East Anglia ONE North Offshore Windfarm

Chapter 28

Offshore Seascape, Landscape and Visual Amenity

Preliminary Environmental Information
Volume 1
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Glossary of Acronyms

AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
CAA	Civil Aviation Authority
cd	Candela
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ELC	European Landscape Convention
ES	Environmental Statement
ETG	Expert Topic Group
GIS	Geographic Information System
GLVIA	Guidelines for Visual Impact Assessment
HAT	Highest Astronomical Tide
IALA	International Association of Lighthouse Authorities
IPC	Infrastructure Planning Commission
IR	Infra-Red
km	Kilometre
LAT	Lowest Astronomical Tide
LCA	Landscape Character Assessment
LCT	Landscape Character Type
MCA	Maritime and Coastguard Agency
MOD	Minstry of Defence
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MW	Megawatt
NCA	National Character Area
NE	Natural England
NGO	Non-Governmental Organisation
NGV	National Grid Venture
NPS	National Policy Statement
OEP	Offshore Electrical Platform
OMM	Operational Meteorological Mast
OS	Ordnance Survey
PEIR	Preliminary Environmental Information Report
RPG	Registered Park and Garden
SAR	Search and Rescue
SCT	Seascape Character Type
SL&V	Seascape, Landscape and Visual
SLVIA	Seascape, Landscape and Visual Impact Assessment

SNH	Scottish Natural Heritage
SPS	Significant Peripheral Structure
SZC	Sizewell C
ZTV	Zone of Theoretical Visibility

Glossary of Terminology

Applicant	East Anglia ONE North Limited.
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia ONE North windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
Construction, operation and maintenance platform	A fixed structure required for construction, operation and maintenance personnel and activities.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Inter-array cables	Offshore cables which link the wind turbines to each other and the offshore electrical platforms, these cables will include fibre optic cables.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.
Met mast	An offshore structure which contains metrological instruments used for wind data acquisition.
Monitoring buoys	Buoys to monitor in situ condition within the windfarm, for example wave and metocean conditions.
Offshore cable corridor	This is the area which will contain the offshore export cable between offshore electrical platforms and landfall jointing bay.
Offshore development area	The East Anglia ONE North windfarm site and offshore cable corridor (up to Mean High Water Springs).
Offshore electrical infrastructure	The transmission assets required to export generated electricity to shore. This includes inter-array cables from the wind turbines to the offshore electrical platforms, offshore electrical platforms, platform link cables and export cables from the offshore electrical platforms to the landfall.
Offshore electrical platform	A fixed structure located within the windfarm area, containing electrical equipment to aggregate the power from the wind turbines and convert it into a more suitable form for export to shore.
Offshore export cables	The cables which would bring electricity from the offshore electrical platforms to the landfall, these cables will include fibre optic cables.
Offshore infrastructure	All of the offshore infrastructure including wind turbines, platforms, and cables.
Offshore platform	A collective term for the construction, operation and maintenance platform and the offshore electrical platforms.
Platform link cable	Electrical cable which links one or more offshore platforms, these cables will include fibre optic cables.
Safety zones	A marine area declared for the purposes of safety around a renewable energy installation or works / construction area under the Energy Act 2004.
Scour protection	Protective materials to avoid sediment being eroded away from the base of the foundations as a result of the flow of water.

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28 Offshore Seascape Landscape and Visual Amenity

28.1 Introduction

1. This chapter of the Preliminary Environmental Information Report (PEIR) presents the Seascape, Landscape and Visual Impact Assessment (SLVIA) for the construction and operation of the offshore infrastructure of the proposed East Anglia ONE North project during the construction, operation and maintenance and decommissioning phases. The SLVIA evaluates the effects of the construction and operation of the offshore infrastructure i.e. all offshore aspects of the East Anglia ONE North windfarm site, offshore transmission works, offshore platforms and offshore cable corridor (shown in ***Figure 28.1*** and described in ***section 28.3.2*** of this chapter).

2. The SLVIA identifies and assesses the significance of changes resulting from the construction and operation of the offshore infrastructure to both the seascape / landscape as an environmental resource in its own right, and on people's views and visual amenity. It also assesses the cumulative effects of the construction and operation of the offshore infrastructure in conjunction with other developments.

3. The landscape and visual effects arising from the onshore infrastructure and National Grid infrastructure are assessed in ***Chapter 29 Landscape and Visual Impact Assessment*** of this PEIR.

4. More detail of the approach and methodology for the SLVIA can be found in ***Appendix 28.1***.

5. Full technical assessments of the seascape, landscape and visual impacts of the construction and operation of the offshore infrastructure are contained within ***Appendices 28.2 – 28.7*** as follows:

    - ***Appendix 28.2 Seascape Assessment***;
    - ***Appendix 28.3 Landscape Assessment***;
    - ***Appendix 28.4 Visual Assessment***;
    - ***Appendix 28.5 Suffolk Coastal Path Assessment***;
    - ***Appendix 28.6 Cumulative Seascape, Landscape and Visual Assessment***; and
    - ***Appendix 28.7 Offshore windfarm Visibility***.

6. This SLVIA chapter provides a narrative summary of the significance of changes resulting from the construction and operation of the offshore infrastructure to seascape, landscape and visual amenity, but full technical assessment is provided within ***Appendices 28.2 – 28.7***.

7. The SLVIA is supported by plan graphics and visual representations as shown in ***Volume 2.***

28.2 Consultation

8. Consultation is a key driver of the Environmental Impact Assessment (EIA) process, and continues throughout the lifecycle of a project, from its initial stages through to consent and post-consent.

9. To date, consultation with regards to SLVIA has been undertaken via Expert Topic Group (ETG), described within ***Chapter 5 EIA Methodology,*** with meetings held in 2017 and 2018 (with representatives from Suffolk County Council, Suffolk Coastal District Council, Waveney District Council, Great Yarmouth Borough Council, the Broads National Park, Suffolk Coast and Heaths AONB unit, Natural England and Historic England) and through the East Anglia TWO Scoping Report (ScottishPower Renewables (SPR) 2017). Feedback received through this process has been considered in preparing the PEIR where appropriate and this chapter will be updated following the next stage of consultation for the final assessment submitted with the Development Consent Order (DCO) application. ***Table 28.1*** provides a summary of the principal issues from The Planning Inspectorate Scoping Opinion (Planning Inspectorate 2017) and consultation with the SLVIA ETG.

Table 28.1Consultation Responses

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
The Planning Inspectorate	20/12/2017 Scoping Response	The Inspectorate agrees that an assessment of impacts beyond the ZTV can be scoped out of the assessment.	***Section 28.3.1***
The Planning Inspectorate	20/12/2017 Scoping Response	The Inspectorate agrees that as a result of the geographical location of the National Park from the Proposed Development, impacts to this area are unlikely to be significant and can be scoped out.	***Section 28.7.1***
The Planning Inspectorate	20/12/2017 Scoping Response	The Inspectorate agrees that as a result of the geographical location of the Landscape Character Areas within Broadland and South Norfolk Districts from the Proposed Development, impacts to these areas	***Section 28.7.1***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
		are unlikely to be significant and can be scoped out.	
The Planning Inspectorate	20/12/2017 Scoping Response	The Inspectorate agrees that as a result of the geographical location of East Anglia ONE, East Anglia THREE, Norfolk Vanguard and Norfolk Boreas offshore windfarms in relation to the proposed development, the matter of cumulative impacts with these offshore windfarms can be scoped out.	***Section 28.9***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The Environmental Statement should include details of the approach to visualisations, including the representation of aviation and marine navigation lighting.	Approach to visualisation of aviation and marine navigational lighting in ***section 28.3.2.5.*** Night-time photomontages provided in ***Figures 28.25f, 28.26f, 28.28g, 28.27e and 28.41f.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	Definitions of duration of landscape and visual effects should be provided.	Methodology described in ***Appendix 28.1.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	Sequential visual effects on users of the Suffolk Coast Path should be assessed, given the relationship of this route to the designated (AONB) landscape and the likely duration of impacts.	Methodology described in ***Appendix 28.1.*** Assessment undertaken in ***section 28.8.2.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The following are essential: A realistic worst case scenario to be used; A clear definition of the range of susceptibility of seascape and landscape types. Coast path users to be accorded the highest level of sensitivity An ongoing series of less than moderate effects on coast path walkers can still be significant due to the continuous experience. Thresholds of significance need to be agreed as part of the methodology prior to submission of the ES.	Realistic worst case scenario described ***section 28.3.2.*** Definition of susceptibility described ***Appendix 28.1.*** Sensitivity of coast path users assessed in ***Appendix 28.5.*** Effects on coast path users assessed in ***Appendix 28.5.*** Thresholds of significance described in ***Appendix 28.1.***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The effects of the proposals on seascape character will be evaluated using the seascape character assessment.	Effects on seascape character assessed in ***Appendix 28.2*** and summarised in ***section 28.6.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The SLVIA should assess the contribution of the seascape to the character of all the receiving landscape/s and on that basis the likely impacts of the proposal.	Effects on landscape character assessed in ***Appendix 28.3*** and summarised in ***section 28.6***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	A full understanding and assessment of the proposed development on the Suffolk Coast and Heaths AONB Special Qualities Document is necessary to meet the requirements of EN3 (2.6.203), where assessment is required of people's perception and interaction with the seascape. The SLVIA will need to systematically assess the impacts of the proposal on the character and special qualities of the AONB.	Effects on special qualities of the AONB assessed in ***Appendix 28.3*** and summarised in ***section 28.6***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The ES needs to assess the potential impact of the proposed development on the setting of the AONB as well as the AONB itself, as explained further in Position Statement: Setting of the Suffolk Coast and Heaths AONB.	Effects on setting of the AONB assessed in ***Appendix 28.3*** and summarised in ***section 28.6***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	Full assessment of combined onshore and offshore effects is critical where combined effects are experienced, either simultaneously or in near immediate sequence. Combined landscape and visual effects between offshore and onshore project components are likely to occur and the agreed methodology should allow evaluation of these combined effects.	Combined onshore and offshore effects are assessed in ***section 28.11***.
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	Future projects include the Nautilus interconnector. The applicant should not exclude the project from the CIA at this stage.	***Table 28.6*** Other Energy Developments Considered in the SLVIA.
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The applicant should be mindful of the definition of seascape as set out in NPS EN3: *'Where necessary, assessment of the seascape should include an assessment of three principal considerations on the likely*	Effects on seascape character assessed in ***Appendix 28.2*** and summarised in ***section 28.6.***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
		effect of offshore windfarms on the coast: *Limit of visual perception from the coast.* *Individual characteristics of the coast which affect its capacity to absorb a development; and* *How people perceive and interact with the seascape'.*	
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	The agreed approach to viewpoint selection and timing of baseline photography is an attempt by all parties to properly evaluate the impacts.	Viewpoint assessment from agreed viewpoints undertaken in ***Appendix 28.4*** and summarised in ***section 28.8.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	Given the unprecedented size of the proposed turbines, it is difficult to make reasonable assumptions regarding lighting. It will also be necessary to understand how the visibility of aviation and navigation lighting will vary depending on conditions.	Proposed lighting of the turbines described in ***section 28.3.2.5*** and assessed in the visual assessment in ***Appendix 28.4*** and summarised in ***section 28.8.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	Visibility data for the Suffolk coastline does not appear to be available. Has yet to be established if the proposed use of Weybourne and Shoeburyness data is a reasonable proxy for the Suffolk and south Norfolk coastline.	Appraisal of visibility data and its influence on the likelihood of visual effects is described in ***Appendix 28.4*** and summarised in ***section 28.8.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	02/12/2017 Scoping Response	It is important to be clear as to where and to what extent offshore windfarms form a characteristic element in different parts of the study area. It is likely that the magnitude of change and sensitivity of receptors will vary in different locations.	Assessed in ***Appendix 28.2*** and ***Appendix 28.3*** and summarised in ***sections 28.6*** and ***0.***
Norfolk County Council	November 2017 Scoping Response	For both offshore and onshore development, the EIA/PEIR will need to provide: an assessment of the impact of the development on the landscape and seascape character.	Impacts on landscape character assessed in ***Appendix 28.3*** / summarised in ***section 28.6*** and seascape character assessed in ***Appendix 28.2*** / summarised in ***section 28.8.***
Norfolk County Council	November 2017	An assessment of the visual impact which should include a ZTV and	Visual effects assessed in ***Appendix 28.4*** and summarised in ***section***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
	Scoping Response	photomontages illustrating the impact of the development.	***28.8.*** ZTVs provided in ***Figures 28.4 - 28.8.*** Photomontages provided in ***Figures 28.25 – 28.45.***
Norfolk County Council	November 2017 Scoping Response	An assessment of the cumulative effect together with other (a) operational windfarms (b) permitted windfarms and (c) development proposals like to come forward.	Cumulative effects assessed in ***Appendix 28.6*** and summarised in ***section 28.9.***
Norfolk County Council	November 2017 Scoping Response	An assessment of the impact of the development on the heritage landscape.	Effects of the proposed development on cultural heritage assessed in ***Chapters 16 Marine Archaeology and Cultural Heritage*** and ***24 Archaeology and Cultural Heritage.***
Natural England	08/12/2017 Scoping Response	It is important to highlight the much larger scale and geographic spread of Round 3 compared to Rounds 1 and 2 of development. There is potential for a different range and/or greater level of impacts to arise from Round 3 development, particularly in relation to cumulative impacts.	Cumulative effects assessed in ***Appendix 28.6*** and summarised in ***section 28.9.***
Natural England	08/12/2017 Scoping Response	Welcomes further information pertaining to the specific survey methodologies to be adopted for assessment of impacts and for a preliminary assessment of key potential impacts associated with the development.	SLVIA Methodology described in ***Appendix 28.1.*** PEI assessments of seascape, landscape and visual effects provided in ***Appendix 28.2, 28.3*** and ***28.4*** and summarised in ***sections 28.6, 0*** and ***28.8.***
Natural England	08/12/2017 Scoping Response	The EIA should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. Natural England would wish to see details of local landscape character areas mapped at a scale appropriate to the development and reference to the relevant National Character Areas.	Effects on landscape character assessed in ***Appendix 28.3*** / summarised in ***section 28.6*** and shown in ***Figure 28.12*** and ***28.13.***
Natural England	08/12/2017	The EIA should include assessments of visual effects on the surrounding area.	Visual effects assessed in ***Appendix 28.4*** and

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
	Scoping Response		summarised in ***section 28.8.***
Natural England	08/12/2017 Scoping Response	Natural England supports the use of the methodology set out in Guidelines for Landscape and Visual Impact Assessment (GLVIA 3).	***Appendix 28.1***
Natural England	08/12/2017 Scoping Response	Seascape, landscape and visual effects as a result of the East Anglia ONE North offshore windfarm can be scoped out beyond 50km.	***Section 28.3.1***
Natural England	08/12/2017 Scoping Response	The seascape character assessment for the waters off the Suffolk and Norfolk coastlines within the study currently being prepared by Suffolk County Council can inform the baseline seascape characterisation in the SLVIA.	Effects on seascape character assessed in ***Appendix 28.2*** and summarised in ***section 28.6.***
Natural England	08/12/2017 Scoping Response	The SLVIA should assess the impacts of the proposed East Anglia ONE North offshore windfarm on the special characteristics of the Suffolk Coast and Heaths AONB and the Suffolk Heritage Coast. Consideration should be given to the direct and indirect effect upon this designated landscape, in particular the effect upon its purpose for designation.	***Appendix 28.3*** and ***section 28.6***
Natural England	08/12/2017 Scoping Response	Advice from the Broads Authority should be sought in terms of whether this protected landscape can be scoped out of the assessment.	Effects on landscape character assessed in ***Appendix 28.4*** and summarised in ***section 28.6***
Natural England	08/12/2017 Scoping Response	The SLVIA should include the cumulative effect of the development with other relevant existing or proposed development in the area. Agreed that the focus of the cumulative SLVIA will be on the additional impact of the proposed East Anglia ONE North offshore windfarm in conjunction with other developments of the same type i.e. other offshore windfarms i.e. Scroby Sands, Greater Gabbard, Galloper and East Anglia ONE North offshore windfarm.	Cumulative effects assessed in ***Appendix 28.6*** and summarised in ***section 28.9.***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
Expert Topic Group	26/04/2017 Expert Topic Group meeting	Worst case scenario for the visual impacts was presented as turbines of a maximum tip height of 300 meters.	***Section 28.3.2***
Expert Topic Group	26/04/2017 Expert Topic Group meeting	It was recommended that a full set of visualisations in summer (July/August) in full visibility conditions were included, to represent maximum visibility scenario, which is likely to be when sun in the west (evening) (when sun would be lighting front of turbines). A selection of viewpoints could then be used to illustrate different times of day e.g. morning photos to show the context of the less visible part of the day (when sun is behind the turbines).	Photomontage visualisations shown in ***Figures 28.25 – 28.45.***
Expert Topic Group	26/04/2017 Expert Topic Group meeting	It was recommended that additional Met Office visibility data should be used to corroborate the data from Weybourne weather station. Met Office visibility data could be used to assess the seasonal timing and duration of 'excellent' and 'good' visibility, which will be key to determining impact significance.	Visual effects assessed in ***Appendix 28.4*** and summarised in ***section 28.8.***
Expert Topic Group	26/04/2017 Expert Topic Group meeting	Viewpoints selected for assessment should not be restricted to beach views. Land often rises up from the beach, affording more visibility.	Agreed viewpoints for visual assessment listed in ***Table 28.7.***
Expert Topic Group	26/04/2017 Expert Topic Group meeting	At time of the ETG meeting, there was no published baseline Seascape Character Assessment available for this coastline. SLVIA needs to consider how the baseline is defined to inform assessment work. SPR may need to commission a baseline seascape characterisation study.	SLVIA uses the Suffolk, South Norfolk and North Essex Seascape Character Assessment as the baseline, as described in ***Appendix 28.3*** and ***section 28.6.***
Expert Topic Group	26/04/2017 Expert Topic Group meeting	LVIA should consider how the proposed development will affect the special qualities of the AONB e.g. the sea constitutes the setting to the AONB. AONB special qualities document should be referred to when defining special qualities.	Effects on seascape character assessed in ***Appendix 28.2*** and ***section 28.6.***
Suffolk County Council / Suffolk Coastal and	18/05/2017	1) A full suite of viewpoints as far south as Felixstowe and as far north as Caister on Sea will be appropriate.	Agreed viewpoints for visual assessment listed in ***Table 28.7.***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
Waveney District Councils	Viewpoints and LVIA advice note	2) Viewpoint selection should identify both beach locations and elevated locations above the strand line, such as Southwold Common, Gun Hill Southwold and Dunwich Coastguard Cottages. 3) At each principal location, such as Lowestoft, Kessingland, Southwold Walberswick, Thorpeness, Dunwich, Bawdsey and Felixstowe/ Old Felixstowe there should be both representative and illustrative viewpoints to identify how each settlement will be affected by the proposals. 4) In consultation with Historic England and other heritage consultees it is possible that specific viewpoint locations relating to scheduled monuments and listed buildings or parklands will be required. 5) Suggested that specific locations are provided with additional late afternoon views to capture the effect of side lighting of the turbines from the west and a suite of dusk views to illustrate the likely impacts of aviation and marine safety lighting. 6) In order to evaluate the landscape and visual impacts of the proposal, a seascape baseline will need to be developed and agreed. The contribution of this seascape baseline to the character and special qualities of the AONB and Heritage Coast and its setting, also need to be agreed.	Photomontage visualisations shown in ***Figures 28.25 – 28.45*** include late afternoon, evening and dusk views. SLVIA uses the Suffolk, South Norfolk and North Essex Seascape Character Assessment as the baseline, as described in ***Appendix 28.2*** and ***section 28.6.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	04/07/2017 Response on notes of East Anglia TWO and East Anglia ONE North meetings 26th and 27th April 2017	Lighting of the turbines is likely to be a sensitive issue, given the size of the turbines it would be helpful to establish the likely illumination requirements from the CAA and MOD.	Turbine lighting proposals described in ***section 28.3.2.***
Suffolk County Council / Suffolk Coastal and	04/07/2017 Response on notes of East	The degree of visual perception of the array from the coast is a particularly important matter that is identified in EN3 at paragraph	Visual effects assessed in ***Appendix 28.4*** and ***section 28.8.***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
Waveney District Councils	Anglia TWO and East Anglia ONE North meetings 26th and 27th April 2017	2.6.203. The applicant should be able to demonstrate that Weybourne is a satisfactory analogy for the Suffolk coastline and confirm if there is other data available from the Met Office Data Archive, (MIDAS), Trinity House, Maritime and Coastguard Agency (MCA) or other sources that would help to corroborate this data.	
Suffolk County Council / Suffolk Coastal and Waveney District Councils	04/07/2017 Response on notes of East Anglia TWO and East Anglia ONE North meetings 26th and 27th April 2017	The characteristics of the coast and its sensitivities and ability to absorb the impacts of the proposal are a particularly important matter that is identified in EN3 at paragraph 2.6.203. The applicant will need to review the current seascape baseline and present possible options for assessing the impact of the proposal on the waters between the array and the shoreline of Suffolk (and Norfolk).	SLVIA uses the Suffolk, South Norfolk and North Essex Seascape Character Assessment as the baseline, as described in ***Appendix 28.2*** and ***section 28.6.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	04/07/2017 Response on notes of East Anglia TWO and East Anglia ONE North meetings 26th and 27th April 2017	The applicant will present draft locations for viewpoints and those viewpoints that will be used for verified visualisations and if required, illustrative visualisations; to be agreed with the landscape and visual group in discussion and through joint site visits.	Agreed viewpoints for visual assessment listed in ***Table 28.7.*** Photomontage visualisations shown in ***Figures 28.25 – 28.45.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	04/07/2017 Response on notes of East Anglia TWO and East Anglia ONE North meetings 26th and 27th April 2017	Viewpoint locations should be sufficiently widespread to pick up any in combination visual effects with turbines that are part of the visual baseline, such as Gabbard / Galloper, Scroby Sands, Gunfleet Sands and the London Array.	Agreed viewpoints for visual assessment listed in ***Table 28.7.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	04/07/2017 Response on notes of East Anglia TWO and East Anglia ONE North meetings 26th and 27th April 2017	Visualisations will include night-time views and where appropriate may include combined views with consented but unbuilt arrays. It is also likely to be necessary to consider the possible interaction of this proposal with the construction and operational phases of SZC for which specific visualisations may be required.	Agreed viewpoints for visual assessment listed in ***Table*** 28.7.Photomontage visualisations shown in ***Figures 28.25 – 28.45*** include late afternoon, evening and dusk views. Cumulative effects assessed in ***Appendix 28.6*** and

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
			summarised in ***section 28.9.***
Expert Topic Group	07/07/2017 Project Update and Seascape Visuals Meeting	Visibility data from Weybourne and Shoeburyness will be combined to give more robust data for the visibility assessment.	Visual effects assessed in ***Appendix 28.4*** and summarised in ***section 28.8.***
Expert Topic Group	07/07/2017 Project Update and Seascape Visuals Meeting	Partial agreement that the proposed coastal viewpoints were broadly suitable at a high level, but that the range of viewpoints was insufficient to complete a thorough assessment at the most sensitive receptors. More viewpoints will be considered, particularly in areas where detailed assessment is needed, as well as more elevated viewpoints. In addition, more at elevated coastal cliff top views will also be considered.	Agreed viewpoints for visual assessment listed in ***Table 28.7.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	27/07/2017 Further comments on viewpoint selection	List of 22 representative viewpoints, which were issued to the ETG subsequent to 7th July ETG meeting, was confirmed as being a satisfactory initial set, but a night time-morning view is also required in the Felixstowe area, to capture the interaction with existing baseline lighting from Galloper, Gabbard, London Array, and the ports/ shipping traffic. Additional representative viewpoints were requested: Landguard Common (EA2) public open space and Landguard Fort Ancient Monument etc. (EA2) Cliff top Hamilton Gardens or Wolsey Gardens Felixstowe (EA1N EA2) Orford Ness eastern shore; at the pagodas (EA1N and EA2) Roof of Orford Castle (EA1N and 2) – given the public access and status of the site and our experience with Historic England over Leiston Abbey and SzC. Lowestoft Sea Front Gardens (EA1N and EA2)	Agreed viewpoints for visual assessment listed in ***Table 28.7.***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
		Additional illustrative viewpoints also suggested: Southwold - end of the pier (EA1N/2) Pulhamite cliffs at Bawdsey Manor (EA2) Ness Point Lowestoft (EA1N/2) Corton Holiday Village (EA1N/2)	
Suffolk County Council / Suffolk Coastal and Waveney District Councils	27/07/2017 Further comments on viewpoint selection	Definitions of representative and illustrative viewpoints agreed Representative viewpoints – These are selected to represent the experience of different types of visual receptor where larger numbers of viewpoints cannot all be included; full visualisation with analysis of impacts in the text. Illustrative viewpoints – These are chosen specifically to demonstrate a particular effect or specific issues; appropriate visualisation for the location but written analysis of the impacts not required for LVIA. (Note however that analysis of heritage impacts may be required in heritage assessment).	Agreed viewpoints for visual assessment listed in ***Table 28.7.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	27/07/2017 Further comments on viewpoint selection	Request for a systematic agreed approach to the assessment of visual impacts on users of the existing / in development coast path. May be appropriate to assess the impacts on those walking north and those walking south separately; and/or to divide the route into sections and the degree of impact assessed for each section. As well as assessing the visibility of the proposal from the route, it is suggested that the contribution of the open sea to the character and visual amenity should also be evaluated.	Visual effects on users of the coastal path assessed in ***Appendix 28.5*** and summarised in ***section 28.8.***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	The format of the Onshore LVIA and Offshore SLVIA should be considered, with the potential for merging of the two topics to address	Offshore SLVIA is contained in Chapter 28 and ***Appendices 28.1 – 28.6.*** Onshore LVIA is contained in

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
		the overlap of onshore and offshore landscape and visual effects.	***Chapter 29 Landscape and Visual Impact Assessment***. Inter-related effects of both offshore and onshore elements are assessed in ***section 28.11*** of this chapter.
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Consultees requested clear documentation that explains what is to be assessed under each 'scenario' and for each application (EA1N and EA2).	Scenarios for the impact assessment contained in this SLVIA are explained in ***section 28.4.***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Confirmed list of projects for cumulative assessment to be circulated to all ETG stakeholders. Requested that Greater Gabbard and Galloper windfarms are included in the SLVIA baseline. The stage two SZC consultation should inform the basis for the development of a worst case scenario to deal with these cumulative impacts of the construction and operation of Sizewell C.	Agreed list of cumulative projects for assessment in the SLVIA in ***Table 28.7.***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Agreement that for SLVIA the newly developed 'Suffolk, South Norfolk and North Essex Seascape Character Assessment' will form the baseline.	SLVIA uses the Suffolk, South Norfolk and North Essex Seascape Character Assessment as the baseline, as described in ***Appendix 28.2*** and ***section 28.6.***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Suffolk County Council requested consideration of two worst case scenarios in the SLVIA (more and smaller turbines OR fewer and taller turbines). Natural England felt that only assessing the tallest turbines would be sufficient but would recommend the SLVIA clearly explains the worst case scenario assumptions used in the assessment.	Worst case scenario for the SLVIA described in ***section 28.3.2.***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Clarification required if lighting for night-time OSPs will be visible above the horizon. Realistic worst case scenario for SLVIA will clarify assumed position of the offshore platforms in the array area (i.e.	Lighting proposals described in worst case scenario for the SLVIA in ***section 28.3.2.*** Assessment of visual effect of lighting assessed in ***Appendix***

Consultee	Date/ Document	Comment	Response / where addressed in the PEI
		closest to shore) and if OSP lighting will be visible.	***28.4*** and summarised in ***section 28.8.***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	ETG requested that photographs taken for evening visualisations for SLVIA are taken post 3pm.	Photomontage visualisations shown in ***Figures 28.25 – 28.45*** include late afternoon, evening and dusk views.
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Following review of the Method Statement provided to stakeholders in advance of the meeting and then discussed at the SLVIA ETG, a 50km radius study area was agreed for the SLVIA.	***Section 28.3.1***
Expert Topic Group	27/04/2018 LVIA / SLVIA ETG Meeting	Agreed that definitions of duration (short, medium and long-term) should match those agreed in East Anglia ONE and East Anglia THREE projects.	***Section 28.4*** and ***Appendix 28.1.***
Suffolk County Council / Suffolk Coastal and Waveney District Councils	Response to meeting of 27th April 2018	In respect of the information provided regarding the timing of photography undertaken, the Suffolk Local Authorities suggest that the priority of evening summer photography (6pm-8pm) are viewpoints 3, 4, 5, 6, 7, 8, If at all possible viewpoints 9, 10 11 should also be included.	Photomontage visualisations shown in ***Figures 28.25 – 28.45*** include evening views from viewpoints 3, 4, 5, 6, 7 and 8.

10. Ongoing public consultation has been conducted through a series of Public Information Days (PIDs) and Public Meetings. PIDs have been held throughout Suffolk in November 2017, March 2018, and June / July 2018 with further events planned in 2019. A series of stakeholder engagement events were also undertaken in October 2018 as part of consultation phase 3.5. These events were held to inform the public of potential changes to the onshore substation location. This consultation aims to ensure that community concerns are well understood and that site specific issues can be taken into account, where practicable. Consultation phases are explained further in ***Chapter 5 EIA Methodology***. Full details of the proposed East Anglia ONE North project consultation process will be presented in the Consultation Report, which will be submitted as part of the DCO application.

11. ***Table 28.2*** shows public consultation feedback pertaining to SLVIA. Consultation phases are explained further in ***Chapter 4 Site Selection and Assessment of Alternatives.***

Table 28.2 Public Consultation Relevant to SLVIA

Topic	Response / where addressed in the PEI
Phase 1	
• Proximity to shore and potential night time impacts • Seascape / landscape and visual impacts • Impacts on views from Southwold	Impacts to the seascape are assessed in ***section 28.6*** Impacts to landscape are assessed in ***section 28.6*** Potential visual impacts are assessed in ***section 28.8***
Phase 2	
• Concerns over night time lighting of offshore infrastructure • Proximity to shore and scale of turbines • Sun reflection off the moving turbine blades • Impact on character of AONB	Impacts to the seascape are assessed in ***section 28.6*** Impacts to landscape are assessed in ***section 28.6*** Impacts to the AONB are considered in ***section 28.7.3.2*** Potential visual impacts are assessed in ***section 28.8***
Phase 3	
• Visibility from beach • Concerns over night time lighting of offshore infrastructure • Proximity to shore and scale of turbines • Impact on character of AONB • Seascape issues – possible curtaining effect	Impacts to the seascape are assessed in ***section 28.6*** Impacts to landscape are assessed in ***section 28.6*** Impacts to the AONB are considered in ***section 28.7.3.2*** Potential visual impacts are assessed in ***section 28.8***
Phase 3.5	
• Visibility from beach • Proximity to shore and scale of turbines	Impacts to the seascape are assessed in ***section 28.6*** Impacts to landscape are assessed in ***section 28.7*** Potential Visual Impacts are assessed in **section 28.8**

28.3 Scope

28.3.1 Study Area

12. The SLVIA study area is defined as a 50km radius from the outermost wind turbines of the East Anglia ONE North windfarm site in all directions and is shown in ***Figure 28.3***.

13. A 50km radius study area has been selected for the SLVIA for a number of reasons. As described in ***Chapter 6 Project Description*** and in ***section 28.3.2***, the realistic worst case layout assessed as the project design envelope for the SLVIA is the 53 x 300m wind turbine layout ('the 300m wind turbine layout') with 300m blade tip height wind turbines (***Figure 28.1***). Although 300m blade tip height wind turbines could theoretically be visible at distances beyond 50km, the EIA regulations require assessment of 'likely significant effects', therefore the SLVIA study area should extend far enough to include all areas within which significant visual effects are likely to occur. It is considered that the construction and operation of the offshore infrastructure is unlikely to result in significant effects at distances over 50km. Relevant guidance, professional experience, ZTV mapping, published material (BOEM, 2013) and Met Office Visibility Data all indicate that the threshold at which significant visual effects would diminish is likely to be within this 50km radius area.

14. Relevant guidance (SNH 2017) recommends that ZTV distances are used for defining study area based on wind turbine height. The guidance recommends 45km for wind turbines greater than 150 m to blade tip, although it also recognises that *'greater distances may need to be considered for the larger wind turbines used offshore'*.

15. Consideration of the blade tip ZTV (***Figures 28.4*** and ***28.5***), indicates that theoretical visibility of the East Anglia ONE North windfarm site will become very dispersed at distances beyond 50km. The horizontal angle ZTV (***Figure 28.8***) also shows that the portion of views occupied by the horizontal spread of the East Anglia ONE North windfarm site will decrease dramatically with distance. At distances over 50km, the horizontal spread of the array will occupy a very small portion of available views (less than 30 degrees).

16. The actual visibility of the East Anglia ONE North windfarm site that will be experienced by people will be influenced substantially by the prevailing weather and visibility conditions in the area. Visibility frequency data supplied by the Met Office from Weybourne and Shoeburyness, provides an understanding about the amount of time when visibility is experienced at distances greater than 50km. The Met Office data shows that visibility frequency drops sharply at longer distances, such that visibility over 50km recorded at Weybourne occurred for only around 9% of the time over the 10-year period between 2007 – 2017. This would equate to approximately 33 days per year on average, when there is visibility beyond 50km, and that there would be theoretical visibility of the East Anglia ONE North windfarm site. The prevailing weather / visibility conditions notably reduce the potential for effects to relatively limited and infrequent periods, when there is excellent visibility at distances over 50km. The Met Office visibility data indicates that it is likely that there would be no visibility of the East Anglia ONE North windfarm site at distances

over 50km for approximately 90% of the time over the 10 year period between 2007 and 2017 (or 332 days per year on average).

17. Further details of visibility frequency are provided in ***Appendix 28.7***, using METAR visibility data from the nearest Met Office stations that record visibility (Weybourne and Shoeburyness), to highlight potential trends in the visibility conditions of the study area. Both GLVIA3 (8.15) and SNH guidance (SNH 2017, para 39) refer to use of this Met Office visibility data to assess typical visibility conditions within an area. Although there are limitations to how this data can be applied to judgements about windfarm visibility, the visibility data provides some understanding and evidence basis for evaluating the visibility of the wind turbines against their background. Weybourne and Shoeburyness provide the most representative Met Office stations

18. Consultation with relevant stakeholders has not identified any specific concerns about significant visual effects of the East Anglia ONE North windfarm site in areas located beyond 50km, with the focus of consultation comments and discussion being on assessment of the closest coastal landscapes that are more likely to experience effects. The visibility of the East Anglia ONE North windfarm site reduces considerably from inland areas where the screening effects of landform, vegetation, buildings and other surface features screen views. Visual effects, while possible, are unlikely to be significant beyond 50km. The Planning Inspectorate has agreed in its scoping response (section 4.24) that an assessment of impacts beyond the 50km. The Planning Inspectorate has agreed in its Scoping Opinion (section 4.24) that an assessment of impacts beyond the 50km ZTV can be scoped out of the assessment.

19. Significant seascape / landscape and visual effects are scoped out beyond 50km, which is considered to be the maximum area within which a significant effect would be likely to occur as a result of the construction and operation of the offshore infrastructure and has been agreed with the SLVIA ETG. A 50km radius study area is suitable for the purposes of assessing the likely significant effects of the construction and operation of the offshore infrastructure. In reality, significant seascape, landscape and visual effects are more likely to occur from locations in closer proximity to the array; and less likely to occur towards the outer edges of the study area at long distance.

20. A 50km radius study area has also been utilised as the search area for the identification of other wind energy developments relevant to the assessment (***Figure 28.9***), including all operational, consented, application and scoping stage windfarm proposals out to 50km from the East Anglia ONE North windfarm site. These are further discussed in ***section 28.9***.

28.3.2 Worst Case

28.3.2.1 Wind Turbines

21. This section addresses the realistic worst case of the proposed East Anglia ONE North project. The SLVIA is based on the Rochdale Envelope described in ***Chapter 6 Project Description***. In compliance with EIA regulations, the likely significant effects of a realistic 'worst case' scenario are assessed and illustrated in the SLVIA.

22. The maximum design scenarios identified have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the details provided in the project description ***Chapter 6 Project Description***. Effects of greater adverse significance are not predicted to arise should any other development scenario (based on details within the project design envelope) to that assessed here, be taken forward in the final proposed East Anglia ONE North project design.

23. The wind turbine sizes that are currently under consideration are the 250m wind turbine and 300m wind turbine. In the SLVIA Rochdale envelope considered in this assessment, assumptions are made with regards to the dimensions and height of the wind turbines as shown in ***Table 28.3***.

Table 28.3 Wind Turbines Considered in the SLVIA Rochdale Envelope

Wind turbine rating (MW):	250m wind turbine	300m wind turbine
Maximum number of turbines	67	53
Maximum blade tip height above Lowest Astronomical Tide (LAT) (m)	250	300
Maximum rotor diameter (m)	220	250
Maximum hub height above LAT (m)	140	175
Min Air draught above LAT (m)	24.44	24.44
Indicative rotor speed range (rpm)	7.8	6.8 – 7.3
Maximum tower diameter (at bottom) (m)	8	12
Number of blades (per WTG)	3	3
Max blade width (m)	7	9
Turbine spacing (in row) (min) (m)	800	800
Turbine spacing (inter row) (min) (m)	1,200	1,200

Wind turbine rating (MW):	250m wind turbine	300m wind turbine
Layout pattern	Turbines spaced evenly within the East Anglia ONE North windfarm site in a regular pattern (***Figure 28.1***)	

24. The design envelope would allow a mixture of turbine sizes to be used in the final detailed design. However, the assessment scenario(s) for the SLVIA is based on the use of a single wind turbine model for the East Anglia ONE North windfarm site as this is considered the realistic worst case.

25. The realistic worst case layout assessed as the project design envelope for the SLVIA is the 53 x 300m wind turbine layout ('the 300m wind turbine layout'), as shown in ***Figure 28.1***. This layout has the highest wind turbine blade tip height (300 m), with largest rotor diameter (250 m), with a lower overall number of wind turbines and the least dense spacing with turbine rows oriented in a realistic grid alignment. The realistic worst case for SLVIA assessment has turbines spaced evenly within the East Anglia ONE North windfarm site in a regular pattern (***Figure 28.1***). The Rochdale Envelope would allow for wind turbines to be spaced closer together however this is not considered the worst case for assessment as the largest turbines spread over the greatest lateral extent across the East Anglia ONE North windfarm site is considered the worst case. An alternative project design envelope for the SLVIA is the 67 x 250m wind turbine layout ('the 250m wind turbine layout') as shown in ***Figure 28.2***.

26. There are a number of reasons why the 300m wind turbine layout, as shown in ***Figure 28.1***, is considered to form the worst case and is assessed as such in the SLVIA. Wind turbines with a higher 300m blade tip height will have a wider extent of ZTV than the lower 250m blade tip height wind turbines. They have the potential to be visible from a wider geographic area, since they are 50m higher and it is their height which contributes most to extent of visibility. This is evident in comparison of the ZTVs in ***Figure 28.4*** (250m blade tip) and ***Figure 28.5*** (300m blade tip).

27. In addition to the wider geographic extent of effect, the 300m wind turbines will appear to have a larger scale in views than the 250m wind turbines, both in terms of their overall blade tip height (which is 50m higher), but also in terms of the appearance of the larger rotor of the wind turbine (which is30 m larger). This will result in visible differences in scale, with the 300m wind turbine considered to have potential for a higher visual effect than the 250m wind turbine, by nature of its larger scale and height on the sea skyline. This is evident in comparison of the wireline visualisations in ***Figures 28.25 – 28.45***.

28. The increased visual effect arising from the larger scale of the 300m wind turbines is offset to a degree, by the 250m wind turbine layout having a higher number of

wind turbines, with a denser spacing, than the 300m wind turbine layout - which may typically be considered 'worse'. The 300m turbine layout consists of 53 wind turbines, compared to the 67 wind turbines in the 250m wind turbine layout. The effect that results from the additional 14 wind turbines of smaller size, in the 250m wind turbine layout is however, considered to be outweighed by the larger height and scale of the 300m wind turbines.

29. The lateral spread of development on the horizon also contributes to the scale of the visual effect (along with height and density of turbines), however the lateral spread will be similar for both the 250m wind turbine and 300m wind turbine layouts, as the wind turbines in each layout are spaced to fill the extents of the East Anglia ONE North windfarm site. The 300m wind turbine layout represents both the maximum wind turbine height and maximum lateral spread of wind turbines in the field of view.

30. Considering all of the factors described above, the 300m wind turbine layout, shown in ***Figure 28.1***, is considered to be representative of the realistic worst case in terms of seascape, landscape and visual effects, and is the main scenario assessed in the SLVIA and shown in the visual representations in ***Figures 28.25 – 28.45.*** Effects of greater adverse significance are not predicted to arise should any other development scenario (based on details within the project design envelope) to that assessed, be taken forward in the final design scheme.

31. In addition to this main realistic worst case assessment scenario (53 x 300m wind turbine), an alternative worst case 250m wind turbine layout (67 x 250m wind turbine) is also illustrated in wirelines from a selection of key viewpoints (in ***Figures 28.25 – 28.45***) in order to consider this potential development scenario with a denser wind turbine spacing and largest overall number of wind turbines, with wind turbine rows oriented in a realistic grid alignment.

32. Neither the design nor scale of individual wind turbines can be changed without significantly affecting the electricity generating output of the wind turbines. Therefore, it is unlikely that mitigation in the form of reduction in scale will be feasible.

28.3.2.2 Foundation Substructures

33. The worst case for the SLVIA assumes that the substructure design will be a 4-legged jacket substructure. Field survey and experience of the visual effects of existing offshore windfarms suggests that jacket foundations are worst case for visual impacts. Jacket foundations are shown for the East Anglia ONE North windfarm site in photomontage visualisations where visible.

34. The foundation substructures are assumed to have a working platform and tower interface, where the tower connects with the jacket foundation structure. The interface level (above Highest Astronomical Tide (HAT)) between the substructure and the wind turbine hub is assumed to be 20 m above HAT. The jacket foundations are assumed to have four sides and four legs, of 4.6m maximum diameter, supported by cross braces. The foundation substructures will be painted yellow for navigational marking.

28.3.2.3 Offshore Electrical Platforms (OEP) and Construction operation and maintenance platform

35. The SLVIA Rochdale Envelope identifies that up to four OEPs and one construction operation and maintenance platform are required within the East Anglia ONE North windfarm site. Indicative locations of the OEPs and construction operation and maintenance platform have been assumed for the SLVIA, located along the shoreward perimeter of the East Anglia ONE North windfarm site, as shown in ***Figure 28.1***, where they will in theory be most visible from coastal viewpoints.

36. The SLVIA Rochdale envelope assumes that each OEP and the construction operation and maintenance platform will have a maximum platform length of 70 m, platform width of 50 m and topside maximum height above LAT of 50 m (excluding crane and helideck). The foundation type for the construction operation and maintenance platform is assumed to be 8-legged jacket foundation, supported with cross braces and painted yellow for navigational marking. The effects of the OEPs are assessed as part of the East Anglia ONE North windfarm site in this chapter. OEPs are shown in the photomontage visualisations in ***Figures 28.27 – 28.32***.

28.3.2.4 Operational Meteorological Mast (OMM)

37. The worst case for the SLVIA assesses that a single operational met mast (OMM) will be installed within the boundaries of the East Anglia ONE North windfarm site, with a lattice tower with a maximum height of 175 m above LAT (the hub height of the 300m wind turbines). It is assumed, as worst case for the SLVIA, that the substructure design will be a jacket substructure. The OMM will be placed at 2.5 rotor diameters upwind from the first row of wind turbines as shown in ***Figure 28.1***, in order to try to fulfil international standard (IEC 61400-12.1, Ed. 2 (2017). The OMM is shown in photomontage visualisations from a selection of key viewpoints – ***Figures 28.25 – 28.45***.

28.3.2.5 Wind Turbine Lighting

38. The wind turbines, OMM, OEP, and the construction operation and maintenance platform will be lit in accordance with the International Association of Lighthouse Authorities (IALA) standards and Civil Aviation Authority (CAA) requirements. As such, there is potential for the East Anglia ONE North windfarm site to be visible

at night. Specific requirements for aviation and navigational lighting will be agreed with the relevant stakeholders (as listed in ***section 28.2***) post-consent and prior to construction.

39. The following worst case assumptions have been made with regards to lighting of the East Anglia ONE North windfarm site for the SLVIA:

- Red, medium intensity aviation warning lights (2000 candela (cd)) will be located on either side of the nacelle (175 m above LAT for 300m wind turbines) of significant peripheral wind turbines. Significant peripheral wind turbines are assumed to include all wind turbines on the periphery of the 300m wind turbine layout shown in ***Figure 28.1***. These lights will flash simultaneously with a Morse W flash pattern and will also include an infra-red component;
- All aviation warning lights will flash synchronously throughout the East Anglia ONE North windfarm site and be able to be switched on and off by means of twilight switches;
- Aviation warning lights will allow for reduction in lighting intensity at and below the horizon when visibility from every wind turbine is more than 5km. The SLVIA and the night-time photomontages in ***Figures 28.25f, 28.26f, 28.28g, 28.37e, 28.41f*** assume full lighting intensity of the 2000 cd aviation warning lights in very good to excellent visibility conditions, as a worst case;
- Search and rescue (SAR) lighting of each of the non-periphery turbines will be combi infra-red(IR)/200cd steady red aviation hazard lights, individually switchable from the control centre at the request of the MCA (i.e. when conducting SAR operations in or around the East Anglia ONE North offshore windfarm site). These low intensity lights are not shown in the night-time photomontages, as they will not be visible at such long distances;
- All wind turbines will be fitted with a low intensity light for the purpose of helicopter winching (green hoist lamp). All wind turbines will also be fitted with suitable illumination (minimum one 5cd light) for ID signs. These low intensity lights are not shown in the night-time photomontages, as they will not be visible at such long distances; and
- Marine navigational lights will be fitted at the platform level on significant peripheral structures (SPS) as shown in ***Figure 28.1.*** These lights will be synchronized to display simultaneously an IALA “special mark” characteristic, flashing yellow, with a range of not less than five (5) nautical miles. The marine navigational lights will be located circa 10m above sea level and will not be visible from coastal viewpoints, as they are will be hidden at such long distances by the curvature of the earth.

40. The visual effect of the construction and operation of the offshore infrastructure at night has been assessed in this chapter, informed by assessment and night-time photomontage visualisations produced from representative viewpoints at:

- Lowestoft (Viewpoint 1 – ***Figure 28.25f***);
- Kessingland Beach (Viewpoint 2 – ***Figure 28.26f***);
- Southwold (Viewpoint 4 – ***Figure 28.28g***); and
- Aldeburgh (Viewpoint 13 – ***Figure 28.37e***).

28.3.3 Embedded Mitigation

41. Mitigation measures that were identified and adopted as part of the evolution of the project design (embedded into the project design) and that are relevant to seascape, landscape and visual effects are described as follows.

42. The East Anglia ONE North construction and operation of the offshore infrastructure is located within the former East Anglia Zone, whose location was sited outside territorial waters following feedback on its consultation. The 'Round 3 plan / programme' was considered under SEA which noted that the siting of Round 3 zones outside territorial waters, 8km off undesignated coasts and 13km off AONB and heritage coasts, would help mitigate potential visual impacts.

43. The wind turbines, OMM, OEP and the construction operation and maintenance platform will be lit in accordance with the IALA standards and CAA requirements, however embedded mitigation measures are included to mitigate the visual effect of the construction and operation of the offshore infrastructure at night. Aviation warning lights will only be fitted to significant peripheral wind turbines and will allow for reduction in lighting intensity at and below the horizon when visibility from every wind turbine is more than 5km. SAR lighting of each of the non-periphery turbines will be low intensity hazard lights, individually switchable from the control centre at the request of the MCA. Marine navigational lights will be fitted at the platform level only on SPS.

28.3.4 Monitoring

44. Post-consent, the final detailed design of the proposed East Anglia ONE North project and the development of the relevant management plan(s) will refine the worst-case parameters assessed in the EIA. It is recognised that monitoring is an important element in the management and verification of the impacts of the proposed East Anglia ONE North project. Outline management plans, across a number of environmental topics, will be submitted with the DCO application. These outline management plans will contain key principles that provide the framework for any monitoring that could be required. The requirement for and final appropriate design and scope of monitoring will be agreed with the relevant stakeholders and

included within the relevant management plan(s), submitted for approval, prior to construction works commencing.

28.4 Assessment Methodology

28.4.1 Guidance

45. There are a number of pieces of legislation, policy and guidance applicable to LVIA. The following sections provide detail on key pieces of international and UK legislation, policy and guidance which are relevant to this chapter.

28.4.1.1 Legislation and Policy

28.4.1.1.1 European Landscape Convention (ELC)

46. The ELC is devoted exclusively to the protection, management and planning of all landscapes in Europe. Landscape is described as *"an area, as perceived by people, whose character is the result of the action and interaction of natural and/ or human factors"* (ELC 2000). The definition applies to all urban and peri-urban landscapes, towns, villages, rural areas, the coast and inland areas. In addition, it applies to ordinary or even degraded landscape as well as those areas that are of outstanding value or protected.

47. The ELC is binding in the UK. As a signatory, the UK Government has therefore undertaken to adopt general policies and measures to protect, manage and plan landscapes as follows:

- To recognise landscapes in law as an essential component of people's surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity;
- To establish and implement landscape policies aimed at landscape protection, management and planning through the adoption of the specific measures. These include awareness-raising, training and education, identification and assessment of landscapes, definition of landscape quality objectives and the implementation of landscape policies;
- To establish procedures for the participation of the general public, local and regional authorities, and other parties with an interest in the definition and implementation of the landscape policies mentioned above; and
- To integrate landscape into regional and town planning policies and in cultural, environmental, agricultural, social and economic policies, as well as in any other policies with possible direct or indirect impact on landscape.

48. Landscape policy in the UK is already closely aligned with the Convention, and before UK ratification a Regulatory Impact Assessment had demonstrated that existing procedures and practice (through the work over many years of

Government agencies, Local Government and Non-Governmental Organisations (NGOs) such as the National Trust) are compliant with its formal requirements. Given the UK's adoption of the ELC and its aims, the ELC gives an appropriate basis for the importance placed on the UK landscape.

28.4.1.1.2 National Policy Statements (NPS)

49. The assessment of potential effects on the landscape and visual receptors has been made with reference to relevant NPSs, as discussed in Chapter 3 Policy and Legislative Context. The relevant NPSs to this assessment are:

- Overarching 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).

50. The specific assessment requirements for landscape and visual receptors, as detailed in the NPSs, are summarised in ***Table 28.4.***

Table 28.4 NPS Assessment Requirements

NPS Requirement	NPS Reference	PEIR Reference
EN-1 Overarching NPS for Energy		
Paragraph 5.9.5 of EN-1 advises that the applicant should carry out a landscape and visual assessment and makes reference to the following documents: Landscape Institute and Institute of Environmental Management and Assessment (2002, 2nd edition): Guidelines for Landscape and Visual Impact Assessment; and Land Use Consultants (2002): Landscape Character Assessment – Guidance for England and Scotland.	Paragraph 5.9.5	'The Guidelines for Landscape and Visual Impact Assessment' (GLVIA) (2002, 2nd edition) has been superseded by GLVIA Version 3. Landscape Character Assessment – Guidance for England and Scotland has been superseded by Natural England's 'An Approach to Landscape Character Assessment'. This LVIA has been prepared following the updated versions of these documents which are referred to in ***Appendix 28.1***
"The landscape and visual assessment should include reference to any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the proposed project. The applicant's assessment should also take account of any relevant policies based on	Paragraph 5.9.5	Published character assessments for the study area and policies are referred to in ***section 28.5*** of the SLVIA.

NPS Requirement	NPS Reference	PEIR Reference
these assessments in local development documents in England."		
"The applicant's assessment should include the effects during construction of the project and the effects of the completed development and its operation on landscape components and landscape character."	Paragraph 5.9.6	The effect on landscape components and landscape character during construction and operation are assessed in ***section 28.6*** of the SLVIA and ***Appendix 28.3***.
"The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity."	Paragraph 5.9.7	The visual effects of the proposed proposed East Anglia ONE North project during construction and operation are assessed in ***section 28.6*** of the SLVIA and ***Appendix 28.4***.
"Landscape effects depend on the existing character of the local landscape, its current quality, how highly it is valued and its capacity to accommodate change. All of these factors need to be considered in judging the impact of a project on landscape. Virtually all nationally significant energy infrastructure projects will have effects on the landscape. Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate."	Paragraph 5.9.8	The quality, value and capacity of the landscape to accommodate change are considerations of the landscape assessment. The design of the proposed East Anglia ONE North project has considered the potential impact on the landscape in order to minimise harm by mitigation of landscape effects as presented in ***section 28.6*** of the SLVIA and ***Appendix 28.3***.
"The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. The aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting, operational, and other relevant constraints.' … and paragraph 5.9.13 advises 'The fact that a proposed project will be visible from within a designated area should not in itself be a reason for refusing consent."	Paragraph 5.9.12 and 5.9.13	The potential for the proposed East Anglia ONE North project to affect the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB), The Broads National Park (NP) and Registered Parks and Gardens (RPG), has been considered in section ***section 28.6*** of the SLVIA and ***Appendix 28.3***.
"Outside nationally designated areas, there are local landscapes that may be highly valued locally and protected by local designation. Where a local development document in England has policies based on landscape character assessment, these should be paid particular attention. However, local landscape designations should not be used in themselves to refuse consent, as this may unduly restrict acceptable development."	Paragraph 5.9.14	The value of the local landscape is a consideration within ***Chapter 29 Landscape and Visual Impact Assessment*** and assessed in respect of each landscape receptor in ***section 28.6*** and ***Appendix 28.3***.

NPS Requirement	NPS Reference	PEIR Reference
"The IPC [now the Planning Inspectorate and the Secretary of State] should consider whether the project has been designed carefully, taking account of environmental effects on the landscape and siting, operational and other relevant constraints, to minimise harm to the landscape, including by reasonable mitigation."	Paragraph 5.9.17	***Chapter 4 Site Selection and Assessment of Alternatives*** of the PEIR sets out the iterative process that has influenced the design of the proposed East Anglia ONE North project. The mitigation of landscape and visual effects has been carefully considered in the SLVIA, to minimise 'harm to the landscape' where possible.
"Within a defined site, adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within that site, design including colours and materials, and landscaping schemes, depending on the size and type of the proposed project. Materials and designs of buildings should always be given careful consideration."	Paragraph 5.9.22	Adverse landscape and visual effects are minimised through embedded mitigation measures as presented in ***section 28.3.3***.
EN-3 NPS for Renewable Energy Infrastructure		
"Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology."	Paragraph 2.4.2	Project design has avoided sensitive features where possible. Embedded mitigation measures are presented in ***section 28.3.3***.
EN-5 NPS for Electricity Networks Infrastructure		
"New substations, sealing end compounds and other above ground installations that form connection, switching and voltage transformation points on the electricity networks can also give rise to landscape and visual impacts. Cumulative landscape and visual impacts can arise where new overhead lines are required along with other related developments such as substations, windfarms and/or other new sources of power generation."	Paragraph 2.8.2	The potential effects of the onshore infrastructure where possible have been assessed in ***Chapter 29 Landscape and Visual Impact Assessment.*** and ***Appendices 29.2 and 29.3***.

28.4.1.2 Assessment Guidance

51. This methodology has been specifically devised by OPEN for the assessment of wind energy developments and accords with Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3). Previous assessments which have been produced by OPEN using this methodology include Thanet Extension and Norfolk Vanguard. The following publications have been used for guidance and reference in preparation of the SLVIA:

    - Planning Inspectorate (IPC) (2018) Advice Note Nine: Rochdale Envelope;

- Landscape Institute and IEMA, 2013 - Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3);
- Landscape Institute (2017). Visual Representation of Development Proposals;
- Natural England (2012). An Approach to Seascape Character Assessment;
- Natural England (2014). An Approach to Landscape Character Assessment;
- Scottish Natural Heritage (SNH) (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments;
- SNH, 2017 - Siting and Designing Windfarms in the Landscape, Guidance (Version 3) (herein referred to as 'SNH Siting and Designing'); and
- SNH, 2017 - Visual Representation of Windfarms, Guidance (Version 2.2) (herein referred to as 'SNH Visual Representation').

28.4.2 Data Sources

52. Data has been gathered from official, reliable and the most up-to-date sources. This includes Ordnance Survey map-based data, as well as data on landscape characterisation, landscape designations and other Governmental and local authority data of relevance. The full list of data sources is presented in ***Appendix 28.1.***

28.4.3 Impact Assessment Methodology

53. The methodology for the assessment of seascape, landscape and visual (SL&V) impacts of the construction and operation of the offshore infrastructure is set out in full in ***Appendix 28.1***. A brief summary of the SLVIA methodology is provided within this chapter.

28.4.3.1 Approach to Assessment of East Anglia One North

54. This SLVIA is undertaken for the East Anglia ONE North windfarm site as a standalone project, in ***Appendices 28.2 – 28.5***, with the proposed East Anglia TWO project being considered as a cumulative source of impact and part of the cumulative context in ***Appendix 28.6***.

28.4.3.2 Approach to Operational Energy Developments

55. The SLVIA in ***section 28.6*** and ***Appendices 28.2 – 28.5*** considers effects of the construction and operation of the offshore infrastructure with a baseline of existing wind energy development, as listed in ***Table 28.6*** and illustrated in ***Figure 28.9***.

28.4.3.3 Whole Project Effects

56. The SLVIA presented in this chapter and LVIA presented in ***Chapter Landscape and Visual Impact Assessment*** together provide a whole project assessment of

the SL&V effects of the proposed East Anglia ONE North project i.e. of both the construction and operation of the offshore infrastructure (including windfarm site, offshore platforms, offshore cable corridor) and the onshore infrastructure and National grid infrastructure.

57. The effect of the construction and operation of the offshore infrastructure on specific offshore receptors (coastal viewpoints, seascape character types etc) is assessed within this chapter. The effect of the proposed onshore development area on specific onshore receptors (inland viewpoints, landscape character areas etc) is assessed in ***Chapter 29 Landscape and Visual Impact Assessment***.This chapter refers primarily to effects of the construction and operation of the offshore infrastructure, while ***Chapter 29 Landscape and Visual Impact Assessment*** refers primarily to effects of the construction and operation of the onshore infrastructure and together should be read as the de-facto whole project assessment of the Proposed East Anglia ONE North project. A further assessment of inter-related effects in ***section 28.11*** assesses any areas where the construction and operation of the offshore infrastructure and proposed onshore development area combine, or inter-relate, to have an effect e.g. on views from the coastal area near the landfall (between Sizewell and Thorpeness) and the combined effects of the construction and operation of the offshore infrastructure and onshore infrastructure on the character of the Suffolk Coast and Heaths AONB.

28.4.3.4 Seascape Effects and Landscape Effects

58. In England, seascape character ‘principally applies to coastal and marine areas seaward of the low-water mark’ and landscape character ‘principally applies to terrestrial areas lying to the landward side of the high-water mark’ (Natural England 2012 p7, Box 1). Although these definitions are clear in the guidance, the importance of the interaction of sea, coastline and land as perceived by people is also highlighted in subsequent definitions of seascape in the guidance (atural England, 2012), indicating a subtler transition between seascape and landscape than defined in Box 1, p7 of the guidance.

59. In order to address this and avoid under-valuing the intertidal area between the mean low and high-water mark (defined within this chapter and the wider PEIR as Mean Low Water Springs (MLWS) and Mean High Water Springs (MHWS) respectively), this SLVIA assesses seascape effects on Seascape Character Types (SCTs) that are seaward of the mean low-water mark, which consist of areas of inshore waters and offshore shipping channels. Landscape effects are assessed on Landscape Character Types (LCTs) lying to the landward side of the mean low-water mark, which includes beaches, intertidal areas and coastlines within LCTs covering the coast and those LCTs covering inland terrestrial areas with views of the proposed East Anglia ONE North project.

28.4.3.5 Overview of Approach to SLVIA

60. The SLVIA deals with the effects of changes resulting from the proposed East Anglia ONE North project on landscape / seascape as a resource, the views available to people and their visual amenity. The SLVIA is undertaken using the following steps:

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

These judgements are combined to assess the magnitude of change on the visual receptor; and

- The assessments of sensitivity to change and magnitude of change are combined to assess the significance of seascape, landscape and visual effects.

28.4.3.6 Defining Impact Significance

61. The objective of the assessment is to predict the likely significant effects of the proposed East Anglia ONE North project on the SL&V resource. In accordance with the EIA Regulations, SL&V effects are assessed to be either significant or not significant. The SLVIA does not define intermediate levels of significance as the EIA Regulations do not provide for these.

62. The significance of the effect on each seascape/ landscape character receptor is dependent on all of the factors considered in the sensitivity of the receptor and the magnitude of change resulting from the proposed East Anglia ONE North project. Factors which influence levels of sensitivity and magnitude of change assessed in the SLVIA are set out in full in ***Appendix 28.1***.

63. Judgements on sensitivity and magnitude of change are combined to arrive at an overall assessment as to whether the proposed East Anglia ONE North project will have an effect that is significant or not significant on each seascape/ landscape and visual receptor. An assessment of the factors considered in the evaluation of the sensitivity of each seascape/ landscape and visual receptor and the magnitude of the change resulting from the proposed East Anglia ONE North project is presented, in order that the relevant considerations which have informed the significance can be considered transparently.

64. The matrix in ***Table 28.5*** helps to inform the threshold of significance when combining sensitivity and magnitude to assess significance.

Table 28.5 Impact Significance Matrix – Seascape/Landscape Effects

		Magnitude of change					
		High	Medium-high	Medium	Medium-low	Low	Negligible
Sensitivity	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***

28.4.3.7 Geographical Extent

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

66. The extent of the effects varies depending on the specific nature of the proposed East Anglia ONE North project and is principally assessed through analysis of the extent of perceived changes through visibility of the proposed East Anglia ONE North project.

28.4.3.8 Duration and Reversibility

67. The duration and reversibility of seascape/ landscape and visual effects is based on the period over which the proposed East Anglia ONE North project is likely to exist and the extent to which the proposed East Anglia ONE North project will be removed and its effects reversed at the end of that period. OPEN's methodology does not include duration and reversibility as part of magnitude of change, as there is potential that the reversibility aspect could alter or reduce potentially significant effects even though they are long-term. The duration and reversibility of the effects

is instead determined separately and recorded alongside significance rather than being a factor of it.

68. Long-term, medium-term and short-term seascape/ landscape effects are defined as follows:

- Long-term – more than 10 years;
- Medium-term – 5 to 10 years; and
- Short-term – 1 to 4 years.

28.4.4 Cumulative Impact Assessment

28.4.4.1 Introduction

69. In GLVIA3 (Landscape Institute and IEMA, 2013, p120) the guidelines define cumulative landscape and visual effects as those that '*result from additional changes to the landscape and visual amenity caused by the proposal in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.*'

70. SNH's guidance, Assessing the Cumulative Impact of Onshore Wind Energy Developments (SNH 2012) is widely used across the UK to inform the specific assessment of the cumulative effects of windfarms. Both GLVIA3 and SNH's guidance provide the basis for the methodology for the cumulative SLVIA undertaken in this PEIR. The SNH (2012) guidance defines:

- Cumulative effects as '*the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments taken together*' (SNH 2012: p4);
- Cumulative landscape effects are those effects that '*can impact on either the physical fabric or character of the landscape, or any special values attached to it'* (SNH 2012, p10); and
- Cumulative visual effects are those effects that can be caused by combined visibility, which '*occurs where the observer is able to see two or more developments from one viewpoint*' and/or sequential effects which '*occur when the observer has to move to another viewpoint to see different developments'* (SNH 2012, p11).

71. In line with guidance (SNH, 2012), the SLVIA has sought to assess the key cumulative impacts which are likely to give rise to significant effects which could influence decision making, rather than assessing every potential cumulative effect. ***Chapter 5 EIA Methodology*** provides information and the methodology that has been used for the Cumulative Impact Assessment (CIA).

28.4.4.2 Scope of the Cumulative Assessment

72. In accordance with guidance (SNH 2012), the cumulative SLVIA undertaken in this PEIR assesses the combined effect of a set of developments taken together. The focus of the cumulative SLVIA is on the combined effect of the construction and operation of the proposed East Anglia ONE North offshore infrastructure with the construction and operation of the proposed East Anglia TWO offshore infrastructure.

73. The main SLVIA in ***Appendices 28.2 – 28.5*** considers effects of the construction and operation of the offshore infrastructure with a baseline of existing energy development, as listed in ***Table A28.1.10*** and illustrated in ***Figure 28.9***.

74. The cumulative SLVIA in ***Appendix 28.6*** considers effects of the construction and operation of the East Anglia ONE North windfarm site cumulatively with the East Anglia TWO windfarm site, as this is the only relevant offshore project which requires assessment, as listed in ***Table 28.6*** and shown in the cumulative search plan (***Figure 28.9***). ***Table 28.6*** identifies those projects that have been scoped in and out of the cumulative assessment.

Table 28.6 Other Energy Developments Considered in the SLVIA

Project	Status	Distance (km) from coastline	Scoped in (✓) or scoped out (x)	Rationale
Projects considered as part of the baseline				
Scroby Sands	Operational	2.0 km	✓	Considered as part of the baseline.
Greater Gabbard	Operational	24.8 km (from Orford Ness)	✓	Considered as part of the baseline.
Galloper	Under construction	28.9 km (from Orford Ness)	✓	Considered as part of the baseline.
Gunfleet Sands 1, 2 and 3	Operational	6.2 km (from Clacton-on-Sea)	✓	Considered as part of the baseline.
London Array	Operational	22.5 km (from Frinton-on-Sea)	✓	Considered as part of the baseline.
Lowestoft Ness Point	Operational	Onshore	✓	Considered as part of the baseline.
Sizewell A and B Nuclear Power Station	Operational	Onshore	✓	Considered as part of the baseline.
Projects scoped out of the SLVIA (as agreed at scoping)				

Project	Status	Distance (km) from coastline	Scoped in (✓) or scoped out (x)	Rationale
East Anglia ONE	Consented	48.6 (between Kessingland and Covehithe)	x	Limited theoretical visibility of East Anglia ONE offshore windfarm in coastal views and location behind East Anglia TWO windfarm site and at greater distance offshore.
East Anglia THREE	Consented	67.9 (Lowestoft)	x	Likelihood that there will be no visibility of East Anglia THREE offshore windfarm at distances over 67.9km from the coast.
Norfolk Vanguard	Scoping	47.8 (Winterton-on-sea)	x	Limited theoretical visibility of Norfolk Vanguard in coastal views at distances of 47.8km from coast. Geographic separation from East Anglia ONE North windfarm site.
Norfolk Boreas	Scoping	73.2 (Scratby)	x	Likelihood that there will be no visibility of Norfolk Boreas at distances over 73.2km from coast. Geographic separation from East Anglia ONE North windfarm site.
National Grid Ventures (NGV) inter-continental connectors (Nautilus and Eurolink)	Pre-application	NA - site location yet to be determined	x	NGV inter-continental connector projects are at pre-application stage. Lack of detail dictates that the NGV projects cannot be properly considered as part of the SLVIA for the proposed East Anglia ONE North project.
Projects considered as part of the cumulative impact assessment (assessed in *Appendix 28.6*)				
East Anglia TWO	Application (to be made at the same time as the proposed East Anglia ONE North project)	37.3km (from Lowestoft)	✓	The proposed East Anglia TWO project will be included in the cumulative assessment for the proposed East Anglia ONE North offshore windfarm due to its proximity and potential for cumulative effects on receptors/coastal views from the Suffolk/Norfolk coast.
Sizewell C New Nuclear Energy Plant	Scoping	Onshore	x	EDF Energy's proposals for a new nuclear power station to north of Sizewell B may have cumulative effect interactions with the onshore infrastructure associated with the proposed East Anglia ONE North project. Cumulative effects assessed in ***Chapter 29***

Project	Status	Distance (km) from coastline	Scoped in (✓) or scoped out (x)	Rationale
				Landscape and Visual Impact Assessment

28.4.4.3 Significance of Cumulative Effects

75. Judgements on sensitivity and cumulative magnitude of change are combined to arrive at an overall assessment as to whether the proposed East Anglia ONE North project will have a cumulative effect that is significant or not significant on each seascape / landscape and visual receptors. An assessment of the factors considered in the evaluation of the sensitivity of each seascape/ landscape and visual receptor and the magnitude of the change resulting from the proposed East Anglia ONE North project is presented, in order that the relevant considerations which have informed the significance can be considered transparently.

76. The matrix in ***Table 28.5*** helps to inform the threshold of significance when combining sensitivity and magnitude to assess significance.

77. Significant cumulative SL&V effects are likely to arise where the addition of the proposed East Anglia ONE North project, leads to offshore windfarms becoming a prevailing seascape/ landscape and visual characteristic of a receptor that is sensitive to such change.

28.4.5 Transboundary Impact Assessment

78. Transboundary effects have been scoped out of the SLVIA since there is no potential for transboundary seascape/ landscape and visual effects to arise as a result of the construction and operation of the offshore infrastructure.

28.4.6 Visual Representations

79. The methodology for the production of visual representations (photomontages and ZTVs) of the East Anglia ONE North windfarm site is set out in full in ***Appendix 28.1***.

80. Photomontages have been produced in accordance with SNH Visual Representation of Windfarms Guidance (SNH February 2017) and the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA 3) (Landscape Institute and IEMA 2013).

81. In preparing photomontages for the SLVIA, photographs have been taken in favourable weather conditions. Weather conditions shown in the photographs for all viewpoints have, where possible, been taken during periods of ‘very good’ or ‘excellent’ visibility conditions, during summer and in the afternoon or evening -

seeking to represent a maximum visibility scenario when the developments may be highly visible.

82. Photomontages have also been produced from five key viewpoints at night-time (Lowestoft, Kessingland, Southwold, Aldeburgh and Felixstowe), showing a photomontage representation of the appearance of visible aviation and marine navigation lighting.

83. The photomontage visualisations of the East Anglia ONE North windfarm site (and any windfarm proposal) have a number of limitations when using them to form a judgement on visual impact.

84. Rendering of the wind turbines in the photomontages is as photorealistic as possible to the conditions shown in each viewpoint photograph. There is some variation in the appearance and visibility of the wind turbines between the viewpoints, as they are rendered to suit the conditions shown in each of the different viewpoint photographs, which have some unavoidable degree of variation in terms of lighting and weather conditions. The key requirement is that the wind turbines have been rendered with sufficient contrast against the skyline backdrop to illustrate their maximum visibility scenario in each image. The full suite of viewpoint photomontages should be viewed to gain an impression of the likely visual effects of the East Anglia ONE North windfarm site.

85. The ZTV has been generated using GIS software (ESRI ArcGIS Version 10.5) to demonstrate the number of wind turbines that may theoretically be seen from any point in the study area. The ZTVs, shown in ***Figures 28.4*** to ***28.6***, show the number of wind turbines (blade tips) that are theoretically visible around the study area (based on the maximum blade tip height of 300 m). The ZTVs in ***Figures 28.16*** to ***28.19*** are shown in conjunction with the seascape, landscape and visual receptors.

28.5 Existing Environment

28.5.1 Seascape Character

28.5.1.1 Seascape Definition

86. In England, Seascape Character principally applies to coastal and marine areas seaward of the low water mark. Seascape, like landscape is about the relationship between people and place and the part it plays in forming the setting to our everyday lives. Seascape results from the way that the different components of the environment – both natural and cultural - interact and are understood and experienced by people. Seascape is defined by Natural England in its position statement on All Landscapes Matter (2010) as: “An area of sea, coastline and land, as perceived by people, whose character results from the actions and interactions of land with sea, by natural and/or human factors”. A summary of what constitutes

seascape is presented in 'An Approach to Seascape Character Assessment' (Natural England 2012).

87. A definition of seascape is also set out in NPS EN3 (2.6.203): "*Where necessary, assessment of the seascape should include an assessment of three principal considerations on the likely effect of offshore windfarms on the coast:*

- *Limit of visual perception from the coast;*
- *Individual characteristics of the coast which affect its capacity to absorb a development;* and
- *How people perceive and interact with the seascape".*

28.5.1.2 Seascape Overview

88. The seascapes of Suffolk, south Norfolk and north Essex within the SLVIA study area, are varied and interesting seascapes, which are valued natural and cultural assets. They contain some of the area's most important habitats, contribute to the setting of designated landscapes, (notably the Suffolk Coast and Heaths AONB); are important from an economic perspective, with major ports, seaside resorts and a range of commercial activities at sea and along the coast; and provide a fundamental contribution to the culture and identity of local communities.

89. In 1996, the 'Character of England: landscape, wildlife and natural features' map was published, which included 'Maritime Natural Areas' and onshore 'Natural Areas'. The SLVIA study area includes the full extent of the Suffolk Coast Maritime Natural Area, together with parts of the Sheringham to Lowestoft and Southern North Sea Marine Natural Area. The immediate onshore hinterland of the study area encompasses five terrestrial natural areas – North Norfolk, The Broads, Suffolk Coast and Heaths, London Basin and Greater Thames Estuary.

90. The SLVIA study area falls within the East Inshore Marine Plan area (MMO 2012), which is described as covering an area with*" …its coastline includes exposed sandy beaches, soft glacial till cliffs and seafront towns…busy with tourism, recreational activities and fisheries. Shallow waters and sandbanks provide important wildlife habitats and spawning grounds for many species and the area is rich in wildlife with many internationally designated sites."*

91. The East Offshore Marine Plan Area is described as *"…predominantly open, expansive, shallow water supporting oil and gas platforms and commercial activities such as shipping, aggregate extraction and fishing. Designated shipping routes, cables infrastructure and oil and gas pipelines cross the offshore area linking the United Kingdom mainland with Europe."* (MMO 2012)

92. In October 2012, Natural England published a pilot seascape character assessment of the Marine Plan Areas 3, 4 and Part of Area 6. The assessment maps and describes 11 seascape character areas at the national scale, highlights their key characteristics and their physical and cultural influences along with aesthetic and perceptual qualities.

93. In July 2012, the MMO published a study that was undertaken to summarise and respond to comments received following the informal consultation of the key characteristics for 10 of the seascape character areas described in the pilot study published by Natural England (MMO 2012). The study area includes the following Seascape Character Areas: Suffolk Coastal Waters; Norfolk Coastal Waters; East Anglian Shipping Waters; and East Midlands Offshore Gas Fields (***Figure 28.10***).

28.5.1.3 Suffolk, South Norfolk and North Essex Seascape Character Assessment

94. During pre-application discussions between the SLVIA ETG (Suffolk County Council, Suffolk Coastal and Waveney District Council, Great Yarmouth Borough Council) and the Applicant, regarding the East Anglia ONE North offshore windfarm, it was noted that there was no published seascape character assessment for the proposed study area for the SLVIA.

95. It was agreed that it would be necessary to map and describe seascape character to an appropriate level of detail to provide a comprehensive description of the marine areas of Suffolk and south Norfolk to inform the project and assessment of effects of the East Anglia ONE North offshore windfarm on seascape character (whilst also having an application in informing wider planning, design and management decisions).

96. In response, Suffolk County Council and Suffolk Coastal and Waveney District Council commissioned the Suffolk, South Norfolk and North Essex Preliminary Seascape Character Assessment (LDA Design 2018).

97. The SLVIA uses this Suffolk, South Norfolk and North Essex Preliminary Seascape Character Assessment (LDA Design 2018) to define the baseline seascape characterisation for the assessment. This preliminary seascape character assessment maps and describes the seascape character of the Suffolk, south Norfolk and north Essex coast in order to provide a comprehensive baseline description of the marine environment consistent with information available for terrestrial areas, at the county scale of assessment.

98. The emphasis is on mapping seascape character types (SCTs) (***Figure 28.10***) and describing their 'key characteristics' (set out in full in ***Appendix 28.2***). A subsequent phase will develop the description presented for each SCT to include aesthetic and perceptual qualities, drawing on further assessment work.

99. The seascape within which the East Anglia ONE North windfarm site is located is defined by the Offshore Waters SCT (06) (***Figure 28.10***). Situated at a distance of approximately 18km from the coastline and extending to the seaward extents of the SLVIA study area, the Offshore Waters SCT is formed by an open expanse of sea with consistently deep waters, generally in excess of 30m. The seascape is visually unified, with an expansive open character, but the character is influenced by the presence of commercial vessels crossing these busy shipping waters, to and from major coastal ports, which are often visible from the shore. The existing Greater Gabbard and Galloper offshore windfarms, together with the under-construction East Anglia ONE offshore windfarm, form a key characteristic in the baseline character of the southern and central parts of the SCT. The lights of shipping, flashing maritime navigation devices and lighting of existing offshore wind turbines have an influence on the seascape character at night.

100. The East Anglia ONE North windfarm site is also located 17.5km from the Coastal Waters SCT (05), which runs parallel to the coastline and marks a transition between the Nearshore Water SCT (03) and Developed Nearshore Waters SCT (04) which lie closer to the coast, and the Offshore Waters SCT (06) which lies further out to sea. Situated at a distance of 8km from the coast, the Coastal Waters SCT (05) is defined by an open expanse of sea, with simple bathymetry between 20 and 30 m in depth, incorporating commercial shipping routes and busy fishing waters. The Nearshore Waters SCT (03) extends along the coastline between Old Felixstowe and Lowestoft, occupying the shallower coastal waters associated with the Suffolk coastline; and to the north is the Developed Nearshore Waters SCT (04) which occupies the coastal waters associated with the largely developed stretch of coast extending north from Lowestoft.

101. Two further SCTs identified within the Suffolk, South Norfolk and North Essex Preliminary Seascape Character Assessment are located outside and to the south of the SLVIA study area. The Inland Navigable Waters SCT (01) extend across the estuaries of the River Stour and River Orwell, the eastward limits of which are defined by the adjacent International Ports and Approaches SCT (02).

102. The key characteristics of each SCT in the SLVIA Study Area (***Figure 28.10***) are described in full and assessed in ***Appendix 28.2***.

28.5.2 Landscape Character

28.5.2.1 Landscape Character Areas

103. Landscape character principally applies to terrestrial areas lying to the landward side of the high-water mark. There is a hierarchy of published Landscape Character Assessments (LCAs) that describe the baseline landscape character of the landscape in the SLVIA study area, at the National, County and District level.

104. The English Landscape is classified at the national level by National Character Areas (NCAs). The 159 NCAs, which cover the country, were originally identified by the Countryside Agency. This mapping and the associated descriptions have been revised and developed by Natural England into NCA profiles, which provide a recognised, national, spatial framework.

105. At the National level, the SLVIA study area is characterised by the following NCAs, as shown in ***Figure 28.11***:

- North East Norfolk and Flegg (NCA 79);
- The Broads (NCA 80);
- Suffolk Coast and Heaths (NCA 82); and
- South Norfolk and High Suffolk Claylands NCA (NCA 83).

106. The Suffolk Coast and Heaths NCA covers the largest part of the SLVIA study area and is located approximately 29.7km from the East Anglia ONE North windfarm site, at its closest point. The Suffolk Coast and Heaths NCA lies on the North Sea coast between Great Yarmouth in the north and Harwich in the south, forming a long, narrow band that extends between 10-20km inland. The distinctive landscape character is a product of its underlying geology, shaped by the effects of the sea and the interactions of people. It is mainly flat or gently rolling, often open but with few commanding viewpoints. In many places, and especially near the coast, wildlife habitats and landscape features lie in an intimate mosaic, providing diversity. Farming utilises much of the total land area, however the remaining land consists of coast and lowland heaths (known locally as the Sandlings) and form distinctive features, although traditional heath is now much fragmented. The coast is interrupted by five estuaries (Stour, Orwell, Deben, Alde/Ore and Blyth) with extensive intertidal areas of mudflat and salt marsh. The importance of the coast for biodiversity is recognised by its many wildlife designations. The shoreline consists of predominantly shingle beaches, often extensive in nature. Shingle structures, such as Orford Ness, form important geomorphological features.

107. Local Authorities across England have produced LCAs for their areas which subdivide the broader NCAs into more detailed Landscape Character Areas. These County Council and District Council scale landscape characterisations are utilised in the SLVIA.

108. The Suffolk County Council Landscape Character Assessment (Suffolk County Council, 2008/2011) define the baseline for the Suffolk section of the SLVIA study area, as mapped in ***Figure 28.12***. The LCAs identified within this character assessment are considered to be of an appropriate scale to allow assessment of the effects of the construction and operation of the offshore infrastructure over a

relatively wide SLVIA study area, but at a sufficient level of detail. The SLVIA presents a baseline description of relevant LCAs from the Suffolk County Council Landscape Character Assessment in ***Appendix 28.3*** and assesses the likely significant effects of the construction and operation of the offshore infrastructure on their landscape character. In the context of the construction and operation of the offshore infrastructure, only the visual/perceptual characteristics of onshore LCAs in the Suffolk County Council Landscape Character Assessment are likely to be relevant when considering potential effects, given that there will be no alteration to physical features of these LCTs as a result of the offshore infrastructure.

109. There are various district level landscape character assessments and other reference material that may also inform the baseline description of the SLVIA study area, within the framework of the Suffolk County Council Landscape Character Assessment, including:

- Waveney District Landscape Character Assessment (Waveney District Council, 2008);
- Touching the Tide Landscape Character Assessment (Suffolk Coast and Heaths AONB, 2012); and
- Shotley Peninsula and Hinterland Landscape Character Assessment (Stour and Orwell Society, 2013).

110. Norfolk County Council does not have an equivalent county scale landscape character assessment for the region. Reference will instead be made to District Council landscape character assessments covering Great Yarmouth, Broadland and South Norfolk as follows and shown in ***Figure 28.12***:

- Great Yarmouth Landscape Character Assessment (Great Yarmouth Borough Council, 2008);
- Broadland District Landscape Character Assessment (Broadland District Council, 2013); and
- South Norfolk Landscape Character Assessment (South Norfolk Council, 2001).

111. The SLVIA presents a baseline description of relevant LCAs from the Great Yarmouth Borough Landscape Character Assessment in ***Appendix 28.3*** and assesses the likely significant effects of the construction and operation of the offshore infrastructure on the landscape character of relevant LCAs within Great Yarmouth Borough. In the context of the construction and operation of the offshore infrastructure, only the visual/perceptual characteristics of onshore LCAs in Great

Yarmouth will be relevant when considering potential effects, given that there will be no alteration to physical features of these LCTs as a result of offshore development.

112. Potential landscape effects of the construction and operation of the offshore infrastructure on LCAs within Broadland and South Norfolk Districts are scoped out of the assessment. Significant effects on the landscape character of LCAs within these districts are unlikely due to the long distance of the East Anglia ONE North windfarm site from Broadland District (approximately 41.5km) and South Norfolk (approximately 42.3km); and the limited visibility to the sea and the East Anglia ONE North windfarm site afforded from the landscapes in these districts, which are located further inland, low-lying and partially screened by landforms and intervening vegetation (woodland and hedgerows).

28.5.2.2 Landscape Designations

113. The East Anglia ONE North windfarm site is located beyond the boundary of any areas subject to international, national or regional landscape designation intended to protect landscape quality, as shown in ***Figure 28.13***.

114. A number of landscape designations occur in the wider landscape of the SLVIA study area and include the nationally important Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB), which is located approximately 37.7km from the East Anglia ONE North windfarm site (***Figure 28.13***). The Suffolk Heritage Coast is largely contained within the AONB and is located 36.1km from the East Anglia ONE North windfarm site (***Figure 28.13***).

28.5.2.2.1 Suffolk Coast and Heaths AONB

115. The unique character of the AONB is a product of its underlying geology, shaped by the effects of the sea and the interaction of people with the landscape. It is a mainly flat or gently rolling landscape, often open but with few commanding viewpoints. In many places, and especially near the coast, habitats and landscape features lie in an intimate mosaic, providing great diversity in a small area.

116. The AONB comprises mainly farmland. Other main components of the landscape are forestry plantations, low-lying freshwater marshes, intertidal estuaries, heathland, the coast, small villages and iconic coastal market towns. The area is probably best known for the particularly distinctive features of the coast and lowland heath which give the AONB its name. Where it joins the sea, the AONB consists of predominantly shingle beaches, often extensive in nature, and backed in places by sandy cliffs. The coastline is interrupted by five river estuaries (Blyth, Alde/Ore, Deben, Orwell and Stour) with extensive wildlife-rich intertidal areas of mudflat and saltmarsh. In some places, old estuary mouths have become blocked, creating large areas of brackish or freshwater marshland of significant wildlife

value. Centuries old river walls were created to reclaim intertidal areas from the estuaries. These areas claimed from the sea are now important for agriculture.

117. The area's heathland, known locally as the Sandlings and now much fragmented, follows the line of the coast. Large areas that were once Sandlings heath have been converted to farmland, planted as coniferous forests or developed for housing or military airfields, particularly during the 20th century. The Suffolk Coast and Heaths AONB remains a lightly populated, undeveloped area, popular for outdoor recreation and tourism. The area is valued for its tranquillity, the quality of the environment and culture and for its wildlife.

118. The main LCTs that make up the Suffolk Coast and Heaths AONB are:

- Coastal Dunes and Shingle Ridges (LCT 05);
- Coastal Levels (LCT 06);
- Open Coastal (LCT 08) and Wooded Fens (LCT 29);
- Estate Sandlands (LCT 07);
- Estate Farmlands (LCT 11 and 15);
- Rolling Estate Sandlands (LCT 16);
- Saltmarsh and Intertidal Flats (LCT 20); and
- Valley Meadowlands (LCT 26).

119. A landscape baseline of the Suffolk Coast and Heaths AONB described in full in ***Appendix 28.3***, referring to these LCTs from the Suffolk Landscape Assessment, the AONB Management Plan and the AONB Special Qualities report (EDF Energy, Suffolk Coast and Heaths AONB Partnership, Suffolk County Council, Suffolk Coastal District Council and Waveney District Council, 2016).

120. The SLVIA assess the effects of the construction and operation of the offshore infrastructure on the special characteristics and qualities of the Suffolk Coast and Heaths AONB in ***Appendix 28.3***, including consideration of effects relating to the contribution of the inshore waters to the character and the special qualities of the AONB, as well as its contribution to their setting.

28.5.2.2.2 Suffolk Heritage Coast

121. The Suffolk Heritage Coast is located within the SLVIA study area, approximately 36.1km from the East Anglia ONE North windfarm site at its closest point. The Suffolk Heritage Coast was defined in 1973 and is largely contained within the AONB. It runs from Kessingland to Felixstowe and incorporates the Blyth, Alde/Ore and lower Deben estuaries. There are no statutory requirements or powers associated with the Heritage Coast definition, however it is noted that it includes

objectives for conserving the environmental health and biodiversity of inshore waters and beaches, and to extend opportunities for recreational, educational, sporting and tourist activities that draw on, and are consistent with, the conservation of their natural beauty and the protection of their heritage features. The purpose of Heritage Coast is similar to that of an AONB. As its geographic area is largely within the AONB and its protection policies are now incorporated into the AONB Management Plan, the effects on the Suffolk Heritage Coast designation are considered as integral to this assessment of the AONB.

28.5.2.2.3 The Broads National Park

122. The Norfolk and Suffolk Broads (the Broads) is Britain's largest protected wetland and third largest inland waterway, with the status of a National Park and is located approximately 39.3km from the East Anglia ONE North windfarm site at its closest point. The landscape baseline of the Broads National Park is mapped in ***Figure 28.13***, referring to:

- The Broads Landscape Character Assessment (Broads Authority, 2006); and
- The Broads Landscape Sensitivity Study for Renewables and Infrastructure (Broads Authority / Prepared by LUC July 2012).

123. Potential landscape effects of the construction and operation of the offshore infrastructure on the Broads National Park have been scoped out of the SLVIA assessment, as agreed with the Planning Inspectorate during scoping, due to the long distance of the East Anglia ONE North windfarm site from the Broads (approximately 39.3km); and the limited visibility to the sea and the East Anglia ONE North windfarm site afforded from the landscapes of the Broads, which are located further inland, very low-lying and partially screened by surrounding landforms and intervening vegetation (woodland and hedgerows).

28.5.2.2.4 Registered Parks and Gardens (RPG)

124. There are several Registered Parks and Gardens (RPG) in the study area (***Figure 28.13*** and ***28.18***), the closest of which to the East Anglia ONE North windfarm site is Belle Vue Park, in Lowestoft (36.6km). Further RPGs are located at Henham and Somerleyton Park. The SLVIA assess the effects of the construction and operation of the offshore infrastructure on the character of RPGs in ***Appendix 28.3***.

28.5.3 Views/Visual Amenity

28.5.3.1 Zone of Theoretical Visibility

125. Visual effects will occur when the introduction of the construction and operation of the offshore infrastructure changes or influences the visual amenity and views experienced by people in the area. The visual baseline is defined by the ZTV

shown in ***Figure 28.5*** and in more detail in ***Figure 28.6***. The ZTV shows the main area in which the East Anglia ONE North windfarm site will theoretically be visible, highlighting the different groups of people who may experience views of the East Anglia ONE North windfarm site and assisting in the identification of viewpoints where they may be affected.

126. The ZTV shown in ***Figure 28.5*** and ***28.6*** is based on a windfarm layout consisting of 300m wind turbines with a 300m blade tip height, representing the maximum visibility scenario for the SLVIA. This is the highest wind turbine height under consideration for the project envelope, but also the lowest number of turbines and will have the least dense appearance in views.

127. The Blade Tip ZTV (***Figures 28.5*** and ***28.6***) shows the main areas of theoretical visibility of the East Anglia ONE North windfarm site will be along the Suffolk and Norfolk coastlines and immediate hinterland, between Newport, Norfolk in the north and Sizewell, Suffolk in the south. The closest areas of theoretical visibility of the East Anglia ONE North windfarm site will be between Lowestoft and Southwold at approximately 36.3km from the coast at its closest point at Lowestoft. Theoretical visibility also extends along the coast, at longer distances north of Lowestoft and Great Yarmouth; and south to areas around Thorpeness and Aldeburgh, which lie beyond the southern edge of the study area.

128. The area of theoretical visibility of the East Anglia ONE North windfarm site becomes more fragmented from the hinterland and inland areas of the SLVIA study area, where views of the sea become increasingly screened within the main river valleys, either by adjacent rising land or coastal landforms. Actual visibility from these hinterland and inland areas also becomes increasingly screened by vegetation, such as woodland and hedgerows, and/or built development and settlement. There are relatively few elevated areas affording wider views of the sea from inland areas of the SLVIA study area.

28.5.3.2 Visual Receptors

129. The principal visual receptors are those that are most likely to be susceptible to visual effects arising from the construction and operation of the offshore infrastructure. The principal visual receptors in the SLVIA study area (***Figure 28.14***) are likely to be focused along the closest sections of the Suffolk and south Norfolk coastline, including people within settlements, driving on roads, visitors to tourist facilities or historic environment assets, and people engaged in recreational activity such as on walking along the Suffolk Coastal Path, cycling, informal beach activities and recreational sailing.

130. Principal visual receptors that are likely to be susceptible to visual effects arising from the construction and operation of the offshore infrastructure are located along the Suffolk and south Norfolk coastlines and immediate hinterland, including:

- Coastal settlements - including Caister-on-sea; Great Yarmouth; Gorleston-on-sea; Hopton-on-sea; Corton; Lowestoft; Kessingland; Southwold; Walberswick; Dunwich; Thorpeness; Aldeburgh; Orford; Bawdsey and Felixstowe;
- Recreational routes - including the Suffolk Coastal Path; Regional Cycle Routes 30, 31, 41, 42 and 517;
- Main road routes - such as the A12 and the various roads that lead off it to the coast such as the A1094, A1095, B1083, B1084, B1353, B1122, B1125, B1127;
- Visitors to natural assets – such as the Suffolk Coast and Heaths AONB, beaches and woodland;
- Visitors to tourist facilities - such as the sea fronts/beaches of the main coastal towns/resorts, holiday villages and nature reserves/visitor centres; and
- Visitors to historic environment assets - such as Dunwich Heath, Orford Ness, Orford Castle and the series of Martello Towers along the Suffolk coast.

28.5.3.3 Viewpoints

131. Representative and illustrative viewpoints proposed for the visual assessment are identified in ***Table 28.7*** and mapped in ***Figures 28.5*** and ***Figure 28.6.***

132. Representative viewpoints are selected to represent the experience of different types of visual receptor where larger numbers of viewpoints cannot all be included. A combination of baseline panorama, wireline and full photomontage visualisations has been produced. Full written analysis of visual effects will be undertaken in the SLVIA for those viewpoints that may experience significant visual effects, while others may be scoped out during preliminary assessment if no potential for significant effects is identified.

133. Illustrative viewpoints are chosen specifically to demonstrate a particular effect or specific issue (including restricted visibility). A baseline panorama and wirelines visualisation have been produced, but a written assessment of the visual effects from these viewpoints is not included in the SLVIA as agreed with the SLVIA ETG in Suffolk County Council / Suffolk Coastal and Waveney District Councils comments on viewpoint selection (27/07/2017).

134. Viewpoints have been compiled based on consultee feedback, the potential landscape and visual receptors and the ZTV for the East Anglia ONE North

windfarm site. Consultations with the SLVIA ETG (Suffolk County Council, Suffolk Coastal District Council, Waveney District Council, Great Yarmouth Borough Council, the Broads National Park, Suffolk Coast and Heaths AONB unit, Natural England and Historic England) have been ongoing and the agreement of viewpoint locations for use in the SLVIA has been reached following consideration of their combined feedback. The viewpoints to be included in the SLVIA are listed in ***Table 28.7***. The baseline panoramas from these viewpoints are shown in ***Figures 28.25 – 28.45*** and existing views described in full in ***Appendix 28.4***. The numbering of the viewpoints is consistent with that used in the proposed East Anglia TWO SLVIA in order to simplify cross referencing should this be required. Not all the viewpoints used in the East Anglia TWO SLVIA are used in the East Anglia ONE North SLVIA due to the greater distance offshore of East Anglia ONE North.

Table 28.7 Viewpoints included in SLVIA

Viewpoint		Easting	Northing	Distance from East Anglia ONE North windfarm site (km)
Representative viewpoints				
Suffolk				
1	Lowestoft	654451	291813	38.8
2	Kessingland Beach	653618	285844	39.7
3	Covehithe	652370	281104	41.6
4	Southwold	651072	276454	43.9
5	Gun Hill, Southwold	650828	275764	44.4
6	Walberswick	649936	274658	45.6
7	Dunwich	647961	270777	48.8
8	Dunwich Heath and Beach (Coastguard cottages)	647700	267801	50.2
9	Minsmere Nature Reserve	647171	267225	50.9
10	Sizewell Beach	647542	262858	52.4
11	Suffolk Coastal Path, between Thorpeness and Sizewell	647624	260987	53.0
12	Thorpeness	647287	259490	53.9
13	Aldeburgh	646525	256500	55.8
Norfolk				

Viewpoint		Easting	Northing	Distance from East Anglia ONE North windfarm site (km)
19	Hopton-on-sea	653585	299727	40.9
20	Gorleston-on-sea	652912	303337	42.7
21	Great Yarmouth, South Beach	653175	307578	44.0
22	Caister-on-sea	652777	312085	46.4
Illustrative viewpoints				
Illustrative viewpoints chosen specifically to demonstrate a particular effect or issue; appropriate visualisation produced, but written analysis of the impacts not required for LVIA.				
A	Southwold Common	650484	276162	44.6
B	Ness Point, Lowestoft	655573	293668	37.9
C	Corton Holiday Village	654535	297101	39.4
D	Southwold Pier	651357	276627	43.7

28.5.4 Anticipated Trends in Baseline Condition

135. The baseline character of the landscape in the study area is likely to change in the future as a result of the effects of climate change, land use policy, environmental improvements and development pressures, regardless of whether the proposed East Anglia ONE North project progresses to construction or not.

136. A range of policies impact on the management of the landscape, ranging from European Directive, national policy and regulation, through to community strategies and development frameworks. Landscape planning policies covering the coastal landscape within the study area, such as the AONB, generally seek to conserve and enhance the natural beauty of the area, while recognising the need to adapt to inevitable change over time, particularly in such a dynamic coastal landscape shaped by coastal processes, and the need to respond to development pressures that reflect the changing needs of society.

137. There is overwhelming evidence that global climate change, influenced by the human use of fossil fuels, raw materials and intensive agriculture, is occurring (IPCC 2014). Any notable change in climate is likely to present potential changes to the coastline of the study area in a variety of ways. The legislative framework already exists to ensure that no net loss of internationally important habitat occurs, but there remains a need to increase understanding of the potential effects of

climate change on the characteristic landscapes of the study area and to develop longer term strategies that will mitigate any adverse effects of climate change.

138. Suffolk County Council has produced 'Suffolk Climate Action Plan 3' (2017) which presents a summary of the County's climate change strategy. The Action Plan states *"Extremes of weather are fast becoming the 'new normal', which presents particular challenges to this, the most vulnerable region in the UK to the impacts of climate change, and the most low-lying with up to 30 per cent of land below sea level. This is also the driest area of the UK, with less annual average rainfall than parts of the Middle East, and yet our population is fast growing too, which brings into sharp focus the need to manage our year-round precious water resources. The rainfall we do get is increasingly falling in high intensity events, presenting significant management challenges."* In respect of the study area associated with East Anglia ONE North, higher sea levels will affect much of the Suffolk coastline, with some coastal areas predicted to being lost to the sea. Droughts and flooding will affect the productivity of agricultural land and the stability of farm businesses, while woodlands and other semi- natural landscapes, would be affected both in dry periods and wet periods, with long-term water-logging in low-lying parts presenting a particular problem.

139. The nationally designated AONB landscape within the study area is subject changes implemented from the aims and objectives of the Suffolk Coast and Heaths AONB Management Plan (Suffolk Coast and Heaths AONB, 2013 - 2018). The baseline conditions of this AONB landscape are likely to change gradually over time in response to the implementation of actions set out in the AONB Management Plan (Section 5).

140. Recent development management decisions/planning decision precedent has established and accepted landscape change from offshore windfarm development in the seascape of the study area. Several large scale offshore windfarms are operating and visible in the seascape of the study area, including Scroby Sands in the nearshore waters near Great Yarmouth; Galloper and Greater Gabbard in the offshore waters of the southern part of the study area; and other windfarms such as London Array and Gunfleet Sands (I, II and III) also being visible in the seascape outside the study area to the south, off the north Essex coastline. The baseline conditions are likely to change as a result of further offshore wind energy development in this seascape, with other offshore windfarms under construction nearby (East Anglia ONE) and consented (East Anglia THREE). There are other proposals for large scale offshore windfarms at long distance from the Norfolk coastline, at Norfolk Vanguard and Norfolk Boreas, which are anticipated to change the baseline of the wider seascape. The proposed East Anglia ONE North project fits with the current approach to accommodate wind energy development in this seascape.

141. There is notable development pressure in the Sizewell area of the study area, with several National Grid Ventures (NVG) inter-continental connector projects at pre-application stage. Lack of detail dictates that these NGV projects cannot be properly considered as part of the SLVIA, but there is potential for these projects, if implemented, to increase the influence of energy development in the Sizewell area. EDF Energy's proposals for a new nuclear power station, Sizewell C, to north of Sizewell B are within the onshore study area and may have a notable change to the baseline landscape and visual conditions of the area to the north of the existing Sizewell Power Station, with proposals for a new nuclear power station, accommodation campus, new road and rail access and beach landing facility outlined in the Stage 2 consultation summary document (EDF 2016).

142. Further development pressures which may change the baseline conditions, include suburbanisation and increased tourist development influences, particularly around the coastal landscapes and established coastal towns within the study area, which have potential to increase the developed influence and reduce perceived naturalness of the coastline.

28.6 Potential Seascape Impacts during Construction, Operation and Decommissioning

28.6.1 Preliminary Assessment

143. The potential seascape impacts that could arise as a result of the construction and operation of the offshore infrastructure are identified as follows:

- Temporary impacts on seascape character during construction and decommissioning; and
- Long-term impacts on seascape character during operation - either affecting the pattern of elements that define the character or affecting the visual/perceptual characteristics of seascape character areas.

144. A preliminary assessment of the seascape character types in the study area has been undertaken using ZTV analysis (***Figure 28.15***) and site survey, to identify which of the SCTs are likely to be affected by the construction and operation of the offshore infrastructure. This preliminary assessment is presented in ***Appendix 28.2***, which identifies the SCTs that have the potential to undergo significant effects as a result of the construction and operation of the offshore infrastructure and require to be assessed in full; and those that do not have potential to undergo potential significant effects that can be scoped out of further assessment.

145. The preliminary assessment in ***Appendix 28.2*** has identified four SCTs that require to be assessed further in the technical assessment, as a result of the

potential for significant seascape effects arising from the construction and operation of the offshore infrastructure (***Figure 28.15***):

- Nearshore Waters (SCT 03);
- Developed Nearshore Waters (SCT 04);
- Coastal Waters (SCT 05); and
- Offshore Waters (SCT 06).

146. The construction and operation of the offshore infrastructure is assessed in the preliminary assessment in ***Appendix 28.2*** as having no significant effects on the Inland Navigable Waters (SCT 01) and International Ports and Approaches (SCT 02), which are located outside the study area and have low to negligible visibility of the East Anglia ONE North offshore infrastructure.

28.6.2 Technical Assessment

147. A detailed technical assessment of the seascape effects of the construction and operation of the offshore infrastructure is set out in ***Appendix 28.2***. This describes, in full technical detail, the likely significant effects of the construction and operation of the offshore infrastructure on each SCT identified in the preliminary assessment as having potential to be significantly affected. The full technical assessment of seascape effects from ***Appendix 28.2*** is summarised for this SLVIA chapter in ***section 28.6.3*** as follows.

28.6.3 Summary Assessment

148. A summary assessment of the predicted seascape effects of the construction and operation of the offshore infrastructure on SCTs is set out in ***Table 28.8.*** SCTs are mapped in detail in ***Figure 28.15***. Full technical assessments are provided in ***Appendix 28.2.***

149. The East Anglia ONE North windfarm site is located within the Offshore Waters SCT (06) (***Figure 28.10***). This seascape is formed by open expanses of sea with consistently deep waters, busy shipping waters with several established commercial shipping routes with large vessels, dredging activity, gas wells, vessels and existing offshore windfarms (Greater Gabbard and Galloper) forming important characteristics, in an otherwise vast and featureless seascape with an expansive open character with consistent panoramic horizons.

150. The effect on seascape character of the Offshore Waters SCT (06), in which the East Anglia ONE North windfarm site is located, is assessed as not significant because its character is already characterised by a range of offshore development activities, including large scale offshore windfarms, which creates a seascape with an offshore windfarm influence, in addition to the large-scale shipping influences

of these waters. The addition of the East Anglia ONE North windfarm site, while increasing the windfarm influence, is assessed as not significant, as the Offshore Waters SCT (06) has medium-low sensitivity to change and the changes resulting from the East Anglia ONE North windfarm site will not redefine the existing seascape character of this SCA where offshore windfarms and other offshore development activities already form a key characteristic.

151. The East Anglia ONE North windfarm site is located approximately 28.5km from an area of Nearshore Waters (SCT 03), which extends along the coastline between Old Felixstowe and Lowestoft, and has a higher (medium-high) sensitivity to change. This seascape forms the immediate seascape setting along the coastline of the Suffolk Coast and Heaths AONB. The AONB and Suffolk Heritage Coast provide a strong indication of the scenic qualities of the coastal edges of this SCT, however the majority of the seascape within this SCT is not designated for its scenic value. The addition of the East Anglia ONE North windfarm site in the offshore waters outside these nearshore waters has potential to alter the perceived character of the SCT and some of its aesthetic / perceptual characteristics.

152. The construction and operation of the offshore infrastructure is assessed as having not significant effects on the seascape character of the area of nearshore waters between Kessingland and Orford Ness, which are located between the Suffolk coast and the East Anglia ONE North windfarm site. The East Anglia ONE North windfarm site will result in a low magnitude of change to the seascape character of this SCT, arising from the addition of elements on the sea skyline which will partially alter the visual relationship of the seascape with the coastline, resulting in partial loss of open sea skyline in the backdrop of offshore waters; appearing as an additional element in the simple sea/sky composition and a further focal point in the expansive/limitless views offshore. These changes are considered not significant to the character of the nearshore waters due to the relatively small portion of the skyline backdrop affected and the long distance of the East Anglia ONE North windfarm site, at a minimum of 32km from the SCT. The East Anglia ONE North windfarm site will be increasingly hidden behind the skyline, particularly from the southern areas of the SCT, having less prominence as an additional element and introduces features that are similar to elements already characteristic in the backdrop to the south (Galloper and Greater Gabbard windfarms).

153. Existing offshore windfarms in the Offshore Waters SCT (06) are an integral component of people's surroundings in this seascape and part of the diversity of seascape/ landscape character that is evident in the study area. The seascape is one whose character has already been allowed to change, through the development and operation of several large-scale offshore windfarms, including Galloper and Greater Gabbard, and further south London Array and Gunfleet Sands (I, II and II) are present in the wider seascape. They result in the perception

of a windfarm influenced seascape where offshore windfarms are a characteristic element, as they appear as elements that are repeated. There is currently sufficient 'space' or undeveloped seascape between each offshore windfarm (the overlapping of the offshore windfarms is not too dense) such that they generally appear as a series of separate developments within the seascape, located at long distance offshore, which have a clear and visible influence, but are not the defining characteristic of the seascape.

154. This seascape is one in which a degree of change has already been accepted and managed in the interests of national energy policy. Although the construction and operation of the offshore infrastructure will have an effect on the seascape character, it will be accommodated to retain the overall character of the seascape. It is considered to fit with, and extend, the existing pattern and characteristic of the offshore windfarm influenced seascape and will not re-define its fundamental character. The presence of spacing between existing offshore windfarms and the East Anglia ONE North windfarm site is enough that a curtaining effect, whereby separate developments merge and become interspersed across the sea skyline, will not be evident in the seascape.

Table 28.8 Seascape Character Types – Summary of Effects

Seascape Character Type (SCT) (*Figure 28.15*)	Sensitivity to change	Magnitude of change (East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia TWO) (operation)
Nearshore Waters (SCT 03)				
Area A: Kessingland to Orford Ness	Medium-high	Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Developed Nearshore Waters (SCT 04)				
Area A: Lowestoft area	Medium-low	Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Area B: South Norfolk area (Great Yarmouth to Newport)		Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Coastal Waters (SCT 05)				
Area A: Coastal waters offshore of	Medium	Medium-Low	Not significant, short-term, temporary	Not significant, long-term, reversible

Seascape Character Type (SCT) (*Figure 28.15*)	Sensitivity to change	Magnitude of change (East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia TWO) (operation)
Lowestoft and Southwold				
Area B: Coastal waters offshore of south Norfolk (north of Lowestoft)		Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Area C: Coastal waters offshore between Southwold and Sizewell		Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Offshore Waters (SCT 06)				
Area A: Offshore waters within the study area	Medium-low	Medium or Medium-Low/Low	Not significant, short-term, temporary	Not significant, long-term, reversible

28.7 Potential Landscape Impacts during Construction, Operation and Decommissioning

28.7.1 Preliminary Assessment

155. The potential landscape impacts that could arise as a result of the construction and operation of the offshore infrastructure are identified as follows:

- Temporary impacts on landscape character during construction and decommissioning; and
- Long-term impacts on landscape character during operation - within terrestrial landscape types and landscape designations, primarily as a result of visibility of the offshore wind turbines during operation.

156. A preliminary assessment of the landscape receptors in the study area has been undertaken using ZTV analysis (***Figure 28.17***) and site survey, to identify which of the landscape receptors are likely to be affected by the construction and operation of the offshore infrastructure. This preliminary assessment is presented in ***Appendix 28.3***, which identifies the landscape character types (LCTs) and landscape designations that have the potential to undergo significant effects as a result of the construction and operation of the offshore infrastructure and require

to be assessed in full; and those that do not have potential to undergo significant effects that can be scoped out of further assessment.

157. The preliminary assessment in ***Appendix 28.3*** has identified that parts of three LCTs and two landscape designations require to be assessed further in the technical assessment, as a result of the potential for significant seascape effects arising from the construction and operation of the offshore infrastructure (***Figure 28.17***):

- Coastal Dunes and Shingle Ridges LCT – North of Southwold (05);
- Coastal Levels LCT – North of Southwold (06);
- Estate Sandlands LCT – North of Southwold (07);
- Suffolk Coast and Heaths AONB; and
- Suffolk Heritage Coast.

158. The construction and operation of the offshore infrastructure is assessed in the preliminary assessment in ***Appendix 28.3*** as having no significant effects on the remaining LCTs within the study area.

28.7.2 Technical Assessment

159. A detailed technical assessment of the landscape effects of the construction and operation of the offshore infrastructure is set out in ***Appendix 28.3***. This describes, in full technical detail, the likely significant effects of the construction and operation of the offshore infrastructure on each landscape receptor, focusing on those landscape receptors that were identified in the preliminary assessment as having potential to be significantly affected. The technical assessment of landscape effects from ***Appendix 28.3*** is summarised for this SLVIA chapter as follows.

28.7.3 Summary Assessment

28.7.3.1 Landscape Character Types

160. A summary assessment of the predicted landscape effects of the construction and operation of the offshore infrastructure on LCTs is set out in ***Table 28.9***. Full technical assessments are provided in ***Appendix 28.3***. LCTs are mapped at detailed scale in ***Figure 28.17***.

161. At the National level, the largest part of the SLVIA study area is characterised by the Suffolk Coast and Heaths (NCA 82), which is located approximately 36.4km from the East Anglia ONE North windfarm site, at its closest point. It lies on the North Sea coast between Great Yarmouth in the north and Harwich in the south, forming a long, narrow band that extends between 10-20km inland. It is mainly flat or gently rolling, often open but with few commanding viewpoints. In many places, and especially near the coast, wildlife habitats and landscape features lie in an

intimate mosaic, providing diversity. Farming utilises much of the total land area, however the remaining land consists of coast and lowland heaths (known locally as the Sandlings) and form distinctive features, although traditional heath is now much fragmented. The coast is interrupted by five estuaries (Stour, Orwell, Deben, Alde/Ore and Blyth) with extensive intertidal areas of mudflat and salt marsh. The importance of the coast for biodiversity is recognised by its many wildlife designations. The shoreline consists of predominantly shingle beaches, often extensive in nature. Shingle structures, such as Orford Ness, form important geomorphological features.

162. The Suffolk County Council Landscape Character Assessment (Suffolk County Council, 2008/2011) defines the baseline for the Suffolk section of the SLVIA study area (***Figure 28.17***). The East Anglia ONE North windfarm site will result in not significant, long-term and reversible effects on the landscape character of a narrow edge of the immediate coastal LCTs forming the closest part of the Suffolk coastline between Orford Ness and Kessingland – consisting of specific parts of the Coastal Dunes and Shingle Ridges LCT (05) and the coastal edges of the Estate Sandlands LCT (07).

163. The Coastal Dunes and Shingle Ridges LCT (05) is found in narrow bands along the study area coast: short stretches to the north of Lowestoft; at Kessingland; from Southwold to the north side of Dunwich; and a long stretch from the south side of Dunwich Heath through to Sizewell (***Figure 28.17***). It is formed by flat or gently rolling landform of shingle ridges or coastal dunes, formed by wave action and longshore drift of sand and stones. There are variations in character, with the majority of the LCT formed by vast, open and uncluttered landscape, but with short stretches influenced by intensive tourist activity and some areas have a distinctive bleakness and austere scenic quality, with a strong sense of place. It is assessed as having a medium-high sensitivity to change, due to its high value and medium susceptibility to changes arising from the construction and operation of the offshore infrastructure. Its value is recognised through AONB designation, with special qualities focusing on the simplicity of its main elements (shingle beach/sea/sky), the natural qualities of its vegetated dune and shingle habitats; its relative remoteness/inaccessibility along some stretches and traditional seaside influences of other stretches; and the dynamic qualities of the exposed landscape near the powerful forces of the sea. The landscape is also highly valued for recreation and the focus of visitor activity at the coast. The LCT is assessed as having a medium susceptibility to changes arising from the construction and operation of the offshore infrastructure. The LCT has the potential to be influenced by the construction and operation of the offshore infrastructure due to its coastal location and exposure to the sea, however the potential change occurs far away and separated by vast areas of sea.

164. The magnitude of change resulting from the construction and operation of the offshore infrastructure on the Coastal Dunes and Shingle Ridges LCT (05) is assessed as low on the areas of the LCT to the north of Lowestoft (Area A) and near Kessingland (Area B). The effect of the construction and operation of the offshore infrastructure on the character of the Coastal Dunes and Shingle Ridges LCT (05) is assessed as not significant. The character of this stretch of the LCT to the north of Lowestoft and at Kessingland is heavily influenced by the adjacent developed coastline. The introduction of wind turbines on the distant sea skyline located well outside and at distance from the LCT (over 36.4km) would constitute a new, but relatively minor alteration to the perceived character, at variance to the same characteristics of the LCT, such as its open, vast, uncluttered character, but is in keeping with other characteristics such as its large scale, exposure and existing offshore wind energy generation influences.

165. The Estate Sandlands LCT (07) is found in a slightly interrupted series along the coast, taking in a large part of the area known as the Sandlings heaths and forests, and includes a series of areas stretching eastward from Westleton and Dunwich to Southwold and Reydon, and from Covehithe to Benacre (***Figure 28.17***). The coastal edges of the LCT are defined by low cliffs, such as Covehithe and Sizewell Cliffs, which contrast to gently rolling Sandlings heaths, forests and farmland further inland. The sensitivity of the Estate Sandlands LCT (07) is assessed as locally medium where it meets the sea, but generally low over most of the LCT. Its value is recognised in some of areas through AONB and natural heritage designations (such as SSSI/SPA), but with other areas not being designated and having been subject to changes in the inherent character through extensive plantation forestry, suburbanisation and/or modern energy generation and transmission infrastructure. The main scenic qualities and of the LCT are influenced by areas of heathland / acid grassland within the backdrop of extensive coniferous forestry (Sandlings Forests) and often vary between the different areas. The LCT is assessed as generally having a low susceptibility to changes arising from the construction and operation of the offshore infrastructure as the majority of the LCT has limited association with the sea, where it covers extensive inland areas away from the coast and is often influenced primarily by the presence of plantation forestry or agricultural landscapes with no exposure to the seascape in which the East Anglia ONE North windfarm site is located. In some localised areas of this LCT, where it extends near to the coast to meet the sea, such as Dunwich Heath/Cliffs and areas between Sizewell and Thorpeness, there are stronger associations with the sea and the character will be exposed to the seascape. On balance, the LCT is assessed as having a generally low sensitivity over most of the LCT, with a locally medium sensitivity where it forms the coastal edge (such as at Dunwich Cliffs, Sizewell Cliffs, Easton Bavents and Thorpeness).

166. The magnitude of change resulting from the construction and operation of the offshore infrastructure on the Estate Sandlands LCT (07) is assessed as low from the Covehithe to Benacre and Easton Bavents area (Area A). The construction and operation of the offshore infrastructure will introduce new elements that will change the perception of the seascape in the setting of the low coastal cliffs on the edges of this area of the LCT. The long distance and panoramic views out to sea and along the coast from the cliffs will be altered through a partial loss of open sea skyline, changes in the simple landscape composition and sense of isolation, however these changes on the sea skyline located well outside and at distance from the LCT (over 38km) would constitute a minor alteration to the perceived character, at variance to the same characteristics such as its natural qualities, remoteness/isolation and panoramic views, but in keeping with other characteristics such as its large scale and exposure. The effect of the construction and operation of the offshore infrastructure on the character of the Estate Sandlands LCT (07) is assessed as not significant on the Covehithe to Benacre and Easton Bavents area (Area A).

167. The magnitude of change resulting from the construction and operation of the offshore infrastructure on the Estate Sandlands LCT (07) is assessed as negligible from the Southwold Common area of the LCT (Area B). This negligible change is assessed due to the limited visibility of the East Anglia ONE North windfarm site from this area and its distance inland away from the coast. Views of the East Anglia ONE North windfarm site are almost entirely concealed/screened by a combination of the intervening urban area of Southwold and landform. The effect of the construction and operation of the offshore infrastructure on the character of the Estate Sandlands LCT (07) is assessed as not significant, short-term and temporary on the Southwold Common area of the LCT.

168. The construction and operation of the offshore infrastructure is assessed as having no significant effects on the character of the Coastal Levels LCT (06) In general, this LCT, although having high value, will experience a low magnitude of change to the existing character, due to the limited visibility of the East Anglia ONE North windfarm site, with direct views largely concealed/screened by the extensive intervening dune / shingle landforms, which lies between these LCT and the sea. The East Anglia ONE North windfarm site is located well outside and at long distance from this LCT (over 36 km) and would constitute a new, but relatively minor alteration to the perceived character.

Table 28.9 Landscape Character Types – Summary of Effects

Landscape Character Type (LCT) (Figure 28.17)	Sensitivity to change	Magnitude of change (construction, operation and decommissioning)	Significance of effect (construction and decommissioning)	Significance of effect (operation)
Coastal Dunes and Shingle Ridges (LCT 05)				
Area A: North of Lowestoft	Medium-high	Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Area B: Kessingland		Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Coastal Levels (LCT 06)				
Area A: Marshes flanking the Hundred River from Kessingland Beach westward through the Kessingland Levels to Henstead	Medium	Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Estate Sandlands (LCT 07)				
Area A: Covehithe to Benacre and Easton Bavents	Locally medium at coastal edges of LCT, but generally low over most of LCT	Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Area B: Southwold Common		Negligible	Not significant, short-term, temporary	Not significant, long-term, reversible

28.7.3.2 Suffolk Coast and Heaths AONB and Suffolk Heritage Coast

169. A summary assessment of the predicted landscape effects of the construction and operation of the offshore infrastructure on the Suffolk Coast and Heaths AONB and Suffolk Heritage Coast is set out in ***Table 28.10***. Full technical assessments are provided in ***Appendix 28.3*** and these landscape designations are mapped at detailed scale in ***Figure 28.18***.

170. The Suffolk Coast and Heaths AONB (the AONB) is located approximately 37.7km from the East Anglia ONE North windfarm site (***Figure 28.18***). It covers approximately the Suffolk coastline stretching from Kessingland in the north to the River Stour in the south. Many of the LCTs that define the baseline character of

the AONB have been assessed as having no potential to be significantly affected by the construction and operation of the offshore infrastructure (LCTs 08, 11, 15, 16, 20, 26, 29 and the southerly units of LCTs 5, 6 and 7), due to their inland locations, long distance and / or substantial amount of intervening screening between these areas and the East Anglia ONE North windfarm site. Only the LCTs that define the coastal areas of the AONB within the SLVIA study area (***Figure 28.18)***, where it joins the sea and has a seascape setting, are those which are susceptible to the influence of the construction and operation of the offshore infrastructure. These are identified as the Coastal Dunes and Shingle Ridges (LCT 05), Coastal Levels (LCT 06) and Estate Sandlands (LCT07).

171. The assessment of effects of the construction and operation of the offshore infrastructure on the character of the AONB is informed by these assessments of the LCTs that define its coastal character; but is also based upon published citations that describe the 'special qualities' of the AONB. Special qualities are set out in the Suffolk Coast and Heaths AONB Natural Beauty and Special Qualities Indicators report (November 2016). The assessment which is presented in detail in ***Appendix 28.3***, utilises the natural beauty indicators from the AONB special qualities report (Section 2.0) and assesses the significance of effect on the AONB special qualities – landscape quality, scenic quality, relative wildness, relative tranquillity, natural heritage features and cultural heritage – from the LCTs that define the coastal areas of the AONB.

172. The key finding of the AONB assessment (***Appendix 28.3***) is that the construction and operation of the offshore infrastructure results in not significant effects on the special qualities of the AONB. The construction and operation of the offshore infrastructure will affect the special qualities of the Coastal Dunes and Shingle Beaches LCT (05) in localised areas to the south of Kessingland and between Southwold and Dunswich; and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A) within the AONB, however these effects are assessed as not significant.

173. Due to its long distance offshore, and the relatively narrow lateral spread of turbines on the sea skyline, the construction and operation of the offshore infrastructure will have a relatively limited influence on the strong overall character of the AONB, with its varied and distinctive landscapes continuing to define its overall character. The construction and operation of the offshore infrastructure will result in a relatively small loss of open sea skyline in long distance and panoramic views out to sea, from elevated vantage points, due to the contained lateral spread of turbines on the seaward horizon experienced from the AONB coastline. The turbines may partially alter the 'vastness' of the seaward aspect of the AONB coastline, by curtailing part of the 'limitless' aspect out to sea, but due to its long

distance offshore, would not interrupt the 'rhythm' dictated by river and estuaries along the coast.

174. The construction and operation of the offshore infrastructure will also introduce further wind energy development influences in the offshore backdrop to the coastal cliffs, shingle spits, estuaries and beaches that define the coastal landform of the AONB. Some changes will arise from the introduction of modern wind turbines in the seascape backdrop, contrasting to the natural colours/textures of sand dunes, shingle beaches, reedbeds, mud flats and heathland at the coast, despite also relating rationally to the exposure, large scale and austere character of parts of the coastal landscape. The turbines within the East Anglia ONE North windfarm site will add a new large-scale offshore windfarm element to the sea element of the simply composed character of sea and big 'Suffolk skies', however the vertical height of the turbines relatively to the vast skies will be relatively small in scale, due to their long distance offshore (over 36km) and the large scale of the seascape. The construction and operation of the offshore infrastructure will also add a further large-scale energy generation element influencing the coast and its seascape setting, in addition to other long-established elements such as Sizewell Nuclear Power Station and more recent offshore windfarms (Greater Gabbard and Galloper), which may add to the cluttered seascape horizon.

175. The construction and operation of the offshore infrastructure will result in no significant effects on the landscape and scenic special qualities of the AONB from wider inland areas out with the Coastal Dunes and Shingle Beaches LCT (05) and the coastal edges of the Estate Sandlands LCT (07), having no significant effects on the wider character of the AONB extending inland beyond its immediate coastal edges, where a combination of landform, extensive plantation forestry, woodlands and hedgerows limit or prevent visibility of the East Anglia windfarm site and therefore perceived changes in the character of the AONB.

176. The construction and operation of the offshore infrastructure will result in no significant effects on the relative wildness, relative tranquillity and natural heritage of the AONB. Although the construction and operation of the offshore infrastructure will introduce further development influence on the relatively undeveloped character of the Suffolk coast, this influence occurs at long distance offshore and in the context of existing energy generation influences in the sea and on the coast. The increase in apparent development activity may change the perceived wildness attributes from pockets of coastal AONB landscapes which have relative wildness associated with coast, contrasting with this perception of wildness, yet on the other hand wind turbines may also relate legibly to the coastal exposure and inclement conditions experienced. The changes arising from the construction and operation of the offshore infrastructure also often occur in the context of existing energy generation developments, which already influence and limit the perceived wildness

of the AONB, including operational offshore windfarms (Greater Gabbard and Galloper) and the Sizewell A and B Nuclear Power Station. In this context, the construction and operation of the offshore infrastructure represents an increase in energy development influence/an increase in an existing characteristic of the AONB coastline, rather than an entirely new influence.

177. The construction and operation of the offshore infrastructure will result in no audible changes to the existing sounds of tranquil areas of the AONB and have negligible changes to the sense of relative tranquillity experienced in the AONB and its coastline. The appearance of the East Anglia ONE North windfarm site relates rationally to the sounds of the wind and exposure along the AONB coastline and although the introduction of the wind turbines will introduce further visual movement, their relatively low speed and long distance offshore would ensure that they have negligible changes to the perceived calmness in the landscape (only experienced during good weather). The East Anglia ONE North windfarm site will result in negligible changes to areas of the AONB which have low levels of tranquillity in the baseline, such as the busy coastal towns with large numbers of seasonal tourist visitors and urban development/road traffic being prevalent. Night time lighting of the wind turbines will introduce further lighting in the relatively dark night skies, however will be viewed at long distance offshore, in the context of existing wind turbine lighting (Galloper and Greater Gabbard) and other lighting of cardinal buoys and vessels in the waters off the AONB coastline

Table 28.10 Suffolk Coast and Heaths AONB – Summary of Effects

Special quality	Magnitude of change (East Anglia ONE North) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North) (construction and decommissioning)	Significance of effect (East Anglia ONE North) (operation)
Suffolk Coasts and Heaths AONB and Heritage Coast			
Landscape quality:	Low change to landscape quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland; Coastal Levels LCT (06) at Kessingland Marshes; and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A). Negligible change to landscape quality of the inland areas of	**Not significant**, short-term, temporary effects on landscape quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland (Area A); Coastal Levels LCT (06) at Kessingland Marshes and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A).	**Not significant**, long-term, reversible effects on landscape quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland (Area A); Coastal Levels LCT (06) at Kessingland Marshes and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A).

Special quality	Magnitude of change (East Anglia ONE North) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North) (construction and decommissioning)	Significance of effect (East Anglia ONE North) (operation)
	Estate Sandlands LCT (07) within AONB.		
Scenic quality:	Low change to scenic quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland; Coastal Levels LCT (06) at Kessingland Marshes; and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A).	**Not significant**, short-term, temporary effects on scenic quality of the Coastal Dunes and Shingle Beaches LCT (05) near Kessingland (Area A); the Coastal Levels LCT (06) at Kessingland Marshes; and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A).	**Not significant**, long-term, reversible effects on scenic quality of the Coastal Dunes and Shingle Beaches LCT (05) near Kessingland (Area A); the Coastal Levels LCT (06) at Kessingland Marshes; and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A).
Relative wildness:	Low change to relative wildness of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland; the Coastal Levels LCT (06) at Kessingland Marshes and the coastal edges of the Estate Sandlands LCT (07).	**Not significant**, short-term, temporary effects on relative wildness of the Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) and Estate Sandlands LCT (07) within the AONB.	**Not significant**, long-term, reversible effects on the relative wildness of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) and Estate Sandlands LCT (07) within the AONB.
Relative tranquillity:	Negligible change to relative tranquillity of Coastal Dunes and Shingle Beaches LCT (05), Estate Sandlands LCT (07), and Coastal Levels LCT (06) within AONB.	**Not significant**, short-term, temporary effects on relative tranquillity of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) and Estate Sandlands LCT (07) within the AONB.	**Not significant**, long-term, reversible effects on relative tranquillity of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) and Estate Sandlands LCT (07) within the AONB.
Natural heritage features:	Negligible change to natural heritage features of Coastal Dunes and Shingle Beaches LCT (05), Estate Sandlands LCT (07) and Coastal Levels LCT (06) within AONB.	**Not significant**, short-term, temporary effects on natural heritage features of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) and Estate Sandlands LCT (07) within the AONB.	**Not significant**, long-term, reversible effects on natural heritage features of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) and Estate Sandlands LCT (07) within the AONB.

28.8 Potential Visual Impacts During Construction, Operation and Decommissioning

28.8.1 Preliminary Assessment

178. Potential visual impacts that could arise during construction, operation and decommissioning are identified as follows:

- Temporary visual impacts on views during construction and decommissioning; and
- Long-term visual impacts on views during operation and maintenance, primarily as a result of offshore wind turbine operation, experienced by visual receptors (groups of people) with visibility of the construction and operation of the offshore infrastructure, on specific views and on their visual amenity/experience of the landscape. In addition, there may be visual impacts on views at night-time as a result of navigational lighting and aviation lighting of offshore wind turbines.

179. A preliminary assessment of the visual receptors and viewpoints in the study area has been undertaken using ZTV analysis (***Figure 28.19***) and site survey, to identify which of the visual receptors and viewpoints are likely to be affected by the construction and operation of the offshore infrastructure. This preliminary assessment is presented in ***Appendix 28.4***, which identifies the visual receptors and viewpoints that have the potential to undergo significant effects as a result of the construction and operation of the offshore infrastructure and require to be assessed in full; and those that do not have potential to undergo potential significant effects that can be scoped out of further assessment.

28.8.1.1 Viewpoints

180. The preliminary assessment in ***Appendix 28.4*** has identified the following viewpoints (shown in ***Figure 28.19***) that require to be assessed further in the technical assessment, as a result of the potential for significant visual effects arising from the construction and operation of the offshore infrastructure:

- Viewpoint 1 – Lowestoft;
- Viewpoint 2 - Kessingland Beach;
- Viewpoint 3 – Covehithe;
- Viewpoint 4 – Southwold;
- Viewpoint 5 - Gun Hill, Southwold;
- Viewpoint 6 – Walberswick;
- Viewpoint 7 – Dunwich;
- Viewpoint 19 - Hopton-on-Sea; and

- Viewpoint 20 - Gorleston-on-Sea.

181. The construction and operation of the offshore infrastructure is assessed in the preliminary assessment in ***Appendix 28.4*** as having no significant effects on the remaining representative viewpoints largely as a result of distance from the East Anglia ONE North windfarm site.

- Viewpoint 8 - Dunwich Heath and Beach (Coastguard cottages);
- Viewpoint 9 - Minsmere Nature Reserve;
- Viewpoint 10 - Sizewell Beach;
- Viewpoint 11 - Suffolk Coastal Path, between Thorpeness and Sizewell;
- Viewpoint 12 – Thorpeness;
- Viewpoint 13 – Aldeburgh;
- Viewpoint 21 Great Yarmouth; and
- Viewpoint 22 Caister-on-Sea.

28.8.1.2 Settlements

182. The preliminary assessment in ***Appendix 28.4*** has identified the following settlements that require further assessment in the technical assessment, as a result of the potential for significant seascape effects arising from the construction and operation of the offshore infrastructure: Lowestoft, Kessingland, and Southwold.

183. The construction and operation of the offshore infrastructure is assessed in the preliminary assessment in ***Appendix 28.4*** as having no significant effects on the remaining settlements within the study area.

28.8.1.3 Recreational Routes

184. The preliminary assessment in ***Appendix 28.4*** has identified that the Suffolk Coastal Path requires further assessment in the technical assessment, as a result of the potential for significant seascape effects arising from the construction and operation of the offshore infrastructure.

28.8.1.4 Transport Routes

185. The preliminary assessment has identified that the construction and operation of the offshore infrastructure will have no significant effects on main transport routes through the study area (main roads and railway lines). There is an absence of major coastal roads and rail routes, due to the estuaries and intermittent ‘soft edged’ coastal landscape, with lightly trafficked access routes across the AONB to the coastline from main routes further inland. This has contributed to the relatively

undeveloped character of the Suffolk coast but also means that there are no major transport routes that will experience significant effects.

28.8.2 Technical Assessment

186. A detailed technical assessment of the visual effects of the construction and operation of the offshore infrastructure is set out in ***Appendix 28.4***. This describes, in full technical detail, the likely significant effects of the construction and operation of the offshore infrastructure on each visual receptor/viewpoint, focusing on those visual receptors/viewpoints that were identified in the preliminary assessment as having potential to be significantly affected. The technical assessment of visual effects from ***Appendix 28.4*** is summarised for this SLVIA chapter in ***section 28.8.3***.

28.8.3 Summary Assessment

28.8.3.1 Frequency and Likelihood of Visual Effects – Weather Conditions

187. The judgements made in the SLVIA are based on optimum 'very good' to 'excellent' visibility of the East Anglia ONE North windfarm site. This assumption is assessed as the worst case scenario in the SLVIA, but in reality, the degree and extent of visual effects arising from the East Anglia ONE North windfarm site will be influenced by the prevailing weather and visibility conditions. Viewing conditions and visibility have been found to vary in the study area. The varied clarity or otherwise of the atmosphere will reduce the number of days upon which views of the East Anglia ONE North windfarm site will be available from the coastline and hinterland, and is likely to inhibit clear views, rendering the wind turbines more visually recessive within the wider seascape. The effects of construction and operation of the offshore infrastructure will vary according to the weather and prevailing visibility. This means that effects that are assessed to be significant in the SLVIA under very good or excellent visibility conditions, may be not significant under moderate, poor or very poor visibility conditions.

188. A description of visibility frequency is provided in the SLVIA, using METAR visibility data from the nearest Met Office stations that record visibility (Weybourne and Shoeburyness), to highlight potential trends in the visibility conditions of the study area. Both GLVIA3 (8.15) and SNH guidance (SNH 2017, para 39) refer to use of this Met Office visibility data to assess typical visibility conditions within an area. Although there are limitations to how this data can be applied to judgements about windfarm visibility, the visibility data provides some understanding and evidence basis for evaluating the visibility of the wind turbines against their background.

189. Met Office visibility data is mapped in ***Figure 28.20*** in the context of the East Anglia ONE North windfarm site and visibility frequency over a 10 year period at different distance ranges, based on Met Office visibility definitions: < 1km Very Poor; 1 - 4km Poor; 4 -10km Moderate; 10 - 20km Good; 20 - 40km Very Good; 40km >

Excellent. The visibility range is shown in bands extending offshore and these can be correlated against the percentage visibility frequency graph (in ***Figure 28.20***) to show the frequency of visibility at different ranges. The East Anglia ONE North offshore windfarm site will only be visible in 'very good' or 'excellent' visibility, since it is located 36.4km from the coast at its closest point and extends beyond 50km from the coast at its more distant points. Based on visibility from the closest point (36.4km), the Met Office visibility data indicates that the East Anglia ONE North windfarm site will have a visibility frequency of approximately 26% i.e. 91 days of the year on average (or approximately one-third of the year) with visibility over 36.4km.

190. The Met Office visibility data allows some quantification of the likely frequency of visibility of the East Anglia ONE North windfarm site from individual viewpoints, based on the distance of each viewpoint location from the East Anglia ONE North windfarm site. The Met Office visibility frequency data is used to inform an assessment of the 'likelihood of effect' from each viewpoint, in order to qualify any significant effects assessed in optimum visibility conditions with how likely they are to actually occur given the prevailing weather/ visibility conditions. The viewpoints included in the SLVIA range from 38.8 km to 55.8 km from the East Anglia ONE North offshore windfarm site, with assessments of likelihood of effect varying from 26% at the closest viewpoint (Viewpoint 2, Kessingland), to 14% at the more distant viewpoints (such as Viewpoint 7, Dunwich), with assessments varying between a medium-low likelihood of effects occurring at the closest viewpoints to a low likelihood at the more distant viewpoints.

28.8.3.2 Viewpoints

191. A summary assessment of the predicted visual effects of the construction and operation of the offshore infrastructure on visual receptors at representative viewpoints is set out in ***Table 28.11***Table 28.11 Viewpoints - Summary of Effects ***.*** Full technical assessments are provided in ***Appendix 28.4***. Viewpoint locations and visual receptors are shown on ***Figure 28.19***.

192. Views of the construction and operation of the offshore infrastructure will primarily be experienced where the coastal edges of Suffolk meet the sea, between Lowestoft and Southwold, at distances of between approximately 36km (near Kessingland) to 42km (near Southwold). Views of the construction and operation of the offshore infrastructure will also extend further north along the south Norfolk coastline, and further south between Southwold and Sizewell, at longer distance and reduced prominence. Substantial areas of these latter sections of coastline are already likely to experience some view of an existing offshore windfarm, either Scroby Sands from the south Norfolk coastline; or Greater Gabbard, Galloper, London Array and Gunfleet Sands from the coastline between Southwold and Sizewell.

193. Visibility of the East Anglia ONE North windfarm site is curtailed by landform together with larger areas of coniferous plantation woodland, woodland belts and hedgerows within hinterland and inland areas of the study area, which often confine views of the sea and the East Anglia ONE North windfarm site to the coastal dunes and shingle ridges running along the coast; and occasional areas of higher ground along the crumbling sea cliffs at Dunwich. Inland areas of the study area, away from the immediate coastal edge, marshland and estuaries near the coast, often have limited association and intervisibility with the sea. From inland areas of the study area, theoretical visibility of the East Anglia ONE North windfarm site is very much restricted, as successive layers of landform combine to create an effective visual barrier, limiting visibility.

194. The visual effects of the construction and operation of the offshore infrastructure has been assessed as not significant on the visual amenity experienced by visual receptors from all representative viewpoints in the SLVIA. The magnitude of change arising from the construction and operation of the offshore infrastructure is assessed as medium-low from representative viewpoint locations along the closest section of coastline between Lowestoft and Kessingland, including Viewpoint 1 (Lowestoft) and Viewpoint 2 (Kessingland). The magnitude of change arising from the construction and operation of the offshore infrastructure is assessed as low on all other representative viewpoints that were assessed in full in the SLVIA (i.e. those that were not scoped out), including Viewpoint 3 (Covehithe), Viewpoint 4 (Southwold), Viewpoint 5 (Gun Hill, Southwold), Viewpoint 6 (Walberswick), Viewpoint 7 (Dunwich), Viewpoint 19 (Hopton-on-Sea) and Viewpoint 20 (Gorleston-on-Sea).

195. In these views, the East Anglia ONE North windfarm site will generally have a lateral spread on the sea skyline of between 14-17° of the field of view, adding wind turbine developed skyline to a relatively limited portion of the 180° sea view. The turbines of the East Anglia ONE North windfarm site will add a new offshore windfarm element to the composition of these views, which are often currently a relatively simply composed view of sandy beach, sea and sky layers with very relatively influence from development. The towers and rotors of the turbines tend to be visible above the skyline, with those to the west of the East Anglia ONE North windfarm site appearing more prominent than those which recede with distance to the east. The vertical height of the turbines will be relatively small in scale, due to their long distance offshore and the large scale of the seascape in the views, and the height of the turbines will be difficult to judge due to the general absence of scale indicators from which to compare the scale of the turbines. The movement of rotor blades on an otherwise relatively still horizon, will introduce further complexity and visual movement to these views. The technological appearance of the turbines may contrast with the perceived natural qualities associated with the

habitats and visible geology of parts of the coastline, however their appearance will relate rationally to the visual exposure and large scale.

196. Views of the East Anglia ONE North windfarm site extend further north along the south Norfolk coastline and further south between Dunwich Heath and Aldeburgh. The visual effect of the construction and operation of the offshore infrastructure on representative viewpoints between Dunwich Heath and Aldeburgh has been scoped out as not significant in the SLVIA, due to the long distance and low to negligible magnitude of change resulting, including:

- Viewpoint 8 Dunwich Heath and Beach (Coastguard Cottages);
- Viewpoint 9 Minsmere Nature Reserve;
- Viewpoint 10 Sizewell Beach;
- Viewpoint 11 Suffolk Coastal Path, between Thorpeness and Sizewell;
- Viewpoint 12 Thorpeness; and
- Viewpoint 13 Aldeburgh.

197. And not significant from the south Norfolk coastline, including:

- Viewpoint 21 (Great Yarmouth); and
- Viewpoint 22 (Caister-on-Sea).

Table 28.11 Viewpoints - Summary of Effects

Receptor /Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	**Sensitivity to change**	**Magnitude of change (East Anglia ONE North)** (construction, operation and decommissioning)	**Significance of effect (East Anglia ONE North)** (construction and decommissioning)	**Significance of effect (East Anglia ONE North)** (operation)	**Likelihood of effect**
Viewpoint 1: Lowestoft					
Beach users (Lowestoft Beach):	Medium	Medium-low	Not significant, short-term, temporary	Not significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 38.8km occurs 26% of the time of the time from Weybourne and 15% of the time
Walkers and cyclists (Suffolk Coastal Path):	Medium-high				
Residents of Lowestoft seafront:	Medium-high				

Receptor /Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North) (construction and decommissioning)	Significance of effect (East Anglia ONE North) (operation)	Likelihood of effect
Visitors engaged in recreational amusements:	Low				from Shoeburyness.*.
People sitting / viewing from seafront benches:	Medium-high				
Recreational boaters (Lowestoft Marina):	Medium				
Viewpoint 2: Kessingland					
Beach users (Kessingland Beach):	Medium	Medium-Low	Not significant, short-term, temporary	Not significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 39.7km occurs 26% of the time from Weybourne and 15% of the time from Shoeburyness
Walkers (Suffolk Coastal Path/ promenade):	Medium-high		Not significant, short-term, temporary	Not significant, long-term, reversible	
Residents of Kessingland seafront:	Medium-high		Not significant, short-term, temporary	Not significant, long-term, reversible	
Viewpoint 3: Covehithe					
Beach users:	High	Low	Not significant, short-term, temporary	Not significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 41.6km occurs 26% of the time from Weybourne and 15% of the time from Shoeburyness*.
Viewpoint 4: Southwold					
Beach users (Southwold Beach):	Medium-high	Low	Not significant, short-term, temporary	Not significant, long-term, reversible	Excellent visibility required.

Receptor /Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North) (construction and decommissioning)	Significance of effect (East Anglia ONE North) (operation)	Likelihood of effect
Walkers and cyclists (Suffolk Coastal Path):	Medium-high		Not significant, short-term, temporary	Not significant, long-term, reversible	Visibility at or beyond 43.9km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Residents of Southwold seafront:	High		Not significant, short-term, temporary	Not significant, long-term, reversible	
People engaged in recreational amusements:	Low		Not significant, short-term, temporary	Not significant, long-term, reversible	
People sitting/viewing from seafront benches:	High		Not significant, short-term, temporary	Not significant, long-term, reversible	
Recreational boaters (Southwold Harbour):	Medium		Not significant, short-term, temporary	Not significant, long-term, reversible	
Viewpoint 5: Gun Hill, Southwold					
Beach users (Gunhill Cliff/The Denes):	Medium-high	Low	Not significant, short-term, temporary	Not significant, long-term, reversible	Excellent visibility required. Visibility at or beyond 44.4km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Walkers (Suffolk Coastal Path):	Medium-high		Not significant, short-term, temporary	Not significant, long-term, reversible	
Residents around Gun Hill/promenade:	High		Not significant, short-term, temporary	Not significant, long-term, reversible	
People sitting/viewing from seafront benches:	High		Not significant, short-term, temporary	Not significant, long-term, reversible	
Recreational boaters (Southwold Harbour):	Medium		Not significant, short-term, temporary	Not significant, long-term, reversible	
Viewpoint 6: Walberswick					
Beach users (Walberswick Beach):	Medium-high	Low	Not significant, short-term, temporary	Not significant, long-term, reversible	Excellent visibility required.

Receptor /Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North) (construction and decommissioning)	Significance of effect (East Anglia ONE North) (operation)	Likelihood of effect
Walkers using the Suffolk Coastal Path:	Medium-high		Not significant, short-term, temporary	Not significant, long-term, reversible	Visibility at or beyond 45.6km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Residents of the coastal edges of Walbersick:	High		Not significant, short-term, temporary	Not significant, long-term, reversible	
Recreational boaters (Southwold Harbour):	Medium		Not significant, short-term, temporary	Not significant, long-term, reversible	
Viewpoint 7: Dunwich					
Beach users at Dunwich Beach:	Medium-high	Low	Not significant, short-term, temporary	Not significant, long-term, reversible	Excellent visibility required. Visibility at or beyond 48.8km occurs 220% of the time from Weybourne and 10% of the time from Shoeburyness *.
Visitors to the nearby National Trust café:	Medium-low		Not significant, short-term, temporary	Not significant, long-term, reversible	
Dingle Marshes RSPB reserve (NNR):	Medium		Not significant, short-term, temporary	Not significant, long-term, reversible	
Residents of the edges of Dunwich village:	High		Not significant, short-term, temporary	Not significant, long-term, reversible	
Viewpoint 19: Hopton-on-Sea					
Beach users (Hopton-on-Sea):	Medium	Low	Not significant, short-term, temporary	Not significant, long-term, reversible	Excellent visibility required. Visibility at or beyond 40.9km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Tourist visitors (e.g. Hopton Holiday Village):	Medium-high				
Residents of the coastal edges of Hopton-on-Sea (e.g. Sea View Rise):	Medium-high				
Walkers using the England Coastal Path:	Medium				
Viewpoint 20: Gorleston-on-Sea					

Receptor /Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North) (construction and decommissioning)	Significance of effect (East Anglia ONE North) (operation)	Likelihood of effect
Beach users (Gorleston-on-Sea beach):	Medium	Low	Not significant, short-term, temporary	Not significant, long-term, reversible	Excellent visibility required. Visibility at or beyond 42.7km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Tourist visitors to the seafront e.g. around Lower Esplanade/Marine Esplanade:	Medium-high				
People sitting/viewing from seafront benches/gardens:	Medium-high				
Walkers using the England Coastal Path:	Medium-high				
Cyclists using NCNR 517:	Medium				
Residents of Gorleston-on-Seafront (e.g. Marine Parade):	Medium-high				
People engaged in active sports (e.g. Tennis / Basketball /Trim Trails):	Low				
*** over 10 year period 2007-2017 (Met Office Visibility Data)**					

28.8.3.3 Settlements

198. A summary assessment of the predicted visual effects of the construction and operation of the offshore infrastructure on residents of settlements is set out in ***Table 28.12***. Full technical assessments are provided in ***Appendix 28.4.*** The location of settlements is shown on ***Figure 28.19***.

199. The principal visual receptors that may experience views of the construction and operation of the offshore infrastructure are residents of the coastal towns of Lowestoft, Kessingland and Southwold in Suffolk. The residences of the coastal and sea-front edges of these towns are often orientated to the open seaward

horizon in the direction of the East Anglia ONE North windfarm site. The study area offers a variety of visitor attractions and facilities, ranging from the beaches and bays around coast, offering opportunities for walking, cycling and water sports; traditional seaside resort towns and attractions on the coast and historic environment attractions. It includes the Suffolk Coastal Path long distance walking route, national cycle routes and numerous public rights of way.

Table 28.12 Settlements – Summary of Effects

Settlement receptor (*Figure 28.19*)	Sensitivity to change	Magnitude of change (East Anglia ONE North) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North) (construction and decommissioning)	Significance of effect (East Anglia ONE North) (operation)	Likelihood of effect
Lowestoft					
Area A: Gunton area to the north of Lowestoft	High	Low	Not significant, short-term, temporary	Not significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 38.8km occurs 26% of the time from Weybourne and 15% of the time from Shoeburyness *.
Area B: South Beach/Kirkley area		Medium-low			
Area C: Pakefield/Pakefield Cliffs area (e.g. Pakefield Road, Pakefield Street)		Medium-low			
Area D: Quayside/inner harbour along Lake Lothing and Oulton Broad		Negligible			
Area E: Urban areas of Lowestoft set-back from coast, including Kirkley, Pakefield and Carlton Colville		Negligible			
Kessingland					
Area A: Sea front extending from Kessingland Beach to Alandale Park and Coastguard Lane	High	Medium-low	Significant, short-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 39.7km occurs 26% of the time from Weybourne and 15% of the time from
Area B: Kessingland		Negligible	Not significant, short-term, temporary	Not significant, long-term, reversible	

Settlement receptor (*Figure 28.19*)	Sensitivity to change	Magnitude of change (East Anglia ONE North) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North) (construction and decommissioning)	Significance of effect (East Anglia ONE North) (operation)	Likelihood of effect
					Shoeburyness *.
Southwold					
Area A: Immediate seafront along coastal edge of Southwold between Pier Avenue/Southwold Pier (Illustrative Viewpoint D) along North Parade (Viewpoint 4) to Gun Hill (Viewpoint 5).	High	Low	Significant, short-term, temporary	Significant, long-term, reversible	Excellent visibility required. Visibility at or beyond43.9km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Area B: Southwold Common (Illustrative Viewpoint A)		Negligible	Not significant, short-term, temporary	Not significant, long-term, reversible	
Area C: Southwold town centre, (including from High Street/Market Place)		Negligible			
Area D: North Southwold residential areas between North Road and Victoria Street		Negligible			
Area E: Residential areas to the south and west of High Street/Queen Street		Negligible			
***** over 10 year period 2007-2017 (Met Office Visibility Data)					

28.8.3.4 Transport Routes

200. The preliminary assessment in ***Appendix 28.4*** has identified that the construction and operation of the offshore infrastructure will have no significant effects on main transport routes through the study area (main roads and railway lines). There is an absence of major coastal roads and rail routes, due to the estuaries and

intermittent 'soft edged' coastal landscape, with lightly trafficked access routes across the AONB to the coastline from main routes further inland. This has contributed to the relatively undeveloped character of the Suffolk coast but also means that there are no major transport routes that will experience significant effects.

28.8.3.5 Suffolk Coastal Path

201. A summary assessment of the predicted visual effects of the construction and operation of the offshore infrastructure on walkers using the Suffolk Coastal Path sections to the north of Southwold is set out in ***Table 28.13***. Full technical assessments are provided in ***Appendix 28.5***. ZTVs illustrating the predicted visibility of the East Anglia ONE North construction and operation of the offshore infrastructure from the Suffolk Coastal Path are shown in ***Figure 28.23***.

202. The Suffolk Coastal Path is an approximately 86km long distance footpath which follows the Suffolk coast between Felixstowe and Lowestoft. It runs through a wide variety of landscapes many of which typify the character of the Suffolk Coast and Heaths AONB including nationally important examples of: shingle beaches, coastal marshes, low coastal cliffs, heathland, forest and late enclosure farmland.

203. The exact distance of the footpath is to an extent defined by the dynamic nature of the coastline. The route varies according to the time of year as well as in accordance with local tides. Between late autumn and spring some coastal sections can become impassable and are diverted inland due to flooding and erosion of the coastal cliffs, whilst some beach sections of the Suffolk Coastal Path are only walkable between mid and low tide. Sections of the Suffolk Coastal Path are rebuilt either naturally as sediment is returned to beaches as part of ongoing coastal geomorphological process or by humans after the impact of storms. Latest updates on diversions and advice for walking the Suffolk Coastal Path can be found online[1].

204. The Sandlings Walk follows a route inland between Ipswich and Southwold but roughly parallel to the Suffolk Coastal Path and covers more of the heath and forest landscapes. However, the two routes meet and cross at several points including in the area between Snape and Southwold. The Suffolk Coastal Path also meets with the Stour and Orwell Walk (between Felixstowe and Cattawade) at Felixstowe which, combined with the presence of other local rights of way affords the opportunity for numerous shorter walks and circular routes which encompass sections of the Suffolk Coastal Path.

[1] http://www.suffolkcoastandheaths.org/things-to-do/walking/footpath-changes-updates/suffolk-coast-path/.

205. A detailed technical assessment of the visual effects of users of the Suffolk Coastal Path is presented in ***Appendix 28.5***. The assessment is divided into 4 sections within the SLVIA study area, each of which is assessed independently. This is followed by a combined assessment of the entire route. The full method used to establish the Suffolk Coastal Path sections is described in ***Appendix 28.1***.

206. The findings of the detailed technical assessment in ***Appendix 28.5***, conclude that the visual effects of the construction and operation of the offshore infrastructure on walkers using the Suffolk Coastal Path will be not significant. The primary visual effects arising to views experienced by walkers on the Suffolk Coastal Path would be geographically spread over a 3.7km stretch through Lowestoft; a 2.5km stretch along Kessingland Beach; a 4.4km stretch through Southwold; and a 1km stretch over Dunwhich Heath north of the coastguard cottages, however these visual effects are assessed as not significant, primarily due to the medium-low or low magnitude of change arising from the construction and operation of the offshore infrastructure.

207. The proximity of the Suffolk Coastal Path to the Sandlings Walk, the Stour and Orwell Walk and a comprehensive network of local rights of way affords the opportunity to create circular routes incorporating shorter sections of the Suffolk Coastal Path. Walkers using the path in this manner would not be significantly affected by views of the construction and operation of the offshore infrastructure.

208. The Suffolk Coastal Path is promoted and way-marked as a long-distance footpath and is undergoing development to incorporate it within the England Coastal Path, a high-profile national trail around all of England's coast. A significant number of walkers are therefore likely to be walking longer sections of the route and would be repeatedly exposed to views of the East Anglia ONE North windfarm site. This repeated exposure to views which have been assessed as not significant in isolation, do not amount to a significant effect when combined over a longer distance or viewed in succession over several days.

Table 28.13 Suffolk Coastal Path, north of Southwold – Summary of Effects

Section of Suffolk Coastal Path (*Figure 28.23*)	Sensitivity to change	Magnitude of change (East Anglia ONE North) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North) (construction and decommissioning)	Significance of effect (East Anglia ONE North) (operation)
Suffolk Coastal Path				
Section 01 Lowestoft	Medium-high	Medium-low	Not significant, short-term, temporary	Not significant, long-term, reversible
Section 02 Kessingland	Medium-high from the stretch south of Kessingland and low through Kessingland	Medium-low	Not significant, short-term, temporary	Not significant, long-term, reversible
Section 03 Kessingland to Reydon	Medium	Low	Not significant, short-term, temporary	Not significant, long-term, reversible
Section 04 Southwold	High from the 2.5 km stretch along the sea front of Southwold, between Eastern Marshes and Havenbeach Marshes. Medium in all other areas around Southwold.	Low	Not significant, short-term, temporary	Not significant, long-term, reversible

28.9 Cumulative Impacts

209. The cumulative SLVIA in ***Appendix 28.6*** considers the combined (or total) effect of the construction and operation of the East Anglia ONE North offshore infrastructure cumulatively with the East Anglia TWO offshore infrastructure. This cumulative assessment focuses on the seascape, landscape and visual receptors that were assessed in full in the project alone technical assessments in ***Appendixes 28.2 – 28.5***. Receptors which were scoped out of the SLVIA in the preliminary assessment contained in these appendices are also scoped out of the cumulative SLVIA in ***Appendix 28.6***.

28.9.1 Cumulative Seascape Effects

210. A detailed technical assessment of the cumulative seascape effects of the construction and operation of the East Anglia ONE North offshore infrastructure

and East Anglia TWO offshore infrastructure is set out in ***Appendix 28.6***. This describes, in full technical detail, the likely significant cumulative seascape effects on each SCT. The full technical assessment of seascape effects from ***Appendix 28.6*** is summarised for this SLVIA chapter in ***Table 28.14***. SCTs are shown on ***Figure 28.15.***

Table 28.14 Seascape Character Types – Summary of Cumulative Effects

Seascape Character Type (SCT) (*Figure 28.15*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)
Nearshore Waters (SCT 03)				
Area A: Kessingland to Orford Ness	Medium-high	Medium to medium-high	Significant, medium-term, temporary	Significant, long-term, reversible
Area B: Orford Ness to Bawdsey		Low	Not significant, medium-term, temporary	Not significant, long-term, reversible
Developed Nearshore Waters (SCT 04)				
Area A: Lowestoft area	Medium-low	Medium	Not significant, medium-term, temporary	Not significant, long-term, reversible
Area B: South Norfolk area (Great Yarmouth to Newport)		Low	Not significant, medium-term, temporary	Not significant, long-term, reversible
Coastal Waters (SCT 05)				
Area A: Coastal waters offshore of Covehithe to Aldeburgh	Medium	Medium to medium-high	Significant, medium-term, temporary	Significant, long-term, reversible
Area B: Coastal waters offshore of south Norfolk (north of Lowestoft)		Medium to medium-low	Not significant, medium-term, temporary	Not significant, long-term, reversible
Area C: Coastal waters offshore between Southwold and Sizewell		Low	Not significant, medium-term, temporary	Not significant, long-term, reversible
Offshore Waters (SCT 06)				
Area A: Offshore waters within the study area	Medium-low	Medium-high	Significant, medium-term, temporary	Significant, long-term, reversible

28.9.2 Cumulative Landscape Effects

211. A detailed technical assessment of the cumulative landscape effects of the construction and operation of the East Anglia ONE North offshore infrastructure cumulatively with the East Anglia TWO offshore infrastructure is set out in ***Appendix 28.6***. This describes, in full technical detail, the likely significant cumulative landscape effects on each landscape receptor. The full technical assessment of landscape effects from ***Appendix 28.6*** is summarised for this SLVIA chapter in ***Table 28.15***. LCTs are shown in ***Figure 28.17***.

28.9.2.1 Landscape Character Types

Table 28.15 Landscape Character Types – Summary of Cumulative Effects

Landscape Character Type (LCT) (*Figure 28.17*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)
Coastal Dunes and Shingle Ridges (LCT 05)				
Area A: North of Lowestoft	Medium-high	Medium-low	Not significant, medium-term, temporary	Not significant, long-tern, reversible
Area B: Kessingland		Medium-high	Significant, medium-term, temporary	Significant, long-tern, reversible
Area C: Southwold to the north side of Dunwich		Medium	Significant medium-term , temporary	Significant, long-tern, reversible
Area D: South side of Dunwich Heath to Sizewell		Medium	Significant, medium-term, temporary	Significant, long-tern, reversible
Coastal Levels (LCT 06)				
Area A: Marshes flanking the Hundred River from Kessingland Beach westward through the Kessingland Levels to Henstead	Medium	Low	Not significant, medium-term, temporary	Not significant, long-tern, reversible
Area B: Marshes flanking the River Blyth and Buss Creek from Walberswick westward to Wolsey Bridge		Medium to low	Not significant, medium-term, temporary	Not significant, long-tern, reversible

Landscape Character Type (LCT) (*Figure 28.17*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)
Area C: Marshes of the Minsmere Level extending westward to Eastbridge and Theberton		Low to negligible	Not significant, medium-term, temporary	Not significant, long-tern, reversible
Estate Sandlands (LCT 07)				
Area A: Covehithe to Benacre and Easton Bavents	Locally medium at coastal edges of LCT, but generally low over most of LCT	Medium	Significant, medium-term, temporary	Significant, long-tern, reversible
Area B: Southwold ommon		Negligible	Not significant, medium-term, temporary	Not significant, long-tern, reversible
Area C: Walberswick to Westleton and Dunwich		Areas between Walberswick and Westleton: Negligible Localised area at Dunwich Heath/Cliffs: Medium-low	Not significant, medium-term, temporary	Not significant, long-tern, reversible
Open Coastal Fens (LCT 08)				
Area A: Corporation and Dingle Marshes	Medium	Low	Not significant, medium-term, temporary	Not significant, long-tern, reversible
Area B: Westwood Marshes		Negligible	Not significant, medium-term, temporary	Not significant, long-tern, reversible
Area C: Reedland Marshes		Negligible	Not significant, medium-term, temporary	Not significant, long-tern, reversible

28.9.2.2 Suffolk Coast and Heaths AONB and Suffolk Heritage Coast

212. A summary assessment of the predicted cumulative landscape effects of the construction and operation of the offshore infrastructure on the Suffolk Coast and Heaths AONB and Suffolk Heritage Coast is set out in ***Table 28.16***. Full technical assessments are provided in ***Appendix 28.6*** and these landscape designations are mapped at detailed scale in ***Figure 28.18***.

Table 28.16 Suffolk Coast and Heaths AONB – Summary of Cumulative Effects

Special quality	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)
Suffolk Coasts and Heaths AONB and Heritage Coast			
Landscape quality:	Medium-high change to landscape quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland Beach (Area B) and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A). Medium change to landscape quality of Coastal Dunes and Shingle Beaches LCT (05) between Southwold and Orford Ness (Areas C and D). Low change to landscape quality of Open Coastal Fens (08) LCT, Coastal Levels LCT (06) and inland areas of Estate Sandlands LCT (07) within AONB.	Significant, medium-term, temporary effects on landscape quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland Beach (Area B); between Southwold and Orford Ness (Areas C and D); and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A). Not significant, medium-term, temporary effects on landscape quality of Open Coastal Fens (08) LCT, Coastal Levels LCT (06) and inland areas of Estate Sandlands LCT (07) within AONB.	Significant, long-term, reversible effects on landscape quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland Beach (Area B); between Southwold and Orford Ness (Areas C and D); and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A). Not significant, long-term, reversible effects on landscape quality of Open Coastal Fens (08) LCT, Coastal Levels LCT (06) and inland areas of Estate Sandlands LCT (07) within AONB.
Scenic quality:	Medium-high change to scenic quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland Beach (Area B) and the coastal edges of the Estate Sandlands LCT (07) between	Significant, medium-term, temporary effects on scenic quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland Beach (Area B); between Southwold	Significant, long-term, reversible effects on scenic quality of Coastal Dunes and Shingle Beaches LCT (05) near Kessingland Beach (Area B); between Southwold and Orford Ness

Special quality	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)
	Covehithe to Benacre and Easton Bavents area (Area A). Medium change to scenic quality of Coastal Dunes and Shingle Beaches LCT (05) between Southwold and Orford Ness (Areas C and D). Low change to scenic quality of Open Coastal Fens (08) LCT, Coastal Levels LCT (06) and inland areas of Estate Sandlands LCT (07) within AONB.	and Orford Ness (Areas C and D); and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A). Not significant, medium-term, temporary effects on scenic quality of Open Coastal Fens (08) LCT, Coastal Levels LCT (06) and inland areas of Estate Sandlands LCT (07) within AONB.	(Areas C and D); and the coastal edges of the Estate Sandlands LCT (07) between Covehithe to Benacre and Easton Bavents area (Area A). Not significant, long-term, reversible effects on scenic quality of Open Coastal Fens (08) LCT, Coastal Levels LCT (06) and inland areas of Estate Sandlands LCT (07) within AONB.
Relative wildness:	Medium-low change to relative wildness of Coastal Dunes and Shingle Beaches LCT (05) and the coastal edges of the Estate Sandlands LCT (07). Low change to landscape quality of Open Coastal Fens (08) LCT, Coastal Levels LCT (06) and inland areas of Estate Sandlands LCT (07) within AONB.	Not significant, medium-term, temporary effects on relative wildness of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) Estate Sandlands LCT (07) and Open Coastal Fens (08) LCT within AONB.	Not significant, long-term, reversible effects on relative wildness of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) Estate Sandlands LCT (07) and Open Coastal Fens (08) LCT within AONB.
Relative tranquillity:	Negligible change to relative wildness of Coastal Dunes and Shingle Beaches LCT (05), Estate Sandlands LCT (07), Open Coastal Fens (08) LCT and Coastal Levels LCT (06) within AONB.	Not significant, medium-term, temporary effects on relative tranquillity of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) Estate Sandlands LCT (07) and Open Coastal Fens (08) LCT within AONB.	Not significant, long-term, reversible effects on relative tranquillity of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) Estate Sandlands LCT (07) and Open Coastal Fens (08) LCT within AONB.

Special quality	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)
Natural heritage features:	Negligible change to natural heritage features of Coastal Dunes and Shingle Beaches LCT (05), Estate Sandlands LCT (07), Open Coastal Fens (08) LCT and Coastal Levels LCT (06) within AONB.	Not significant, medium-term, temporary effects on natural heritage features of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) Estate Sandlands LCT (07) and Open Coastal Fens (08) LCT within AONB.	Not significant, long-term, reversible effects on natural heritage features of Coastal Dunes and Shingle Beaches LCT (05), Coastal Levels LCT (06) Estate Sandlands LCT (07) and Open Coastal Fens (08) LCT within AONB.

28.9.3 Cumulative Visual Effects

28.9.3.1 Viewpoints

213. A detailed technical assessment of the cumulative visual effects of the construction and operation of the East Anglia ONE North offshore infrastructure cumulatively with the East Anglia TWO offshore infrastructure is set out in ***Appendix 28.6***. This describes, in full technical detail, the likely significant cumulative visual effects on each visual receptor and representative viewpoint identified in the preliminary assessment as having potential to be significantly affected. The full technical assessment of visual effects from ***Appendix 28.6*** is summarised for this SLVIA chapter in ***Table 28.17***. Viewpoints and visual receptors are shown in ***Figure 28.19***.

Table 28.17 Viewpoints – Summary of Cumulative Effects

Receptor/Viewpoint (*Figure 28.19 and* ***Figures 28.25 – 28.45***)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Viewpoint 1: Lowestoft					
Beach users (Lowestoft Beach):	Medium	Medium	Not significant, medium-term, temporary	Not significant, long-term, reversible	Very good or excellent visibility required. Visibility of the proposed East Anglia TWO project at or
Walkers and cyclists (Suffolk Coastal Path):	Medium-high		Significant, medium-term, temporary	Significant, long-term, reversible	

Receptor/Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Residents of Lowestoft seafront:	Medium-high		Significant, medium-term, temporary	Significant, long-term, reversible	beyond 32.1km occurs 33% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 38.8km occurs 26% of the time from Weybourne and 15% of the time from Shoeburyness *.
Visitors engaged in recreational amusements:	Low		Not significant, medium-term, temporary	Not significant, long-term, reversible	
People sitting / viewing from seafront benches:	Medium-high		Significant, medium-term, temporary	Significant, long-term, reversible	
Recreational boaters (Lowestoft Marina):	Medium		Not significant, short-term, temporary	Not significant, long-term, reversible	
Viewpoint 2: Kessingland					
Beach users (Kessingland Beach):	Medium	Medium-high	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility of the proposed East Anglia TWO project at or beyond 30.5km occurs 33% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 38.8km occurs 26% of the time from Weybourne and 15% of the time from Shoeburyness * .
Walkers (Suffolk Coastal Path/ promenade):	Medium-high				
Residents of Kessingland seafront:	Medium-high				

Receptor/Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Viewpoint 3: Covehithe					
Beach users:	High	Medium-high	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 30.6km occurs 33% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 41.6km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Viewpoint 4: Southwold					
Beach users (Southwold Beach):	Medium-high	Medium-high	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 31.5km occurs 33% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 43.9km occurs 20% of the time
Walkers and cyclists (Suffolk Coastal Path):	Medium-high		Significant, medium-term, temporary	Significant, long-term, reversible	
Residents of Southwold seafront:	High		Significant, medium-term, temporary	Significant, long-term, reversible	
People engaged in recreational amusements:	Low		Not significant, medium-term, temporary	Not significant, long-term, reversible	
People sitting/viewing from seafront benches:	High		Significant, medium-term, temporary	Significant, long-term, reversible	

Receptor/Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Recreational boaters (Southwold Harbour):	Medium		Not significant, medium-term, temporary	Not significant, long-term, reversible	from Weybourne and 10% of the time from Shoeburyness *.
Viewpoint 5: Gun Hill, Southwold					
Beach users (Gunhill Cliff/The Denes):	Medium-high	Medium-high	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 31.7km occurs 33% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 44.4km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Walkers (Suffolk Coastal Path):	Medium-high		Significant, medium-term, temporary	Significant, long-term, reversible	
Residents around Gun Hill/promenade:	High		Significant, medium-term, temporary	Significant, long-term, reversible	
People sitting/viewing from seafront benches:	High		Significant, medium-term, temporary	Significant, long-term, reversible	
Recreational boaters (Southwold Harbour):	Medium		Not significant, medium-term, temporary	Not significant, long-term, reversible	
Viewpoint 6: Walberswick					
Beach users (Walberswick Beach):	Medium-high	Medium	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 32.7km occurs 33% of the time from Weyborne and 21% of the time for
Walkers using the Suffolk Coastal Path:	Medium-high		Significant, medium-term, temporary	Significant, long-term, reversible	
Residents of the coastal edges of Walbersick:	High		Significant, medium-term, temporary	Significant, long-term, reversible	

Receptor/Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Recreational boaters (Southwold Harbour):	Medium		Not significant, medium-term, temporary	Not significant, long-term, reversible	Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 45.6km occurs 15% of the time from Weybourne and 6% of the time from Shoeburyness *.
Viewpoint 7: Dunwich					
Beach users at Dunwich Beach:	Medium-high	Medium	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 35km occurs 26% of the time from Weyborne and 15% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 48.8km occurs 15% of the time from Weybourne and 6% of the time from Shoeburyness *.
Visitors to the nearby National Trust café:	Medium-low		Not significant, medium-term, temporary	Not significant, long-term, reversible	
Dingle Marshes RSPB reserve (NNR):	Medium		Not significant, medium-term, temporary	Not significant, long-term, reversible	
Residents of the edges of Dunwich village:	High		Significant, medium-term, temporary	Significant, long-term, reversible	
Viewpoint 8: Dunwich Heath and Beach					
Visitors to Dunwich Heath and Beach (including Coastguard Cottages):	High	Medium	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or

Receptor/Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Walkers using the Suffolk Coastal Path:	Medium-high		Significant, medium-term, temporary	Significant, long-term, reversible	beyond 35.7km occurs 26% of the time from Weyborne and 15% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 50.2km occurs 9% of the time from Weybourne and 3% of the time from Shoeburyness *.
Viewpoint 9: Minsmere Nature Reserve					
Visitors at the visitor centre/car parking area:	Medium-high	Medium	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 36.2km occurs 26% of the time from Weyborne and 15% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 50.9km occurs 9% of the time from Weybourne and 3% of the time from Shoeburyness *.
Birdwatchers using hides/viewing platforms:	Medium-low		Not significant, medium-term, temporary	Not significant, long-term, reversible	
Walkers using the coast trail around the Scrape:	Medium-high		Significant, medium-term, temporary	Significant, long-term, reversible	
Walkers using the Island Mere and Woodland Trail:	Medium-low		Not significant, medium-term, temporary	Not significant, long-term, reversible	
Viewpoint 10: Sizewell Beach					

Receptor/Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Beach users at Sizewell Beach:	Medium-low	Medium	Not significant, medium-term, temporary	Not significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 35.6km occurs 26% of the time from Weyborne and 15% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 52.4km occurs 9% of the time from Weybourne and 3% of the time from Shoeburyness *.
Walkers using the Suffolk Coastal Path:	Medium-low				
Residents of Sizewell:	Medium				
Workers at Sizewell Nuclear Power Station:	Low				
Viewpoint 11: Coastal Path between Thorpeness and Sizewell					
Walkers using the Coastal Path:	Medium-high	Medium	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 35.5km occurs 26% of the time from Weyborne and 15% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 53km occurs 9% of the time from

Receptor/Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
					Weybourne and 3% of the time from Shoeburyness *.
Viewpoint 12: Thorpeness					
Beach users at Thorpeness beach:	Medium-high	Medium	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 35.8km occurs 26% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 38.8km occurs 26% of the time from Weybourne and 15% of the time from Shoeburyness *.
Residents of Thorpeness:	High				
Tourist visitors to Thorpeness/holiday accommodation:	High				
Walkers using the Suffolk Coastal Path:	Medium-high				
Viewpoint 13: Aldeburgh					
Beach users (Aldeburgh Beach):	Medium-high	Medium	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 36.4km occurs 26% of the time from Weyborne and 15% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE
Residents of Southwold seafront:	High		Significant, medium-term, temporary	Significant, long-term, reversible	
Tourist visitors to the seafront:	High		Significant, medium-term, temporary	Significant, long-term, reversible	
Walkers/strollers using Crag Path	Medium-high		Significant, medium-term, temporary	Significant, long-term, reversible	

Receptor/Viewpoint (*Figure 28.19 and Figures 28.25 – 28.45*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
alongside the beach:					North project at or beyond 55.8km occurs 9% of the time from Weybourne and 3% of the time from Shoeburyness*.
People sitting/viewing from seafront benches:	High		Significant, medium-term, temporary	Significant, long-term, reversible	
People working along the front e.g. RNLI shop, vendors:	Medium-low		Not significant, medium-term, temporary	Not significant, long-term, reversible	
Recreational boating (e.g. from Aldeburgh Yacht Club):	Medium		Not significant, medium-term, temporary	Not significant, long-term, reversible	
Viewpoint 19: Hopton-on-Sea					
Beach users (Hopton-on-Sea):	Medium	Medium-low	Not significant, medium-term, temporary	Not significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 37.3km occurs 26% of the time from Weyborne and 15% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 40.9km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Tourist visitors (e.g. Hopton Holiday Village):	Medium-high				
Residents of the coastal edges of Hopton-on-Sea (e.g. Sea View Rise):	Medium-high				
Walkers using the England Coastal Path:	Medium				
Viewpoint 20: Gorleston-on-Sea					
Beach users (Gorleston-on-Sea beach):	Medium	Medium-low	Not significant, medium-term, temporary	Not significant,	Very good or excellent visibility

Receptor/Viewpoint (*Figure 28.19 and* ***Figures 28.25 – 28.45***)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Tourist visitors to the seafront e.g. around Lower Esplanade/Marine Esplanade:	Medium-high			long-term, reversible	required. Visibility at or beyond 40.1km occurs 20% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 42.7km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
People sitting/viewing from seafront benches/gardens:	Medium-high				
Walkers using the England Coastal Path:	Medium-high				
Cyclists using NCNR 517:	Medium				
Residents of Gorleston-on-Seafront (e.g. Marine Parade):	Medium-high				
People engaged in active sports (e.g. Tennis / Basketball /Trim Trails):	Medium-low				
***** over 10 year period 2007-2017 (Met Office Visibility Data)					

28.9.3.2 Settlements

214. A summary assessment of the predicted cumulative visual effects of the construction and operation of the East Anglia ONE North offshore infrastructure cumulatively with the East Anglia TWO offshore infrastructure on residents of settlements is set out in ***Table 28.18***. Full technical assessments are provided in ***Appendix 28.6.*** The location of settlements is shown on ***Figure 28.19.***

Table 28.18 Settlements – Summary of Cumulative Effects

Settlement receptor (*Figure 28.19*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Lowestoft					
Area A: Gunton area to the north of Lowestoft	High	Low	Not significant, medium-term, temporary	Not significant, long-term, reversible	Very good or excellent visibility required. Visibility of the proposed East Anglia TWO project at or beyond 32.1km occurs 33% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 38.8km occurs 26% of the time from Weybourne and 15% of the time from Shoeburyness *.*.
Area B: South Beach/Kirkley area		Medium	Significant, medium-term, temporary	Significant, long-term, reversible	
Area C: Pakefield/Pakefield Cliffs area (e.g. Pakefield Road, Pakefield Street)		Medium	Significant, medium-term, temporary	Significant, long-term, reversible	
Area D: Quayside/inner harbour along Lake Lothing and Oulton Broad		Negligible	Not significant, medium-term, temporary	Not significant, long-term, reversible	
Area E: Urban areas of Lowestoft set-back from coast, including Kirkley, Pakefield and Carlton Colville		Negligible	Not significant, medium-term, temporary	Not significant, long-term, reversible	
Kessingland					
Area A: Sea front extending from Kessingland Beach to Alandale Park and Coastguard Lane	High	Medium-high	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility of the proposed East Anglia TWO project at or beyond 30.5km occurs 33% of the time from Weyborne and 21% of the time for Shoeburyness.
Area B: Kessingland		Negligible	Not significant, medium-term, temporary	Not significant, long-term, reversible	

Settlement receptor (*Figure 28.19*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
					Visibility of the proposed East Anglia ONE North project at or beyond 38.8km occurs 26% of the time from Weybourne and 15% of the time from Shoeburyness *.
Southwold					
Area A: Immediate seafront along coastal edge of Southwold between Pier Avenue/Southwold Pier (Illustrative Viewpoint D) along North Parade (Viewpoint 4) to Gun Hill (Viewpoint 5).	High	Medium-high	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 31.5km occurs 33% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 43.9km occurs 20% of the time from Weybourne and 10% of the time from Shoeburyness *.
Area B: Southwold Common (Illustrative Viewpoint A)		Negligible	Not significant, medium-term, temporary	Not significant, long-term, reversible	
Area C: Southwold town centre, (including from High Street/Market Place)		Negligible			
Area D: North Southwold residential areas between North Road and Victoria Street		Negligible			
Area E: Residential areas to the south and west of High Street/Queen Street		Negligible			
Thorpeness					
Area A: Seafront residential areas between North End	High	Medium	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility

Settlement receptor (*Figure 28.19*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Avenue, Admiral's Walk/The Headlands/ Benthills; to Thorpe Road.					required. Visibility at or beyond 35.8km occurs 26% of the time from Weyborne and 21% of the time for Shoeburyness. Visibility of the proposed East Anglia ONE North project at or beyond 38.8km occurs 26% of the time from Weybourne and 15% of the time from Shoeburyness *.
Area B: Areas of Thorpeness set-back from these seafront areas, including the Meare and its adjacent streets (The Haven/Lakeside Avenue); and central/western areas of Thorpeness around the village green/The Sanctuary/Westgate/The Whinlands/Pilgrim's Way.		Negligible	Not significant, medium-term, temporary	Not significant, long-term, reversible	
Aldeburgh					
Area A: Aldeburgh seafront between Thorpe Road, Market Cross Place, Crabbe Street and Crag Path	High	Medium	Significant, medium-term, temporary	Significant, long-term, reversible	Very good or excellent visibility required. Visibility at or beyond 36.4km occurs 26% of the time. Excellent visibility required for the proposed East Anglia ONE North windfarm site to be visible at 55.8km. Visibility at or beyond this distance occurs approximately 9% of the time, over 10-year period 2007-
Area B: Parts of Aldeburgh around Church Farm Rise/St Peter's Road/Victoria Road inland of immediate seafront which are slightly elevated.		Medium	Significant, medium-term, temporary	Significant, long-term, reversible	
Area C: Aldeburgh town centre along Aldeburgh High Street; residential areas in northern part of Aldeburgh (to north of Victoria Road/east of Leiston Road); residential areas in southern part of Aldeburgh (to south		Negligible	Not significant, medium-term, temporary	Not significant, long-term, reversible	

Settlement receptor (*Figure 28.19*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)	Likelihood of effect
Victoria Road); residential areas in western part of Aldeburgh (to north of Saxmundham Road (A1094)/south of Leiston Road).					2017 from Weybourne and 3% of the time from Shoeburyness (Met Office Visibility Data).
***** over 10 year period 2007-2017 (Met Office Visibility Data)					

28.9.3.3 Suffolk Coastal Path

215. A summary assessment of the predicted cumulative visual effects of the construction and operation of the East Anglia ONE North offshore infrastructure cumulatively with the East Anglia TWO offshore infrastructure on walkers using the Suffolk Coastal is set out in ***Table 28.19***. Full technical assessments are provided in ***Appendix 28.6***. ZTVs illustrating the predicted visibility of the East Anglia ONE North windfarm site from the Suffolk Coastal Path are shown in ***Figure 28.23***.

Table 28.19 Suffolk Coastal Path – Summary of Cumulative Effects

Section of Suffolk Coastal Path (*Figure 28.23*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)
Suffolk Coastal Path				
Section 01 Lowestoft	Medium-high	Medium for a 3 km stretch along Lowestoft seafront	Significant, medium-term , temporary	Not significant, long-term, reversible
Section 02 Kessingland	Medium-high from the stretch south of Kessingland and medium-low through Kessingland	Medium-high for 2.5km stretch along Kessingland Beach	Significant, medium-term, temporary for 2.5km stretch along Kessingland Beach	Significant, long-term, reversible for 2.5km stretch along Kessingland Beach
Section 03 Kessingland to Reydon	Medium	Low	Not significant, medium-term, temporary	Not significant, long-term, reversible

Section of Suffolk Coastal Path (*Figure 28.23*)	Sensitivity to change	Magnitude of change (East Anglia ONE North and East Anglia TWO) (construction, operation and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (construction and decommissioning)	Significance of effect (East Anglia ONE North and East Anglia TWO) (operation)
Section 04 Southwold	High from the 2.5 km stretch along the sea front of Southwold, between Eastern Marshes and Havenbeach Marshes. Medium in all other areas around Southwold.	Medium-high from 2.5 km stretch along the sea front of Southwold, between Eastern Marshes and Havenbeach Marshes. Medium-Low in all other areas around Southwold	Significant, medium-term, temporary from the 2.5 km stretch along the sea front between Eastern Marshes and Havenbeach Marshes Not significant, medium-term, temporary over remainder of this section in the Southwold area including Southwold Harbour.	Significant, long-term, reversible from the 2.5 km stretch along the sea front between Eastern Marshes and Havenbeach Marshes Not significant, long-term, reversible over remainder of this section in the Southwold area including Southwold Harbour.
Section 05 Walberswick and Corporation Marshes	Medium-high	Medium-low	Not significant, medium-term, temporary	Not significant, long-term, reversible
Section 06 Dunwich Forest and Heath	Medium	Medium over a 1km stretch north of Coastguard Cottages Low over the remainder of this section.	Significant, medium-term, temporary over a 1km stretch north of Coastguard Cottages. Not significant, medium-term, temporary over remainder of this section.	Significant, long-term, reversible over a 1km stretch north of Coastguard Cottages Not significant, long-term, reversible over remainder of this section.
Section 07 Minsmere and Sizewell	Medium-high over the stretch near Minsmere Medium-low over the stretch near Sizewell	Low over the stretch through Minsmere Medium over the stretch near Sizewell	Not significant, medium-term, temporary	Not significant, long-term, reversible

28.10Transboundary Impacts

216. The East Anglia ONE North windfarm site is located approximately 104km from the coastline of the nearest EU member state (Netherlands). The ZTV in ***Figure 28.5*** shows that there is no theoretical visibility of the East Anglia ONE North windfarm site over approximately 70km, due to the effects of earth curvature which would effectively 'hide' the turbines behind the skyline at distance beyond 70km. Transboundary effects have therefore been scoped out of the SLVIA, since there is no potential for significant effects at such long distance; the coastline of other EU member states is outside the SLVIA study area and would have no visibility of the construction and operation of the offshore infrastructure.

28.11Inter-relationships

217. Inter-relationships are considered to be the impacts and associated effects of different aspects of the proposed East Anglia ONE North project on the same receptor. In the SLVIA, these inter-related effects are considered to be receptor led effects, where specific receptors may be affected by both the construction and operation of the offshore infrastructure (including windfarm site, offshore platforms, offshore cable corridor) and the contruction and operation of the onshore infrastructure (i.e. onshore substation, onshore cable corridor, landfall location and National Grid infrastructure). There is potential for effects to interact, spatially and temporally, to create inter-related effects on a receptor.

218. The SLVIA presented in ***Chapter 28 Seascape, Landscape and Visual Amenity*** and and LVIA presented in ***Chapter 29 Landscape and Visual Impact Assessment*** together provide an assessment of the SL&V effects of the proposed East Anglia ONE North project i.e. of both the construction and operation of the offshore infrastructure (including windfarm site, offshore platforms, offshore cable corridor) and the onshore infrastructure and National grid infrastructure.

219. An assessment of significant inter-related effects has also been undertaken in ***section 28.11.1*** to ***section 28.11.3*** to assess any areas where the construction and operation of the offshore infrastructure and the construction and operation of the onshore infrastructure combine, or inter-relate, to have an effect.

220. For example, visibility of the East Anglia ONE North windfarm site and the onshore substation or landfall from a particular viewpoint or landscape designation, may interact to produce a different, or greater effect on a receptor than when the effects are considered in isolation. Receptor-led effects might be short-term, temporary or transient effects, or incorporate longer term effects.

221. A description of the likely significant inter-related effects arising from the proposed East Anglia ONE North project is provided in the following sections (***sections 28.11.1*** to ***28.11.3***) of the SLVIA.

28.11.1 Inter-related Seascape Effects

222. No inter-related seascape effects have been identified since the construction and operation of the onshore infrastructure will not affect the character of offshore SCTs. These offshore seascape character receptors will be affected only by the construction and operation of the offshore infrastructure in isolation.

28.11.2 Inter-related Landscape Effects

28.11.2.1 Construction Stage Inter-Related Landscape Effects

223. The majority of LCTs and landscape designations in the SLVIA study area will not experience inter-related effects, since they have either no visibility, or very limited/distant visibility, of either the construction of the onshore infrastructure or the construction of the offshore infrastructure, and therefore have limited potential for inter-related (or combined) effects to occur. Inter-related effects will only occur on those LCTs and landscape designations near the landfall, where the construction of the onshore infrastructure will occur in areas that may also be susceptible to changes resulting from views of the construction of the offshore infrastructure.

224. Based on the assessments undertaken in ***section 28.6*** and ***section 29.6 of Chapter 29 Landscape and Visual Impact Assessment***, a limited number of LCTs are identified as having potential to have inter-related effects arising through the potential change in character resulting from the construction of the onshore infrastructure and offshore infrastructure, as follows:

- LCT 05 Coastal Dunes and Shingle Ridges – Area D (Dunwich Heath to Sizewell).
- LCT 07 Estate Sandlands LCT - Area A (Thorpeness to Aldringham and Friston).
- Suffolk Coast and Heaths AONB (and Heritage Coast) - Area A (between Thorpeness, Sizewell and Leiston).

225. Inter-related effects are assessed as most likely to occur in a localised area of these LCTs and the AONB within close proximity to the landfall (to the north of Thorpeness and south of Sizewell), where the character is assessed as likely to experience not significant inter-related effects during the construction of the landfall and onshore cable route together with the construction of the offshore infrastructure, over a short-term period when their construction periods overlap. These areas, in close proximity to the landfall (to the north of Thorpeness and south of Sizewell) are located outside the 50km radius study area around the East Anglia ONE North Windfarm site, therefore the magnitude of any inter-related landscape effects arising will be low, due to the limited contribution of the East Anglia ONE North Windfarm site to any inter-relation.

226. In reality, the programming would mean there would likely be some degree of separation between the construction of the onshore infrastructure and construction of the offshore infrastructure. The period over which significant inter-related effects on landscape character occur during construction is therefore limited to the short-term with inter-related effects being temporary, and becoming not significant during the operational phase, when the landfall and onshore cable route will have a negligible change to landscape character (post-construction).

28.11.2.2 Operational Inter-Related Landscape Effects

227. Based on the assessments undertaken in ***section 28.6*** and ***section 29.6*** of ***Chapter 29 Landscape and Visual Impact Assessment***, due to the geographic separation of the East Anglia ONE North windfarm site and the onshore substation, the assessment identifies no significant inter-related landscape effects resulting from the operation of the East Anglia ONE North windfarm site and the onshore substation.

28.11.3 Inter-related Visual Effects

28.11.3.1 Construction Stage Inter-Related Visual Effects

228. The majority of viewpoints and visual receptors in the SLVIA study area will not experience inter-related effects, since they have either no visibility, or very limited/distant visibility, of both the construction of the onshore infrastructure or the offshore infrastructure, and therefore have limited potential for inter-related (or combined) effects to occur. Inter-related effects will only occur on those viewpoints and visual receptors near the landfall, where the construction of the onshore infrastructure will occur in areas that may also be susceptible to changes resulting from views of the construction of the offshore infrastructure.

229. Based on the assessments undertaken in ***section 28.6*** and ***section 29.6 of Chapter 29 Landscape and Visual Impact Assessment***, a limited number of viewpoints and visual receptors are identified as having potential to have inter-related effects arising through the potential change to views resulting from the construction of the onshore infrastructure and offshore infrastructure, as follows:

- Residents of the northern edges of Thorpeness; and
- Walkers using the Suffolk Coastal Path and Sandlings Walk, in the area between Thorpeness and Sizewell.

230. The assessment identifies not significant construction stage inter-related effects of the onshore infrastructure and offshore infrastructure on the visual amenity experienced by people within a localised geographic area, consisting of residents of the northern edges of Thorpeness, and walkers over a 2.5km section of the Suffolk Coastal Path and a 3km section of the Sandlings Walk in the area between

Thorpeness and Sizewell. Not significant construction stage inter-related visual effects are likely to occur where the Suffolk Coastal Path and Sandlings Walk cross, or are in close proximity to, the construction of onshore infrastructure at the landfall and the onshore cable route, from where there is potential for simultaneous or sequential views of the construction of the offshore infrastructure out to sea in sea views from these routes. These areas, in close proximity to the landfall (to the north of Thorpeness and south of Sizewell) are located outside the 50km radius study area around the East Anglia ONE North Windfarm site, therefore the magnitude of any inter-related visual effects arising will be low, due to the limited contribution of the East Anglia ONE North Windfarm site to any inter-relation.

231. The period over which significant inter-related visual effects on views and visual receptors occur during construction is limited to the short-term with inter-related effects being temporary, and becoming not significant during the operational phase, when the landfall and onshore cable route will have a negligible change to views (post-construction).

28.11.3.2 Operational Inter-Related Visual Effects

232. Based on the assessments undertaken in ***section 28.6*** and ***section 29.6 of Chapter 29 Landscape and Visual Impact Assessment***, due to the geographic separation of the East Anglia ONE North windfarm site and the onshore substation, the assessment identifies no significant inter-related visual effects resulting from the operation of the East Anglia ONE North windfarm site and the onshore substation.

28.12Interactions

The impacts identified and assessed in this chapter have the potential to interact with each other, which could give rise to synergistic impacts as a result of that interaction. For clarity, the areas of interaction between impacts are presented in ***Table 28.20***, along with an indication as to whether the interaction may give rise to synergistic impacts.

Table 28.20 Interaction between impacts

Potential Interactions between Impacts				
Construction	**1 Changes to landscape character**	**2 Changes to seascape character**	**3 Changes to landscape designations**	**4 Changes to visual amenity**
1 Changes to landscape character	-	Yes	Yes	Yes
2 Change to seascape character	Yes	-	Yes	Yes
3 Changes to landscape designations	Yes	Yes	-	Yes
4 Changes to visual amenity	Yes	Yes	Yes	-
Operation	**1 Changes to landscape character**	**2 Changes to seascape character**	**3 Changes to landscape designations**	**4 Changes to visual amenity**
1 Changes to landscape character	-	Yes	Yes	Yes
2 Change to seascape character	Yes	-	Yes	Yes
3 Changes to landscape designations	Yes	Yes	-	Yes
4 Changes to visual amenity	Yes	Yes	Yes	-

28.13Summary and Conclusions

233. Having considered all of the issues, the conclusion reached in the SLVIA is that in seascape, landscape and visual terms, it is considered that although the construction and operation of the offshore infrastructure extends the influence of the existing wind energy characteristics of the seascape, it will not result in significant effects on the character and views from the closest areas of the Suffolk coastline. There is scope for the East Anglia ONE North windfarm site to be accommodated in this location without significant and unacceptable effects on seascape, landscape character and visual amenity.

234. The SLVIA has found that the construction and operation of the offshore infrastructure would not result in the key characteristics of the seascape, landscape or views as being affected to such a degree that the seascape would become a 'windfarm seascape' (in addition to or with other operational windfarms), where wind turbines dominate the character, but that it would remain characterised locally as a 'seascape with windfarms'. This is an important distinction as it implies that the carrying capacity - as defined by its inherent character - would not be exceeded by the construction and operation of the offshore infrastructure.

235. In coming to this conclusion, the SLVIA also has regard to the following specific matters in reaching its opinion on the effects of the construction and operation of the offshore infrastructure:

- The separation distances from sensitive coastal landscape and visual receptors, at distances of over 36 km from the nearest coastline. The East Anglia ONE North windfarm site is well set-back at distance (over 36 km) from the nearest parts of the coastline.
- The relatively contained geographic extent of landscape and visual effects, which are largely contained to the narrow coastal edges of the Suffolk coast, such that significant effects that occur are specific to a particular area, and are not widespread. The majority of significant effects on landscape character and views/visual amenity are restricted to the immediate coastal edges of the Suffolk coastline.
- The East Anglia ONE North windfarm site is located within a seascape that has physical characteristics and scale that underpin its capacity to absorb further offshore windfarm development of the size and scale proposed.
- The East Anglia ONE North windfarm site fits within the existing seascape character and will not change the overall character of the offshore waters' seascape, given the existing influence of existing offshore windfarms in this seascape and the geographic area of significant effect.
- The fact that landscape planning has already established and accepted landscape change from offshore windfarm development in this seascape.
- The East Anglia ONE North windfarm site fits with the current landscape approach to accommodate wind energy development in this seascape, as it will retain the overall character of the seascape, accepting that it will have some significant seascape, landscape and visual effects on the character of some inshore seascape and coastal edge landscape at the local/regional scale.

28.14References

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