East Anglia TWO Offshore Windfarm

Appendix 26.25

Traffic and Transport Cumulative Impact Assessment with the Proposed East Anglia ONE North Project

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Revision Summary					
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Glossary of Acronyms

AADT	Average Annual Daily Traffic
CCS	Construction Consolidation Sites
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
ES	Environmental Statement
GEART	Guidelines for the Environmental Assessment of Road Traffic
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
LCV	Light Commercial Vehicle
MW	Megawatt
NGET	National Grid Electricity Transmission
PEIR	Preliminary Environmental Information Report
SCC	Suffolk County Council

Glossary of Terminology

Applicant	East Anglia TWO Limited.
Construction consolidation sites	Compounds which will contain laydown, storage and work areas for onshore construction works. The HDD construction compound will also be referred to as a construction consolidation site.
Development Area	Area containing all onshore and offshore infrastructure, transmission works, construction consolidation sites, and mitigation areas.
East Anglia TWO project	The proposed project consisting of up to 75 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.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive, as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017 and regulation 18 of the Conservation of Offshore Marine Habitats and Species Regulations 2017. These include candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to the EIA and the information required to support HRA.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Jointing Bay	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The area where the offshore export cables would make contact with land, and connect to the onshore cables.
Link boxes	Underground chambers or above ground cabinets next to the cable trench housing electrical earthing links.
Mitigation areas	Areas captured within the Development Area specifically for mitigating expected or anticipated impacts.
National Grid infrastructure	A National Grid substation, connection to the existing electricity pylons and National Grid overhead line realignment works which will be consented as part of the proposed East Anglia TWO project Development Consent Order but will be National Grid owned assets.
National Grid overhead line realignment works	Works required to upgrade the existing electricity pylons and overhead lines to transport electricity from the National Grid substation to the national electricity grid
National Grid overhead line realignment works area	The proposed area for National Grid overhead line realignment works.

National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the proposed East Anglia TWO project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia TWO project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation required to connect the proposed East Anglia TWO project to the national electricity grid.
Natura 2000 site	A site forming part of the network of sites made up of Special Areas of Conservation and Special Protection Areas designated respectively under the Habitats Directive and Birds Directive.
Onshore cable corridor	The corridor within which the onshore cable route will be located.
Onshore cable route	This is the construction swathe within the onshore cable corridor which would contain onshore cables as well as temporary ground required for construction which includes cable trenches, haul road and spoil storage areas.
Onshore cables	The cables which would bring electricity from landfall to the onshore substation. The onshore cable is comprised of up to six power cables and two fibre optic cables.
Proposed onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction consolidation sites), and the National Grid Infrastructure will be located.
Onshore infrastructure	The combined name for all infrastructure associated with the proposed East Anglia TWO project from landfall to grid connection.
Onshore substation	The East Anglia TWO substation and all of the electrical equipment within in.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia TWO project.
Onshore study area	All onshore areas being considered for the placement of onshore infrastructure or temporary construction consolidation sites. This includes areas being considered for National Grid infrastructure, East Anglia TWO onshore substation, onshore cable corridor and landfall.
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.
Two-way movement	A movement is the process of transporting goods from a source location to a predefined destination. A two-way movement represents the inbound (laden trip from source) and the outbound unladen trip (back to source). For example, 20 two-way movements comprise 10 laden trips from source and 10 unladen unladed trips back to source.

26.25 Traffic and Transport Cumulative Impact Assessment with the Proposed East Anglia ONE North Project

26.1 Introduction

1. This appendix covers the cumulative impact assessment of the proposed East Anglia TWO project with the proposed East Anglia ONE North project in relation to traffic and transport.

2. The East Anglia ONE North offshore windfarm project (the proposed East Anglia ONE North project) is also in the pre-application phase. The proposed East Anglia ONE North project will have a separate Development Consent Order (DCO) application but is working to the same programme of submission as the proposed East Anglia TWO project. The two projects will share the same landfall location and cable route and the two onshore substations will be co-located, and feed into the same National Grid substation.

3. The proposed East Anglia TWO project Cumulative Impact Assessment (CIA) for traffic and transport will therefore initially consider the cumulative impact with only the East Anglia ONE North project against two different construction scenarios (i.e. construction of the two projects simultaneously and sequentially). The realistic worst case scenario of each impact is then carried through to the main body of the CIA assessment which considers other developments which are in close proximity to the proposed East Anglia TWO project.

4. For a more detailed description of the CIA please refer to ***Chapter 5 EIA Methodology***.

26.2 Construction Scenarios Realistic Worst Case

5. There are two potential scenarios for construction of the proposed East Anglia TWO project and proposed East Anglia ONE North project, namely:

   - Scenario 1 - the proposed East Anglia TWO project and East Anglia ONE North are built simultaneously; and
   - Scenario 2 - the proposed East Anglia TWO project and East Anglia ONE North are built sequentially with a construction gap.

6. With respect to traffic and transport, the worst case for all effects would be Scenario 1 whereby there would be far greater traffic demand associated with constructing two projects simultaneously. For Scenario 2, the cumulative impacts would be no worse than those assessed for the proposed East Anglia TWO project alone.

7. The traffic and transport CIA therefore adopts Scenario 1 for an initial assessment of cumulative effects with the proposed East Anglia ONE North project.

8. ***Section 26.6.2*** of ***Chapter 26 Traffic and Transport*** identifies that for the operational phase, the onshore substation and National Grid substation would not normally be staffed and vehicle movements would therefore be limited to occasional repair, maintenance and inspection visits and annual routine integrity tests of the onshore cable route. The same operational requirements apply to the proposed East Anglia ONE North project therefore, **no significant** cumulative impacts during operation are anticipated.

9. Mitigation measures for the proposed East Anglia TWO project and proposed East Anglia ONE North project will be the same. These are detailed in ***Chapter 26 Traffic and Transport***.

26.3 CIA during Construction under Scenario 1

26.3.1 Trip Generation and Assignment

10. The simultaneous construction of the proposed East Anglia TWO project and proposed East Anglia ONE North project (Scenario 1) would result in an increase in the volume of materials required, when compared to constructing the proposed East Anglia TWO project in isolation. This section therefore outlines the vehicle trips generated by simultaneous construction in order to inform an assessment of the potential impacts.

11. To minimise the impact of the increase in traffic Scenario 1 would adopt the same embedded mitigation as that set for the proposed East Anglia TWO project (as set out in ***Table 26.3*** of ***Chapter 26 Traffic and Transport***). Both the proposed East Anglia TWO and proposed East Anglia ONE North projects would be required to share a single haul road therefore limiting the potential traffic demand required for bulk stone movements (that would otherwise be required for the construction of two separate haul roads).

12. Utilising the same approach as outlined in ***section 26.6*** of ***Chapter 26 Traffic and Transport***, ***Appendix 26.19*** provides a summary of the expected quantity of materials and plant movements that could be expected for each of the construction activities in Scenario 1.

13. ***Appendix 26.20*** disaggregates the proposed East Anglia TWO and proposed East Anglia ONE North projects traffic demand (contained in ***Appendix 26.19***) by activity over time to provide total one-way (deliveries) and two-way Heavy Goods Vehicle (HGV) and Light Commercial Vehicle (LCV) movements per day. ***Table A26.1*** and ***Table A26.2*** provide 'snap shot' summaries of the peak daily HGV and employee movements per discrete site respectively.

Table A26.1 Daily Two-Way HGV Movements per Month (Scenario 1)

Discrete sites	Months										⋮							
	1	2	3	4	5	6	7	8	9	10		30	31	32	33	34	35	36
Landfall location	35	45	45	37	27	25	25	25	25	25		0	0	0	0	0	0	0
Onshore cable route section 1	42	40	40	40	54	52	32	39	27	32		0	0	0	0	51	47	51
Onshore cable route section 2	44	42	42	42	36	44	27	29	25	29		0	0	0	0	53	49	53
Onshore cable route section 3	43	41	41	41	25	23	15	23	21	25		0	0	0	0	48	44	48
Onshore cable route section 4	44	44	44	44	49	49	46	54	54	31		0	0	0	0	83	83	83
East Anglia TWO & East Anglia ONE North onshore substations	65	65	65	54	29	31	82	80	78	77		0	4	0	0	31	28	31
National Grid Substation and Infrastructure	45	45	45	45	45	45	25	25	25	5		18	33	33	33	27	27	27
Total two-way * daily HGV movements accessing all discrete sites	318	322	322	303	265	269	252	275	255	224		18	37	33	33	293	278	293

Key	
	Peak period
*	Total two-way movements represent the inbound and outbound trip, i.e. 322 two-way movements equates to 161 arrivals and 161 departures

Table A26.2 Daily Two-Way Employees Movements per Month (Scenario 1)

Discrete sites	Months																	
	⋮	7	8	9	10	11	12	13	14	15	16	17	18	⋮	32	33	34	35	36
Landfall location		8	8	8	8	8	8	8	20	22	32	32	32		0	0	0	0	0
Onshore cable route section 1		58	58	58	61	59	65	64	61	70	70	61	46		21	21	61	61	58
Onshore cable route section 2		41	40	40	43	41	48	47	44	53	53	41	29		4	4	44	44	41
Onshore cable route section 3		38	39	39	42	40	44	44	44	44	44	29	29		4	4	44	44	41
Onshore cable route section 4		43	46	46	42	40	44	44	44	44	44	29	29		4	4	47	47	44
East Anglia TWO & East ONE North onshore substations		83	71	71	54	54	62	62	80	80	92	90	76		18	18	52	52	52
National Grid Substation and Infrastructure		7	8	8	8	8	8	14	14	14	19	19	19		17	17	14	14	14
Total two-way * daily employee movements accessing all discrete sites		**278**	**270**	**273**	**258**	**252**	**279**	**283**	**307**	**327**	**354**	**301**	**260**		**68**	**68**	**262**	**262**	**250**
Key																			
	Peak period																		

*	Total two-way movements represent the inbound and outbound trip, i.e. 354 two-way movements equates to 177 arrivals and 177 departures

14. The daily vehicle movements have been assigned to the highway network adopting the same assumptions as those set out in ***section 26.6*** of ***Chapter 26 Traffic and Transport*** for the proposed East Anglia TWO project alone, augmented with specific cumulative assumptions, namely:

- A theoretical 'in-combination worst case' month has been adopted, whereby the peak construction activity for all sites would occur concurrently for Scenario 1 (at a total of 14 sites). This results in worst case peak vehicle movements on the local highway network, appropriate reduction factors are applied to the A12 to avoid an unrealistic accumulation of traffic;
- All employees and HGVs to be assigned to the same accesses proposed for the proposed East Anglia TWO project; and
- Employees assumed to have the same origin / destinations as assumed for the proposed East Anglia TWO project.

15. Utilising these assumptions, ***Appendix 26.21*** highlights the traffic flows assigned to the highway network.

26.3.2 Traffic Impact Screening

16. In accordance with the Guidelines for the Environmental Assessment of Road Traffic (GEART) (Rule 1 and Rule 2), a screening process has been undertaken for the onshore highway study area to identify routes that are likely to have sufficient changes in traffic flows and therefore require further impact assessment.

17. ***Table A26.3*** summarises the total daily peak two-way vehicle movements (i.e. arrivals and departures) of all materials, personnel and plant during the peak in-combination month when distributed across the highway network, ***Appendix 26.22*** graphically depicts this demand on the highway network for scenario 1.

18. ***Table A26.4*** also provides a comparison of the peak daily construction flows with the forecast background daily traffic flows in 2024 (assumed worst case realistic start of construction) for scenario 1.

Table A26.3 Existing and Proposed Daily Traffic Flows (Scenario 1)

Link ID	Link Description	Link sensitivity	Background 2024 flows (24Hr Annual Average Daily Traffic (AADT))		Scenario 1 Construction Vehicle Movements (two-way)		Percentage Increase	
			All vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
1	A12 north of the B1122	Low	13,763	1,069	477	322	3%	30%
2	A12 between the B1122 and A1094	Low to High	12,320	1,045	403	322	3%	31%
3	A12 south of the A1094	Low to High	18,807	1,120	486	322	3%	29%
4	B1122 from the A12 to Leiston	Low to High	2,818	203	337	152	12%	75%
5	B1121 from the A12 to Friston	Low to High	1,273	49	71	0	6%	0%
6	A1094 from the A12 to the B1121 / B1069	Low to High	8,223	425	454	303	6%	71%
7	B1121 Friston to the A1094	High	1,296	57	42	0	3%	0%
8	A1094 from the B1121 / B1069 to	Low to High	6,013	217	125	55	2%	25%
9	B1069 from the A1094 to south of Knodishall / Coldfair Green	Low	4,928	198	602	268	12%	135%
10	B1122 from Aldeburgh to the B1353	Medium to High	3,440	149	125	55	4%	37%
11	B1353 from the B1122 to Thorpeness	Medium	2,334	75	88	45	4%	60%
12	Lover's Lane / Sizewell Gap	Low	2,892	88	359	152	12%	173%
13	Aldringham Lane	High	2,607	61	38	0	1%	0%
14	B1122 south of Lover's Lane to Leiston	High	2,818	203	200	0	7%	0%
15	B1069 through Knodishall,	High	5,099	137	196	0	4%	0%

Link ID	Link Description	Link sensitivity	Background 2024 flows (24Hr Annual Average Daily Traffic (AADT))		Scenario 1 Construction Vehicle Movements (two-way)		Percentage Increase	
			All vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
	Coldfair Green and Leiston							
	Exceeds GEART screening thresholds							

19. In accordance with GEART only those links that are showing greater than 10% increase in total traffic flows (or HGV component) for sensitive links, or greater than 30% increase in total traffic or HGV component for all other links, are considered when assessing the traffic impact upon receptors.

20. It is noted from ***Table A26.3*** that links 5, 7, 13, 14 and 15 are below the GEART screening thresholds and are therefore not considered further in the impact assessment. The remaining links (highlighted within ***Table A26.3****Error! Reference source not found.*) are all above the GEART screening thresholds and are therefore considered further.

21. The following paragraphs summarise the assessment construction traffic impacts on the effects identified as being susceptible to changes in flow.

26.3.3 Impact 1: Severance

22. The peak daily change in total traffic flow for all screened links is significantly less than the 30% change in total traffic, therefore applying the GEART severance threshold (***Table 26.8*** of ***Chapter 26 Traffic and Transport***) the magnitude of effect is assessed as very low on low to high sensitivity links giving a maximum impact of **minor adverse** to **negligible**.

23. Noting impacts are assessed as no greater than **minor adverse** for all screened links, no mitigation further to that embedded within the design of the proposed East Anglia TWO project is considered necessary.

26.3.4 Impact 2: Pedestrian Amenity

24. The peak daily change in total flows or HGV component for links 9 and 12 is greater than the 100% GEART impact threshold, which suggests adverse amenity impacts may be experienced.

25. Link 9 comprises of the B1069 from the junction of the A1094 to the south of Knodishall. This link is assessed as low value sensitivity noting there is minimal frontage development, and no footways along the road, suggesting limited pedestrian demand. The link is subject to a 135% (268 HGVs) increase in HGVs (on a baseline of 198 HGVs per day) and therefore the magnitude of effect is assessed as medium on a low sensitive receptor resulting in **minor adverse** cumulative impact.

26. Link 12 comprises Lover's Lane / Sizewell Gap. This link is assessed as low value sensitivity noting there is minimal frontage development whilst pedestrians and cyclists are segregated from traffic with a dedicated shared use pedestrian footway cycleway. The link is subject to a 173% increase (152 HGVs) in HGVs (on a baseline of 88 HGVs per day) and therefore the magnitude of effect is assessed as medium on a low sensitive receptor resulting in **minor adverse** cumulative impact.

27. Noting impacts are assessed as no greater than minor adverse for all screened links, no mitigation further to that embedded within the design of the proposed East Anglia TWO project is considered necessary.

26.3.5 Impact 3: Road Safety

28. ***Table A26.4*** provides a summary of collision clusters and links with a collision rate higher than the national average for comparable roads previously identified in ***section 26.5.4*** of ***Chapter 26 Traffic and Transport***. ***Table A26.4*** also provides a comparison of increase in traffic flows for the proposed East Anglia TWO project and Scenario 1.

Table A26.4 Collision Analysis (Scenario 1)

Sensitive Links	Description	East Anglia TWO % increase		Scenario 1 % increase	
		All vehicles	HGVs	All vehicles	HGVs
Cluster 1 (Link 2)	A cluster of nine collisions at the junction of the junction A12 and B1119 Rendham Road that demonstrates a pattern of collisions involving vehicles right turning from Rendham Road on to the A12.	3%	28%	3%	31%
Cluster 3 (Link 2, 3 & 6)	A cluster of 17 collisions at the junction of the A12 and A1094 that demonstrates a pattern of collisions between vehicles turning between the A12 and A1094.	4%	58%	6%	71%

Sensitive Links	Description	East Anglia TWO % increase		Scenario 1 % increase	
		All vehicles	HGVs	All vehicles	HGVs
B1121 (Links 5 & 7)	It has been identified that the number of collisions along the B1121 is higher than the national average for comparable roads.	5%	0%	6%	0%
A1094 (Links 6 & 8)	It has been identified that the number of collisions along the A1094 is just below the national average for comparable roads.	4%	58%	6%	71%

29. It is concluded from ***Table A26.4*** that the potential road safety impacts for Scenario 1 are similar to those assessed for the proposed East Anglia TWO project and therefore the package of additional mitigation measures outlined (reduced speed limit, enhanced warning signage, 'rumble strips' and slow markings) would be equally applicable to Scenario 1.

30. The implementation of the additional mitigation measures at the junction of the A12 and A1094 would reduce the speed to traffic on the A12 and help highlight the junction to drivers. It is reasoned therefore that these measures would consequently assist in reducing the number and potential severity of the collisions at this location.

31. With the implementation of the additional mitigation measures the sensitivity of the junction would be expected to reduce to low sensitivity. The magnitude of effect remains medium upon a low sensitive receptor resulting in a **minor adverse** residual cumulative impact.

32. With the provision of a package of measures to mitigate the potential impact of the slow-moving construction traffic at the proposed accesses, the magnitude is assessed as low on low value receptors resulting in a residual **negligible** cumulative impact.

26.3.6 Impact 4: Driver Delay (Capacity)

26.3.6.1 Impacts Prior to Mitigation

33. The GEART screening thresholds do not apply to this effect as the potential impact is defined as significant when the traffic system surrounding the development under consideration is at or close to capacity.

34. The most sensitive time for Driver Delay would be when the daytime construction shift finishes at the same time as the evening network peak. During this period

construction employees would be departing their place of work and HGVs would be returning from making deliveries.

35. To assess if this has the potential for significant impact, Scenario 1 pm peak construction traffic generation has been assigned to the junctions identified as sensitive by Suffolk County Council (SCC) and Highways England. ***Table A26.5*** details the resultant traffic flows arriving at the junctions during the afternoon peak hour. Daily and peak hour turning count diagrams are also provided within ***Appendix 26.23***.

Table A26.5 Peak Hour Traffic Flows Through Sensitive Junctions (Scenario 1)

Junction	All vehicles	HGVs
Junction 1: Junction of the A12 and A1094	123	33
Junction 2: Junction of the A12 and B1122	115	33
Junction 3: Junction of the A1094 and B1069	105	32
Junction 4: Junction of the A12, A14 and A1156 (A14 Junction 58)	40	33
Junction 5: Junction of the A12, A14 and A1214 (A14 Junction 55)	55	33

36. ***Table A26.5*** identifies that the peak increase in total flows through the sensitive junctions is between 40 and 123 vehicle movements per hour.

37. It is considered that the forecast increase in all vehicle movements through the sensitive junctions would not be significant in the context of the existing traffic levels. The magnitude of effect is therefore assessed as very low on a high value receptor resulting in a **minor adverse** cumulative impact.

38. In addition to considering the potential for delays associated with increases in traffic at critical junctions, during consultation with SCC the potential for delays associated with the following activities was also raised:

- Delays resulting from the closures of roads to install the proposed East Anglia TWO project cables across the existing public highway; and
- Delays associated with traffic being held back whilst HGVs are escorted to access 3 via along the B1353.

39. With regards to delays resulting from road closures, the simultaneous construction of the proposed East Anglia TWO project and the proposed East Anglia ONE North project would not change the impacts assessed for the construction of the proposed East Anglia TWO project alone. Therefore, the

package of mitigation set out in ***section 26.6.1.11.3*** of ***Chapter 26 Traffic and Transport*** is considered valid for Scenario 1 and the residual cumulative impact is assessed as **negligible**.

40. With regards to traffic delays associated with the HGVs being escorted to access 3, ***section 26.6.1.11.3*** of ***Chapter 26 Traffic and Transport*** defines a package of mitigation measures to manage a daily peak of 38 two-way HGV movements. ***Table A26.1*** identifies that for Scenario 1 there could be up to 45 two-way HGV movements travelling to access 3 via the B1353. It is considered that the package of mitigation measures defined for the proposed East Anglia TWO project would be equally applicable to mitigating the impact of 45 two-way HGV movements per day and therefore, the residual cumulative impact is assessed as negligible.

26.3.7 Impact 5: Driver Delay (Highway Geometry)

41. During consultation with SCC a request was made to consider the potential for delays associated with HGVs attempting to pass on coming vehicles at locations where the existing highway width is constrained, namely:

- The priority junction of the A1094 and B1069; and
- The roundabout junction of the A1094 and B1122 at Aldeburgh.

42. ***Section 26.6.1.12*** of ***Chapter 26 Traffic and Transport*** identified that HGVs could negotiate the junction of the A1094 and the B1069 but that mitigation would be required at the roundabout junction of the A1094 and B11122. It is considered that this mitigation would be equally applicable to the simultaneous construction of the proposed East Anglia TWO project and proposed East Anglia ONE North project. Therefore, the residual cumulative impact is assessed as **negligible**.

26.4 Summary

43. Construction scenario 1 was identified in ***section 26.2*** as creating a realistic worst case in terms of impacts to traffic and transport and has been assessed in the sections above. Therefore, scenario 1 will be carried through into the wider CIA with other developments, see ***section 21.7*** in ***Chapter 26 Traffic and Transport.***