# East Anglia ONE North and East Anglia TWO Offshore Windfarms

# Clarification Note

## Air Quality

Applicants: East Anglia ONE North Limited and East Anglia TWO Limited
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**Applicable to East Anglia ONE North and East Anglia TWO**

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# Glossary of Acronyms

| | |
|---|---|
| AADT | Annual Average Daily Traffic |
| AAWT | Annual Average Weekday Traffic |
| APIS | Air Pollution Information System |
| AQMA | Air Quality Management Area |
| CCS | Construction Consolidation Sites |
| DCO | Development Consent Order |
| DMRB | Design Manual for Road and Bridges |
| EPUK | Environmental Protection UK |
| ES | Environmental Statement |
| ESC | East Suffolk Council |
| IAQM | Institute of Air Quality Management |
| HGV | Heavy Goods Vehicle |
| LCV | Light Commercial Vehicles |
| NOx | Nitrogen Oxide |
| NRMM | Non-Road Mobile Machinery |
| $O_3$ | Ozone |
| OCTMP | Outline Construction Traffic Management Plan |
| SCC | Suffolk County Council |
| SoCG | Statement of Common Ground |
| $SO_2$ | Sulphur dioxide |
| SPA | Special Protection Area |
| SSSI | Site of Special Scientific Interest |

# Glossary of Terminology

| | |
|---|---|
| Applicants | East Anglia TWO Limited / 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 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. |
| Landfall | The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables. |
| National electricity grid | The high voltage electricity transmission network in England and Wales owned and maintained by National Grid Electricity Transmission |
| National Grid infrastructure | A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of 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 (including cable sealing end compounds and cable sealing end (with circuit breaker) compound) to transport electricity from the National Grid substation to the national electricity grid. |
| 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 development area | The area in which the landfall, onshore cable corridor, onshore substation, landscaping and ecological 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 of the onshore infrastructure associated with the proposed East Anglia TWO project from landfall to the connection to the national electricity grid. |
| Onshore substation | The East Anglia TWO substation and all of the electrical equipment within the onshore substation and connecting to the National Grid infrastructure. |

# 1 Introduction

1. This clarification note has been prepared by East Anglia TWO Limited and East Anglia ONE North Limited (the Applicants) to clarify aspects of the East Anglia TWO and East Anglia ONE North Development Consent Order (DCO) applications (the Applications).

2. This clarification note relates to air quality matters and addresses queries raised during the preparation of the Statement of Common Ground (SoCG) with East Suffolk Council and Suffolk County Council (the Councils).

   This document is applicable to both the East Anglia ONE North and East Anglia TWO DCO applications, and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's procedural decisions on document management of 23rd December 2019 (PD-004). Whilst this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it for the other project submission.

## 1.1 Purpose

3. In preparing the SoCG with the Councils, clarification was sought with regard to the assessment presented in ***Chapter 19 Air Quality*** (APP-067). In particular, clarification on the following matters has been requested:

   - Consideration of the latest Institute of Air Quality Management (IAQM) ecological guidance document;
   - Impacts to ecological receptors arising from airborne Nitrogen Oxide (NOx) concentrations and acid deposition;
   - Impacts to ecological receptors as a result of Non-Road Mobile Machinery (NRMM) emissions;
   - Clarification of discrepancies between the worst-case traffic forecasts used in the air quality and ***Chapter 26 Traffic and Transport*** (APP-074);
   - Assessment of haul road traffic emissions; and
   - Assessment of impacts associated with diverted traffic.

4. The following sections of this clarification note address these matters in turn.

# 2 Consideration of the Latest IAQM Ecological Guidance Document

5. Whilst the Applications were submitted to The Planning Inspectorate in October 2019, the assessment of impacts on designated ecological sites presented within ***Chapter 19 Air Quality*** (APP-067) was undertaken prior to release of A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (IAQM, June 2019), which was subsequently updated in May 2020. However, the assessment was undertaken broadly in accordance with this May 2020 guidance document. The assessment considered in-combination impacts from road traffic; however it did not consider emissions from agricultural or industrial projects in-combination as required by the guidance. The Applicants seek to address this in this clarification note.

6. Other proposed developments, including other Nationally Significant Infrastructure Projects (NSIPs), with the potential to result in cumulative impacts with the Projects were identified for the ES (***Section 19.7.2***, ***Chapter 19*** (APP-067)). It is anticipated that projects beyond 5km of the onshore development area would have a negligible cumulative impact. The list of projects was reviewed to determine whether there were any new or proposed agricultural or industrial developments which could impact upon Sandlings Special Protection Area (SPA) / Leiston-Aldeburgh Site of Special Scientific Interest (SSSI) and Sizewell Marshes SSSI in-combination.

7. No such agricultural projects with operational emissions were identified from the list of projects. In addition, there were no further NSIPs or industrial projects identified in the vicinity of the designated sites, notwithstanding the demolition and relocation of facilities at the Sizewell B Power Station Complex and the proposed Sizewell C New Nuclear Power Station projects, which are not considered quantitatively in ***Chapter 19 Air Quality*** (APP-067) due to the insufficient availability of information. However, since submission of the Applications further information on the proposed works at Sizewell B and C has been made available. The Applicants are preparing a clarification note which considers the cumulative impacts of the Projects and these proposals. This note will include an assessment of cumulative impacts regarding Traffic and Transport, Noise and Air Quality and will be submitted to the Examinations at Deadline 2.

# 3 Impacts to Ecological Receptors Arising from Airborne NOx Concentrations and Acid Deposition

8. The assessment presented in ***Chapter 19 Air Quality*** (APP-067) includes a consideration of impacts of nutrient nitrogen deposition at Sandlings SPA / Leiston-Aldeburgh SSSI and Sizewell Marshes SSSI, which are shown to be below 1% of the relevant Critical Load. The associated concentrations of NOx and acid deposition are presented for clarification purposes.

9. ***Appendix 19.4 Emissions Sensitivity Test*** (APP-493) presented the results of an emissions sensitivity test to consider potential impacts should vehicle emissions not decline at the predicted rate in the future. Following submission of the Applications, evidence has been published to suggest that the Emissions Factors Toolkit v9.0, as used in the assessment, is on balance likely to be sufficiently robust and may in fact overestimate NOx concentrations into the future (Air Quality Consultants 2020). Given this evidence, the predicted concentrations using the vehicle fleet mix for 2023 are considered to be sufficiently robust, and the assessments set out below are derived on this basis.

## 3.1 Critical Loads and Levels

10. Critical Loads are a habitat-specific estimate of exposure to air pollutants below which specific environmental receptors will not experience significant adverse effects (based on present knowledge). Critical Levels for the protection of vegetation and ecosystems apply irrespective of habitat type and are based on the concentration of the relevant pollutants in air.

11. NOx Critical Levels and acidity Critical Loads for the relevant habitats have been obtained from the Air Pollution Information System (APIS) website (CEH, 2020), as detailed in ***Table 3.1***. The features of the Sandlings SPA are not sensitive to the effects of acid deposition on their habitat; however, the habitats for which the Leiston-Aldeburgh SSSI was designated are potentially sensitive to such deposition effects.

**Table 3.1 Critical Loads and Levels**

| Parameter | | Leiston-Aldeburgh SSSI | | | | Sizewell Marshes SSSI | |
|---|---|---|---|---|---|---|---|
| | | Broadleaved Woodland | | Dwarf Shrub Heath | | Acid Grassland (Fen Marsh and Swamp Habitat) | |
| | | Min | Max | Min | Max | Min | Max |
| Acidity Critical Load (keq.ha.y$^{-1}$) | CLMaxS | 1.092 | 8.369 | 0.48 | 4.14 | 0.49 | 4.14 |
| | CLMinN | 0.142 | 0.357 | 0.714 | 1.035 | 0.223 | 0.366 |
| | CLMaxN | 1.234 | 8.701 | 1.372 | 5.165 | 0.713 | 4.506 |
| NOx Critical Level – Annual Mean (µg.m$^{-3}$) | | 30 | | | | | |

13. There are Critical Levels for NOx for both annual mean and daily mean averaging periods. The IAQM guidance (2020) recommends that only the annual mean Critical Level (30 µg.m$^{-3}$) is used in assessments due to the comparative importance of annual effects to impacts upon vegetation, except where specifically required by the regulator where high short-term emissions may occur, such as from an industrial stack emission source. As such, given the consistent traffic exhaust emission source along road links, only the annual mean Critical Level has been considered.

## 3.2 Critical Level Results

Annual mean concentrations of airborne NOx predicted at each of the transect locations presented in the ES are detailed in ***Table 3.3*** and ***Table 3.2*** below for and development scenario 1 and scenario 2 where:

- Scenario 1 – the Projects are built simultaneously (at the same time); and
- Scenario 2 – the Projects are built with a construction gap. For the onshore infrastructure, this scenario assumes construction of the first project and full re-instatement, followed by the construction of the second project.

**Table 3.2 Annual Mean Critical Level Results –Simultaneous Construction (Scenario 1)**

| Receptor | Transect ID | NOx Critical Level - Annual Mean | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | In Combination NOx (µg.m$^{-3}$) | Project NOx (µg.m$^{-3}$) | Project Impact as % Critical Level | In Combination impact as % Critical Level | Total Road NOx (including existing traffic) (µg.m$^{-3}$) | Background NOx (µg.m$^{-3}$) | Total NOx Conc. (µg.m$^{-3}$) | Total Conc. As % of Critical Level |
| **Sandlings SPA / Leiston-Aldeburgh SSSI** | T1-1 | 0.23 | 0.31 | 1.0% | 1.8% | 3.76 | 8.57 | 12.33 | 41% |
| | T1-2 | 0.04 | 0.05 | 0.2% | 0.3% | 0.68 | 8.57 | 9.25 | 31% |
| | T1-3 | 0.02 | 0.03 | 0.1% | 0.2% | 0.40 | 8.57 | 8.97 | 30% |
| | T1-4 | 0.01 | 0.02 | 0.1% | 0.1% | 0.29 | 8.57 | 8.86 | 30% |
| | T1-5 | 0.01 | 0.02 | 0.1% | 0.1% | 0.24 | 8.57 | 8.81 | 29% |
| **Sizewell Marshes SSSI** | T2-1 | 0.22 | 0.43 | 1.4% | 2.2% | 3.89 | 8.70 | 12.59 | 42% |
| | T2-2 | 0.04 | 0.09 | 0.3% | 0.4% | 0.82 | 8.70 | 9.53 | 32% |
| | T2-3 | 0.02 | 0.05 | 0.2% | 0.2% | 0.51 | 8.70 | 9.22 | 31% |
| | T2-4 | 0.02 | 0.04 | 0.1% | 0.2% | 0.39 | 8.70 | 9.10 | 30% |
| | T2-5 | 0.01 | 0.03 | 0.1% | 0.1% | 0.33 | 8.70 | 9.03 | 30% |

**Table 3.3 Annual Mean Critical Level Results – Sequential Construction (Scenario 2)**

| | | NOx Critical Level - Annual Mean | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Receptor** | **Transect ID** | **In Combination NOx (µg.m$^{-3}$)** | **Project NOx (µg.m$^{-3}$)** | **Project Impact as % Critical Level** | **In Combination impact as % Critical Level** | **Total Road NOx (including existing traffic) (µg.m$^{-3}$)** | **Background NOx (µg.m$^{-3}$)** | **Total NOx Conc. (µg.m$^{-3}$)** | **Total Conc. As % of Critical Level** |
| **Sandlings SPA / Leiston-Aldeburgh SSSI** | T1-1 | 0.23 | 0.24 | 0.8% | 1.6% | 3.70 | 8.57 | 12.26 | 41% |
| | T1-2 | 0.04 | 0.04 | 0.1% | 0.3% | 0.67 | 8.57 | 9.24 | 31% |
| | T1-3 | 0.02 | 0.02 | 0.1% | 0.1% | 0.40 | 8.57 | 8.96 | 30% |
| | T1-4 | 0.01 | 0.02 | 0.1% | 0.1% | 0.29 | 8.57 | 8.86 | 30% |
| | T1-5 | 0.01 | 0.01 | 0.0% | 0.1% | 0.24 | 8.57 | 8.80 | 29% |
| **Sizewell Marshes SSSI** | T2-1 | 0.22 | 0.35 | 1.2% | 1.9% | 3.80 | 8.70 | 12.50 | 42% |
| | T2-2 | 0.04 | 0.07 | 0.2% | 0.4% | 0.81 | 8.70 | 9.51 | 32% |
| | T2-3 | 0.02 | 0.04 | 0.1% | 0.2% | 0.50 | 8.70 | 9.21 | 31% |
| | T2-4 | 0.02 | 0.03 | 0.1% | 0.2% | 0.38 | 8.70 | 9.09 | 30% |
| | T2-5 | 0.01 | 0.02 | 0.1% | 0.1% | 0.32 | 8.70 | 9.02 | 30% |

14. As detailed in Table 3.3***Table 3.2*** and ***Table 3.3,*** the impacts of both the Projects and Scenario 1 are predicted to be at or marginally above 1% of the annual mean Critical Level at the locations on the transects closest to the road for all three designated sites. Any development-generated or in-combination nutrient nitrogen deposition values above 1% of the Critical Level would require additional assessment by an ecologist to determine whether any significant impacts may be experienced at the affected habitats. The determination of the significance of impacts associated with nutrient nitrogen deposition is detailed in ***Chapter 22 Onshore Ecology*** (APP-070). Beyond 50m from the road, impacts of the Projects alone an in-combination would be well below 1%. At the location nearest the road, in-combination impacts are predicted to be slightly higher, up to a maximum of 2.2% of the Critical Level.

15. Taking into account background NOx concentrations, the total concentrations are shown to be well below (less than 50% of) the annual mean Critical Level. Due to the rural nature of the area, background NOx concentrations are relatively low. A discussion of the significance of these impacts is presented in ***section 5*** of the ***Onshore Ecology Clarification Note*** (document reference ExA.AS-12.D1.V1).

## 3.3 Critical Load Results

The results of the assessment of impacts in relation to acidity Critical Loads are detailed in ***Table 3.4*** and ***Table 3.5***.

**Table 3.4 Acid Deposition Results – Simultaneous Construction (Scenario 1)**

| Site | Habitat | Acid Deposition (keq.ha.y$^{-1}$) | | | Background Deposition (keq.ha.y$^{-1}$)* | | % Minimum Critical Load | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Background Traffic Growth Impact | Project Alone Impact | In-Combination Impact | Nitrogen | Sulphur | Project Alone Impact | In-Combination Impact | In-Combination Total Deposition |
| **Leiston/ Aldeburgh SSSI** | Broadleaved woodland | 0.002 | 0.0035 | 0.0057 | 0.8 | 0.1 | 0 | 0.8 | 73.7 |
| | Broadleaved woodland | 0.000 | 0.0006 | 0.0008 | 0.8 | 0.1 | 0 | 0 | 72.9 |
| | Dwarf shrub heath | 0.000 | 0.0002 | 0.0002 | 0.8 | 0.1 | 0 | 0 | 65.6 |
| | Dwarf shrub heath | 0.000 | 0.0001 | 0.0000 | 0.8 | 0.1 | 0 | 0 | 65.6 |
| | Dwarf shrub heath | 0.000 | 0.0001 | 0.0000 | 0.8 | 0.1 | 0 | 0 | 65.6 |
| **Sizewell Marshes SSSI** | Fen, Marsh and Swamp | 0.001 | 0.0025 | 0.0037 | 0.9 | 0.1 | 0 | 0 | 140.3 |
| | Fen, Marsh and Swamp | 0.000 | 0.0004 | 0.0006 | 0.9 | 0.1 | 0 | 0 | 140.3 |
| | Fen, Marsh and Swamp | 0.000 | 0.0003 | 0.0004 | 0.9 | 0.1 | 0 | 0 | 140.3 |
| | Fen, Marsh and Swamp | 0.000 | 0.0002 | 0.0003 | 0.9 | 0.1 | 0 | 0 | 140.3 |
| | Fen, Marsh and Swamp | 0.000 | 0.0002 | 0.0003 | 0.9 | 0.1 | 0 | 0 | 140.3 |

**Table 3.5 Acid Deposition Results – Sequential Construction (Scenario 2)**

| Site | Habitat | Acid Deposition (keq.ha.y$^{-1}$) | | | Background Deposition (keq.ha.y$^{-1}$)* | | % Minimum Critical Load | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Background Traffic Growth Impact | Project Alone Impact | In-Combination Impact | Nitrogen | Sulphur | Project Alone Impact | In-Combination Impact | In-Combination Total Deposition |
| **Leiston/ Aldeburgh SSSI** | Broadleaved woodland | 0.002 | 0.0027 | 0.0049 | 0.8 | 0.1 | 0 | 0 | 72.9 |
| | Broadleaved woodland | 0.000 | 0.0006 | 0.0008 | 0.8 | 0.1 | 0 | 0 | 72.9 |
| | Dwarf shrub heath | 0.000 | 0.0002 | 0.0002 | 0.8 | 0.1 | 0 | 0 | 65.6 |
| | Dwarf shrub heath | 0.000 | 0.0001 | 0.0000 | 0.8 | 0.1 | 0 | 0 | 65.6 |
| | Dwarf shrub heath | 0.000 | 0.0001 | 0.0000 | 0.8 | 0.1 | 0 | 0 | 65.6 |
| **Sizewell Marshes SSSI** | Fen, Marsh and Swamp | 0.001 | 0.0019 | 0.0032 | 0.9 | 0.1 | 0 | 0 | 140.3 |
| | Fen, Marsh and Swamp | 0.000 | 0.0003 | 0.0005 | 0.9 | 0.1 | 0 | 0 | 140.3 |
| | Fen, Marsh and Swamp | 0.000 | 0.0003 | 0.0004 | 0.9 | 0.1 | 0 | 0 | 140.3 |
| | Fen, Marsh and Swamp | 0.000 | 0.0001 | 0.0002 | 0.9 | 0.1 | 0 | 0 | 140.3 |
| | Fen, Marsh and Swamp | 0.000 | 0.0002 | 0.0003 | 0.9 | 0.1 | 0 | 0 | 140.3 |

*Obtained from APIS

16. As detailed in ***Table 3.4*** and ***Table 3.5***, acid deposition was shown to be less than 1% of the Critical Load in-combination for both scenarios. Impacts are therefore considered to be not significant.

# 4 Impacts to Ecological Receptors as a Result of Non-Road Mobile Machinery Emissions

17. This section presents a qualitative assessment of Non-Road Mobile Machinery (NRMM) exhaust emissions. During a SoCG meeting (7th October 2020), the Councils requested a quantitative assessment of NRMM exhaust emissions and consideration of any associated potential ecological impacts. As such, an update to this ***Air Quality Clarification Note***, which will include a quantitative assessment, will be submitted to the Examinations at Deadline 3.

18. As noted in the ES, the Department for Environment, Food and Rural Affairs (Defra) technical guidance (2018) states that exhaust emissions from NRMM on construction sites is unlikely to have a significant impact on air quality. The Draft Local Impact Report (ESC and SCC 2020) states that:

    *"This scheme could require considerably more NRMM than most construction projects and potential impacts should have been quantitatively assessed".*

19. In the vicinity of ecological receptors, the Projects would utilise predominantly earthmoving plant, as by its nature the primary activities along the onshore cable route are temporary haul road construction, excavation and backfilling and haul road removal works. In areas where trenchless techniques may be employed, similar earth-moving plant would be required, in addition to diesel power generation, which are standard items of plant used widely on construction sites.

20. As presented within ***Chapter 6 Project Description*** (APP-054), the onshore cable route would be subdivided into sections of 500m to 2km lengths between the Construction Consolidation Sites (CCSs), and work would be undertaken in a practical, logical and sequential manner (e.g. topsoil stripping would be undertaken prior to construction of the haul road in advance of trench excavation). Due to the linear nature of the works area, the number of plant items active in the vicinity of receptors for each activity, along the length of each section of cable route, is not anticipated to be in excess of that required on a 'standard' construction site. The assertion that 'considerably more NRMM' may be required is without evidence and is disputed by the Applicants, and the application of the guidance is relevant and appropriate.

21. Nevertheless, additional consideration has been given to the potential for impacts at designated ecological sites, as the onshore cable route would pass through the Sandlings SPA / Leiston-Aldeburgh SSSI.

22. The ES considers two options for the SPA crossing; either an open trench technique or a trenchless technique. The Applicants' preferred option is to use the open trench technique.

23. If open trenching is used, the onshore cable route width would be reduced from 32m to 16.1m for each of the Projects and a temporary haul road using a 'trackmat' system or similar would be installed to minimise impacts and subsequently minimise reinstatement time. For scenario 1 (considered the worst case), open trench works associated with the SPA crossing, both within the SPA and the 200m SPA crossing buffer, are anticipated to be completed within one non-breeding bird season. Space constraints at the SPA crossing mean that a limited number of plant items would be working within this area at any one time. Furthermore, each item of plant present would not necessarily be fully utilised throughout the working day.

24. Given that open trenching techniques associated with crossing the SPA boundary would be undertaken for a proportion of the year no greater than 5 months (due to a seasonal restriction on the works), it is considered unlikely that they would lead to significant impacts on annual mean pollutant concentrations and associated increases in nutrient nitrogen or acid deposition.

25. Use of a trenchless technique would require a number of items of plant and generators to be operating at the entry pit located outside of the SPA boundary, rather than within the SPA itself, with plant operating continuously during boring operations. It is anticipated that trenchless technique works would take up to 11 months in total. Where above ground construction activity associated with the trenchless crossing of the SPA takes place within the 200m SPA crossing buffer, these will be subject to a seasonal restriction between 14th February to 31st August as detailed within the ***Outline SPA Crossing Method Statement*** (document reference ExA.AS-3.D1.V1). It is therefore considered unlikely that such works would lead to significant increases in pollutant concentrations and associated increases in nutrient nitrogen or acid deposition in the vicinity of the SPA.

26. There is a 24-hour Critical Level for NOx; the IAQM guidance (2020) recommends that this is only considered where specifically requested by the regulator, for example in Environmental Permit applications where high, short-term peaks may occur. Furthermore, the guidance states that the short-term NOx Critical Level of 75µg.m$^{-3}$ was derived for use where concentrations of ozone ($O_3$) or sulphur dioxide ($SO_2$) are at or above their Critical Levels, otherwise a 200µg.m$^{-3}$ Critical Level should apply. Given that $O_3$ and $SO_2$ concentrations in the UK are generally low, the guidance advises that the 200µg.m$^{-3}$ threshold is appropriate. Therefore, this threshold has been adopted for the purposes of the assessment within this clarification note.

27. Background NOx concentrations are detailed in ***Table 3.3*** and are characteristically low for an area which is mostly rural in nature. Using the air quality assessment approach of considering twice the annual mean background concentration in consideration of short-term effects, as recommended by the Environment Agency and Department for the Environment Food and Rural Affairs (Defra) (2016), the background values would be 17.1 µg.m$^{-3}$ and 17.4 µg.m$^{-3}$ at the SPA and SSSI respectively. Therefore, it is unlikely that the works would result in significant short-term concentrations which would lead to exceedance of the 24-hour NOx Critical Level of 200µg.m$^{-3}$.

28. Onshore cable route works either side of the SPA boundary would also be undertaken according to the same methodology as described above and, with increasing distance from the SPA, emissions from plant would have a diminishing effect.

29. Other potential air borne pollution sources in the vicinity of the SPA are the CCSs. The CCSs would contain welfare facilities for staff powered by small diesel generators, and cranes and other plant for unloading materials. The indicative CCS areas for the onshore cable corridor sections either side of the SPA are shown on ***Figure 6.6c*** and ***Figure 6.6d*** (APP-101). ***Plate 4.1*** shows the wind rose of meteorological conditions as used in the air quality assessment (***section 19.4.3.2.5*** of ***Chapter 19 Air Quality*** (APP-067)). The prevailing wind direction is from the south to west, so emissions from the CCS to the east (within Work No. 11 and likely to be closest to the SPA) would be mostly dispersed away from the SPA.

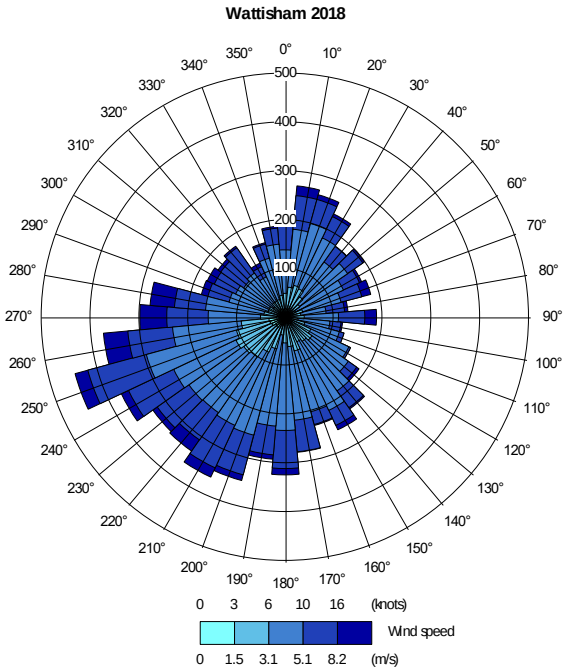


**Plate 4.1 Wind Rose of 2018 Meteorological Data from the Wattisham Recording Station**

30. The assessment includes a number of NRMM control and management measures, as recommended in Defra guidance (Defra, 2018), which are included within the ***outline Code of Construction Practice*** (oCoCP) (APP-578) and secured in the requirements of the ***draft DCO*** (APP-023). These measures would ensure that emissions from NRMM are minimised so far as is reasonably practicable. Significant impacts are therefore not anticipated to occur.

31. It is noted that the Draft Local Impact Report (ESC and SCC, 2020) also cites potential impacts from NRMM emissions on the residential areas of Thorpeness, Aldringham and Knodishall Common. The above assessment of impacts on designated ecological sites, based on conservative assumptions of activities and distance separation considerations, can equally be applied to human receptor locations. Thereby it is concluded that the likelihood of significant impacts is low, particularly given the lack of other pollution sources in the vicinity of the onshore cable route which would act cumulatively.

# 5 Clarification of Discrepancies Between the Worst-Case Traffic Forecasts used in the Air Quality and Traffic and Transport Assessments

32. It is noted that the daily project-generated traffic flows presented in the ***Chapter 19 Air Quality*** (APP-067) and the ***Chapter 26 Traffic and Transport*** (APP-074) did not align, and that those presented in ***Chapter 26*** were higher in magnitude. As explained below, this is due to different averaging bases used in the ES chapters which is an appropriate basis on which to undertake the assessments.

33. ***Chapter 26*** utilised the 18-hour Annual Average Weekday Traffic (AAWT) flows as these are higher and represent a worst-case scenario from a road link and junction capacity perspective.

34. The project-generated traffic flows used in ***Chapter 19*** were 24-hour Annual Average Daily Traffic (AADT) flows, which are used in air quality dispersion modelling, to ensure that emissions from all traffic activity over a 24-hour period is assessed. For clarity, the traffic flow values for each assessment scenario, as AADT and AAWT metrics, are presented in ***Table 5.1***.

**Table 5.1 Development Traffic Flows as AADT and AAWT**

| Link ID | Scenario 1 (Simultaneous Construction) Development Flows | | | | Scenario 2 (Sequential Construction) Development Flows | | | |
|---|---|---|---|---|---|---|---|---|
| | 24 Hour AADT | | 18Hr AAWT | | 24 Hour AADT | | 18Hr AAWT | |
| | Total Flow | HGV | Total Flow | HGV | Total Flow | HGV | Total Flow | HGV |
| **1** | 348 | 212 | 442 | 270 | 274 | 165 | 349 | 210 |
| **2** | 281 | 212 | 357 | 270 | 224 | 165 | 285 | 210 |
| **3** | 355 | 212 | 452 | 270 | 280 | 165 | 357 | 210 |
| **4** | 279 | 120 | 355 | 153 | 217 | 90 | 276 | 115 |
| **6** | 334 | 202 | 425 | 256 | 267 | 161 | 339 | 205 |
| **9** | 521 | 208 | 663 | 265 | 412 | 167 | 524 | 213 |

| Link ID | Scenario 1 (Simultaneous Construction) Development Flows | | | | Scenario 2 (Sequential Construction) Development Flows | | | |
|---|---|---|---|---|---|---|---|---|
| | 24 Hour AADT | | 18Hr AAWT | | 24 Hour AADT | | 18Hr AAWT | |
| | Total Flow | HGV | Total Flow | HGV | Total Flow | HGV | Total Flow | HGV |
| **11** | 268 | 120 | 341 | 153 | 213 | 90 | 271 | 115 |
| **12** | 268 | 120 | 341 | 153 | 213 | 90 | 271 | 115 |

35. The assessments in ***Chapter 19 Air Quality*** (APP-067) and ***Chapter 26 Traffic and Transport*** (APP-074) are therefore based on the same worst-case traffic flows, using the appropriate metric for assessment based on the relevant methodology for the consideration of each environmental aspect.

# 6 Assessment of Haul Road Traffic Emissions

36. The requirement for a detailed assessment of exhaust emissions from haul road movements was considered using screening criteria provided by IAQM and Environmental Protection UK (EPUK) (2017), and the Design Manual for Roads and Bridges (DMRB) (Highways England, 2019), as detailed in ***Table 6.1***.

37. The screening criteria from the DMRB are considered by Natural England to equate to a 1% change in the Critical Load or Level (Natural England, 2018) which is regarded as a threshold of insignificance. As such, these criteria were used to screen the potential for impacts at ecological receptors.

**Table 6.1 Road Traffic Screening Criteria**

| Guidance document | Criteria | |
|---|---|---|
| IAQM and EPUK | Light Duty Vehicles (LDVs)* | A change in annual average daily traffic (AADT) of more than 100 within or adjacent to an Air Quality Management Area (AQMA), or more than 500 elsewhere |
| | Heavy Duty Vehicles (HDVs)* | An increase in HDV movements of more than 25 per day within or adjacent to an AQMA, or more than 100 elsewhere |
| DMRB | Light Duty Vehicles (LDVs)* | Increase of 1,000 AADT or more |
| | HDVs* | An increase in HDV movements of more than 200 per day |

*note that the Applications use the terminology Heavy Goods Vehicles (HGV) and Light Commercial Vehicles (LCV)

38. The Applicants have calculated the number of vehicle movements using each section of the haul road, based on the number of vehicles entering each of the associated accesses (***Appendix 26.18*** of the ES (APP-544)) and using a conservative assumption as to how the transported loads may be broken down before transport to individual works areas. These assumptions are detailed in **Appendix 1** of this clarification note.

39. Both peak and average HGV movements were provided; it is considered that the average movements are more suitable for consideration of air quality impacts, as pollutant concentrations are considered in terms of an annual mean averaging period at human receptors. Guidance provided by the IAQM (2020) on the assessment of impacts on designated ecological sites states that only the annual mean Critical Levels require consideration. The average traffic movements along

the haul road were therefore used in the assessment, and the peak flows are provided for comparison purposes.

40. The calculated traffic flows on the haul road are detailed in ***Table 6.2*** (replicated from **Appendix 1**)

**Table 6.2 Movements on the Haul Road**

| Access | Section | Peak daily two-way HGV movements | Average daily two-way HGV movements | Peak daily two-way LCVs movements |
|---|---|---|---|---|
| Access 1 | Landfall location and Onshore cable route section 1 | 106 | 88 | 152 |
| Access 2 | Onshore cable route section 2 | 52 | 44 | 78 |
| Access 5 or 6 | Onshore cable route section 3b | 9 | 8 | 14 |
| Access 9 | Onshore cable route section 3a | 49 | 41 | 72 |
| Access 10 | Onshore cable route section 4, Onshore substation and National Grid infrastructure | 177 | 147 | 338 |

41. As shown in ***Table 6.2***, average movements of HDVs and peak LCV movements on the haul road in Sections 1, 2, 3a and 3b of the onshore cable route were below the screening criteria. Sections 1 and 2 of the onshore cable route pass within the Sandlings SPA / Leiston-Aldeburgh SSSI, and these movements are below the appropriate DMRB screening criteria. Air quality impacts in these sections are therefore considered to be not significant.

42. Movements on Section 4 of the onshore cable route, which serves the onshore substation and National Grid infrastructure, are higher due to the greater scale of development required in this area. Average HGV movements are in exceedance of the more stringent IAQM and EPUK screening criteria by 47 daily movements (i.e. 147 daily movements on Section 4, as per ***Table 6.2***, exceeds the threshold of an increase in HGV movements of more than 100 per day by 47 daily movements).

43. The screening criteria are considered to only apply where there are relevant receptors (e.g. residential properties) within 200m of the haul road. A 200m buffer was applied around the onshore development area, as the exact location of the haul road within the boundary will be finalised during detailed design. A number of properties were identified within 200m of the DCO Order Limits, notably along the B1069 Snape Road close to Access 10 and the area to the north of Friston. Other scattered properties are present within this distance. These receptors may therefore experience increases in traffic-related pollutants from the haul road.

44. IAQM (2020) states that: *"exceeding a screening criterion [in the referenced table] does not automatically lead to the requirement for a Detailed Assessment. The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise of a significant effect on local air quality. A Simple Assessment will be appropriate, if it can provide this evidence"*.

45. Background pollutant concentrations across the study area used in ***Chapter 19 Air Quality*** (APP-067) were obtained for the ES; these are replicated in ***Table 6.3*** for ease of reference.

**Table 6.3 Background Pollutant Concentrations in the Study Area**

| **Annual mean background concentration 2018 (µg.m$^{-3}$)** | | | | | |
|---|---|---|---|---|---|
| **$NO_2$** | | **$PM_{10}$** | | **$PM_{2.5}$** | |
| Minimum | Maximum | Minimum | Maximum | Minimum | Maximum |
| 7.73 | 8.83 | 13.96 | 15.93 | 8.78 | 9.42 |
| **Annual mean background concentration 2023 (µg.m$^{-3}$)** | | | | | |
| **$NO_2$** | | **$PM_{10}$** | | **$PM_{2.5}$** | |
| Minimum | Maximum | Minimum | Maximum | Minimum | Maximum |
| 6.54 | 7.28 | 13.12 | 15.10 | 8.08 | 8.71 |

46. As shown in ***Table 6.3***, pollutant concentrations across the study area in 2023, the earliest year of construction as noted in ***Table 26.3*** of ***Chapter 26 Traffic and Transport*** (APP-074), are 'well below' (i.e. less than 75% of) the relevant annual mean national air quality Objectives (40 µg.m$^{-3}$ for $NO_2$ and $PM_{10}$ and 25 µg.m$^{-3}$ for $PM_{2.5}$). Most of the receptors within 200 m of the DCO Order Limits in Section 4 of the onshore cable route are not in proximity to any significantly trafficked roads or any other major sources of pollution. The magnitude of change in pollutant concentrations would be relatively small, and total concentrations would remain 'well below' the relevant Objectives. As such, it is considered highly unlikely that emissions from haul road traffic would give rise to a change in air quality that would be considered to be significant in EIA terms.

47. Two receptors along the B1069 Snape Road, in the vicinity of Access 10, were assessed in the ES as a result of project-related traffic travelling along Snape Road. The total predicted concentrations of $NO_2$ at these receptors were 8.98 and 9.09 µg.m$^{-3}$ respectively, including the contribution from project-related traffic, and impacts were considered to be 'negligible'. As such, the addition of

emissions from vehicles travelling along the haul road is not anticipated to give rise to a significant impact on air quality in this area.

48. In conclusion, emissions from vehicles travelling along the haul road are not considered to lead to significant air quality impacts at human or ecological receptors and it is considered that no detailed assessment is required.

# 7 Assessment of Impacts Associated with Diverted Traffic

49. East Suffolk Council (ESC) has queried if baseline traffic could be diverted during the construction of the highway alteration works required for the Projects. Specifically, clarification is sought that traffic will not divert onto routes that have been screened out as not likely to be subject to significant impacts of vehicle emissions upon human health receptors and habitats. ESC notes that only substantial works durations of greater than six months have the potential to cause a material impact upon local air quality.

50. To address ESC's query, the Applicants have undertaken analysis of the potential for the highway alteration works associated with the Projects to lead to delays which would cause traffic to reroute, potentially leading to air quality impacts on the wider highway network.

51. The highway alteration works associated with the Projects are as follows:

- Widening the junction of the A1094 and B1069 to accommodate abnormal load movements (Works No. 35);
- A reduced speed limit, improved signing and rumble strips at the junction of the A12 and A1094 (Friday Street) to improve road safety (Works No. 36; and
- Potential works to strengthen an existing bridge for special order abnormal indivisible load deliveries along the A12 at Marlesford (Works No. 37).

52. Regarding the bridge works at Marlesford (Works No. 37), the scale and scope of these works (or even if they are required) is yet to be determined as it is dependent on the origin of the abnormal indivisible loads and detailed structural assessment of the bridge with finalised loading. It is likely that there will be potential for less disruptive mitigation (e.g. overbridging) that will not require substantial works durations. This level of analysis is typically carried out by a specialist contractor post pre-commencement when the detail of the load configuration finalised. As the scope of works at Marlesford is unknown at this stage and the scale of traffic management is to be determined, is it proposed that the Outline Construction Traffic Management Plan (OCTMP) includes a commitment to consider the traffic delay and air quality impacts as part of the detailed design work, including any required mitigation measures. As part of this process there would also be a requirement to agree the form of traffic

management and satisfy SCC in their duty under the Traffic Management Act 2004 to *"ensure traffic moves freely and quickly on their roads"*.

53. Indicative durations of the remaining two highway alteration works are provided in ***Table 7.1***, along with the traffic flows along these roads (which include the Projects' traffic). The Applicant has used the peak hour traffic flows to determine the potential for delays to occur. The AADT flows are provided for context.

**Table 7.1 Highway Alteration Works and Durations**

| Work No. | Mitigation Measure | Duration | AADT * | Peak Hour Flows ** |
|---|---|---|---|---|
| 35 | Junction widening at the junction of the A1094 and B1069 | 2 – 4 weeks | 8,507 | 1,066 |
| 36 | Road safety improvements at the junction of the A12 and A1094 (Friday Street) | 6 months | 18,937 | 1,961 |
| | ***Key***<br>*Annual Average Daily Flows (2023)<br>**Peak hour flows (2023) | | | |

54. As shown in ***Table 7.1***, the duration of Works No. 35 would be relatively short; in air quality terms, a duration of works of less than six months is unlikely to have a significant impact on annual mean pollutant concentrations. Furthermore, analysis undertaken by the Applicants, concluded that, given the magnitude of the peak hour traffic flows at Works No. 35, it is unlikely that significant delays would occur which would lead drivers to seek alternative routes.

55. With regard to Works No. 36 the mitigation scheme submitted with the Applications (as set out in paragraph **Error! Reference source not found.**) would not have a duration of over six months and therefore the works are unlikely to have a significant impact on annual mean pollutant concentrations.

56. Peak hour traffic flows at Works No. 36 are in exceedance of the threshold whereby typical temporary signal control of roadworks would lead to delays may be sufficient to lead to drivers rerouting their journey. It is proposed to include a commitment in the OCTMP to consider the potential for transport and air quality impacts to inform the detailed design of the proposed works, and any associated mitigation measures, if required. As part of this process there would also be a requirement to agree the form of traffic management and satisfy SCC in their duty under the Traffic Management Act 2004 to *"ensure traffic moves freely and quickly on their roads"*.

57. In conclusion, junction widening of A1094 and B1069 (Works No.35) is considered unlikely to lead to significant air quality effects, either from the duration of works or from a requirement for traffic to reroute.

58. The works at Friday Street (Works No. 36) and Marlesford Bridge (Works No. 37) would be of a longer duration; however as the details of the roadworks traffic management are not yet finalised, the potential effect on transport and air quality cannot be determined. It is therefore proposed to include a commitment in the OCTMP to consider these effects when undertaking detailed design and agreement of traffic management requirements with SCC.

# 8 References

Air Quality Consultants (2020) Performance of Defra's Emission Factor Toolkit 2013 – 2019.

Department for the Environment Food and Rural Affairs (Defra) (2018) Local Air Quality Management Technical Guidance Document Local Air Quality Management.TG (16) London: Defra.

East Suffolk Council and Suffolk County Council (2020) Appendix B – Early Draft Local Impact Report for EA1N and EA2 Windfarms.

Environment Agency and Defra (2016) Air Emissions Risk Assessment for your Environmental Permit https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit.

Highways England (2019) Design Manual for Roads and Bridges LA 105 Air Quality.

Institute of Air Quality Management and Environmental Protection UK (2017) Land Use Planning and Development Control: Planning for Air Quality.

Institute of Air Quality Management (2020) A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites.

Natural England (2018) Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001).

# Appendix 1: Haul Road Traffic

## Introduction

59. This appendix to the ***Air Quality Clarification Note*** (document reference ExA.AS-20.D1.V1) has been produced by the Applicants to inform a response to East Suffolk Council (ESC) regarding the potential for haul road traffic from the East Anglia ONE North and East Anglia TWO projects (the Projects) to generate significant adverse impacts upon air quality, and the Projects' potential construction impacts upon onshore ecology habitats.

60. In response to the submission of the Development Consent Order applications, ESC have raised concerns that whilst the air quality impacts of highway construction traffic have been assessed, the movement of construction traffic along the Projects' haul roads had not been adequately assessed.

### Purpose

61. ***Chapter 26 Traffic and Transport*** of the Environmental Statement (APP-074) includes details of numbers of vehicle movements to and from each of the Projects' accesses via the wider highway network (also detailed in ***Appendix 26.18*** (APP-544)). The purpose of this note is to provide details of traffic movements along the haul road to enable the consideration of potential air quality impacts.

## Haul Road Traffic Summary

62. The Projects onshore infrastructure includes works at the following seven discrete sites:

- Landfall location;
- Onshore cable route section 1;
- Onshore cable route section 2;
- Onshore cable route section 3;
- Onshore cable route section 4;
- Onshore substations; and
- National Grid infrastructure.

63. ***Table A2*** provides further detail of the respective points of access from the highway that would be used to access each of seven discrete sites. ***Figure 26.2***

(APP-307) highlights the location of these seven sites in relation to the proposed access.

**Table A2 Proposed Accesses to Onshore Infrastructure**

| Access | Section |
|---|---|
| **Access 1** | Landfall location and Onshore cable route section 1 |
| **Access 2** | Onshore cable route section 2 |
| **Access 5 or 6** | Onshore cable route section 3b |
| **Access 9** | Onshore cable route section 3a |
| **Access 10** | Onshore cable route section 4, Onshore substation and National Grid infrastructure |

64. ***Appendix 26.23*** (APP-549) sets out details of the numbers of Heavy Goods Vehicles (HGV) movements and Light Commercial Vehicles (LCV) movements (associated with employees) that would travel to each of these accesses via the wider highway network. To disaggregate these movements to vehicle movements that could travel along each section of haul road, the following worst case assumptions have been adopted:

- Vehicle numbers are presented for the construction of the Projects simultaneously;
- Vehicle numbers are presented for the peak construction period (i.e. worst case month) for each of the seven discrete sites;
- All LCVs are assumed to travel along the haul road with no reduction in vehicle numbers applied to account for, employees parking at a central location and either walking to their works area, or travelling in 'gangs' via contractor provided minibuses, crew cabs etc.; and
- All HGVs delivering non-bulk materials or plant would be broken down and smaller loads transported along the haul road, thereby generating more HGV traffic on the haul road. Loads have been increased by a factor of five to account for loads being broken down from a typical 20 tonne payload to a conservative 5 tonne payload.

65. These assumptions ensure a robust worst case haul road traffic scenario is developed. **Annex A** demonstrates how information presented in ***Appendix 26.23*** (APP-549) has been disaggregated to calculate peak daily HGV movements.

66. ***Table A3*** provides a summary of the numbers of peak daily HGVs and LCVs movements that could travel via each section of haul road. In addition, ***Table A3*** also presents average daily movements for HGVs which have been derived by reducing the peak flows by a factor of 83%. The rationale for this reduction is that ***Table A26.1*** in ***Appendix 26.23*** (APP-549) shows that between months 1 and 10 would be an average of 220 per day in comparison to a peak of 264 two-way highway movements per day (approximately 83% of the peak).

**Table A3 HGV and LCV Movements per Access**

| Access | Section | Peak daily two-way HGV movements | Average daily two-way HGV movements | Peak daily two-way LCVs movements |
|---|---|---|---|---|
| **Access 1** | Landfall location and Onshore cable route section 1 | 106 | 88 | 152 |
| **Access 2** | Onshore cable route section 2 | 52 | 44 | 78 |
| **Access 5 or 6** | Onshore cable route section 3b | 9 | 8 | 14 |
| **Access 9** | Onshore cable route section 3a | 49 | 41 | 72 |
| **Access 10** | Onshore cable route section 4, Onshore substation and National Grid infrastructure | 177 | 147 | 338 |

# Annex A

**Landfall location**

**Peak month adopted - month 5**

| Construction activities | Types of deliveries required per activity | Total HGV deliveries | Total working days | Daily HGV deliveries | Daily HGV deliveries (factored up to accound for double handing) | Total daily HGV deliveries per activity |
|---|---|---|---|---|---|---|
| Establish landfall HDD construction compound/ topsoil strip in landfall la | Subbase stone | 230 | 66 | 3.5 | 3.5 | 6 |
| | crushed stone | 140 | 66 | 2.1 | 2.1 | |
| | Geogrid | 2 | 66 | 0.0 | 0.2 | |
| | Fencing | 2 | 66 | 0.0 | 0.2 | |
| Mobilisation of HDD kit and Welfare or Landfall Compound | Welfare and Operation Plant | 68 | 22 | 3.1 | 3.1 | 4 |
| Construction of CCS | Subbase stone | 191 | 66 | 2.9 | 2.9 | 5 |
| | crushed stone | 117 | 66 | 1.8 | 1.8 | |
| | Geogrid | 2 | 66 | 0.0 | 0.2 | |
| | Fencing | 2 | 66 | 0.0 | 0.2 | |
| Mobilisation of Welfare and Operation Plant to CCS | Welfare and Operation Plant | 48 | 22 | 2.2 | 2.2 | 3 |
| Average Section Skip HGV Movements per day | Number of skip movements | | | 1.0 | 1.0 | 1 |
| | | | | | **Total daily movements** | **19** |
| | | | | | **Total daily two-way movements** | **38** |
| | | | | | **Total daily two-way movements (plus 25% contingency)** | **48** |
| | | | | | **Total daily two-way movements (plus zero plant deliveries)** | **48** |

**Onshore Cable Route Section 1**

**Peak month adopted - month 1**

| Construction activities | Types of deliveries required per activity | Total HGV deliveries | Total working days | Daily HGV deliveries | Daily HGV deliveries (factored up to accound for double handing) | Total daily HGV deliveries per activity |
|---|---|---|---|---|---|---|
| **Establish construction consolidation site and site accesses** | Subbase stone | 191 | 44 | 4.3 | 4.3 | 9 |
| | Crushed stone | 117 | 44 | 2.7 | 2.7 | |
| | geogrid | 2 | 44 | 0.0 | 0.2 | |
| | Fencing | 2 | 44 | 0.0 | 0.2 | |
| | Type 1 stone | 8 | 44 | 0.2 | 0.2 | |
| | Asphalt | 6 | 44 | 0.1 | 0.1 | |
| | Kerbs | 5 | 44 | 0.1 | 0.6 | |
| | Concrete | 6 | 44 | 0.1 | 0.1 | |
| | Cement pallet, lime pallet and sand bag deliveries | 1 | 44 | 0.0 | 0.1 | |
| **Mobilisation of Welfare and Operation Plant to CCS** | Welfare and Operation Plant | 48 | 44 | 1.1 | 1.1 | 2 |
| **Site preparation including fencing, temporary drainage and haul road construction** | Subbase stone | 251 | 44 | 5.7 | 5.7 | 10 |
| | Crushed stone | 153 | 44 | 3.5 | 3.5 | |
| | geogrid | 2 | 44 | 0.0 | 0.2 | |
| | Fencing | 2 | 44 | 0.0 | 0.2 | |
| **Average Section Skip HGV Movements per day** | Number of skip movements | 230 | 550 | 1.0 | 1.0 | 1 |
| | | | | | **Total daily movements** | **22** |
| | | | | | **Total daily two-way movements** | **44** |
| | | | | | **Total daily two-way movements (plus 23% contingency)** | **54** |
| | | | | | **Total daily two-way movements (plus four plant deliveries)** | **58** |

**Onshore Cable Route Section 2**

**Peak month adopted - month 6**

| Construction activities | Types of deliveries required per activity | Total HGV deliveries | Total working days | Daily HGV deliveries | Daily HGV deliveries (factored up to accound for double handing) | Total daily HGV deliveries per activity |
|---|---|---|---|---|---|---|
| **Establish construction consolidation site and site accesses** | Subbase stone | 260 | 110 | 2.4 | 2.4 | 5 |
| | Crushed stone | 159 | 110 | 1.4 | 1.4 | |
| | geogrid | 3 | 110 | 0.0 | 0.1 | |
| | Fencing | 3 | 110 | 0.0 | 0.1 | |
| | Type 1 stone | 8 | 110 | 0.1 | 0.1 | |
| | Asphalt | 6 | 110 | 0.1 | 0.1 | |
| | Kerbs | 5 | 110 | 0.0 | 0.2 | |
| | Concrete | 6 | 110 | 0.1 | 0.1 | |
| | Cement pallet, lime pallet and sand bag deliveries | 1 | 110 | 0.0 | 0.0 | |
| **Mobilisation of Welfare and Operation Plant to CCS** | Welfare and Operation Plant | 67 | 110 | 0.6 | 0.6 | 1 |
| **Site preparation including fencing, temporary drainage and haul road construction** | Subbase stone | 362 | 66 | 5.5 | 5.5 | 10 |
| | Crushed stone | 220 | 66 | 3.3 | 3.3 | |
| | geogrid | 3 | 66 | 0.0 | 0.2 | |
| | Fencing | 3 | 66 | 0.0 | 0.2 | |
| **Establish Onshore HDD Entry Pit Compound** | Subbase stone | 91 | 44 | 2.1 | 2.1 | 4 |
| | Crushed stone | 56 | 44 | 1.3 | 1.3 | |
| | geogrid | 1 | 44 | 0.0 | 0.1 | |
| | Fencing | 1 | 44 | 0.0 | 0.1 | |
| **Average Section Skip HGV Movements per day** | Number of skip movements | 354 | 591 | 1 | 1 | 1 |
| | | | | | **Total daily movements** | **21** |
| | | | | | **Total daily two-way movements** | **42** |
| | | | | | **Total daily two-way movements (plus 23% contingency)** | **52** |
| | | | | | **Total daily two-way movements (plus zero plant deliveries)** | **52** |

**Onshore Cable Route Section 3**

**Peak month adopted - month 6**

| Construction activities | Types of deliveries required per activity | Total HGV deliveries | Total working days | Daily HGV deliveries | Daily HGV deliveries (factored up to accound for double handing) | Total daily HGV deliveries per activity |
|---|---|---|---|---|---|---|
| **Establish construction consolidation site and site accesses** | Subbase stone | 69 | 22 | 3.1 | 3.1 | 6 |
| | Crushed stone | 42 | 22 | 1.9 | 1.9 | |
| | geogrid | 1 | 22 | 0.0 | 0.2 | |
| | Fencing | 1 | 22 | 0.0 | 0.2 | |
| **Mobilisation of Welfare and Operation Plant to CCS** | Welfare and Operation Plant | 19 | 22 | 0.9 | 0.9 | 1 |
| **Site preparation including fencing, temporary drainage and haul road construction** | Subbase stone | 192 | 44 | 4.4 | 4.4 | 11 |
| | Crushed stone | 118 | 44 | 2.7 | 2.7 | |
| | geogrid | 3 | 44 | 0.1 | 0.3 | |
| | Fencing | 2 | 44 | 0.0 | 0.2 | |
| | Type 1 stone | 23 | 44 | 0.5 | 0.5 | |
| | Asphalt | 17 | 44 | 0.4 | 0.4 | |
| | Kerbs | 15 | 44 | 0.3 | 1.7 | |
| | Concrete | 18 | 44 | 0.4 | 0.4 | |
| | Cement pallet, lime pallet and sand bag deliveries | 2 | 44 | 0.0 | 0.2 | |
| **Average Section Skip HGV Movements per day** | Number of skip movements | 92 | 506 | 1.0 | 1.0 | 1 |
| | | | | | **Total daily movements** | **19** |
| | | | | | **Total daily two-way movements** | **38** |
| | | | | | **Total daily two-way movements (plus 29% contingency)** | **49** |
| | | | | | **Total daily two-way movements (plus zero plant deliveries)** | **49** |

**Onshore Cable Route Section 4**

**Peak month adopted - month 2**

| Construction activities | Types of deliveries required per activity | Total HGV deliveries | Total working days | Daily HGV deliveries | Daily HGV deliveries (factored up to accound for double handing) | Total daily HGV deliveries per activity |
|---|---|---|---|---|---|---|
| Establihse construction consolidation iste compound and site accesses | Subbase stone | 366 | 88 | 4.2 | 4.2 | 12 |
| | Crushed stone | 223 | 88 | 2.5 | 2.5 | |
| | geogrid | 3 | 88 | 0.0 | 0.2 | |
| | Stone | 156 | 88 | 1.8 | 1.8 | |
| | Asphalt | 183 | 88 | 2.1 | 2.1 | |
| | Fencing | 2 | 88 | 0.0 | 0.1 | |
| | Type 1 stone | 8 | 88 | 0.1 | 0.1 | |
| | Kerbs | 5 | 88 | 0.1 | 0.3 | |
| | Concrete | 6 | 88 | 0.1 | 0.1 | |
| | Cement pallet, lime pallet and sand bag deliveries | 1 | 88 | 0.0 | 0.1 | |
| Mobilisation of Welfare and Operation Plant to CCS | Welfare and Operation Plant | 98 | 88 | 1.1 | 1.1 | 2 |
| Construction of tarmac haul road from access to CCS | Stone | 106 | 44 | 2.4 | 2.4 | 6 |
| | Asphalt | 121 | 45 | 2.7 | 2.7 | |
| Site preparation including fencing, temporary drainage and haul road construction | Subbase stone | 240 | 66 | 3.6 | 3.6 | 7 |
| | Crushed stone | 146 | 66 | 2.2 | 2.2 | |
| | geogrid | 3 | 66 | 0.0 | 0.2 | |
| | Fencing | 2 | 66 | 0.0 | 0.2 | |
| Average Section Skip HGV Movements per day | Number of skip movements | 840 | 792 | 2.0 | 2.0 | 2 |
| | | | | | Total daily movements | 29 |
| | | | | | Total daily two-way movements | 58 |
| | | | | | Total daily two-way movements (plus 24% contingency) | 72 |
| | | | | | Total daily two-way movements (plus two plant deliveries) | 74 |

**Onshore Substation**

**Peak month adopted - month 5**

| Construction activities | Types of deliveries required per activity | Total HGV deliveries | Total working days | Daily HGV deliveries | Daily HGV deliveries (factored up to accound for double handing) | Total daily HGV deliveries per activity |
|---|---|---|---|---|---|---|
| Permanent access Road | Type 1 stone | 384 | 110 | 3.5 | 3.5 | 12 |
| | Asphalt | 408 | 110 | 3.7 | 3.7 | |
| | Kerbs | 23 | 110 | 0.2 | 0.2 | |
| | Concrete | 51 | 110 | 0.5 | 2.3 | |
| | Cement pallet, lime pallet and sand bag deliveries | 4 | 110 | 0.0 | 0.2 | |
| | Topsoil removal | 209 | 110 | 1.9 | 1.9 | |
| | Stone | 8 | 110 | 0.1 | 0.1 | |
| Construction Compound Construction | Subbase | 382 | 88 | 4.3 | 4.3 | 8 |
| | Crushed stone | 233 | 88 | 2.6 | 2.6 | |
| | Geogrid | 3 | 88 | 0.0 | 0.2 | |
| | Fencing | 3 | 88 | 0.0 | 0.2 | |
| Welfare Mobilisation | Welfare and Operation Plant | 54 | 66 | 0.8 | 0.8 | 2 |
| Site Clearance Works | Topsoil removal | 701 | 88 | 8.0 | 8.0 | 8 |
| Average Section Skip HGV Movements per day | Number of skip movements | 264 | 726 | 1.0 | 1.0 | 1 |
| | | | | | Total daily movements | 31 |
| | | | | | Total daily two-way movements | 62 |
| | | | | | Total daily two-way movements (plus 25% contingency) | 78 |
| | | | | | Total daily two-way movements (plus two plant deliveries) | 80 |

**National Grid Infrastructure**

**Peak month adopted - month 1**

| Construction activities | Types of deliveries required per activity | Total HGV deliveries | Total working days | Daily HGV deliveries | Daily HGV deliveries (factored up to accound for double handing) | Total daily HGV deliveries per activity |
|---|---|---|---|---|---|---|
| Construction of access roads for National Grid Over Head Line Works | Subbase stone | 115 | 22 | 5.2 | 5.2 | 9 |
| | Crushed stone | 70 | 22 | 3.2 | 3.2 | |
| | Geogrid | 1 | 22 | 0.0 | 0.2 | |
| | Fencing | 1 | 22 | 0.0 | 0.2 | |
| | | | | | Total daily movements | 9 |
| | | | | | Total daily two-way movements | 18 |
| | | | | | Total daily two-way movements (plus 25% contingency) | 23 |
| | | | | | Total daily two-way movements (plus zero plant deliveries) | 23 |

**Key**

Deliveries increased by a factor of five to account for double handling