised extent, would give rise to a **significant** impact. The impact of the construction works on the other physical elements would be **not significant**. This assessment applies to both the Single Phase and Two Phased approaches, the difference being that for the Two Phased approach the significant impacts predicted would occur across the two separate construction periods, making them short term in duration, as opposed to very short term in respect of the Single Phase approach.

29.7.1.1.2 Potential Impacts of Landfall Construction on Landscape Character

145. The potential impacts on the landscape character of the Rolling Estate Sandlands LCT and the Suffolk Coast and Heaths AONB would be limited by the presence of the existing ducts through the cliffs and adjacent farmland which would enable the simpler and smaller scale process of pulling through cables without HDD drilling or open-cut trenching. These construction operations would be relatively small in scale and sufficiently localised in extents to ensure that in respect of the wider LCT and AONB their impacts would be **not significant**. This assessment applies to both the Single Phase and Two Phased approaches. Despite the impacts occurring twice during the Two Phased approach, they would remain not significant during each phase.

29.7.1.1.3 Potential Impacts of Landfall Construction on Visual Amenity

146. The potential impacts on the visual amenity of walkers on the Suffolk Coast Path and road-users on Ferry Road would be limited as the construction works would require a pull-through of the cables without HDD drilling or open-cut trenching. The visible components of the construction process would be sufficiently small in scale and relatively well contained to ensure the impacts would be **not significant**. This assessment applies to both the Single Phase and Two Phased approaches. Despite

the impacts occurring twice during the Two Phased approach, they would remain not significant during each phase.

29.7.1.2 Potential Impacts of Onshore Cable Route Construction

147. Cable pulling operations would be undertaken at up to 62 locations along the onshore cable route. At each of these locations, there would be a requirement to construct up to two jointing bays and four kiosks. Access would be either, via haul road for isolated jointing bay locations, upgraded track access or directly from the public highway wherever possible. The haul roads and CCS would be constructed as part of the proposed East Anglia THREE project, in locations where they were constructed and removed in relation to East Anglia ONE. In some locations, removal of hedgerows and other types of vegetation would be required for the construction of the jointing bays. Under the Single Phase approach both jointing bays would be constructed in one construction period, while under the Two Phased approach, one would be constructed in the first phase and the other in the second phase.

29.7.1.2.1 Potential Impacts of Onshore Cable Route Construction on Physical Elements

148. The potential impacts on the physical elements would be notably reduced by the existing presence of the ducts. Disturbance to, or loss of vegetation would be limited where the jointing bays would be constructed and cables pulled through. The majority of the works would take place in the less sensitive agricultural land with relatively little disturbance to hedgerows or woodland. Where sections of hedgerow would be removed in relation to the construction of the haul roads and CCSs, these would be the specimens replanted following the completion of East Anglia ONE and therefore would be relatively immature. Their removal would, therefore, have a lesser impact than if they were more mature and well established specimens.

149. The impact on the physical elements would be **not significant** owing to the relatively small proportion of the wider physical elements that would be disturbed or removed, the localised extent of the impacts, and the reversibility of impacts through the reinstatement of vegetation on completion of the construction works. This assessment applies to both the Single Phase and Two Phased approaches. Despite the impacts occurring twice during the Two Phased approach, they would remain not significant during each phase, although the impacts would occur over a longer period of time.

29.7.1.2.2 Potential Impacts of Onshore Cable Route Construction on Landscape Character

150. The potential impacts on landscape character would be notably reduced by the existing presence of the ducts, whereby the pull-through process would reduce the extent to which the character of the landscape would be altered. Haul roads and CCSs would be a requirement and a concentration of construction activity would

occur in these locations and in relation to the jointing bays. The removal of hedgerows in relation to the haul roads and CCSs would coincide with sections where previous removals had occurred in relation to East Anglia ONE and, therefore, the removal of replanted specimens would have a lesser impact than if they were more mature and well established specimens. The impact on the LCTs would be **not significant** owing to the localised influence of the construction works, the limited extent to which the characterising features of the landscape would be altered, the impermanent nature of the construction works and the reversibility of any residual impacts. This assessment applies to both the Single Phase and Two Phased approaches. Despite the impacts occurring twice during the Two Phased approach, they would remain not significant during each phase, although the impacts would occur for a longer period of time.

29.7.1.2.3 Potential Impacts of Onshore Cable Route Construction on Visual Amenity

151. The potential impacts of the onshore cable route on the visual amenity of the residents, road-users, walkers, horse riders, sailors and other visual receptors would arise principally from the construction and activity associated with the haul roads and the CCSs and presence of machinery, equipment and storage associated with the construction works.
152. While the construction works would come close to a number of PRowS, roads, settlements and rivers, the impacts would be **not significant**. This would be on account of the localised influence of the construction works, the limited visibility of the construction works across the wider area, the impermanent nature of the construction works and the reversibility of any residual impacts. This assessment applies to both the Single Phase and Two Phased approaches. Despite the impacts occurring twice during the Two Phased approach, they would remain not significant during each phase, although the impacts would occur for a longer duration.

29.7.1.3 Potential Impacts of Substation Construction

153. For the purposes of the assessment it is assumed that East Anglia ONE would be operational and that it would occupy the land to the immediate south-west of where the East Anglia THREE substation would be constructed. In respect of some receptors, this would reduce the impact as East Anglia ONE would either partially or fully screen the construction of the East Anglia THREE substation, while in respect of other receptors the construction of East Anglia THREE would be seen in conjunction with the East Anglia ONE converter station. Impacts would arise primarily in relation to the construction of the main building associated with the proposed East Anglia THREE substation, while smaller scale construction works, such as the open trenching of the onshore cable route to the east of the substation would have a limited influence on landscape and visual receptors, owing to their small scale, as

well as the existing influence of energy infrastructure on this close range and localised area.

29.7.1.3.1 Potential Impacts of Substation Construction on Physical Elements

154. The East Anglia THREE substation would give rise to the loss of agricultural land and the potential removal of select hedgerows and trees. An area of agricultural land would be developed, however owing to the low sensitivity of the agricultural land and its common occurrence across the wider landscape, the impact of the loss would be **not significant**. This assessment applies to both the Single Phase and Two Phased approaches. Despite the impacts occurring twice during the Two Phased approach, they would remain not significant during each phase, although the impacts would occur for a longer period of time.

29.7.1.3.2 Potential Impacts of Substation Construction on Landscape Character

155. In respect of the potential impacts on landscape character, the East Anglia THREE substation in addition to East Anglia ONE converter station would give rise to variable impacts depending on the extent of screening. The impact on landscape character to the north-west and north-east is reduced by the screening effect of the intervening woodland, and to the south by the partial screening effect of the existing substation. In these directions the impact during construction would be **not significant**.

156. The addition of the East Anglia THREE substation to the immediate east of the East Anglia ONE converter station means that the construction works would be screened from the landscape to the west and south-west and the cumulative impact in these directions would be **not significant**. To the east and north, where the landscape is exposed to the construction of the East Anglia THREE substation, this would be seen with the presence of the East Anglia ONE converter station in the background. Out to a radius of 800m to the north and 800m to the east the impact on the Ancient Plateau Claylands LCT would be **significant**.

157. This assessment applies to both the Single Phase and Two Phased approaches, with the predicted significant impacts occurring during the two separate construction periods and therefore for an overall longer period of time. The not significant impacts would also apply equally to the Single Phase and Two Phased approaches.

29.7.1.3.3 Potential Impacts of Substation Construction on Visual Amenity

158. An initial assessment to consider the potential impacts of the substation on the viewpoints is presented in *Table 29.8* below. Many of the viewpoints are discounted from the assessment owing to the limited extent to which the East Anglia THREE substation or the East Anglia ONE converter station are visible, either as a result of distance, the screening effect of intervening woodland or the screening effect of the

converter station or substation of one another. In these instances, the impacts are assessed as **not significant**. The shaded cells in the table indicate which viewpoints are to be assessed in detail. Both the Single Phase and Two Phased approaches have been considered in this initial assessment, although ultimately both would lead to the same magnitude of change, albeit occurring over a longer period of time in respect of the Two Phased approach. The implications of phasing are considered in the detailed assessments.

Table 29.8. Potential Impacts on Visual Amenity

Visual Receptor	Potential Impacts
VP 1- Offton Road, near Elmsett Village	East Anglia THREE substation and East Anglia ONE converter station would be distant and partially screened by intervening woodland.
VP2 – Flowton Village	East Anglia THREE substation and East Anglia ONE converter station would be partially screened by intervening woodland.
VP3 –Flowton to Burstallhill Minor Road	East Anglia THREE substation and East Anglia ONE converter station would be partially screened by intervening woodland.
VP4 – Minor Road to Hintlesham Priory	East Anglia THREE substation and East Anglia ONE converter station would be screened by intervening woodland.
VP5 – Orchard Lands, near Canes Farm	East Anglia THREE substation would be partially screened by East Anglia ONE converter station and intervening tree cover and would lie at a greater distance.
VP 6 – PROW 147/006/0, near Hill Farm	East Anglia ONE converter station would largely screen East Anglia THREE substation, reducing its influence on the cumulative situation.
VP7 - Burstall	East Anglia THREE substation and East Anglia ONE converter station would be partially screened by intervening woodland, set into the horizon and with East Anglia THREE seen at a greater distance set behind ONE.
VP8 – A1071, near Valley Farm	East Anglia THREE substation and East Anglia ONE converter station would be distant and screened by intervening woodland.
VP9 – Thornbush Hall	East Anglia THREE substation and East Anglia ONE converter station would be screened by intervening woodland.
VP 10 – PRoW 155/047/0, near Fidgeon’s Farm	East Anglia THREE substation and East Anglia ONE converter station would be visible from this viewpoint with the potential to give rise to a significant impact.
VP 11 – PRoW 155/002/0, near Bullenhall Farm	East Anglia THREE substation and East Anglia ONE converter station would be visible from this viewpoint with the potential to give rise to a significant impact.
VP12 – PRoW 155/003/0, near Tye House	East Anglia THREE substation and East Anglia ONE converter station would be visible from this viewpoint with the potential to give rise to a significant impact.
VP13 – Tye Lane	No visibility of East Anglia THREE substation.
VP14 – Valley Road, near Nettlestead	East Anglia THREE substation and East Anglia ONE converter station would be distant and partially screened by intervening woodland.

Visual Receptor	Potential Impacts
VP15 – Church Hill, near Canes Farm	East Anglia THREE substation and East Anglia ONE converter station would be screened by intervening woodland.
VP16 – PRow 155/003/0, north-east of site	East Anglia THREE substation would be screened by intervening woodland.

29.7.1.3.4 Single Phase: Potential Impacts of Substation Construction on Viewpoint 10

159. It is assumed East Anglia ONE converter station would be operational and visible as a long and low roofline seen above the intervening tree cover. The construction of East Anglia THREE substation would occur to the fore of East Anglia ONE converter station, although the intervening tree cover would screen the majority of the construction works, with the exception of the higher level works which would be seen above the tree tops, including the emergence of the converter hall or substation hall roof structure and cranes needed for its construction.
160. The construction works would be seen to be located in an area, where there are already pylons and a mast, as well as an existing converter station. It would, therefore, not appear as a new or unfamiliar feature in this view, but would add to the concentration of modern structures in this location. While the emerging structure of the East Anglia THREE substation would be in close alignment with the East Anglia ONE converter station, it would increase the extents of development to the right. Taking all these factors into account the impact would be **not significant**.

29.7.1.3.5 Two Phased: Potential Impacts of Substation Construction on Viewpoint 10

161. In the Two Phased approach to construction it would be the converter hall or substation hall closest to East Anglia ONE that would be constructed during phase one and then the converter hall or substation hall adjacent to the east that would be constructed during phase two. The impact of the construction of phase one would have a slightly lesser impact than the Single Phase assessed above, as the construction would be seen at a slightly longer range from the viewpoint and seen to occupy a slightly more contained horizontal extent. The impact of phase one would be **not significant**.
162. The impact of Phase Two would be the same as assessed in respect of the Single Phase approach assessed above, giving rise to a **not significant** impact. Overall, the duration of the impact would be increased over a longer period of time.

29.7.1.3.6 Single Phase: Potential Impacts of Substation Construction on Viewpoint 11

163. It is assumed that the East Anglia ONE converter station would be operational and visible as a large-scale structure. The construction of the East Anglia THREE substation would occur to the fore of the East Anglia ONE converter station, and in

the absence of any substantial tree cover, would be readily visible from this viewpoint and sections of the PRoW in either direction. The addition of the construction works to a view in which the East Anglia ONE converter station is already a prominent, albeit more distant feature, would give rise to a **significant** impact.

29.7.1.3.7 Two Phased: Potential Impacts of Substation Construction on Viewpoint 11

164. In the Two Phased approach to construction it would be the converter hall or substation hall closest to East Anglia ONE that would be constructed during Phase One and then the converter hall or substation hall adjacent to the east that would be constructed during phase two. The impact of the construction of phase one would have a slightly lesser impact than the Single Phase assessed above, as the construction would be seen at a slightly longer range from the viewpoint and seen to occupy a slightly more contained horizontal extent. The impact of phase one would be **significant** as the construction works would be readily visible and seen at relatively close proximity.

165. The impact of Phase Two would be the same as assessed in respect of the Single Phase approach assessed above, giving rise to a **significant** impact. Overall, the duration of the impact would be increased over a longer period of time.

29.7.1.3.8 Single Phase: Potential Impacts of Substation Construction on Viewpoint 12

166. It is assumed East Anglia ONE converter station would be operational and visible as a large scale structure. The construction of East Anglia THREE substation would occur to the fore of East Anglia ONE converter station, making it a closer range feature to the viewpoint. While some screening would occur from the intervening woodland, the construction works would be readily visible in the gap between Bushey Grove and Gobert's Grove. The addition of the construction works to a view in which the East Anglia ONE converter station is already a prominent feature would give rise to a **significant** impact.

29.7.1.3.9 Two Phased: Potential Impacts of Substation Construction on Viewpoint 12

167. In the Two Phased approach to construction it would be the converter hall or substation hall closest to East Anglia ONE that would be constructed during phase one and then the converter hall or substation hall adjacent to the east that would be constructed during phase two. The impact of the construction of phase one would have a slightly lesser impact than the Single Phase assessed above, as the construction would be seen at a slightly longer range from the viewpoint and seen to occupy a slightly more contained horizontal extent. The impact of phase one would be **significant** as the construction works would be readily visible and seen at relatively close proximity.

168. The impact of phase two would be the same as assessed in respect of the Single Phase approach assessed above, giving rise to a **significant** impact. Overall, the duration of the impact would be increased over a longer period of time.

Table 29.9 Summary of Impacts of Landfall Location, Onshore Cable Route and Substation Construction

Project Stage / Receptor Type	Receptor / Project stage	Sensitivity	Magnitude of change	Significance of impact	Duration
Construction of Landfall Location					
Physical elements	Beach	Medium to low	Medium to low	Not significant	SP: Very short-term TP: Short-term
	Cliffs / cliff top	Medium to high	Medium to high in area of access road Medium to low in remaining areas	Significant in area of access route Not significant in remaining areas	SP: Very short-term TP: Short-term
	Agricultural land	Low	Medium	Not significant	SP: Very short-term TP: Short-term
Landscape character receptors	Rolling Estate Sandlands LCT	Medium to high	Medium to low	Not significant	SP: Very short-term TP: Short-term
	Suffolk Coast and Heaths AONB	Medium to high	Medium to low	Not significant	SP: Very short-term TP: Short-term
Visual receptors	Suffolk Coast Path	Medium to high	Medium to low	Not significant	SP: Very short-term TP: Short-term
Construction of Onshore Cable Route					
Physical elements	Agricultural land	Low	Low	Not significant	Short-term
	Marshy grassland and swamp / Calciferous grassland	Medium	Medium to low	Not significant	Short-term
	Hedgerow / Hedgerow trees	Medium to high	Medium to low	Not significant	Short-term

Project Stage / Receptor Type	Receptor / Project stage	Sensitivity	Magnitude of change	Significance of impact	Duration
	Trees and woodlands	Medium to high	Medium to low	Not significant	Short-term
	Watercourses	High	Medium to low	Not significant	Short-term
Landscape Character Section 1	Rolling Estate Sandlands	Medium to high	Medium to low	Not significant	Short-term
Section 2	Rolling Estate Sandlands / Coastal Levels / Plateau Estate Farmlands	Medium to high	Medium to low	Not significant	Short-term
	Saltmarshes and Intertidal Flats	Medium to high	Medium to low	Not significant	Short-term
Section 3	Rolling Estate Sandlands / Estate Sandlands/ Plateau Estate Farmlands	Medium to high	Medium to low	Not significant	Short-term
	Valley Meadowlands	Medium to high	Medium to low	Not significant	Short-term
Section 4	Rolling Estate Sandlands / Estate Sandlands	Medium to high	Medium to low	Not significant	Short-term
Section 5	Valley Meadowlands / Rolling Valley Farmlands and Furze	Medium to low	Medium to low	Not significant	Short-term
Section 6	Ancient Rolling Farmlands / Rolling Valley Farmlands and Furze	Medium to high	Medium to low	Not significant	Short-term
Section 7	Ancient Rolling Farmlands / Rolling Valley Farmlands and Furze	Medium to high	Medium to low	Not significant	Short-term
Section 8	Ancient Rolling Farmlands / Rolling Estate Farmlands	Medium	Medium to low	Not significant	Short-term
Section 9	Ancient Plateau Claylands / Rolling Valley Farmlands /	Medium	Medium to low	Not significant	Short-term

Project Stage / Receptor Type	Receptor / Project stage	Sensitivity	Magnitude of change	Significance of impact	Duration
	Valley Meadowlands				
Suffolk Coast and Heaths AONB	Saltmarsh and Intertidal Flats / Valley Meadowlands / Coastal Levels / Estate Sandlands / Rolling Estate Sandlands / Estate Farmlands	Medium to high	Medium to low	Not significant	Short-term
Section 1	Walkers	Medium to high	Medium to low	Not significant	Short-term
	Road-users	Medium	Medium to low	Not significant	Short-term
Section 2	Walkers	Medium	Medium to low	Not significant	Short-term
	River-users	Medium	Medium to low	Not significant	Short-term
Section 3	Walkers / horse riders	Medium	Medium to low	Not significant	Short-term
	Road-users	Medium to low	Medium to low	Not significant	Short-term
Section 4	Walkers / horse riders	Medium to high	Medium to low	Not significant	Short-term
	Residents	Medium to high	Medium to low	Not significant	Short-term
	Road-users	Medium to low	Medium to low	Not significant	Short-term
	Cyclists	Medium	Medium to low	Not significant	Short-term
Section 5	Walkers	Medium	Medium to low	Not significant	Short-term
	Residents	Medium	Medium to low	Not significant	Short-term
	Road-users	Medium to low	Medium to low	Not significant	Short-term
Section 6	Walkers	Medium to high	Medium to low	Not significant	Short-term
	Residents	Medium to high	Low	Not significant	Short-term
	Road-users	Medium	Medium to low	Not significant	Short-term
	Cyclists	Medium	Medium to low	Not significant	Short-term
Section 7	Walkers	Medium to	Medium to low	Not significant	Short-term

Project Stage / Receptor Type	Receptor / Project stage	Sensitivity	Magnitude of change	Significance of impact	Duration
		high			
	Road-users	Medium to low	Medium to low	Not significant	Short-term
Section 8	Walkers / horse riders	Medium	Medium to low	Not significant	Short-term
	Road-users	Medium to low	Medium to low	Not significant	Short-term
Section 9	Walkers	Medium	Medium to low	Not significant	Short-term
	Road-users	Medium to low	Medium to low	Not significant	Short-term
Construction of Substation					
Physical Elements	Agricultural land	Low	Low	Not significant	Long-term
	Trees and hedgerows	Medium to high	Low	Not significant	Long-term
Landscape Character	Ancient Plateau Claylands: 800m to north and east,	Medium	Medium to high	Significant	Short-term
	Ancient Plateau Claylands: remaining area	Medium	Low	Not significant	Short-term
Visual Amenity	VP 10 – PRoW 155/047/0, near Fidgeon’s Farm	Medium - walkers	Medium to low	Not significant	Short-term
	VP 11 – PRoW 155/002/0, near Bullenhall Farm	Medium - walkers	Medium	Significant	Short-term
	VP12 – PRoW 155/003/0, near Tye House	Medium – walkers / residents low – road-users	Medium to high	Significant – walkers / residents Not significant – road-users	Short-term

29.7.2 Potential Impacts of Landfall Location, Onshore Cable Route and Substation Operation.

29.7.2.1 Potential Impacts of Landfall Location and Onshore Cable Route Operation

169. Under both the Single Phase and Two Phased approach, the operational impacts of the project would be similar, each requiring limited maintenance along the landfall and onshore cable route. As a worst case scenario, it is assumed one visit per year per jointing bay would be made for maintenance purposes. Routine maintenance works during operation would either be via excavation at jointing bays or inspection of above-ground kiosks.

170. Once the construction phase is complete and the proposed East Anglia THREE project is operational, there would be limited visible evidence of the landfall location and the onshore cable route as they would be concealed below ground surface. Kiosks, if used, would be located at each of the jointing bays and would be the only above ground feature on the onshore cable route. It is assumed that the proposed East Anglia ONE project would also be operational and this would, therefore, also be concealed below ground surface.

29.7.2.1.1 Potential Impacts of Landfall Location and Onshore Cable Route on Physical Elements

171. The potential impacts during operation on the physical elements would be **not significant**, as no further removals or alterations would occur and where gaps in hedgerows had been formed during the construction phase, during the operational phase re-planting would gradually grow to infill these gaps.

29.7.2.1.2 Potential Impacts of Landfall Location and Onshore Cable Route on Landscape Character

172. The potential impacts during operation on landscape character would be **not significant**, as there would be no visible evidence of the constructed components, other than the intermittent, small scale and relatively discreet kiosks, and no further presence of construction works or machinery. While there would be residual impacts on landscape character and visual amenity relating to the time required for hedgerow vegetation to re-establish, the impact would be **not significant** owing to the limited extent of these impacts in relation to the wider extents of the LCTs and the AONB, and the gradual reduction in these impacts as the vegetation grows.

29.7.2.1.3 Potential Impacts of Landfall Location and Onshore Cable Route on Visual Amenity

173. The potential impacts during operation on visual amenity would be **not significant**, as there would be no visible evidence of the constructed components, other than the intermittent, small scale and relatively discreet kiosks, and no further presence of construction works or machinery. While there would be residual impacts on

visual amenity relating to the time required for hedgerow vegetation to re-establish, the impact would be **not significant** owing to the limited extent of these impacts in relation to the distance from many of the visual receptors, the existing condition of the hedgerows and the gradual reduction in these impacts as the vegetation grows.

29.7.2.2 Potential Impacts of Substation Operation

174. For the purposes of the assessment it is assumed that the East Anglia ONE converter station would be operational. This has an influence on the assessment of the East Anglia THREE substation because from some directions the East Anglia ONE converter station would screen visibility of the East Anglia THREE substation, while, from other directions, the buildings would be seen in conjunction with one another and would therefore give rise to a cumulative impact.

29.7.2.2.1 Potential Impacts of Substation Operation on Physical Elements

175. Once operational, the impacts would be **not significant** as there would be no further loss or alteration to the physical elements of the landscape. Mitigation planting, which would have been established as part of East Anglia ONE would occur to the south-west, east and immediate north. The trees would be planted on a 5m high earth bund to the south-west and a 2m bund to the east, which would add to the height of the screening effect. It is anticipated that it would take 20 years for the trees to reach 10m.

29.7.2.2.2 Potential Impacts of Substation Operation on Landscape Character

176. The substation would be located in the Ancient Plateau Claylands LCT and the **significant** impacts would occur 800m to the north and east. The presence of mitigation planting to the north and east would limit the duration of the significant impacts to the first 15 years by which time the planting would have established sufficiently enough to reduce the influence of the substation on the character of the landscape. For the remaining 10 years of the likely project duration, the impacts would be **not significant**.

29.7.2.2.3 Potential Impacts of Substation Operation on Visual Amenity

177. Viewpoint 10: It is assumed that the East Anglia ONE converter station would be operational and visible as a long and low roofline seen above the intervening tree cover. The East Anglia THREE substation would occur to the fore (east) of the East Anglia ONE converter station, with the alignment between the two similar, such that the buildings would typically be seen as one mass, with the East Anglia THREE substation forming a small increase in the extent of development. Existing tree cover would screen the lower parts of both buildings, such that only the roof structure would be visible above the tree tops. While mitigation planting would take 25 years to reach a comparable 12 metres, in the interim it would bolster the

existing tree planting, giving the screening effect more depth and substance. Taking all these factors into account, the impact would be **not significant**.

178. Viewpoint 11: It is assumed the East Anglia ONE converter station would be operational and in Viewpoint 11, visible as a large-scale double shed. The East Anglia THREE substation would occur to the fore of the East Anglia ONE converter station, and would be readily visible from this viewpoint and sections of the PRoW in either direction. The East Anglia THREE substation would align closely with the East Anglia ONE converter station, such that overall, there would only be a minor increase in the extent of development. The closer range of the East Anglia THREE substation would, however, make it appear larger in scale and the additional breadth of the combined developments would be evident. Mitigation planting along the eastern side of the East Anglia THREE substation would gradually reduce the magnitude of change as it grows to screen up to the roofline. The impact would be **significant** for the first 15 years and then **not significant** for the last 10 years of the 25 year consent period.
179. Viewpoint 12: It is assumed that the East Anglia ONE converter station would be operational and in Viewpoint 12, visible as a large-scale structure. The East Anglia THREE substation would occur to the fore of the East Anglia ONE converter station, making it a closer range feature to the viewpoint. While some screening would occur from the intervening woodland, the East Anglia THREE substation would be readily visible in the gap between Bushey Grove and Gobert's Grove. Mitigation planting along the northern side of the East Anglia THREE substation would gradually reduce the magnitude of change as the planting grows to screen the majority of the substation. The impact would be **significant** for the first 15 years and then **not significant** for the last 10 years of the 25 year consent period.

Table 29.10 Summary of Impacts of Landfall Location, Onshore Cable Route and Substation Operation

Project Stage / Receptor Type	Receptor / Project stage	Sensitivity	Magnitude of change	Significance of impact	Duration
Operation of Landfall Location					
Physical elements	Beach / Cliff / Agricultural land	Medium to low / medium to high / low	Low / negligible	Not significant	Long-term
Landscape character receptors	Rolling Estate Sandlands Suffolk Coast and Heaths AONB	Medium to high	Low / negligible	Not significant	Long-term
Visual receptors	Suffolk Coast Path	Medium to high	Low / negligible	Not significant	Long-term

Project Stage / Receptor Type	Receptor / Project stage	Sensitivity	Magnitude of change	Significance of impact	Duration
Operation of Onshore Cable Route					
Physical elements	Agricultural land / marshy grassland / hedgerows / hedgetrees / trees / woodland / water courses	Variable between low and high	Low / negligible	Not significant	Long-term
Landscape character receptors	All LCTs Suffolk Coast and Heaths AONB	Variable between medium and medium to high	Low / negligible	Not significant	Long-term
Visual receptors	All PRoWs / Bridleways / NCRs / minor roads / roads and railways / residential areas / rivers	Variable between low and medium to high	Low / negligible	Not significant	Long-term
Operation of Substation					
Physical elements	Agricultural land Trees and hedgerows	Low Medium to high	No change	Not significant	Long-term
Landscape Character	Ancient Plateau Claylands: 800m to north and east	Medium	Medium to high	Significant year 0-15	Long term
	Ancient Plateau Claylands: 800m to north and east	Medium	Medium	Not significant year 15-25	Long term
	Ancient Plateau Claylands: Remaining areas	Medium	Low	Not significant	Long-term
Visual Amenity	VP 1- Offton Road, near Elmsett Village	Medium to low – road-users	Medium to low	Not significant	Long-term
	VP2 – Flowton Village	Medium – walkers / residents Medium to low – road-users	Medium to low	Not significant	Long-term
	VP3 –Flowton to Burstallhill Minor Road	Medium	Medium to low	Not significant	Long-term

Project Stage / Receptor Type	Receptor / Project stage	Sensitivity	Magnitude of change	Significance of impact	Duration
	VP4 – Minor Road to Hintlesham Priory	No impact due to lack of visibility			
	VP5 – Orchard lands, near Canes Farm	Medium – walkers / residents medium to low – road-users	Medium	Not significant	Long term
	VP 6 – PRoW 147/006/0, near Hill Farm	Medium - walkers	Medium	Not significant	Long term
	VP7 - Burstall	Medium	Medium	Not significant	Long term
	VP8 – A1071, near Valley Farm	No impact due to lack of visibility			
	VP9 – Thornbush Hall	Medium	Low	Not significant	Long term
	VP 10 – PRoW 155/047/0, near Fidgeon’s Farm	Medium - walkers	Medium	Not significant	Long term
	VP 11 – PRoW 155/002/0, near Bullenhall Farm	Medium	Medium year 0-15 Medium to low year 15-25	Significant year 0-15 Not significant year 15-25	Long term
	VP12 – PRoW 155/003/0, near Tye House	Medium – walkers / residents Low – road-users	Medium to high – year 0-15 Medium year 15-25	Significant year 0-15 Not significant year 15-25	Long term
	VP13 – Tye Lane	No impact due to lack of visibility			
	VP14 – Valley Road, near Nettlestead	No impact due to lack of visibility			
	VP15 – Church Hill, near Canes Farm	Medium to low	Low	Not significant	Long-term
	VP16 – PRoW 155/003/0, north-east of site	Medium	Medium to Low	Not significant	Long-term

29.7.3 Potential Impacts of Landfall Location, Onshore Cable Route and Substation Decommissioning

180. It is anticipated that the landfall location and onshore cable route would be decommissioned and the cables left in-situ. The kiosks at the jointing bays would be removed. This means that there would be no further impact on the landscape and visual receptors.
181. There would be no impact on the physical elements. The magnitude of change on the landscape character types, designated AONB and SLA, and visual receptors would be low at the most. Even with variable sensitivities attributed to these receptors at the landfall location and along the length of the onshore cable route, the impacts would be **not significant**, owing to the absence of any high sensitivity receptors and the anticipated low magnitudes of change.
182. If the decommissioning of the substation location does not involve the re-use of the site for future developments, the buildings would be removed. This would reduce the extent of built development and allow for the restoration of the physical elements of the agricultural landscape to take place. The magnitude of change would be low and the impacts of decommissioning on the physical elements would be **not significant**.
183. The decommissioning of the substation location would introduce temporary structures, temporary lighting and traffic movements of machinery, which although associated with the existing development, would appear at variance with the rural character of the surrounding landscape. Mitigation planting around the substation location would, by the end of the 25 year consent, have reached approximately 12m, and would screen most of the ground level operations. The deconstruction of the substation location, especially at the higher levels and where temporary lighting is required, would give rise to a medium to low magnitude of change on the landscape and visual receptors, and factoring in the short term and localised extents of the impacts, they would be **not significant**.

Table 29.11. Summary of Impacts of Landfall Location, Onshore Cable Route and Substation during Decommissioning

Project Stage / Receptor Type	Receptor / Project stage	Sensitivity	Magnitude of change	Significance of the impact	Duration
Decommissioning of Landfall					
Physical elements	Beach / Cliff / Agricultural land	Medium to low / Medium to high / low	Low / negligible	Not significant	Short-term
Landscape character receptors	Rolling Estate Sandlands Suffolk Coast and Heaths AONB	Medium to high	Low / negligible	Not significant	Short-term
Visual receptors	Suffolk Coast Path Ferry Road	Medium to high / medium	Low / negligible	Not significant	Short-term
Decommissioning of Onshore Cable Route					
Physical elements	Agricultural land / marshy grassland / hedgerows / hedgetrees / trees / woodland / water courses	Variable between low and high	Low / negligible	Not significant	Short-term
Landscape character receptors	All LCTs Suffolk Coast and Heaths AONB	Variable between medium and medium to high	Low / negligible	Not significant	Short-term
Visual receptors	All PRoWs / Bridleways / NCRs / minor roads / roads and railways / residential areas / rivers	Variable between low and medium to high	Low / negligible	Not significant	Short-term
Decommissioning of Substation					
Physical elements	Agricultural land Trees and hedgerows	Low Medium to high	Low	Not significant	Short-term
Landscape character	Ancient Plateau Claylands	Medium	Low	Not significant	Short-term
Visual amenity	All viewpoints	Variable: low-medium	Low	Not significant	Short-term

29.8 Cumulative Impacts

29.8.1 Introduction

184. The cumulative assessment of landscape and visual impacts considers the potential for cumulative impacts to arise in relation to other developments. *Table 29.12* lists other wind farm and major infrastructure projects which are potentially relevant to the proposed East Anglia THREE project along with an initial assessment as to whether the potential cumulative impacts require to be assessed in detail in this Cumulative Landscape and Visual Assessment (CLVIA). The assessment of residual impacts in section 29.7 highlights the fact that significant impacts are more likely to relate to the substation than the landfall location or onshore cable route. In respect of the CLVIA, this is also true as the substations and converter station would be the most visible and readily apparent components of the onshore electrical transmission works, while the onshore cable route and landfall location would be relatively discreet within the wider landscape, especially once beyond construction.
185. East Anglia ONE forms part of the predicted baseline, based on the assumption that the East Anglia ONE converter station would be built prior to the construction of the proposed East Anglia THREE substation. Reference is made to the presence of the East Anglia ONE converter station in the cumulative assessment, in respect of how it influences the overall cumulative effect.

Table 29.12 Summary of Projects considered for the CLVIA

Project	Status	Construction / Operation period	³ Approx. Distance from East Anglia THREE (km)	Project definition	Project data status	Included in CIA	Rationale
East Anglia ONE	Application	2018 –2019 / 25 years	0	Offshore Windfarm Project Project description available	Complete / high	Yes	Location of East Anglia ONE largely coincides with East Anglia THREE project. Impacts considered as part of predicted baseline.
A future EAOW project	Pre- application	No information	0	Offshore Windfarm Project Outline project data only	Incomplete / low	Yes	Location of a future EAOW project largely coincides with East Anglia THREE project therefore high potential for cumulative impacts to arise.
Sizewell C	Pre- application	Unknown	24.7	Nuclear Power Station No project detail available	Low	No	The distance between Sizewell C and the East Anglia THREE project limits the potential for significant cumulative impacts to arise.
Bramford- Twinstead	Pre- application	Unknown	0	Outline only	Complete / high	No	Insufficient information available to inform a CLVIA.
SITA (EFW plant)	In construction	Present – late 2014	0.5	Energy From Waste Plant Project description available	Complete / high	No	The distance between SITA and the East Anglia THREE substation combined with extent of woodland cover, limits the potential for significant

³ Shortest distance between the considered project and East Anglia THREE– unless specified otherwise.

Project	Status	Construction / Operation period	³ Approx. Distance from East Anglia THREE (km)	Project definition	Project data status	Included in CIA	Rationale
SnOasis	Planning permission granted	Unknown	0.7	Winter sport centre. Master plans available	Incomplete / low	No	cumulative impacts to arise and it is unlikely for significant cumulative impacts to arise in relation to the onshore cable route despite proximity. The distance between SnOasis and the East Anglia THREE substation limits the potential for significant cumulative impacts to arise and it is unlikely for significant cumulative impacts to arise in relation to the onshore cable route despite proximity.
Old Fisons site (land west of Paper Mill Lane)	Planning application TBD	Unknown	0.7	Business park and housing scheme. Master plans available	Complete / high	No	The distance between Old Fison's site and the East Anglia THREE substation limits the potential for significant cumulative impacts to arise and it is unlikely for significant cumulative impacts to arise in relation to the onshore cable route despite proximity.
Adastral park	Planning application TBD	Unknown	0.8	Business park and housing scheme. Master plans available	Complete / high	No	The distance between Adastral Park and the East Anglia THREE substation limits the potential for significant cumulative impacts to arise in relation to the onshore cable route despite proximity.

Project	Status	Construction / Operation period	³ Approx. Distance from East Anglia THREE (km)	Project definition	Project data status	Included in CIA	Rationale
Ipswich Garden Suburb	Identified in adopted Core Strategy	Primarily after 2020	3	Urban development north of Ipswich. Master Plan at consultation phase.	Incomplete/medium	No	arise and it is unlikely for significant cumulative impacts to arise in relation to the onshore cable route despite proximity. Greenfield site. No overlap with landfall, onshore cable route or substation(s) location. Due to distance and extent of intervening landform and tree cover there will be practically no inter-visibility.
Progress Power, Eye, Suffolk	Consented	Construction 2017-18, Operation by 2019.	28	Gas fired power station development	Complete / high	No	No overlap with landfall, onshore cable route or substation(s) location. Likely to be constructed prior to East Anglia THREE commencement.
Land North Of Woods Lane, Melton, Suffolk	Conditionally Allowed	Unknown	2.7	Outline planning for a residential development for 180 dwellings (8.27ha in size) to include open space and provision of ecological habitat areas.	High	No	No overlap with landfall, onshore cable route or substation(s) location, too distant to impact same receptors.

186. *Table 29.12* shows that the potential for significant cumulative impacts arises in relation to East Anglia ONE⁴ and a future EAOW project but none of the other projects. Owing to the relatively low level and short-term nature of the works associated with the landfall location and onshore cable route, the potential for cumulative impacts would be limited. In respect of the East Anglia THREE substation there is greater potential for cumulative impacts to arise in relation to the scale of the building and its longer term presence. The extent of the enclosure of mature tree cover in the rural landscape combined with the limited number of large scale developments in close proximity, reduces this potential.
187. Through the consultation process the potential cumulative impact with the SITA (EfW) Plant has been cited as a concern. This is located south of Great Blakenham close to junction 52 of the A14 and a distance of 4.2km from the East Anglia THREE substation. The ZTV in *Figure 29.6* shows that theoretical visibility is patchy across the north-east sector of the study area that lies between the East Anglia THREE substation and the SITA (EfW) Plant. Taking into account the extent of woodland cover around the substation and tree belts across the landscape to the north-east, it is unlikely that there would be inter-visibility between the two developments. The separation between the developments means that if inter-visibility were to arise, either one or both of the developments would be at a sufficient distance from the landscape or visual receptor to not have a notable influence. For example, the mid-point between the two developments would be approximately 2km from which range neither of the developments would have a notable influence.
188. In respect of the potential for sequential impacts, the limited possibility of visibility of each development across parts of the study area, other than the close range surroundings, means that this type of impact is unlikely to arise. Furthermore, although the developments have the commonality of being large in scale, their appearance and function would be very different and this further weakens the potential for cumulative impacts.
189. The cumulative scenario of the proposed East Anglia THREE project being added to a cumulative baseline comprising East Anglia ONE constitutes the predicted baseline situation, which has been assessed in detail in section 29.7. The remaining cumulative scenario which requires detailed assessment is the cumulative scenario in which the East Anglia THREE substation is seen in conjunction with the East Anglia ONE converter station and a future EAOW project substation. The potential for

⁴ As discussed previously in section 29.3.2 this is based on the consented dimensions of the East Anglia ONE converter station

cumulative impacts relates only to the substation component of the proposed East Anglia THREE project and not the landfall location or onshore cable route.

190. The proposed East Anglia THREE project would not give rise to significant cumulative impacts in respect of the landfall location or onshore cable route. The onshore construction phases for East Anglia ONE, East Anglia THREE and a future EAOW project would not coincide. The construction phase of East Anglia THREE, in respect of all cumulative scenarios, would take place either when the other projects did not exist or were operational. If they were operational, there would be little visible evidence of the landfall location or the onshore cable route, as the components of both would be largely concealed below ground. The addition of the East Anglia THREE substation to either of these situations would therefore be **not significant**. As the significant impacts all relate to the construction phase and the construction phases would not coincide, all impacts during the construction phase would be solely attributable to East Anglia THREE, with no cumulative impacts arising. This assessment would apply in respect of both the Single Phase and Two Phased approach. In the Two Phased approach, the impacts would remain the same, only spread across two phases and therefore longer in duration.
191. The cumulative scenario is assessed at the construction, operation and decommissioning phases of the proposed East Anglia THREE project, considering the impacts on physical elements, landscape character and visual amenity.
192. There is the potential that the addition of the East Anglia THREE substation to the cumulative scenario would give rise to significant cumulative impacts. *Table 29.13* below provides an initial assessment of the potential for such impacts to arise. Many of the viewpoints are discounted from the detailed cumulative assessment owing to the limited extent to which the East Anglia THREE substation, or the East Anglia ONE converter station and a future EAOW project substation are visible, either as a result of distance, the screening effect of intervening woodland or the screening effect of the converter station or substations of one another. In these instances, the impacts are assessed as not significant. The shaded cells in the table indicate which viewpoints are to be assessed in detail.

Table 29.13. Potential Cumulative Impacts on Visual Amenity

Visual Receptor	Cumulative Scenario
VP 1- Offton Road, near Elmsett Village	East Anglia THREE and a future EAOW project substations would be distant and partially screened by intervening woodland.
VP2 – Flowton Village	East Anglia THREE substation would be partially screened and a future EAOW project substation would be fully screened by intervening woodland.
VP3 –Flowton to Burstallhill Minor Road	A future EAOW substation would be largely screened by intervening woodland.
VP4 – Minor Road to Hintlesham Priory	East Anglia THREE and a future EAOW project substations would be screened by intervening woodland.
VP5 – Orchard Lands, near Canes Farm	A future EAOW project substation would not be visible from this viewpoint owing to screening by East Anglia THREE substation.
VP 6 – PROW 147/006/0, near Hill Farm	A future EAOW project substation would be screened by intervening woodland.
VP7 - Burstall	A future EAOW project substation would be partially set below horizon and screened by intervening woodland.
VP8 – A1071, near Valley Farm	East Anglia THREE and a future EAOW project substation would be distant and screened by intervening woodland.
VP9 – Thornbush Hall	East Anglia THREE and a future EAOW project substations would be screened by intervening woodland.
VP 10 – PRoW 155/047/0, near Fidgeon’s Farm	East Anglia THREE and a future EAOW project substations would be visible from this viewpoint with the potential to give rise to a significant cumulative impact.
VP 11 – PRoW 155/002/0, near Bullenhall Farm	A future EAOW project substation would be partially screened by intervening woodland and located in portion of the view where pylons are concentrated.
VP12 – PRoW 155/003/0, near Tye House	East Anglia THREE substation would be screened by a future EAOW project substation.
VP13 – Tye Lane	No visibility of East Anglia THREE substation.
VP14 – Valley Road, near Nettlestead	East Anglia THREE and a future EAOW project substations would be distant and partially screened by intervening woodland.
VP15 – Church Hill, near Canes Farm	East Anglia THREE and a future EAOW project substations would be screened by intervening woodland.
VP16 – PRoW 155/003/0, north-east of site	East Anglia THREE substation would be screened by intervening woodland.

193. The initial assessment shows that potential for significant cumulative impacts to arise occurs at Viewpoint 10: PRoW Bramford 155/047/0, near Fidgeon's Farm. The cumulative assessment for this viewpoint is presented below in relation to the construction, operation and decommissioning phases of the proposed East Anglia THREE project.

29.8.2 Cumulative Impacts of Substation Construction

29.8.2.1 Cumulative Impacts of Substation Construction on Physical Elements

194. For the purposes of the cumulative assessments it is assumed that East Anglia ONE and a future EAOW project would be operational.

195. Each of the substations would have similar impacts on the physical elements of the site where they are constructed, relating to the loss of agricultural land and the potential removal of select hedgerow and trees. There would be a cumulative impact on physical elements, as the addition of the East Anglia THREE substation to the East Anglia ONE converter station and a future EAOW project substation, would increase the loss of agricultural land and the potential removal of hedgerows and trees.

29.8.2.2 Cumulative Impacts of Substation Construction on Physical Elements

196. The cumulative impact of the East Anglia THREE substation on the physical elements would be **not significant**. The main loss would be of agricultural land, however owing to the low sensitivity of the intensive arable agricultural land and its extent across the wider landscape, the impact of the loss would be **not significant**. This assessment would apply in respect of both the Single Phase and Two Phased approach. In the Two Phased approach, the impacts would remain the same, only spread across two phases and therefore longer in duration.

197. The extent of hedgerow loss is very small in proportion to the wider provision, even taking into account the cumulative loss in relation to the East Anglia ONE converter station and a future EAOW project substation. Furthermore, much more extensive tree and hedgerow planting would occur as part of mitigation planting around the site.

29.8.2.3 Cumulative Impacts of Substation Construction on Landscape Character

198. The East Anglia ONE converter station and a future EAOW project substation would be located in the same Ancient Plateau Claylands LCT in which the proposed East Anglia THREE substation would be located. The converter station and substations would be located in close proximity and there would be the potential for a cumulative impact to arise on the landscape character of the Ancient Plateau Claylands LCT. The landscape surrounding the converter station and substations is

not subject to any national or local landscape designations and, therefore, the Ancient Plateau Claylands LCT is the only landscape receptor to be assessed.

199. The addition of the East Anglia THREE substation to the East Anglia ONE converter station and a future EAOW project substation would generally give rise to **not significant** impacts. This is as a result of the screening of the construction works by the existing buildings in combination with the existing screening provided by the intervening woodland. Where there is the potential for a significant cumulative impact to arise in the landscape to the north, the location of a future EAOW project substation to the fore of East Anglia THREE substation would greatly reduce the cumulative magnitude of change.
200. The one exception where screening would not reduce the magnitude of change, occurs to the east where the construction of the East Anglia THREE substation would be seen to the fore of the existing East Anglia ONE converter station and a **significant** impact would arise out to 800m in this direction. The establishment of mitigation planting to the east would limit the duration of the significant impacts to the first 15 years by which time the planting would have established sufficiently enough to reduce the influence of the substation on the character of the landscape. For the remaining 10 years of the consent period, the impacts would be **not significant**. This assessment would apply in respect of both the Single Phase and Two Phased approach. In the Two Phased approach, the impacts would remain the same, only spread across two phases and therefore longer in duration.

29.8.2.4 Cumulative Impacts of Substation Construction on Visual Amenity

201. An initial assessment regarding the potential for cumulative impacts to arise in relation to visual amenity is set out in *Table 29.13*. In respect of the cumulative scenario, only Viewpoint 10 is considered to have potential to give rise to significant cumulative impacts.
202. It is assumed that the East Anglia ONE converter station and a future EAOW project substation would be operational and in Viewpoint 10, visible as two separate large scale structures, both partially screened at the lower level by tree cover. The construction of the East Anglia THREE substation would occur to the fore of the East Anglia ONE converter station, and to the left of a future EAOW project substation, such that it would increase the extents of development to a small extent, albeit within the parameters of the existing converter station and substation. The partial screening from the intervening tree cover would moderate the cumulative magnitude of change such that it would be medium to low and the cumulative impact would be **not significant**. This assessment would apply in respect of both the Single Phase and Two Phased approach. In the Two Phased approach, the impacts

would remain the same, only spread across two phases and therefore longer in duration.

29.8.3 Cumulative Impacts of Substation Operation

29.8.3.1 Cumulative Impacts of Substation Operation on Landscape Character

203. The addition of the East Anglia THREE substation to the East Anglia ONE converter station and a future EAOW project substation would generally give rise to not significant impacts. This is principally as a result of the location of the East Anglia THREE substation in the middle of the East Anglia ONE⁵ converter station and a future EAOW project substation, which, in combination with the intervening woodland, means that the East Anglia THREE substation is often fully or partially screened. The one exception occurs to the east where the East Anglia THREE substation would be seen to the fore of the existing East Anglia ONE converter station and a significant impact would arise out to 800m in this direction.

29.8.4 Cumulative Impacts of Substation Operation on Visual Amenity

29.8.4.1.1 Viewpoint 10

204. It is assumed that the East Anglia ONE converter station and a future EAOW project substation would be operational and in Viewpoint 10, visible as two separate large scale structures, both partially screened at the lower level by tree cover. The East Anglia THREE substation would occur to the fore of the East Anglia ONE converter station, and to the left of a future EAOW project substation, such that it would increase the extent of development by a small amount, albeit in the parameters of the existing converter station and substation. The partial screening from the intervening tree cover would moderate the cumulative magnitude of change such that it would be medium to low and the cumulative impact would be **not significant**. This assessment would apply in respect of both the Single Phase and Two Phased approach. In the Two Phased approach, the impacts would remain the same, only spread across two phases and therefore longer in duration.

29.8.5 The Cumulative Impacts of Substation Decommissioning

29.8.5.1 Cumulative Impacts of Substation Decommissioning on Landscape Character

205. The screening effect of the existing woodland, plus the mitigation planting which would have grown to approximately 12m over the 25 year consent period, would largely screen the ground level decommissioning works from the surrounding landscape in all directions. While higher level decommissioning works would be

⁵ As discussed previously in section 29.3.2 this is based on the consented dimensions of the East Anglia ONE converter station

visible above the tree tops, the extent and duration of this visibility would lead to a **not significant** impact on landscape character.

29.8.5.2 Cumulative Impacts of Substation Decommissioning on Visual Amenity

206. It is assumed that the East Anglia ONE converter station and a future EAOW project substation would be operational and in Viewpoint 10, visible as roofs, seen above the intervening tree cover. It is likely that the East Anglia ONE converter station would be decommissioned prior to the decommissioning of the East Anglia THREE substation. At the end of the likely 25 year period of consent, when decommissioning would take place, the mitigation planting proposed for the eastern side of the East Anglia THREE substation, in combination with the existing tree cover would screen the majority of the decommissioning works, with the exception of the higher level operations involving cranes and the deconstruction of the building. Taking these factors into account, the cumulative magnitude of change would be medium to low and the cumulative impact would be **not significant**.

29.8.6 Summary of Cumulative Impacts

Table 29.14. Summary of Cumulative Impacts of Substation

Project stage / Receptor type	Landscape / Visual receptors	Sensitivity	Cumulative Impact
Physical elements	Agricultural land	Low	Not significant
	Trees and hedgerows	Medium to high	Not significant
Landscape character	Ancient Plateau Claylands	Medium	Significant 800m to east Not significant in all remaining areas
	VP 10 – PROW 155/047/0, near Fidgeon’s Farm	Medium to low	Not significant
	VP 11 – PROW 155/002/0, near Bullenhall Farm	Medium	Not significant
	VP12 – PROW 155/003/0, near Tye House	Medium – walkers / residents Low – road-users	Not significant
Landscape character	Ancient Plateau Claylands:	Medium	Significant 800m to east year 0-15 Not significant 800m to east, year 15-25 Not significant in all remaining areas
	VP 10 – PROW 155/047/0, near Fidgeon’s Farm	Medium	Not significant
	VP 11 – PROW 155/002/0, near Bullenhall Farm	Medium	Not significant
	VP12 – PROW 155/003/0, near Tye House	Medium – walkers / residents Medium to low – road-users	Not significant
Landscape character	Ancient Plateau Claylands	Medium	Not significant
Visual amenity	VP 10 – PROW 155/047/0, near Fidgeon’s Farm	Medium	Not significant
	VP 11 – PROW 155/002/0, near Bullenhall Farm	Medium	Not significant
	VP12 – PROW 155/003/0, near Tye House	Medium – walkers / residents Medium to low – road-users	Not significant

207. The assessment shows the limited occurrence of significant cumulative impacts in relation to the proposed East Anglia THREE project, which includes localised impacts on landscape character during the construction and operation stages in relation to the cumulative scenario with East Anglia ONE and a future EAOW project. This relates to a combination of three factors; the screening effect of existing woodland cover around the converter station and substations, the screening effect of the converter station and substations to each other; and the screening effect of the proposed mitigation planting.
208. The location and maturity of the existing woodland cover and tree belts around the converter station and substations, means that in certain directions one or more of the converter station and substations are partially or fully screened. In these instances the cumulative magnitude of change is reduced as the buildings are not seen to their full extents and often a scale comparison with the closer range trees arises which helps to reduce the perceived scale of the buildings.
209. The close proximity of the buildings to one another, especially the East Anglia THREE substation(s) and the East Anglia ONE converter station, means that in certain directions the buildings screen each other. In these instances the cumulative magnitude of change is reduced as the extents to which the converter stations or substation(s) are visible is limited.

29.9 Inter-relationships

210. Inter-relationships exist between the Landscape, Seascape and Visual Amenity and that for Onshore Archaeology and Cultural Heritage. Information from this chapter has been used to help establish any potential landscape character and visual amenity receptors and inform the impact assessment presented here. The Onshore Archaeology and Cultural Heritage chapter makes reference to this chapter. This chapter, however, does not rely on the findings of any other chapters in the ES.

Table 29.15 Chapter Topic Inter-Relationships

Topic and description	Related Chapter	Where addressed in this Chapter
Landscape and Visual Impact Assessment	Onshore Archaeology and Cultural Heritage	29.6.3

29.10 Summary

29.10.1 Landfall Location and Onshore Cable Route Impacts

211. For the purposes of the assessment, it is assumed that East Anglia ONE has already been constructed and is operational. The key implication of this is that many of the

components required for the landfall location and onshore cable route, which are designed to be shared with the proposed East Anglia THREE project, would already be constructed. This greatly reduces the potential impacts associated with the East Anglia THREE landfall location and onshore cable route.

212. As part of East Anglia ONE, a combination of HDD and open-cut trenching construction techniques would be used to install ducts for the onshore cables along the 37km length of the route. Jointing bays, in the 62 locations where the sections of cable route would be joined, would need to be constructed as part of the proposed East Anglia THREE project. The installation of the East Anglia THREE onshore cable route would require the pull through of the cables at each of the jointing bays. This would avoid any further open-cut trenching or HDD construction, although Construction Consolidation Sites for the pull through process would be required.
213. The most notable impacts relating to the landfall location and onshore cable route would occur during the construction phase. These impacts would be moderated by a combination of the following factors. Firstly, the extent of the construction works would be especially localised owing to the existing presence of the ducts, which means activity would be largely concentrated at the intermittent jointing bays. This would greatly reduce the disturbance to the physical elements, landscape character and visual amenity. Secondly, without HDD drilling, the scale of the machinery would be more compact and therefore have a lesser impact on receptors. Thirdly, the impacts which would occur are reversible, with embedded mitigation including the restoration of vegetation where loss or disturbance would occur once construction is complete.
214. The assessment has reported that during the construction phase there would be no significant impacts on any of the landscape or visual receptors, with the exception of the localised and short term impact on the cliffs at Bawdsey, where potentially access onto the beach would be required.
215. The application of the Two Phased approach would require the construction works to be carried out in two separate phases. The magnitude and significance of the impacts assessed in relation to the Single Phase approach would be the same for the Two Phased approach, although the duration of these impacts would be over a longer period of time.
216. Once at the operational phase, there would be very little evidence of the landfall location or onshore cable route as the majority of the components for each would be buried underground, apart from intermittent kiosks, located discreetly at the jointing bays and coloured green to blend in with the landscape. The impacts of the landfall

location and onshore cable route on all landscape and visual receptors during the operational phase would be not significant. The Single Phase and Two Phased approach to construction would have no bearing on the operational phase of the landfall location or onshore cable route.

217. As it is likely that the components of the landfall location and onshore cable route would be left in-situ following decommissioning, the impacts of this phase would also be not significant.
218. There would be no cumulative impacts in relation to the landfall location and onshore cable route.

29.10.2 Substation Impacts

219. For the purpose of the assessment, it is assumed that the East Anglia ONE⁶ converter station is constructed and operational, occupying the land to the immediate west of the East Anglia THREE substation location. The East Anglia THREE substation occupies a relatively flat plateau landscape, which benefits from the screening effect of mature blocks of woodland to the west, north-west and north-east. The presence of the adjacent Bramford Substation partially screens the East Anglia THREE substation to the south and, in association with the pylons, establishes energy infrastructure as part of the baseline character.
220. Embedded mitigation, proposed as part of East Anglia ONE, would already be in place to the south-west, immediate north and east. Further planting as part of the East Anglia THREE embedded mitigation would take place to the north. This area would complement the existing mature planting which provides screening to the north-west, west and north-east. It is predicted that the planting would take 20 years to reach 10m. It would not be sufficiently tall to screen the initial construction phase, but then would increasingly screen the substation during the operational phase.
221. During the construction phase, significant impacts would occur on the landscape character of the Ancient Plateau Claylands LCT within a localised area where the screening effect of the existing mature woodland does not occur, approximately 800m to the east and 800m to the north. The presence of the East Anglia ONE converter station prevents the influence extending to the south-west. Significant impacts would also arise in respect of Viewpoint 11, which lies to the east, and Viewpoint 12, which lies to the north, which are representative of the wider PRoWs and the views of walkers, as well as residents in respect of Viewpoint 12.

⁶ As discussed previously in section 29.3.2 this is based on the consented dimensions of the East Anglia ONE converter station

222. The impacts on all remaining parts of the LCT and on all other landscape and visual receptors during the construction phase would be not significant.
223. During the operational phase, the significant impacts reported above would gradually diminish as the mitigation planting would mature and the substation would become largely enclosed by a combination of existing and mitigation planting. By year 15 of the likely 25 year project duration, the screening by the mitigation planting would be sufficient to reduce the impacts on the LCT and Viewpoints 11 and 12 to not significant.
224. While the decommissioning phase would involve potential impacts similar to what would occur during the construction phase, the maturity of the mitigation planting at the 25 year point, in combination with the existing woodland, would largely screen the majority of the decommissioning works, thus ensuring that no significant impacts would arise.
225. There would be no cumulative impacts in relation to the cumulative scenario in which the East Anglia THREE substation would be added to the East Anglia ONE converter station and a future EAOW project substation. This finding relates principally to the extent to which the East Anglia THREE substation is screened by the other converter station and substations as well as existing woodland.

29.11 Conclusions

226. The majority of the landscape and visual receptors assessed in the LVIA would undergo impacts which would be not significant. Where significant impacts would arise, they would typically be short term, localised and reversible. Potential long term impacts relating to the substation, would be reduced to medium term by the effects of mitigation planting. These impacts would also be localised and reversible.
227. As a lot of the necessary construction works for the landfall location and onshore cable route would have already taken place as part of East Anglia ONE, there would be very few significant impacts as a result. Also the East Anglia ONE converter station would add to the screening of the East Anglia THREE substation from certain directions.
228. Embedded mitigation would reduce significant impacts in many aspects of the proposed East Anglia THREE project. Careful site selection for the landfall location and substation, and sensitive routing of the onshore cable route at the design stage has ensured that especially sensitive landscapes and landscape features have largely been avoided. It has also ensured that existing landscape features, such as the existing woodland around the substation, have been used to best effect, as well as

providing for additional planting which would supplement the existing woodland and collectively screen almost every aspect of the substation location.

229. The contained extent of the construction and decommissioning works, and operational components of the proposed East Anglia THREE project, have ensured that all significant impacts occur within the close range of the proposed East Anglia THREE project and avoiding the spread of significant impacts beyond this close range.
230. The limited extent to which the landfall location and onshore cable route are visible, relates to the relatively flat or gently undulating landscape in which they are located. This means that the proposed East Anglia THREE project is not exposed across wider extents, as it would be if it were seen routed across hillsides, and also that there are few prominent vantage points from which expansive views, revealing a substantial section of the route, can be obtained. The limited extent of visibility is further reduced by the frequency of hedgerows and trees which form enclosure and often screen views beyond the close range. These features of the landscape ensure that the influence is largely local, and rapidly dissipates with distance from the proposed East Anglia THREE project.
231. The extent of impacts is notably reduced because the majority of the proposed East Anglia THREE project occurs in land which has been modified by intensive agricultural practices. Where CCSs and jointing bays would be constructed, the disturbance caused would not be as notable as it would be were they to be located in natural or semi-natural vegetation which was previously undisturbed.
232. The surrounding landscape to the substation is not subject to any national or local landscape designations which would otherwise denote a special sensitivity to the proposed East Anglia THREE project. The landscape is characterised by the extent to which it has been modified by intensive agricultural practices, whereby many hedgerows have been removed to consolidate fields and a more open, and less intimate, landscape has been created. Furthermore, the existing presence of the Bramford Substation and predicted presence of the East Anglia ONE converter station, establishes energy infrastructure as a component of the baseline situation such that additional development would not have the same impact as if it were in a previously undeveloped area.
233. Despite the extended construction period that would occur under the Two Phased approach, compared to the Single Phase approach, the impacts would remain the same. Construction works assessed under the Single Phase approach as significant or not significant would have the same impact when carried out for the first and second time in the Two Phased approach.

234. While significant impacts would arise in relation to the construction of the landfall location, onshore cable route and substation, and the operation of the substation, these impacts would all be either short or medium term, localised and reversible.
235. Note that for the purposes of this assessment, the dimensions of the East Anglia ONE converter station are taken to be those consented in the East Anglia ONE DCO. The size of the East Anglia ONE converter station would be smaller than the currently consented position if the current application for a non-material change to the East Anglia ONE DCO is granted. EATL would undertake further assessment if required on the basis of the outcome of the decision upon the non-material change to the East Anglia ONE DCO.

29.12 References

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Chapter 29 Ends Here