

East Anglia THREE

Appendix 29.4

Substation Landscape and Visual Assessment

Environmental Statement

Volume 3

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29.4 LANDSCAPE AND VISUAL ASSESSMENT OF THE SUBSTATION

29.4.1 Introduction

1. This Appendix sets out the detailed assessment of the construction, operation and decommissioning phases of the substation and its impact on the physical elements of the site and impacts on landscape and visual receptors across the study area. It identifies those impacts which would be significant, and defines their geographical extents, their duration and their permanence or reversibility.
2. The findings of this assessment are reported in Scheme Wide Issues – Chapter 29 Seascape, Landscape and Visual Assessment. Chapter 29 sets out the potential impacts of the substation at each stage of the project and outlines the embedded mitigation to reduce these impacts. The assessment is based on the worst case scenario as presented in Table 29.2 of Chapter 29.
3. The assessment has been carried out in accordance with the Methodology set out in Appendix 29.1 and makes reference to the Baseline Assessment contained in Appendix 29.2. Accompanying graphics are referenced in the text and are contained in Volume 2: Figures of the ES. The graphics show the baseline photographs of the representative viewpoints, accompanied by computer generated models of the substation and photomontages for five of the closest range viewpoints.
4. This Appendix contains an assessment of the impacts of the substation on the physical elements, landscape character and visual amenity, during the stages of construction, operation and decommissioning.
5. The assessment assumes that the proposed East Anglia THREE project is being added to a situation in which East Anglia ONE has been constructed and is operational. Within this context the LVIA considers two approaches to construction;
 - Single Phase approach in which the East Anglia THREE substation is constructed in one phase; and
 - Two Phased approach in which the East Anglia THREE substation is constructed in two phases, comprising two buildings of equal dimensions.
6. Chapter 5 Description of the development sets out two alternatives to the electrical solution to be used. The implications of these alternatives are described in Section 29.1.2 below, although essentially for the purposes of the assessment, the substations will be the same dimensions.

7. 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. .

29.4.1.1 Study Area

8. 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 of Chapter 29). Impacts would occur during the construction, operation and decommissioning stages.
9. 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.

29.4.1.2 Substation Description

10. 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.
11. 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 will 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.
12. 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 2 starting a maximum of 18 months after the start of the

onshore construction of Phase 1 giving an overall construction period lasting approximately 45 months.

13. The differences between the Single Phase and Two Phased approach only affects the assessment of the impacts relating to the construction of the proposed project. The impacts during operation and during decommissioning would be the same regardless of whether the proposed project was constructed in one or two phases. The assessment, therefore, only considers the difference between the Single Phase and Two Phased approach during construction.
14. 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. In the cumulative assessment a further scenario is considered in which East Anglia THREE is added to a situation which comprises East Anglia ONE and a future EAOW project, with the assumption, for the purposes of the assessment that a future EAOW project is also to be considered as a relevant project within the cumulative assessment.

29.4.1.3 Embedded Mitigation

15. 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.
16. 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).
17. 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.
18. 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.

19. 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.
20. 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.
21. 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 1.2m00mm 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.

22. 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).
23. 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).
24. 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.
25. 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.
26. 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.
27. In terms of ash die back, this LVIA has been prepared without taking account of the potential effects of ash die back on existing woodland. At the time of writing there has been insufficient information to undertake this assessment with the required certainty. Initial indications are that the existing woodlands around the East Anglia THREE substation, but outwith the site boundary, contain between 40 and 60% of ash. The current DEFRA guidance anticipates a 90 to 100% death rate over the 25 year consent period. It is agreed by both applicant and the Local Authorities that this disease will have a significant impact on the woodland and hedgerow trees around the site during this period. The potential effects will be addressed in a separate mitigation strategy.

28. East Anglia THREE are keen to work with land owners to implement woodland management plans that would help 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.

29.4.2 Potential Impacts of Substation Construction

29. For the purpose 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 the East Anglia ONE converter station 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 East Anglia ONE converter station, or one or both of the buildings would be screened by existing woodland.

29.4.2.1 Potential Impacts of Substation Construction on Physical Elements

30. The impacts as a result of the construction of the substation include the loss of agricultural land currently used for arable farming and the potential removal of a small amount of hedgerows and trees. The majority of the area would be occupied by the East Anglia THREE substation under construction, while the remainder of the East Anglia THREE substation location would be used for construction compounds, storage of materials and spoil, ancillary buildings and site access.
31. The sensitivity of the agricultural land to the impacts of the proposed East Anglia THREE project is low. Agricultural land-uses occur extensively across the surrounding area, such that the site of the substation is typical of the wider landscape and therefore of little scarcity value. The use of the site for arable farming means that the land is constantly being cultivated and the crops are not a permanent feature, and therefore easy to reinstate. The magnitude of change would be low, as the removal would be of a small proportion of a very extensive land cover, and the impact would be not significant, as there is no great sensitivity attached to this area of agricultural land.
32. There is the possibility that a small number of trees and some short sections of hedgerow would need to be removed to allow space for the construction of the substation. The sensitivity of the trees and hedgerows is medium to high. They are a common feature within the wider landscape setting and add value in terms of the enclosure they provide to the farmland and the visual interest they provide to the

rural landscape. These features are relatively easy to replace although it would take 3-5 years for the hedgerows to fill the gaps, and more than 20 years for the trees to reach a height of approximately 10m. The amount which would potentially be removed constitutes only a very small proportion of the wider provision of trees and hedgerows in the surrounding landscape. Furthermore, extensive tree planting forms part of the mitigation measures set out in the Outline Landscape and Ecological Mitigation Strategy (OLEMS) for East Anglia THREE . Taking these factors into account, the magnitude of change would be low and the impact would be not significant.

33. This assessment applies to both the Single Phase and Two Phased approaches to construction of the substation. The same area of landcover would be removed at the outset of both the Single Phase and Two Phased approaches and therefore the magnitude of change would be the same and the impact would be not significant in relation to both approaches, although in respect of the Two Phased approach would last for a longer period of time.

29.4.2.2 Potential Impacts of Substation Construction on Landscape Character

34. The baseline assessment of the Ancient Plateau Claylands LCT in which the substation is located, identified a medium sensitivity as a result of a medium value and a medium susceptibility.
35. Existing woodland blocks around the site would screen much of the construction works from parts of the surrounding landscape, especially to the north-west, west and north-east. From the remaining areas, those aspects of the construction works which are most likely to give rise to impacts on landscape character would include the movement of machinery in and out of the site, the presence of cranes on the site, the presence of the emerging substation and the use of temporary lighting outwith daylight hours.
36. The construction would be seen in the context of a site where energy infrastructure is an existing component and where the tall structures of the electricity pylons are a readily apparent feature. The emerging substation and associated construction activities would, nonetheless, form a notable addition that would influence the character of the immediate surrounding landscape. The scale and mass of the emerging substation, combined with the activity of the construction works, means that from those parts of the LCT within close proximity, the substation construction would appear as a large scale feature which would be at variance with the scale of the rural landscape. The magnitude of change would be medium to high approximately 800m to the north, as far as Tye Lane and 800m to the east, as far as Miller's Wood. The magnitude of change would be low in the other directions owing

to the screening effect of the East Anglia ONE converter station, existing woodland and the partial screening from the sub-station.

37. The impact of the substation construction on the landscape character of the Ancient Plateau Claylands LCT would be significant out to a range of 800m to the north and east, although lasting only the short-term duration of the construction phase. Impacts on the remaining parts of the Ancient Plateau Claylands LCT would be not significant.
38. 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 significant and not significant impacts would also apply equally to the Single Phase and Two Phased approaches, although in respect of the Two Phased approach would last for a longer period of time.

29.4.2.3 Potential Impacts of Substation Construction on Visual Amenity

39. An initial assessment to consider the potential impacts of the substation on the viewpoints is presented in *Table 29.1* below. Many of the viewpoints are discounted from the assessment owing to the limited extent to which the East Anglia THREE substation is visible, either as a result of distance, the screening effect of intervening woodland or the screening effect of the East Anglia ONE converter station. 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 29.1. 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. Even with a 60% loss of woodland cover, the depth of Bullen Wood would provide sufficient residual screening to East Anglia THREE substation. Mitigation planting and bunding associated with East Anglia ONE would add to the screening effect.
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. Despite the loss of 60% of woodland cover, East Anglia THREE substation would be screened by intervening landform.
VP14 – Valley Road, near Nettlestead	East Anglia THREE substation and East Anglia ONE converter station would be distant and partially screened by intervening woodland.
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.

29.4.2.4 Potential Impacts of Substation Construction: Viewpoint 10 – PRow 155/047/0, near Fidgeons Farm

29.4.2.4.1 Viewpoint description

40. This viewpoint is located on the PRow to the west of Fidgeon's Farm. The farm is accessed from the minor road which connects Bramford Village with Bramford Sub-station. The minor road passes through the valley where the containment of the landform, coupled with the intermittent enclosure by tree cover, limits visibility of the substation from this route.
41. Fidgeon's Farm and the PRow which passes through it, sit at a higher elevation above the valley, thus, affording clearer views towards the west where the substation would be situated. The farm has a commercial function as a hire centre for farm and construction vehicles. The farm buildings are orientated northwards and views westwards are largely blocked by the buildings themselves.
42. The extent of the view is restricted by the landform which is relatively level before falling away to the west beyond the main concentration of pylons. The block of deciduous woodland to the east of the Bramford Sub-station screens views and in combination with the woodland at Bullen Farm on the right, contains the view to within a relatively close range. The woodland in the central section is lower owing to its more distant location and this ensures the pylons are readily apparent. Despite the pylons appearing as a key feature of the view, it is the communications mast which forms the principal focus owing to its much larger scale.
43. The woodland forms an important feature in this view in terms of the sense of enclosure and visual interest it provides in contrast to the open and featureless expanse of the fields. Development is also an integral feature of this view, with the tall structures of the mast and pylons readily evident in the middleground, the East Anglia ONE converter station partially screened by the tree cover to the left of centre, and the vehicle hire complex located to the rear of the viewpoint. These features establish development as an integral part of this view..

29.4.2.4.2 Value

44. The value of this view is limited by the fact that it is not taken from a recognised viewpoint, nor is it representative of a location people would visit with the intention to enjoy views. It is an incidental view that would be experienced by walkers passing along the PRow. The landscape in the view is not subject to any national or local landscape designations which would otherwise denote a special sensitivity and the view is typical of the wider agricultural landscape, lacking any special features or attributes. The value of the view is medium.

29.4.2.4.3 Susceptibility

45. The susceptibility of walkers would be typically medium to high owing to their awareness of their surroundings combined with the length of time they would be exposed to views. In respect of this particular context, the experience of walkers is already influenced by the existing presence of the electricity transmission lines and stanchions and mast. With these structures forming an established part of the baseline view, the susceptibility of walkers to the construction of the East Anglia THREE substation would be reduced to medium, as their expectations of experiencing an undeveloped landscape would already be reduced.

29.4.2.4.4 Sensitivity

46. The combination of the ratings for the value of the view and the susceptibility of viewers to the potential change, leads to an overall medium sensitivity.

29.4.2.4.5 Magnitude of change for the Single Phase approach

47. For the purpose of the assessment it is assumed East Anglia ONE converter station would be operational and visible as a long and low roofline, seen to extend above the intervening tree cover. The construction of the East Anglia THREE substation would occur to the fore of the 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 the tall cranes needed for its construction.
48. 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 large scale development 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 extent of development to the right. Taking these factors into account, the magnitude of change would be medium to low.

29.4.2.4.6 Significance of the impact for the Single Phase Approach

49. The impact of the construction stage of the converter station on this view would be not significant. The medium sensitivity of the viewpoint, combined with the existing presence of pylons, communications mast and East Anglia ONE converter station, as well as the partial screening by the tree cover, ensures that the impacts of the construction works would not redefine the character of the view.

29.4.2.4.7 Magnitude of change for the Two Phased approach

50. 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 while Phase Two would equate to the same impact assessed in the Single Phased approach.

29.4.2.4.8 Significance of the impact for the Two Phased Approach

51. The impact of Phase Two would be the same as assessed in respect of the Single Phase approach, giving rise to a not significant impact. Overall, the duration of the impact would be increased over a longer period of time.

29.4.2.5 Potential Impacts of Substation Construction: Viewpoint 11 – PRoW 155/002/0, near Bullen Farm

29.4.2.5.1 Viewpoint description

52. This viewpoint is located on the PRoW which connects Bullen Lane to Tye House, via Bullenhall Farm. It is representative of the views of walkers using the PRoW. There are few residential properties in the vicinity, with the exception of the farmhouse. It is unlikely to gain views of the East Anglia THREE substation owing to the enclosure by other farm buildings and tree cover and its orientation to the south-east, rather than south-west where the substation would be located.
53. From the viewpoint, views to the east are screened by the adjacent woodland block. Views to the west are limited in extent, owing to a combination of existing woodland enclosing the low skyline and the landform falling away from this elevated plateau. The open field occupies most of the view, with woodland, tree cover and hedgerows marking the more distant edges. A collection of large sheds cluster around Bullenhall's farmyard and this adds to the impression of an intensively farmed landscape.
54. The main features of the view include the pylons, which are seen to approach from the north and west to converge at the Bramford Sub-station, and the East Anglia ONE converter station, which owing to the lack of intervening woodland, from this direction would be seen at almost its full extent. In contrast to the farm sheds, the East Anglia ONE converter station appears more prominent owing to its larger scale and mass. While the pylons appear as large scale structures relative to the trees and

farm buildings, this scale is diminished relative to the mast which extends high above the pylons to the left of the view. Although these structures are located within a rural setting, their scale and visual prominence means that they define the character of the view.

29.4.2.5.2 Value

55. The value of this view is limited by the fact that it is not taken from a recognised viewpoint, nor is it representative of a location people would visit with the intention to enjoy the views. It is an incidental view that would be experienced by walkers passing along the PRoW. The landscape in the view is not subject to any national or local landscape designations which would otherwise denote a special sensitivity and the view is typical of the wider agricultural landscape, in which hedgerows and ancient woodland add to the rural character. The value of the view is medium.

29.4.2.5.3 Susceptibility

56. The susceptibility of walkers would typically be medium to high owing to their awareness of their surroundings combined with the length of time they would be exposed to views. In respect of this particular context, the experience of walkers is already influenced by the existing presence of the converter station, communications mast and pylons. With these structures forming an established part of the baseline view, the susceptibility of walkers to the construction of the East Anglia THREE substation is reduced to medium, as their expectations of experiencing an undeveloped landscape would already be reduced.

29.4.2.5.4 Sensitivity

57. The combination of the ratings for the value of the view and the susceptibility of viewers to the potential change, leads to an overall medium sensitivity.

29.4.2.5.5 Magnitude of change for the Single Phase approach

58. The viewpoint is a distance of approximately 500m from the East Anglia THREE substation. This close range means that there is the potential for walkers to gain close range visibility of the construction works. While the intervening trees would screen some of the ground level works, the use of cranes and the emergence of the substation structure would form a notable feature.
59. For the purposes of this assessment, it is assumed East Anglia ONE converter station would be operational and visible as a readily apparent structure. The construction of East Anglia THREE substation would occur to the fore of 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 medium to high magnitude of change.

29.4.2.5.6 Significance of the impact for the Single Phase approach

60. The impact of the construction stage of the substation on this view would be significant during the short-term duration of the construction period. This impact relates principally to the close proximity of the viewpoint to the construction works, which means that the construction works and emerging presence of the substation would redefine the character of the view.

29.4.2.5.7 Magnitude of change for the Two Phased approach

61. 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 magnitude of change as a result of the construction of Phase One would be slightly less than the magnitude of change assessed in respect of the Single Phase approach, as the construction would be seen at a slightly longer range from the viewpoint and seen to occupy a slightly more contained horizontal extent. These differences would not be of a sufficient scale to alter the magnitude of change rating from medium to high.

29.4.2.5.8 Significance of the impact for the Two Phased Approach

62. The impact of Phase One would be significant as the construction works would be readily visible and seen at relatively close proximity. The impact of Phase Two would be the same as assessed in respect of the Single Phase approach, giving rise to a significant impact. Overall, the duration of the significant impact would be increased over a longer period of time.

29.4.2.6 Potential Impacts of Substation Construction: Viewpoint 12 – PRoW 155/003/0, near Tye House

29.4.2.6.1 Viewpoint description

63. This viewpoint is located on the south edge of the hamlet around Tye House and is representative of the views of road-users on the minor road, which coincides with National Cycle Route (NCR) 1, residents in adjacent properties and walkers on the nearby PRoW. The viewpoint is located at one of the few points along the village edge where an opening in the enclosing tree cover occurs. To the east and west, the tree lined edge along the adjoining field either screens or filters views. The opening allows access into the fields and marks the start of PRoW 155/003/0.
64. The wider range of view is limited by the intermittent tree cover following the PRoW in the left of the photograph and the edge of Tye village to the rear of the viewpoint.

The remainder of the available view extends across the open farm field, which lies to the immediate south of the village. Hedgerows appear to have been removed to consolidate smaller fields into larger fields with the resultant loss of some of the enclosure and visual interest, otherwise integral to the character of the rural landscape.

65. While the landscape appears relatively flat, subtle undulations towards the Bramford Sub-station occur and this adds to the perceived depth of the view. Woodland blocks at differing distances almost completely enclose the skyline, the closer range trees and wooden pole helping to provide a favourable scale comparison to reduce the perceived scale of the pylons. The East Anglia ONE converter station would be readily apparent in the gap between the woodlands, which along with the Bramford sub-station, visible to the left of the woodland block, adds to the concentration of development caused primarily by the pylons. These existing structures form the focus of the view.

29.4.2.6.2 Value

66. The value of this view is limited by the fact that it is not taken from a recognised viewpoint, nor is it representative of a location where people would come with the specific intention to enjoy views. The location of the view, at the start of the PROW, means that it is principally representative of walkers, although some residents and road-users may experience similar views. There are no national or local landscape designations which would denote a special sensitivity in terms of scenic value and the view is typical of the wider agricultural landscape. The value of the view is medium.

29.4.2.6.3 Susceptibility

67. The susceptibility of walkers to the potential changes in their views is limited by the fact that the existing converter station, pylons and sub-station form the main features of the baseline view. These structures are large in scale and establish this type of development as an integral part of the existing view. This would lower the expectation of walkers in terms of their potential to enjoy views of undeveloped countryside. The susceptibility of walkers would be medium.
68. While owing to the orientation of the properties and the extent of intervening vegetation it is unlikely that residents would gain direct and clear views of the East Anglia THREE substation from their properties, there is the possibility they would gain filtered views from their garden grounds or the adjacent road during the winter months when the deciduous trees are bare. Residents, therefore also have a medium susceptibility.

69. There is limited potential for road-users to experience this view, with the gap being short and at a perpendicular angle to the direction of travel. While views from behind the tree belt would be either screened or filtered, especially during the winter months, they would not gain clear or sustained views and their susceptibility would therefore be low.

29.4.2.6.4 Sensitivity

70. The combination of the ratings for the value of the view and the susceptibility of viewers to the potential change, leads to a medium sensitivity in respect of walkers and residents and a low sensitivity in respect of road-users.

29.4.2.6.5 Magnitude of change for the Single Phase approach

71. For the purposes of the assessment it is assumed the East Anglia ONE converter station would be operational and visible as a readily apparent structure. The construction of the East Anglia THREE substation would occur to the fore of the East Anglia ONE converter station, making it a closer range feature of the view. 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 at a distance of 700m from the viewpoint.
72. Many of the smaller scale construction activities would not be readily apparent from this distance and with the majority of the site traffic occurring on the opposite side, it would mainly be the larger scale operations involving the cranes and the emergence of the substation that would be apparent from this viewpoint. While the substation construction would not have the same impact as if it were located in a previously undeveloped area, it would, nonetheless, add to the influence of development in this view. The magnitude of change would be medium to high.

29.4.2.6.6 Significance of the impact for the Single Phase approach

73. The impact of the construction stage of the substation on this view would be significant to walkers and residents during the short term of the construction stage but not significant to road-users. While it would be seen as an associated extension to the existing developments, the scale and mass of the emerging building combined with the activity of the machinery would make it a readily apparent feature from this viewpoint. These impacts would extend along the PRoW for approximately 100m to the north before the woodland at Gobert's Grove would screen further visibility.

29.4.2.6.7 Magnitude of change for the Two Phased approach

74. 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. These differences would not be of a sufficient scale to alter the magnitude of change rating from medium to high.

29.4.2.6.8 Significance of the impact for the Two Phased approach

75. The impact of Phase One would be significant as the construction works would be readily visible and seen at relatively close proximity. The impact of Phase Two would be the same as assessed in respect of the Single Phase approach, giving rise to a significant impact. Overall, the duration of the impact would be increased over a longer period of time.

Table 29.2 Summary of Impacts of Substation Construction

Project Stage / Receptor Type	Landscape / Visual Receptors	Sensitivity	Magnitude of Change	Significance of Impact during Single and Two Phased approach	Duration
Substation Construction					
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

29.4.3 Impacts of Substation Operation

76. For the purposes of the assessment, it is assumed that the East Anglia ONE converter station would be operational and that the East Anglia THREE substation would also be operational and located to the immediate south-east. 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.
77. The substation would form a readily apparent feature owing to its size and scale, with a maximum building footprint of 116 x 170m and height of 25m. The building would be solid and rendered with a dark facade. It is assumed that the roof would comprise a double ridge in order to represent the worst case scenario.

29.4.3.1 Potential Impacts of Substation Operation on Physical Elements

78. Once operational, there would be no further impacts, 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 the OLEMS for East Anglia ONE and THREE projects, would occur to the south-west, east and north of the East Anglia THREE substation. To the south-west, the trees would be planted on a 5m high earth bund which would add to the height of the screening effect and to the east on a 2m high bund. It is anticipated that the fast growing nurse species to the south-west would be approximately 2.2m high on a 5m high bund at the start of the 25 year consent period and 12.2m at the end. The nurse species on the 2m high bund to the east and at ground level to the immediate north, would also be 2.2m high at the start and 12.2m at the end of the 25 year consent period. To the north, the planting would be established at the start of the 25 year consent period and would therefore be 1m at the start, growing to 11m by the end.

29.4.3.2 Potential Impacts of Substation Operation on Landscape Character

79. The substation would be located in the Ancient Plateau Claylands LCT and the significant impacts would occur 800m to the north and east. The reasons for these findings correlate with the assessment of the impacts on landscape character as a result of the substation construction as set out in section 29.2.2. These relate principally to the relative openness of the landscape to the north and east and the screening effect of existing woodland or development which occurs in the other directions to the south and west.
80. The establishment of mitigation planting to the north and east, as part of the OLEMS for the East Anglia ONE and THREE projects, would limit the duration of the significant impacts to the first 20 years. By this time the planting would have

established to a sufficient height in order to reduce the influence of the substation on the character of the immediate landscape. For the remaining 5 years of the consent period, the impacts on all parts of the Ancient Plateau Claylands LCT would be not significant.

29.4.3.3 Potential Impacts of Substation Operation on Visual Amenity

81. An initial assessment to consider the potential impacts of the substation construction on the viewpoints is presented in Table 29.1 above. These findings also apply to the substation operation. Many of the viewpoints are discounted from the assessment owing to the limited extent to which the East Anglia THREE substation is visible, either as a result of distance, the screening effect of intervening woodland or the screening effect of the East Anglia ONE converter station. In these instances, the impacts are assessed as not significant. Viewpoints 10, 11 and 12 have been identified as having the potential to undergo significant impacts during operation as well as construction.

29.4.3.4 Potential Impact of Substation Operation: Viewpoint 10 – PRow 155/047/0, near Fidgeons Farm

82. The viewpoint description, value, susceptibility and sensitivity of this viewpoint are described in relation to the impacts during construction in section 29.2.4. The sensitivity of the view in respect of walkers was found to be medium.

29.4.3.4.1 Magnitude of change

83. For the purposes of the assessment it is assumed the East Anglia ONE converter station would be operational and visible as a long and low roofline seen above the intervening tree cover. East Anglia THREE substation would occur to the fore of East Anglia ONE converter station, with the alignment between the two similar, such that the buildings would typically be seen as one mass. East Anglia THREE substation would form an incremental increase in the overall extent of development. Existing tree cover would screen the lower parts of both buildings, such that only the roof structures would be visible above the tree tops.

84. While nurse species in the mitigation planting would take 25 years to reach approximately 12 metres, in the interim it would bolster the existing tree planting, giving the screening effect more depth and substance. East Anglia THREE substation would be seen in the context of a landscape where the interventions of pylons, a communications mast, and East Anglia ONE converter station would already have an influence. Taking all these factors into account, the magnitude of change on this view would be medium to low.

29.4.3.4.2 Significance of the Impact

85. The impact of the East Anglia THREE substation on the view would be not significant, owing principally to the screening effect of the intervening tree cover, the existing influence of development in this view and the comparatively small addition which the additional converter station would make in respect of the existing visibility of East Anglia ONE converter station.

29.4.3.5 Potential Impact of Substation Operation: Viewpoint 11 - PRoW 155/002/0, near Bullen Farm

86. The viewpoint description, value, susceptibility and sensitivity of this viewpoint are described in relation to the impacts during construction in section 29.2.5. The sensitivity of the view in respect of walkers was found to be medium.

29.4.3.5.1 Magnitude of change

87. For the purpose of this assessment, it is assumed that East Anglia ONE converter station would be operational and from this close range, visible as a large scale structure. East Anglia THREE substation would occur to the fore of East Anglia ONE converter station, and would be readily visible from this viewpoint and sections of the PRoW in either direction. East Anglia THREE substation would align closely with East Anglia ONE converter station, such that overall, there would only be a minor increase in the extent of development. The closer range of East Anglia THREE substation would, however, make it appear larger in scale and the additional breadth of the combined developments would be evident.
88. The magnitude of change from this viewpoint would be medium to high. Mitigation planting along the eastern side of East Anglia THREE converter station would gradually reduce the magnitude of change from medium to high to medium to low as it would grow to screen the substation up towards the roof structure but this would only be after 20 years and therefore for the last 5 years of the consent period.

29.4.3.5.2 Significance of the Impact

89. The impact of the East Anglia THREE substation operation on the view would be significant for the first 20 years and then not significant for the last 5 years of the 25 year consent period as mitigation planting becomes more fully established and partially screens visibility of the substation.

29.4.3.6 Operation: Viewpoint 12 – PRoW 155/003/0, near Tye House

90. The viewpoint description, value, susceptibility and sensitivity of this viewpoint are described in relation to the impacts during construction in section 29.2.6. The sensitivity of the view in respect of walkers and residents was found to be medium and in respect of road-users, low.

29.4.3.6.1 Magnitude of change

91. For the purposes of this assessment it is assumed that East Anglia ONE converter station would be operational and visible as a readily apparent structure. 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, East Anglia THREE substation would be readily visible in the gap between Bushey Grove and Gobert's Grove. East Anglia THREE substation would, however, largely screen East Anglia ONE converter station, such that only part of the breadth of the building would be seen to the right.
92. The magnitude of change would be medium to high for the first 20 years of the consent as the East Anglia THREE substation would form a prominent feature in this view. For the remaining 5 years, the mitigation planting established along the northern side of the substation, would reach a sufficient height to partially screen the building and reduce the magnitude of change to medium.

29.4.3.6.2 Significance of the Impact

93. The impact of the East Anglia THREE substation operation would be significant for the first 20 years and then not significant for the last 5 years of the 25 year consent period as mitigation planting becomes more fully established and partially screens visibility of the substation.

Table 29.3 Summary of Potential Impacts of Substation Operation

Project Stage / Receptor Type	Receptor / Project stage	Sensitivity	Magnitude of change	Significance of impact	Duration
Impacts of Substation Operation					
Receptor type	Receptors	Sensitivity	Magnitude of change	Significance	Duration
Physical elements	Agricultural land	Low	No change		Long-term
	Trees and hedgerows	Medium to high			
Landscape character	Ancient Plateau Claylands: 800m to north and east	Medium	medium to high	Significant year 0-20	Long term
	Ancient Plateau Claylands: 800m to north and east	Medium	medium	Not significant year 20-25	Short term
	Ancient Plateau Claylands: Remaining areas	Medium	low	Not significant	Long-term
Visual amenity	VP 10 – PRoW 155/047/0, near Fidgeon’s Farm	Medium -walkers	medium	Not significant	Long-term
	VP 11 – PRoW Bramford 2, near Bullenhall Farm	Medium	medium year 0-20	Significant year 0-20	Long term
			medium to low year 20-25	Not significant year 20-25	Short term
VP12 – PRoW 155/003/03, near Tye House	Medium – walkers / residents Low – road-users	medium to high – year 0-20	Significant year 0-20	Long term	
		medium year 20-25	Not significant year 20-25	Short term	

29.4.4 Impacts of Substation Decommissioning

29.4.4.1 Potential Impacts of Substation Decommissioning on Physical Elements

94. If the decommissioning of the substation 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.

29.4.4.2 Potential Impacts of Substation Decommissioning on Landscape Character

95. The substation is located in an area of Ancient Plateau Claylands LCT. The sensitivity of this LCT is considered to be medium owing to the presence of the adjacent Bramford Sub-station and associated pylons, as well as the predicted presence of East Anglia ONE converter station, within an otherwise rural and largely undeveloped landscape of cultivated farmland.
96. The decommissioning of the East Anglia THREE substation would introduce temporary structures, temporary lighting and traffic movements of heavy plant, which although associated with the existing development, would appear at variance with the rural character of the surrounding landscape. Mitigation planting around the substation would, by this stage, have reached approximately 12m, and would screen the majority of the ground level operations. The deconstruction of the substation, especially at the higher levels and where temporary lighting would be required, would form an apparent influence on landscape character, although the short-term duration and the impermanent nature of these decommissioning works would mean the impacts on the Ancient Plateau Claylands LCT would be not significant.

29.4.4.3 Potential Impacts of Substation Decommissioning on Visual Amenity

97. The visual impacts on the surrounding visual receptors would vary throughout the period of decommissioning, particularly during the specific demolition operations of the larger structures on the compound. As demolition progresses on these structures, there would be a gradual change in the visual environment as the working height would gradually lower.
98. The intermittent, but temporary introduction of prominent tall structures such as cranes used during the demolition, would have short term visual impacts on the visual receptors in both the close range and, to a lesser degree, medium range and more sensitive visual receptors. Additional temporary visual impacts would arise as a result of demolition vehicle movements to and from the site and for general demolition operations.
99. During the decommissioning process, some temporary lighting would be required. It is anticipated that there would be limited activities requiring work on a 24 hour basis, however the greater use of lighting to ensure safe working would be required particularly during the winter months. For the highest parts of the structure, lighting at higher elevations would be required, consequently the greatest potential for

visual impact from demolition lighting would occur during this stage, although it is anticipated this would be relatively short term.

100. The decommissioning process would take place at the end of the 25 year consent when mitigation screen planting around the site would have grown to approximately 12m in height. This would screen much of the decommissioning works from the majority of the visual receptors, with the exception of the more elevated processes and associated lighting. The magnitude of change would mostly be medium to low owing to the screening effect of the mitigation planting and the short-term duration of more visible works at higher levels.
101. The impacts of the decommissioning of the substation on visual amenity would be not significant.

29.4.5 Cumulative Impacts of Substation

29.4.5.1 Introduction

102. The cumulative assessment of landscape and visual impacts considers the potential for cumulative impacts to arise in relation to other developments. Table 29.6 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 Impact Assessment (CLVIA).

Table 29.6 Summary of Projects considered for the CLVIA

Project	Status	Construction / Operation period	¹ 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	Construction would not overlap but consecutive disturbance possible. Operational and decommissioning impacts considered.
A future EAOW project	Pre-application	No information	0	Offshore Windfarm Project Outline project data only	Incomplete / low	Yes	Construction would not overlap but consecutive disturbance possible. Operational and decommissioning impacts considered.
Sizewell C	Pre-application	Unknown	24.7	Nuclear Power Station No project detail available	Low	No	No overlap with landfall, onshore cable route or substation(s) location, too distant to impact same receptors.
Bramford-Twinstead	Pre-application	Unknown	0	Outline only	Complete / high	No	Detail unknown, may affect land around the substation(s) location.
SITA (EfW plant)	In construction	Present – late	0.5	Energy From Waste	Complete / high	No	Would be operational

¹ Shortest distance between the considered project and East Anglia THREE– unless specified otherwise.

Project	Status	Construction / Operation period	¹ Approx. Distance from East Anglia THREE (km)	Project definition	Project data status	Included in CIA	Rationale
		2014		Plant Project description available			before construction commences. No overlap with landfall, onshore cable route or substation(s) location
SnOasis	Planning permission granted	Unknown	0.7	Winter sport centre. Master plans available	Incomplete / low	No	Brownfield site, landfall, onshore cable route or substation(s) location
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	Brownfield site, landfall, onshore cable route or substation(s) location
Adastral park	Planning application TBD	Unknown	0.8	Business park and housing scheme. Master plans available	Complete / high	No	Mostly Brownfield site, landfall, onshore cable route or substation(s) location
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	Greenfield site. No overlap with landfall, onshore cable route or substation(s) location. Due to distance recreational pressure would focus on Orwell Estuary and not Deben Estuary.

Project	Status	Construction / Operation period	¹ Approx. Distance from East Anglia THREE (km)	Project definition	Project data status	Included in CIA	Rationale
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.

103. Table 29.6 shows that the potential for significant cumulative impacts arises in relation to East Anglia ONE and a future EAOW project but none of the other projects.
104. 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.
105. 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.
106. The cumulative scenario of proposed East Anglia THREE project being added to a cumulative baseline comprising East Anglia ONE project constitutes the predicted baseline situation, which has been assessed in detail in sections 29.2, 29.3 and 29.4. The remaining cumulative scenario which requires detailed assessment is the cumulative scenario in which the East Anglia THREE substation is seen in conjunction with East Anglia ONE converter station and future EAOW substation. This cumulative scenario is assessed in respect of the potential cumulative impacts on the landscape character of the surrounding area and visual amenity of local people.
107. 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.
108. There is the potential that the addition of the East Anglia THREE substation to the cumulative scenario would give rise to significant cumulative effects. Table 29.7 below provides an initial assessment of the potential for cumulative impacts to arise

in relation to the representative viewpoints. Many of the viewpoints are discounted from the detailed cumulative assessment owing to the limited extent to which the East Anglia THREE substation, the East Anglia ONE converter station or a future EAOW 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 cumulative impacts are assessed as not significant. The shaded cells in the table indicate which viewpoints are to be assessed in detail.

Table 29.7 Potential Cumulative Impacts on Visual Amenity

Visual Receptor	Cumulative Impacts
VP 1- Offton Road, near Elmsett Village	East Anglia THREE substation and a future EAOW substation would be distant and partially screened by intervening woodland.
VP2 – Flowton Village	East Anglia THREE substation would be partially screened and a future EAOW 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 substation and a future EAOW substation would be screened by intervening woodland.
VP5 – Orchard Lands, near Canes Farm	A future EAOW substation would not be visible from this viewpoint owing to screening by the East Anglia THREE substation.
VP 6 – PROW Burstall 147/006/0, near Hill Farm	A future EAOW substation would be screened by intervening woodland.
VP7 - Burstall	A future EAOW substation would be partially set below horizon and screened by intervening woodland.
VP8 – A1071, near Valley Farm	East Anglia THREE substation and a future EAOW substation would be distant and screened by intervening woodland.
VP9 – Thornbush Hall	East Anglia THREE substation and a future EAOW substation would be screened by intervening woodland.
VP 10 – PRoW 155/047/0, near Fidgeon’s Farm	East Anglia THREE substation and a future EAOW substation 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 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 substation.
VP13 – Tye Lane	No visibility of East Anglia THREE substation.
VP14 – Valley Road, near Nettlestead	East Anglia THREE substation and a future EAOW substation would be distant and partially screened by intervening woodland.
VP15 – Church Hill, near Canes Farm	East Anglia THREE substation and a future EAOW substation would be distant and partially screened by intervening woodland.
VP16 – PRoW 155/003/0, north-east of site	East Anglia THREE substation would be screened by intervening woodland.

109. The initial assessment shows that potential for significant cumulative impacts to arise, would occur at Viewpoint 10: PRoW 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.

29.4.5.2 Cumulative Impacts of Substation Construction

29.4.5.2.1 Cumulative Impacts of Substation Construction on Physical Elements

110. For the purposes of the cumulative assessment it is assumed that the East Anglia ONE and a future EAOW project would be operational.
111. 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 East Anglia THREE substation to East Anglia ONE converter station and a future EAOW substation, would increase the loss of agricultural land and the potential removal of select hedgerows and trees.
112. The cumulative impact of 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 Phased and Two Phased approach. In the Two Phased approach, the impacts would remain the same, only spread across two phases and therefore the impact would be longer in duration.
113. The extent of hedgerow loss would be very small in proportion to the wider provision, even taking into account the cumulative loss in relation to East Anglia ONE converter station and a future EAOW substation. Furthermore, much more extensive replanting would occur as part of mitigation planting around the site.

29.4.5.2.2 Cumulative Impacts of Substation Construction on Landscape Character

114. 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.

115. 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.
116. 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 20 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 5 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.

29.4.5.2.3 Cumulative Impacts of Substation Construction on Visual Amenity

117. An initial assessment regarding the potential for cumulative impacts to arise in relation to visual amenity is set out in *Table 29.7*. In respect of the cumulative scenario, only Viewpoint 10 is considered to have potential to give rise to significant cumulative impacts.
118. It is assumed East Anglia ONE converter station and a future EAOW 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 East Anglia THREE substation would occur to the fore of East Anglia ONE converter station, and to the left of a future EAOW substation, such that it would increase the extent of development to a small amount, albeit in the containment 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.

.5.2.3.1 Cumulative impact of substation construction– Viewpoint 10

119. For the purposes of the assessment it is assumed a future EAOW substation would be operational and in Viewpoint 10, visible as a large scale double shed, seen set behind the intervening tree cover to the right of the mast, such that only the top

part of the building and the roof structure would be visible. The construction of East Anglia THREE substation would occur to the left of a future EAOW substation, 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 roof structure and cranes needed for its construction.

120. The separation from a future EAOW substation means that the addition of the East Anglia THREE substation would increase the extent to which development would be visible. The construction of East Anglia THREE substation would be seen to be located in an area where there is 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 increase the extents of development in this location. Taking all these factors into account, the cumulative magnitude of change would be medium to low and the cumulative impact would be not significant.

29.4.5.3 Cumulative Impacts of Substation Operation

29.4.5.4 Cumulative Impacts of Substation Operation on Physical Elements

121. Once at operational stage, there would be no further loss of or alteration to the physical elements of the substation locations and therefore there would be no cumulative impact.

29.4.5.5 Cumulative Impacts of Substation Operation on Landscape Character

122. The addition of the East Anglia THREE substation to the East Anglia ONE converter station and a future EAOW substation would generally give rise to not significant impacts. This is principally as a result of the location of East Anglia THREE substation in the middle of East Anglia ONE converter station and a future EAOW substation, which, in combination with the intervening woodland, means that East Anglia THREE is often fully or partially screened. The one exception occurs to the east where 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.

29.4.5.6 Cumulative Impacts of Substation Operation on Visual Amenity

.5.6.1.1 Viewpoint 10 – PRoW Bramford 155/047/0 near Fidgeon's Farm

123. It is assumed the East Anglia ONE converter station and a future EAOW 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. East Anglia THREE substation would occur to the fore of East Anglia ONE converter station, and to the left of a future EAOW substation, such that it would increase the extent of

development to a small amount, albeit in the containment 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.

29.4.5.7 Cumulative Impacts of Substation Decommissioning

29.4.5.7.1 Cumulative Impacts of Substation Decommissioning on Landscape Character

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

29.4.5.7.2 Cumulative Impacts of Substation Decommissioning on Visual Amenity

125. It is assumed East Anglia ONE converter station and a future EAOW substation would be operational and in Viewpoint 10, visible as roofs, seen above the intervening tree cover. The decommissioning of East Anglia THREE substation would occur to the fore of East Anglia ONE converter station. At the end of the 25 year consent period, 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.

29.4.5.8 Summary of Cumulative Impacts

Table 29.16. Summary of Cumulative Impacts of Substation

Project stage / Receptor type	Landscape / Visual receptors	Sensitivity	Cumulative magnitude of change	Cumulative Impact
Cumulative Impacts of Substation Construction				
Physical elements	Agricultural land	low	low	Not significant
	Trees and hedgerows	medium to high	low	Not significant
Landscape character	Ancient Plateau Claylands	medium	medium 800m to east medium to low in all remaining areas	Significant 800m to east Not significant in all remaining areas
	VP 10 – PROW 155/047/0, near Fidgeon’s Farm	medium to low	medium	Not significant
Cumulative Impacts of Substation Operation				
Landscape character	Ancient Plateau Claylands:	medium	medium 800m to east year 0-20 low 800m to east, year 20-25 low in all remaining areas	Significant 800m to east year 0-20 Not significant 800m to east, year 20-25 Not significant in all remaining areas
	VP 10 – PROW 155/047/0, near Fidgeon’s Farm	medium	medium to low	Not significant
Cumulative Impacts of Substation Decommissioning				
Landscape character	Ancient Plateau Claylands	medium	low	Not significant
Visual amenity	VP 10 – PROW 155/047/0, near Fidgeon’s Farm	medium	low	Not significant

126. The assessment shows the limited occurrence of significant cumulative impacts in relation to East Anglia THREE. This comprises localised impacts on landscape character during the construction and operational stages in relation to the cumulative scenario with East Anglia ONE and a future EAOW project. The limited occurrence of impacts 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 of each other; and the screening effect of the proposed mitigation planting.

127. 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 either the converter station or 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 extent and often a scale comparison with the closer range trees arises which helps to reduce the perceived scale of the buildings.
128. The close proximity of the buildings to one another, especially the East Anglia THREE substation 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 extent to which the converter station or substation(s) is visible is limited.
129. Mitigation planting is proposed to the north, east and south-west, with additional earth bunding proposed to the south-west. The mitigation planting would not take effect during the construction stage of the proposed project, and then would gradually reduce the impacts during the operational stage, and form a relatively effective screen from these directions during the decommissioning phase. The longevity of these woodland areas and therefore the effectiveness of the screening they provide is dependent on the health of the trees. This issue is addressed in the OLEMS for East Anglia THREE.

29.4.6 Inter-relationships

130. 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 29.17 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

29.4.6.1 Summary Substation Impacts

131. For the purpose of the assessment it is assumed that the East Anglia ONE 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 Sub-station partially screens visibility of the East Anglia THREE substation to the south and, in association with the pylons, establishes energy infrastructure as part of the baseline character in this localised part of the LCT.
132. Embedded mitigation, proposed as part of the East Anglia ONE project, 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 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 approximately 10m. It would not be sufficiently tall to screen the initial construction phase, but then would increasingly screen the substation during the operational phase.
133. 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.
134. 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.
135. During the operational phase, the significant impacts reported above would gradually diminish as the mitigation planting matures and the substation would become largely enclosed by a combination of existing and mitigation planting. By year 20 of the 25 year consent, the screening by the mitigation planting would be sufficient to reduce the impacts on the LCT and Viewpoints 11 and 12 to not significant.
136. 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.

137. In relation to the cumulative scenario in which East Anglia THREE converter station would be added to East Anglia ONE converter station and a future EAOW substation there would be significant cumulative impacts out to 800m to the east occurring during the construction phase and for the first 20 years of the operational phase prior to mitigation planting providing sufficient screening to reduce the impacts. The limited occurrence of cumulative impacts relates principally to the extent to which the East Anglia THREE substation would be screened by the other converter station and substation, as well as existing woodland.

29.4.7 References

Landscape Institute and Institute of Environmental Management and Assessment. (2013) Guidelines for Landscape and Visual Impact Assessment, London: Routledge.

Scottish Natural Heritage. (December 2014) Visual Representation of Windfarms: Good Practice Guidance Version 2.1.

Scottish Natural Heritage. (2012) Assessing the Cumulative Impact of Onshore Wind Energy Developments.

Land Use Consultants on behalf of SNH and the Countryside Agency. (2002). Landscape Character Assessment: Guidance for England and Scotland.

Landscape Institute. (2011) Landscape Institute Advice Note 01/11, Photography and photomontage in landscape and visual impact assessment.

Department of Communities and Local Government, (2012) National Planning Policy Framework, [Online], Available:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

Department of Communities and Local Government, (2013) Planning Practice Guidance for Renewable and Low Carbon Energy, [Online], Available:
<http://awt.org.uk/planningpracticeguidanceforrenewableandlowcarbonenergy.pdf>

Department of Energy & Climate, (2011a) Overarching National Policy Statement for Energy (EN-1), [Online], Available:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

Department of Energy & Climate, (2011b) National Policy Statement for Renewable Energy Infrastructure (EN-3), [Online], Available: <http://www.official-documents.gov.uk/document/other/9780108510793/9780108510793.pdf>

Mid Suffolk District Council, (2008) Core Strategy Development Plan Document, [Online], Available: <http://www.midsuffolk.gov.uk/assets/UploadsMSDC/Economy/Strategic-Planning-Policy/LDF/Adopted-Core-Strategy/Core-Strategy-with-CSFR-label-and-insert-sheet-07-01-13.pdf>

Mid Suffolk District Council, (2012) Core Strategy Focused Review, [Online], Available: <http://www.midsuffolk.gov.uk/assets/UploadsMSDC/Economy/Strategic-Planning-Policy/LDF/Core-Strategy-FR/CSFR-adopted-December-2012.pdf>

RSK, (2013) EAOW Converter Stations: Geophysical Report, unpublished report, ref. 293287.

Suffolk Coastal District Council, (2013a) Suffolk Coastal District Local Plan - Core Strategy and Development Management Policies, [Online], Available: <http://www.suffolkcoastal.gov.uk/assets/Documents/LDF/SuffolkCoastalDistrictLocalPlanJuly2013.pdf>

Suffolk Coastal District Council, (2013b) Suffolk Coastal Local Plan remaining 'Saved Policies', [Online], Available: <http://www.suffolkcoastal.gov.uk/assets/Documents/District/Planning-policy/Local-Plan/LocalPlanSavedPoliciesText.pdf>

The Planning Inspectorate, (2012) Scoping Opinion for East Anglia THREE Offshore Windfarm, [Online], Available: <http://infrastructure.planningportal.gov.uk/projects/eastern/east-anglia-three-offshore-wind-farm/?ipcsection=docs>

Appendix 29.4 Ends Here