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Onshore Cable Works

Code of Construction Practice Appendix 4 Air Quality Monitoring Plan DCO Requirement 22 (2) (e)

(Applicable to 5B to 20, 25 to 38, 41 to 49 and 52 to 61)

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1. INTRODUCTION AND SCOPE

1.1. PROJECT OVERVIEW

- East Anglia Three Limited (EATL) was awarded a Development Consent Order (DCO) by the Secretary of State, Department for Business, Energy and Industrial Strategy (DBEIS) on 7 August 2017 for the East Anglia THREE Offshore Windfarm (EA THREE). The DCO granted consent for the development of a 1,200MW offshore windfarm and associated infrastructure.
- 2. The DCO has now been subject to three non-material variations:
 - In March 2019 EATL submitted a non-material change application to DBEIS to amend the consent to increase the maximum generating capacity from 1,200MW to 1,400MW and to limit the maximum number of gravity base foundations to 100. In June 2019 DBEIS authorised the proposed change application and issued an Amendments Order.
 - In July 2020 EATL submitted a second non-material change application to DBEIS to amend the parameters of its offshore substations (reducing the number of these to one) and wind turbines (a decrease in the number of turbines and an increase in their hub height and rotor radius). On 15 April 2021 DBEIS authorised this proposed change application and issued an Amendments Order.
 - In August 2021 EATL submitted a third non-material change application to DBEIS to amend the consent to remove the
 maximum generating capacity of 1,400MW and to amend the parameters of its wind turbines (a decrease in the number of
 turbines and an increase in their hub height and rotor radius). In September 2022 DBEIS authorised the proposed change
 application and issued an Amendments Order.
- The onshore construction works associated with EA THREE will have a capacity of 1,400MW and transmission connection of 1,320MW. The construction works will be spread across a 37km corridor between the Suffolk coast at Bawdsey and the converter station at Bramford, passing the northern side of Ipswich. As a result of the strategic approach taken, the cables will be pulled through pre-installed ducts laid during the onshore works for East Anglia ONE Offshore Windfarm (EA ONE), thereby substantially reducing the impacts of connecting to the National Grid (NG) at the same location. The infrastructure to be installed for EA THREE, therefore, comprises:
 - The landfall site with one associated transition bay location with two transition bays containing the connection between the
 offshore and onshore cables;
 - Two onshore electrical cables (single core);
 - Up to 62 jointing bay locations each with up to two jointing bays;
 - One onshore converter station, adjacent to the EA ONE Substation;
 - Three cables to link the converter station to the National Grid Bramford Substation;
 - Up to three onshore fibre optic cables; and
 - Landscaping and tree planting around the onshore converter station location.
- Since the granting of the DCO, the decision has been made that the electrical connection for EA THREE will comprise a high voltage direct current (HVDC) cable rather than a high voltage alternating current cable and, therefore, the type of substation that will be required is a HVDC converter station. The substation will, therefore, be referred to here as a 'converter station' and this amended terminology has been agreed with the relevant authorities on 15 October 2020. It has also been determined that only one converter station will be constructed rather than two and that the converter station will be installed in a single construction phase.
- 5. The EA THREE onshore works commenced development in July 2022, with works at the Converter Station, Paper Mill Lane, Playford Corner and Clappits.

1.2. SCOPE

This Employer's Air Quality Monitoring Plan (AQMP) sets out the monitoring and mitigation measures to be applied to the construction works for the EA THREE cable route, to ensure that any potential unmitigated effects are minimised, and where possible, removed. This AQMP is submitted as an appendix to the Code of Construction Practice (CoCP) and fulfils DCO Requirement 22 (2) (e) which states:

22.—(2) The code of construction practice must include (...)

(e) an air quality monitoring plan

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The scope of this document relates to the management of air quality associated with the cable route that runs from the landfall location at Bawdsey to the Converter Station works located near Bramford, Suffolk. These works comprise Work No.s 5B to 61 (see Figure 1 Site Context Plan) as defined in the EA THREE DCO. The Requirement Discharge Documents (RDDs) relating to the construction and installation of cable route infrastructure within the Clappits Works Stage (Work No.s 21 to 24), Playford Corner Works Stage (Work No.s 39 and 40), Paper Mill Lane Works Stage (Work No.s 50 and 51) and Converter Station Stage (Work No.s 62 to 69) have previously been discharged. For the sake of completeness and to provide a suite of comprehensive RDDs for use by the Principal Contractor for the cable route (NKT), the infrastructure and activities that fall within these areas and the associated management measures for these will also be addressed in this document. Nevertheless, this document seeks only to discharge this Requirement with respect to Works No.s 5B to 20, 25-38, 41-49 and 52-61.

- 8. The Principal Contractor will develop their own detailed AQMP for the cable works in accordance with this Employer's AQMP.
- 9. The purpose of this AQMP is to set out the implementation of the appropriate control measures and mitigation to minimise adverse environmental effects during the construction of the cable works. The AQMP also provides the framework of the monitoring plan to evaluate the efficiency of applied control measures and mitigation. It covers all phases of the construction process and takes into account the work of the Principal Contractor and subcontractors.
- 10. The following objectives have been identified in terms of air quality management for the installation of the cable:
 - Release of dust/particulate matter must not cause an environmental nuisance at any human or ecological receptor;
 - No justified complaints received regarding excessive dust generation or air pollution, as a result of construction activities;
 - Ensure exhaust emissions of the plant and equipment used in construction activities are controlled;
 - Monitor and maintain dust controls throughout the construction of the onshore elements;
 - Monitor the effects of all activities on air quality and the effectiveness of mitigation measures;
 - Limit the disturbed area and reinstate as soon as practicable, following the completion of works;
 - Ensure all personnel are appropriately trained in environmental awareness; and
 - No environmental fines or prosecutions relating to dust and air quality.
- Potential dust impacts during the installation of the cable are considered to be temporary in nature and short-term. The impacts are determined to be temporary as they will only potentially occur throughout the construction phase (approximately 2 years) and short-term because these will only arise at particular times when certain activities and meteorological conditions coincide.
- Any risks associated with potential contaminated land are addressed in Section 11 of the CoCP (of which this is an appendix), and as such are not covered within this plan.
- The information contained herein shall be adhered to by the appointed Principal Contractor and subcontractors and implementation and compliance will be monitored by the Construction Management Team. The AQMP will only be revised with the agreement of Mid Suffolk District Council (MSDC) and/or East Suffolk Council (ESC).

2. ABBREVIATIONS

AADT	Annual Average Daily Traffic	
AQAL	Air Quality Assessment Level	
AQMA	Air Quality Management Area	
AQMP	Air Quality Monitoring Plan	
AQO	Air Quality Objective	
AQS	Air Quality Strategy 2007	
AQSR	Air Quality Standards Regulations 2010	
CLO	Community Liaison Officer	
Defra Department for Environment, Food and Rural Affairs		
DPF Diesel Particulate Filters		
EA ONE	East Anglia ONE Offshore Windfarm	

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EA THREE	East Anglia THREE Offshore Windfarm	
EAH	East Anglia Hub Offshore Windfarms	
EnvCoW	Environmental Clerk of Works	
EPA	Environmental Protection Act 1990	
EPUK	Environmental Protection UK	
ES	Environmental Statement	
ESC	East Suffolk Council	
HGV	Heavy Goods Vehicle	
IAQM	Institute of Air Quality Management	
IBC	Ipswich Borough Council	
IBR	Scottish Power / Iberdrola Renewables Offshore	
LAQM	Local Air Quality Management	
MSDC	Mid Suffolk District Council	
NRMM	Non-Road Mobile Machinery	
NO ₂	Nitrogen Dioxide	
PCCS	Primary Construction Consolidation Site	
PM _{2.5}	Particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometres	
PM ₁₀	Particulate matter with an aerodynamic diameter less than or equal to 10 micrometres	
sccs	Secondary Construction Consolidation Site	
SSSI	Site of Special Scientific Interest	

3. LEGISLATION, GUIDELINES, BEST PRACTICES AND STANDARDS

3.1. Legislation

3.1.1. National Obligations

- The Air Quality Standards Regulations 2010 (AQSR) transpose both the EU Ambient Air Quality Directive (2008/50/EC), and the Fourth Daughter Directive (2004/107/EC) within UK legislation, in order to align and mirror European obligations. The AQSR includes Limit Values which are legally binding ambient concentration thresholds which, however, are only applicable at specific locations (Schedule 1: AQSR). Carriageways or central reservations of roads, and any location where the public do not have access (e.g. industrial sites), are exempt. On this basis, if a sampling point does not comply with the siting locations, then strict comparison to the AQSR Limit Values cannot be made.
- Following the UK's withdrawal from the EU, the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 was introduced to mirror revisions to supporting EU legislation. As a result, the fine particulate matter (PM_{2.5}) Limit Value was reduced to 20μg/m³ (to be met by 2020).
- The responsibility of achieving the AQSR (and European equivalent Directives) is a National obligation for Central Government who undertake assessments on an annual basis. Local Authorities have no statutory obligation to achieve the AQSR or the European equivalent Directives, unless otherwise instructed to assist Central Government under Ministerial Direction.
- In response to persistent exceedances, the Government published its 2017 plan for reducing roadside nitrogen dioxide (NO₂) concentrations in order to achieve compliance in the shortest time possible. This has resulted in the introduction of Clean Air Zones across England.

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3.1.2. Local Obligations

- Part IV of the Environment Act 1995 (as amended) requires the Secretary of State to publish a national Air Quality Strategy (AQS) every five years and established the system of Local Air Quality Management (LAQM) for Local Authorities to regularly review and assess air quality within its area.
- The Air Quality (England) Regulations 2000 (as amended) ('the Regulations') provide the statutory basis for the Air Quality Objectives Local Authorities must adhere to under LAQM in England. PM_{2.5} is not currently cited within the Regulations; Local Authorities are however required to work towards reducing PM_{2.5}.
- The Air Quality Objectives apply at locations where members of the public are regularly present and might reasonably be expected to be exposed to pollutant concentrations over the relevant averaging period (relevant exposure). Where any of the prescribed Air Quality Objectives are not likely to be achieved, the local authority must designate an Air Quality Management Area (AQMA). For each AQMA, the local authority is required to prepare an Air Quality Action Plan (AQAP), which details measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the objective.
- The latest AQS for England was published in 2023. The AQS provides the delivery framework for air quality management across England for local authorities and summarises the air quality standards and objectives operable within England for the protection of public health and the environment.
- The ambient air quality standards of relevance to human receptors (as prescribed within the AQS) are set out in Table 3-1. These are primarily based upon the Air Quality Objectives Local Authorities are responsible for achieving reflective of the local authority's duties. The PM_{2.5} Air Quality Standards Regulation (AQSR) Air Quality Objective (a national objective) has also been included for completeness, to provide an indicative assessment (as the sampling point may not comply with the siting locations prescribed under Schedule 1: AQSR).

Table 3-1 Relevant Air Quality Objectives

Pollutant	Standard (µg/m³)	Measured As	
Nitrogen Dioxide (NO ₂)	40	Annual mean	
	200	1-hour mean (not to be exceeded on more than 18 occasions per annum)	
Particles (PM ₁₀)	40	Annual mean	
	50	24-hour mean (not to be exceeded on more than 35 occasions per annum)	
Particles (PM _{2.5})	20	Annual mean	

3.1.3. Environmental Protection Act 1990

Part III of the Environmental Protection Act (EPA) 1990 (as amended) contains the main legislation on statutory nuisance and allows local authorities and individuals to take action to prevent a statutory nuisance. Section 79 of the EPA defines, amongst other things, smoke, fumes, dust and smells emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance, as a potential statutory nuisance.

3.2. Guidelines, Standards and Best Practices

- ^{24.} Several guides, standards and best practice documents are considered in the development of this plan. These documents are designed to offer guidance in reducing impacts of air pollution, based on expert evaluation of current scientific evidence. These documents are not legally binding, they are however often referred to as references for defining and measuring air quality.
 - Department for Environment, Food and Rural Affairs (Defra): Local Air Quality Management Technical Guidance (LAQM.TG(22)) (2022);
 - Environment Agency: Monitoring Particulate Matter in Ambient Air around Waste Facilities (2013);
 - Environmental Protection United Kingdom (EPUK) and Institute of Air Quality Management (IAQM): Land-Use Planning & Development Control: Planning for Air Quality (2017);
 - IAQM: Guidance on the Assessment of Dust from Demolition and Construction, v1.1 (2016); and
 - IAQM: Guidance on Monitoring in the Vicinity of Demolition and Construction Sites, v1.1 (2018).

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3.2.1. Guideline Limits to Prevent Dust Nuisance

- 25. Fractions of dust greater than 10μm (i.e. greater than PM₁₀) in diameter typically relate to nuisance effects as opposed to potential health effects and therefore are not covered within the UK AQS.
- There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist as it is a subjective concept. However, a deposition rate of 200mg/m²/day is generally adopted for the onset of complaints, as proposed by the IAQM and the Environment Agency. This relates to monitoring methods that are acknowledged as coming into use through 'custom and practice'.

4. BASELINE CONDITIONS

4.1. Review of Local Air Quality Monitoring

- 27. The nearest AQMA relative to the site is located greater than 3.5km away, within Ipswich. As such, air quality within the immediacy of the cable corridor works is not considered to be sensitive with respect to human health.
- Monitoring data collected prior to the COVID-19 pandemic (i.e. pre-2020) has been used to characterise the baseline environment, as pollutant concentrations monitored during 2020 and 2021 are expected to be atypical, and not representative of the local environment and have therefore not been considered.
- MSDC do not currently undertake any automatic monitoring of pollutants in their administrative area. ESC operated one automatic monitor within their administrative area in 2019, WBG, located approximately 2km away from the site. The neighbouring Ipswich Borough Council (IBC) had two automatic monitors in 2019, but they were located greater than 3.5km from the cable route. In addition, ESC, MSDC and IBC undertake passive (non-automatic) NO₂ diffusion tube monitoring within their administrative areas. The nearest passive diffusion tube in 2019 was located greater than 1km north of the cable route within Woodbridge. There is no monitoring within, along or adjacent to the cable corridor and affected receptors. Given the separation distance and anticipated differences in local environments, monitoring from automatic and non-automatic locations have not been considered further.

4.2. Defra Mapped Background Concentrations

- Defra maintains a nationwide model of existing and future background air quality concentrations at a 1km grid square resolution which is routinely used to support LAQM requirements and air quality assessments. The data sets include annual average concentration estimates for NO₂, PM₁₀ and PM_{2.5} using a base year of 2018 (the year in which comparisons between modelled and monitored concentrations are made).
- The minimum and maximum Defra mapped annual mean background concentrations for the grid squares covering the cable route for 2024 (representing the earliest anticipated year of construction) are presented in Table 4-1. All the mapped background concentrations are well below the respective annual mean AQALs.

Table 4-1 2024 Defra Background Pollutant Concentrations

Scenario	Annual Mean Background Concentration (μg/m³)			
	NO ₂	PM ₁₀	PM _{2.5}	
Minimum	6.6	11.3	7.5	
Maximum	11.6	17.5	10.1	
AQAL	40	40	20	

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5. CONSTRUCTION DETAILS

5.1. Construction Overview

The construction works will be undertaken across a 37km corridor between the Suffolk coast at Bawdsey and the Converter Station at Bramford, passing the northern side of Ipswich. The cables are to be installed through pre-installed ducts, laid during the onshore construction works for the EA ONE project. Construction has started on the cable route at three locations where Construction Consolidation Sites (CCS) will be located, at Playford, Paper Mill Lane and Clappits. This next phase of the construction works are expected to begin in Spring 2024 with an expected completion in December 2025. The construction activities within the onshore cable route will be as follows:

- Any minor temporary modifications to the public road network.
- Establish 3 additional CCS (approximate duration of 6 weeks for the establishment of each CCS).
- Establish 29 accesses from the public highway. These may require Section 278 Agreement with the Local Highways Authority (see Appendix 2 Transport Route Assessment of the Traffic Management Plan (EA3-LDC-CNS-REP-IBR-000080) for details).
- Establish up to circa 12.7km of stone haul road to access the jointing bay locations from the access points;
- Install 6.4km of proprietary trackway system to reach, *inter alia*, both ends of each Horizontal Directional Drill (HDD). HDDs will be accessed by proprietary trackway system from the jointing bay hardstandings or access points to allow each HDD to be proved.
- Establish 29 temporary jointing bay compounds (including 2 transition jointing bays) (approximate duration of 2 weeks for each compound).
- Excavation of jointing bay pits to locate the existing ducts at each jointing bay location (approximate duration of 3 weeks for each jointing bay location);
- Construct jointing bays (approximate duration of 3 weeks for each jointing bay).
- Transport of cables to site, from designated port to an off-site cable storage location and on to the jointing bay locations.
- Duct proving along the cable route.
- Pull cables through ducts and undertake jointing (approximate duration of 3 weeks per location).
- Backfill and reinstatement of jointing bays (approximate duration of 2 weeks).
- Remove temporary jointing bay hardstandings / compounds and CCS Compounds, haul roads, trackmatting and access points.
- Reinstate all disturbed land, permanent fences, replacement hedges and vegetation with suitable hedgerow species, during the first appropriate planting season.
- The layout of the above infrastructure is shown in Figure 1 Site Context Plan. The locations of the soil bunds are currently indicative and may be moved within the previously disturbed areas, following agreement with EATL, the Ecological Clerk of Works (EcoW) and the Archaeological Consultant. Similarly, the stone haul road/ trackway may also be moved laterally within a distance of +/-5m, following agreement with EATL, the ECoW and the Archaeological Consultant. Currently 12.7km of stone haul road and 6.4km of proprietary trackway are proposed, however it may be possible to reduce further the quantity of stone haul road required by using trackway where practicable. The use of trackway is less invasive (being placed directly on the topsoil) and requires fewer HGV movements. EATL commits to consulting MSDC, ESC and SCC (as applicable) with regards to any changes to the layout, should the design change significantly (e.g. changes to: highway access routes including access routes into and along the cable corridor; number of jointing bays; and anything that potentially requires archaeological assessment and mitigation).
- 34. Circa 8 teams of 5 workers will work in parallel across the cable route, installing the infrastructure at each location.
- Temporary modification of the existing road networks may be required, such as localized widening, socketing of street signs and temporary moving of street furniture to allow the passage of larger HGVs, as set out in the Access Management Plan (EA3-LDC-CNS-REP-IBR-000079). This will be undertaken prior to construction commencing within relevant sections of the cable corridor route.

5.2. Construction Consolidation Sites (CCS)

The installation of the cable will require two 'Primary Construction Consolidation Sites' (PCCS) and four 'Secondary Construction Consolidation Sites' (SCCS), as set out in Table 5-1. All the proposed CCS will be within areas that were previously used for the EA ONE construction works.

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Table 5-1 - Construction Consolidation Site Locations

CCS Type	Address	Dimensions (m²)	Comments
Primary	Paper Mill Lane, Claydon, Ipswich, Suffolk IP6 OAP	3,577	Installed 2022 HGV turning area and parking 1,750m ²
Primary	Top Street, Martlesham, Suffolk IP12	3,572	HGV turning area and parking x 1,400m ²
Secondary	Bullen Lane, Bramford, Ipswich, Suffolk IP8	1,200	
Secondary	Playford Corner, Playford Mount, Ipswich, Suffolk IP6 9DS	581	Installed 2022
Secondary	Clappits, Woodbridge Road, Newbourne, Woodbridge, Suffolk IP12 4PA	1,185	Installed 2022/2023
Secondary	Landfall, Ferry Road, Woodbridge, Suffolk, IP12 3AS	1,200	Installation and use of CCS to be undertaken using Permitted Development Rights

- As shown in Table 5-1, the dimensions of the CCS will be in accordance with Part 3, Requirement 12(9) of the DCO which limits the size of the PCCS to 3,600m² and the SCCS to 1,200m².
- 38. The PCCSs will:
 - Provide areas for the storage of materials and equipment;
 - House site administration and welfare facilities for the labour resources;
 - · Form an interchange hub for deliveries of material, equipment and resources; and
 - Allow HGVs to park prior to entering the local road network during peak hours.
- The SCCSs will function as hubs for distribution along the cable route and will include welfare facilities with some limited storage of materials and equipment. SCCS may also include site offices.
- The Paper Mill Lane PCCS will be the main administrative compound for the onshore works. Top Street PCCS and Landfall SCCS also include designated office space.
- The CCS will be constructed as follows:
 - · Mark out the extent of CCS with use of Global Positioning Systems (GPS) Real Time Kinematic (RTK) setting out equipment;
 - Set out and install drainage features as required. Any encountered existing field drains will be located, capped or diverted to
 areas where any outfall can be managed in accordance with the Surface Water and Foul Drainage Management Plan (EA3-LDCCNS-REP-IBR-000081);
 - Erect security fencing around the perimeter of CCS;
 - Excess vegetation to be removed from soil and from site prior to soil stripping. Strip topsoil under conditions where the topsoil is within its plastic limit with regards to moisture content to minimise damage to the soils structure and texture and store in designated areas within the same field boundary, all in accordance with BS3882, British Standard Topsoil and the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009). The removed vegetation will be either disposed of offsite or used on site for weed suppression in accordance with the correct licence/exemption;
 - Excavate to formation level and store any excess material. Topsoil and subsoil storage bunds will be placed in bunds locally separately, the topsoil bund being seeded, if they are to be stored for longer than 6 months. Subsoil bunds will be kept weed free;
 - Place imported stone in accordance with the CCS base structure design. Hardstandings will be installed in line with temporary works design assessments and may typically be circa 600mm thick;
 - Install prefabricated site offices, meeting room and welfare facilities, where required.

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5.3. Accesses, Stone Haul Roads and Trackway

- Existing accesses and farm tracks will be used where possible (with reinforcement where necessary) to access the jointing bay and HDD locations. Circa 12.7km of 5m wide stone haul road will be installed, in accordance with the permitted 18.05km (as set out in Part 3, paragraph 12(12) of the DCO). In addition, 6.4km of proprietary trackway system will be used to access, *inter alia*, the HDD proving locations. All tracks will, as far as reasonably possible, follow the track bed used for EA ONE.
- There will be several HGV turning points and passing bays along the stone haul road and trackway. These are to provide HGVs with a safe location to turn round after driving onto the easement from the public highway and to reverse as short a distance as possible to the leading edge of the haul road/trackway construction. Over longer lengths of haul road/trackway further HGV turning points will be constructed allowing the HGV to drive along the haul road/trackway and reverse shorter distances.
- The routing of the stone haul road/ trackway will be set out using GPS RTK equipment. For trackway, the proprietary trackway matting would be installed directly on the existing topsoil. For stone haul road the construction will be as follows:
 - Set out the site tracks with the use of GPS RTK equipment;
 - Erect and maintain suitable signage and goal posts where the temporary road runs under overhead lines in accordance with HSE GS6 "Avoiding danger from overhead power lines;
 - Set out and install drainage features along the edges of the length of road to be constructed. Any impacted existing field
 drains will be located, capped or diverted to areas where any outfall can be managed in accordance with the Surface Water
 and Foul Drainage Management Plan (EA3-LDC-CNS-REP-IBR-000081;
 - Clear vegetation, strip topsoil and subsoil material for storage in separate designated stockpiles with suitable signage.
 - Topsoil storage bunds will be stored locally and seeded if they are to be stored for longer than 6 months. Subsoil bunds will be kept weed free.;
 - Excavate to formation level and store any excess material;
 - Test the existing ground conditions to ensure suitability of the temporary works design and bearing capacity for the haul road and hard standing areas;
 - Layers of stone and geotextiles/geogrid will then be placed on the cleared surface.
- Based on the temporary works design and the soil bearing capacity, the 450mm thick stone haul road is likely to include one layer of non-woven geotextile and a layer of Geogrid 30/30 placed on the compacted sub-soil, with a second layer of geogrid 30/30 installed after 300mm of stone is place.
- Where the stone haul road/trackway crosses over an existing watercourse, a flume will be installed temporarily to allow crossing of the watercourse and the continued flow of the watercourse beneath. When the watercourse is too wide to flume with a single board pipe, a proprietary bridge will be utilised. (See the Watercourse Crossing Method Statement (Appendix 12 of the Onshore Cable Route Code of Construction Practice (EA3-LDC-CNS-REP-IBR-000084).

5.4. Jointing Bay Compounds

- 27 jointing bay compounds will be required, in addition to a compound for the 2 transition jointing bays at landfall. The jointing bay compounds will comprise hard standing to provide a working platform and to accommodate containers, drum trailer movement, parking, and welfare. The jointing bay compounds will have areas up to a maximum of 3,690m² (In accordance with Part 3 Requirement 12(11) which limits the area to 3,740m²). A typical layout is shown in Figure 2 of the Code of Construction Practice (EA3-LDC-CNS-REP-IBR-000084).
- Once the location of the jointing bay compounds has been established (using GPS RTK equipment), the creation of the compound will commence with erection of security fencing, removal of topsoil layer and installation of hard standing areas. The jointing bays (25m x 5m) will then be excavated to a depth of up to 2.5m with adequate slope batter or shoring on all sides of the excavation to prevent the soil from collapse. The existing ducts will be exposed and concrete slabs constructed to provide a level working area. Drainage channels and a sump pit will be included to facilitate drainage and dewatering. Installation and jointing of the cables will then take place before the earth link boxes and fibre optic boxes are installed and the area back filled with subsoil and Cement Bound Sand, as required.
- Earthing link boxes will be installed within the cable system on every fourth jointing bay. All link boxes will be installed into a link box chamber that will be buried to below plough depth at a minimum of 1.2m, within the jointing bay.

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50. To enable the fibre optic cable pulling through the already installed ducts, a pulling chamber will be installed at every jointing bay location. All cable joints, link boxes and pulling chambers will be buried to below plough depth of 1.2m.

5.5. Duct Proving

- The ducts to be used for EA THREE, which were installed during the EA ONE project construction works, will require cleaning and proving to ensure that they are intact, free of debris and ready for cable installation. Cleaning and proving will be undertaken by using a foam sponge pig, driven under air pressure from jointing bay to jointing bay followed by drawing a brush and mandrill through from jointing bay to jointing bay.
- Each set of HDD ducts will also require proving. A larger diameter duct was installed at the HDD locations than is used along the rest of the cable route. Therefore, an excavation (2m x 3m x 1.5m) will be made at each end of each of the HDD locations at the duct diameter transition location. The transition coupler will be removed before cleaning and proving the HDD ducts as described above.
- The construction of the two transition jointing bays within the transition bay compound is addressed in the Landfall Method Statement (EA3-LDC-CNS-REP-IBR 000078) (Reference to jointing bays in the remainder of this document also includes transition bays). These works will use the adjacent SCCS, located off Ferry Road, Bawdsey.

5.6. Cable Pull-through

- The HVDC cable wound drums will be transported from the docks to the cable drum storage location located in Kesgrave close to lpswich. Cable drums will then be transported directly to the jointing bay compounds. Cable lengths are dependent on the distance between the jointing bays and are typically between 750m and 1950m in length. Before cable installation commences the cable ducts and communications ducts will be given a final clean through and proved by pulling through a sponge, brush and mandrill.
- Installation of the cables into the ducts will begin with a cable pulling system being installed into the jointing bay. A steel bond and winching system with free spinning rollers will be installed along the bottom of the jointing bay. The cable will then be drawn off the lorry mounted cable drum using HGV hydraulic assist and cable winch & winch wire.
- Pulling calculations have confirmed that mechanical cable pushers will be required to assist the cable pull in operation on several of the longer pull locations, where cable pushers will be installed within the jointing bay. A dynamometer will ensure the maximum calculated pulling tension of the cables is not exceeded. Tension on the cable will be reduced using a biodegradable water-based lubricant, for example, "Lubtec-HD" (as used on EA ONE). Once both HVDC cables have been installed, the cable will then be jointed within the jointing bay and tested before moving onto the next pair of cables along the route. This process will be repeated for each of the twenty-eight sections.
- 57. The pre-installed DTS fibre optic ducting will be proven by blowing a gauging steel ball bearing through the ducting joint bay to joint bay. The Communication fibre ducts will be proven by blowing a sponge pig through prior to installing the fibre optic cable. Fibre optic cables will then be blown through the ducted system from jointing bay to jointing bay. The blowing of fibre optic cables requires a highspeed air flow combined with a mechanical pusher.
- It is expected that pulling and jointing operations at each joining bay would take approximately 2.5 weeks, typically spread over a three-to-four-week period, with a typically eight-person team installing the cables and a three-person jointing team.

5.7. Reinstatement

The jointing bay compounds, CCSs, accesses and stone haul roads will be reinstated and restored with the stored topsoil and subsoil in accordance with BS3882, British Standard Topsoil and the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009). Reinstatement will only take place under conditions where the topsoil is within its plastic limit with regards to moisture content to minimise damage to the soil's structure and texture. If necessary, the subsoil will be 'ripped' under friable conditions prior to placement if compaction had occurred. Topsoil may also require ripping if compacted following the removal of the trackway. Topsoil will be spread in such a way as to ensure that it does not become compacted. Pasture and arable land will be reseeded as required, fences reinstated, and suitable hedgerow species replanted during the first appropriate planting season in accordance with the Landscape Management Pan (EA3-LDC-CNS-REP-IBR-000077).

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5.8. Schedule and Working Hours

- The onshore cable construction works are programmed to start in Spring 2024 and are expected to be of up to 24 months duration (including restoration). Works will begin with the installation of the remaining three CCSs (Top Street PCCS, Bullen Lane SCCS, and Landfall SCCS). The civil works (ie installation of access points, stone haul road /trackway, the construction of the jointing bay compounds and excavation of the jointing bays and duct proving) will be undertaken on a rolling basis across the cable route. Works are anticipated to be underway at several locations at any one time. As noted above, circa 8 teams of 5 workers will work in parallel across the cable route, installing the infrastructure at each location, generally working from west to east. Cable pull through is anticipated to start in Summer 2024 and jointing is anticipated to start in Autumn 2024. Reinstatement will also be undertaken on a rolling basis and is anticipated to start at the western end of the route by year end 2024.
- _{61.} DCO Requirement 25 defines the construction working hours as follows:
 - **25.**—(1) Construction work for the connection works must only take place between 0700 hours and 1900 hours Monday to Saturday, with no activity on Sundays or bank holidays, except as specified in paragraph (2).
 - (2) Outside the hours specified in paragraph (1), construction work may be undertaken for essential and non-intrusive activities including but not limited to:
 - (a) continuous periods of operation that are required as assessed in the environmental statement, such as concrete pouring;
 - (b) fitting out works associated with the onshore substation(s) comprised within Work No. 67;
 - (c) delivery to the connection works of abnormal loads that may cause congestion on the local road network;
 - (d) connection works carried out on the foreshore;
 - (e) daily start up or shut down;
 - (f) electrical installation; and
 - (g) non-destructive testing.
 - (3) All construction work undertaken in accordance with paragraph (2)(a) to (d) must be agreed with the relevant planning authority in writing in advance, and must be carried out within the agreed time.
- _{62.} Further information is provided in Section 5.5 of the CoCP.

5.9. Construction Road Traffic

- 63. Construction activities associated with the cable corridor will result in the temporary generation of road traffic vehicle movements on the public road network. These movements have the potential to temporarily deteriorate local air quality.
- A quantitative assessment of potential impacts associated with construction road traffic was undertaken as part of the previously submitted Air Quality Environmental Statement (ES) Chapter (Volume 1 Chapter 20 Air Quality). This considered road traffic volumes generated by all onshore construction activities. In accordance with the EPUK and IAQM guidance, effects upon NO₂ and PM₁₀ concentrations at existing receptors were considered to be 'not significant'. No further consideration was therefore needed.
- As documented within the Cable Route Traffic Management Plan (EA3-LDC-CNS-REP-IBR-000080), it is acknowledged that vehicle movements generated by the cable construction works have changed relative to what was previously assessed within the Air Quality ES Chapter. In general, vehicle movements have remained consistent across the majority of links assessed but have, however, increased on some (relative to the ES Chapter). Despite this, the outcomes established as part of the Air Quality ES Chapter still remain valid and no further consideration is needed. This is based on the following reasoning:
 - For the purposes of informing the air quality assessment, total daily peak HGV movements generated across the full extent of
 the onshore construction works were used, rather than 24-hour Annual Average Daily Traffic (AADT). AADT values relate to
 annualised average daily traffic flows, so will be lower in comparison to peak road traffic movements. Use of peak road traffic
 movements for the purposes of predicting potential impacts results in a more robust assessment and allows greater flexibility
 for any potential design changes;

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Peak vehicle flows were assumed to occur within the earliest date of potential construction (2020). This theoretically assumes
that peak vehicle flows generated throughout the whole construction phase occur under worst case air quality conditions
(vehicle emission factors and background pollutant concentrations) projected for the full construction period; and

- Construction is now anticipated to commence in 2024. Impacts established as part of the Air Quality ES Chapter are considered
 conservative, as baseline air quality conditions are expected to have improved in the interim; given the forecasted reductions
 in vehicle emission factors and background pollutant concentrations. This is in response to the introduction of cleaner
 technologies and fuels.
- 66. The methodology and associated outcomes established as part of the Air Quality ES Chapter are therefore considered to be conservative and therefore remain valid.

5.10. Non-Road Mobile Machinery

- To facilitate construction, non-road mobile machinery (NRMM) will be used. NRMM refers to mobile machines, transportable industrial equipment or vehicles which are fitted with an internal combustion engine and not intended for transporting goods or passengers on roads. An inventory of NRMM proposed to be used for the construction of the cable route is presented in Table 5-1.
- Best endeavours will be used to hire/use only plant less than 2 years of age, where this does not impact on plant availability. Such plant will therefore be in compliance with Stage V requirements, which came into force 2019, noting that specialist plant may only be available as older, pre-2014 (i.e. pre-Stage IV) stock.
- Following application of suitable controls (such as those outlined in Table 8-1), emissions from NRMM used during the construction phase are unlikely to make a significant impact on local air quality as per LAQM.TG (22).

Table 5-1 Details of NRMM

Construction Activity	NRMM Construction Equipment
Jointing Bays and HDD excavations	360°Excavator (8ton, 16 ton, 21 ton, 25 ton, 40 ton)
	Ride on Roller twin drum (1200kg and 9000kg)
	Swivel Dumper (6ton)
	Articulated Lorries (Low-loader and hammer trailer)
	8 wheel lorry
	Short wheel base lorry (small plant deliveries)
	Dump truck 10ton /A25
	Forward / Reverse compactor plate
	Capstan Winch
	Cable pulling winch
	Compressor 600psi
	Tractor
	Cable push / puller
	Allieys cable drum mounted trailer & tractor unit
	250ton Mobile Craneage
	Cable powered realer (Rope)
	Rammax (trench roller)
	Dozer D6
	Road Sweeper
	Generator
CCS/Access Points/Stone Haul Road/Trackway	360°Excavators (16ton and 21 ton)
	Ride on Roller twin drum (1200kg and 9000kg)
	Swivel Dumper (6ton)
	Road planner
	Paver
	8 wheel lorry (Tarmac & Type 1)
	Articulated Lorry (Low-loader)
	Tractor cw compressor (Trac-air)
	Short wheel base lorry (small plant deliveries)
	Forward / Reverse compactor plate
	Road Sweeper

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Construction Activity	NRMM Construction Equipment
	Bulldozer D6
	Dump truck A25
	Bowser

6. IAQM CONSTRUCTION DUST ASSESSMENT METHODOLOGY

- A construction dust assessment was undertaken as part of the wider ES, using guidance documents and associated methodologies that are still considered relevant and up to date. A separate dust assessment has now been undertaken (in accordance with IAQM guidance) which focuses solely on construction activities proposed along the cable route, with the use of updated information from the Principal Contractor. In addition, a number of mitigation measures (including those set out in the Outline Code of Construction Practice) have been included within this AQMP to provide a best practice approach.
- 71. Given the scale of the construction works (spread across a 37km cable corridor), the wider site has been divided into 'zones' for the dust risk assessment to account for varying activities and sensitivities across the cable corridor length. Each 'zone' comprises discreet areas of cable construction works. However, to facilitate a clear mitigation strategy, the mitigation appropriate for the highest risk category determined across all the 'zones' has been applied. Therefore, the assessment is considered conservative and robust.
- The assessment of risk is determined by considering the risk of dust effects arising from four activities of relevance to the onshore cable works in the absence of mitigation: demolition, earthworks, construction and trackout.
- The assessment methodology considers three separate dust impacts taking into account the sensitivity of the area that may experience these effects:
 - Annoyance due to dust soiling;
 - The risk of health effects due to an increase in exposure to PM₁₀; and
 - · Harm to ecological receptors.
- The first stage of the assessment involves a screening exercise to determine if there are sensitive receptors within threshold distances of the site activities associated with the construction phase of the scheme. Further assessment is required where a:
 - Human receptor is located within 350m of the site, and/or within 50m of routes used by construction vehicles, up to 500m from the site entrance(s) and/or,
 - Ecological receptor is located within 50m of the site, and/or within 50m of routes used by construction vehicles, up to 500m from the site entrance(s).
- The dust emission class (or magnitude) for each activity is determined based on the guidance, indicative thresholds and expert judgement. The risk of dust effects arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area. The risk of impact is then used to determine the appropriate mitigation requirements, whereby through effective application, residual effects are considered to be 'not significant'.
- The IAQM guidance therefore does not provide a framework to determine the significance of unmitigated effects, as is not considered appropriate nor relevant in this context. For these reasons, the significance of unmitigated effect of construction dust cannot be defined.

7. CONSTRUCTION PHASE DUST ASSESSMENT

7.1. Assessment Screening

There are human receptors within 350m of the construction works and an ecologically designated site within 50m of the construction works. Therefore, an assessment of construction dust on human and ecological receptors is required.

7.2. Potential Dust Emissions Magnitude

A summary of the dust emission magnitude for the four assessed activities is provided in the following text and summarised in Table 7-1. This assessment has used information provided by the appointed Principal Contractor.

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7.2.1. Demolition

There are no existing buildings or structures currently occupying the cable route which are to be demolished. As such, an assessment of the potential dust impacts associated with this activity has been screened out from requiring assessment.

7.2.2. Earthworks

It is anticipated that earthworks could be required over an area greater than 10,000m² despite consideration of isolated zones across the cable route. The EA THREE cables will be installed within the ducts laid during the onshore works for EA ONE, reducing the scale of potential earthwork activity. Nonetheless earthworks are still required for the establishment of the stone haul road, CCSs, jointing bays and HDD duct proving works. Though unlikely, there is potential for greater than 10 heavy earth moving vehicles active at any one time within a given 'zone' moving up to a maximum 20,000 tonnes of material. Bunds of material are to be formed for topsoil up to 3m in height and, following consultation with the Client, subsoil up to 4m in height. As such, the overall dust emissions magnitude for earthworks is therefore conservatively considered to be 'large'.

7.2.3. Construction

The proposals comprise the construction of the CCSs described in Section 5.1.1. Furthermore, there are 29 jointing bays proposed for which construction will comprise a concrete slab 10m long by 3m wide laid at the bottom of a circa 2.5m excavation with adjacent jointing bay construction compounds and associated infrastructure, as discussed in Section 0. The total aggregated building volume is <25,000m³ consisting of concrete slabs for the jointing bays as well as portacabins for the CCSs; which will comprise off-site manufactured, prefabricated units and therefore have minimal potential for dust release. As such, the potential dust emission magnitude for construction is therefore initially considered to be 'small'.

7.2.4. Trackout

Section 5.9. The maximum number of outward HGV movements in any one day from a given site access has the potential to be greater than 50, however, any unpaved roads are anticipated to have the potential to be >100m. As such, the potential dust emission magnitude for trackout is therefore considered to be 'large'.

7.3. Sensitivity of the Area

A summary of the sensitivity of the surrounding area is detailed in the following text and summarised in Table 7-1.

Table 7-1 Potential dust emission magnitude

	Activity	Dust Emission Magnitude
Earthworks		Large
Construction		Small
Trackout		Large

7.3.1. Dust Soiling

- There are a maximum of 1 to 10 existing residential properties (highly sensitive receptors) within 20m of the anticipated cable route construction works at any considered 'zone' and less than 100 residential properties within 50m of the 'zone'. There are also a maximum of 10 to 100 existing residential properties within 20m of the public highway up to 500m from each access point along the local road network (commensurate of a large trackout magnitude).
- Given the above information regarding the number of residential receptors within 20m/50m of the cable route and within 20m of the identified trackout routes, the sensitivity of the area with respect to dust soiling effects on people and property in relation to earthworks and construction is therefore considered to be 'medium' and in relation to trackout is considered to be 'high'. This has been assumed across the wider cable corridor route a conservative approach.

7.3.2. Human Health

The maximum 2024 Defra mapped background PM_{10} concentration (2018 base year) for the $1 km^2$ grid squares centred on the cable route is estimated to be $17.9 \mu g/m^3$ (i.e. falls within the <24 $\mu g/m^3$ class). As discussed in Section 4.1, no local background PM_{10} monitoring exists within the development locale.

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Given the above information regarding the number of residential receptors within 20m/50m of the cable route and within 20m of the identified trackout routes, the sensitivity of the area with respect to human health impacts in relation to earthworks, construction and trackout is considered to be 'low'.

7.3.3. Ecological

- Miller's Wood ancient woodland (AW), a low sensitivity ecological receptor, is located within 20m of the cable route construction works at APO2 and the Bullen Lane CCS. The sensitivity of this area with respect to dust soiling effects on ecological receptors in relation to earthworks and construction is therefore considered to be 'low'.
- Newbourne Springs Site of Special Scientific Interest (SSSI), a medium sensitivity ecological receptor, is located within 20m of the trackout route (500m from AP26 on Newbourne Road). An ancient woodland (Lumber Wood AW) is also located within 50m of the potential trackout route. The sensitivity of this area with respect to dust soiling effects on ecological receptors in relation to trackout is therefore considered to be 'medium'.

Table 7-2 Sensitivity of the Area

Potential Impact	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	High
Human Health	Low	Low	Low
Ecological	Low	Low	Medium

7.4. Risk of Impacts (Unmitigated)

- The calculated worst case sensitivities and dust emission magnitudes for each activity and impact are combined to determine the risk of impact (unmitigated) which is used to inform the selection of appropriate mitigation for inclusion within the AQMP, and implementation throughout the construction phase.
- The worst case magnitudes have been combined with the worst case sensitivities across the entire of the cable route, as such the calculated risk of dust impacts comprise a highly conservative approach, when in reality are likely to be reduced at a given point along the cable route.

Table 7-3 Risk of dust impacts (unmitigated)

Potential Impact	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Low Risk	High Risk
Human Health	Low Risk	Negligible	Low Risk
Ecological	Low Risk	Negligible	Medium Risk

- Following the construction dust assessment, the cable route as a whole is found to be at worst 'High Risk' in relation to dust soiling effects on people and property, and 'Low Risk' in relation to human health impacts and 'Medium Risk' in relation to ecological impacts. In addition, potential dust effects during the construction phase are considered to be temporary in nature and may only arise at particular times (i.e. certain activities and/or meteorological conditions).
- Nonetheless, commensurate with the above designation of dust risk, mitigation measures, as identified in the IAQM guidance, are required to ensure that any potential impacts arising from the construction phase are reduced and, where possible, completely removed.

8. CONTROL MEASURES AND MITIGATION

The air quality control measures set out below will be included in the relevant Risk Assessment and Method Statement that will be submitted for each construction activity by all appointed contractors. The mitigation measures are proportionate to the scale and extent of impacts predicted and are included in the various standards and best practice guidelines.

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The air quality control measures presented in Table 8-1 comprise the Highly Recommended and Desirable measures identified as a result of the Construction Phase Dust Assessment set out in Section 7 and also a number of further best practice measures which were included, *inter alia*, within the AQMP for EA ONE. These measures will be implemented as part of normal environmental control measures and in line with best practice and the activities that are being undertaken at the time. In the unlikely event that MSDC or ESC note the potential for nuisance, additional control measures will be agreed and implemented.

During the construction phase, a proactive approach will be taken to ensure the potential for fugitive dust emissions is minimised, rather than pursuing a reactionary approach i.e. when a complaint is made. This will be achieved through the implementation of a monitoring strategy as detailed in Section 9. This strategy will comprise routine visual inspections by onsite contractors and application of the 'as needed' or 'as necessary' controls identified in Table 8-1, i.e. if the levels of dust deposition are seen to increase significantly during the visual inspections, further dust controls will be implemented as appropriate from the list of measures presented. This process is illustrated in Appendix A.

Table 8-1 Air Quality Control Measures

Mitigation Measure - Category	Description	Responsibility
Sustainable Travel and Machinery	Ensure all vehicles switch off engines when stationary	All personnel
	- no idling vehicles.	
	Avoid the use of diesel- or petrol-powered generators	Principal Contractor
	and use mains electricity or battery powered	
	equipment where practicable.	
	Impose and signpost a maximum-speed-limit of	Site Manager/Principal
	10mph on haul roads, trackway and work areas.	Contractor
perations	Only use cutting, grinding or sawing equipment fitted	Principal Contractor
	or in conjunction with suitable dust suppression	
	techniques such as water sprays or local extraction,	
	e.g. suitable local exhaust ventilation systems.	
	Ensure an adequate water supply on the site for	Principal Contractor
	effective dust/particulate matter	
	suppression/mitigation, using non-potable water	
	where possible and appropriate.	
	Use enclosed chutes and conveyors and covered skips	Principal Contractor
	(other than where materials are not dust-generating	· ·
	and the covering of the skips introduces risks for	
	loading and unloading).	
	Minimise drop heights from conveyors, loading	All personnel
	shovels, hoppers and other loading or handling	, , , ,
	equipment and use fine water sprays on such	
	equipment wherever appropriate.	
	Monitor weather forecasts for prolonged dry or windy	Principal Contractor/Site
	conditions and modify (or delay) potentially dusty site	Manager
	activities until the risk has reduced.	
	Ensure equipment is readily available on site to clean	Principal Contractor
	any dry spillages and clean up spillages as soon as	- Timespan Contractor
	reasonably practicable after the event using wet	
	cleaning methods.	
reparing and Maintaining the	Plan the site layout so that machinery and dust	Principal Contractor
ite	causing activities are located as far from receptors	Timelpar contractor
	identified on Table 9-1 and Figure 2, unless required	
	for works.	
	Erect effective solid screens or barriers around dusty	Principal Contractor
	activities or the site boundary that are at least as high	Findipal Contractor
	as any stockpiles on site.	
	Enclose site or specific operations where there is a	Principal Contractor/all
	high potential for dust production and the site is	
		personnel
	active for an extensive period.	Dringing! Contractor
	Keep site fencing, barriers and scaffolding clean using	Principal Contractor
	wet methods e.g. fine water spray.	

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Mitigation Measure - Category	Description	Responsibility
	Remove materials that have a potential to produce	Principal Contractor/all
	dust from site as soon as possible, unless being re-	personnel
	used on site. If they are being re-used on-site cover as	·
	described below.	
	Cover, seed or fence stockpiles to prevent wind	Site Manager/Principal
	whipping.	Contractor
	Monitoring of haul road surface condition.	Principal Contractor
ite Management	Record all dust and air quality complaints, identify	Principal Contractor/Site
	cause(s), take appropriate measures to reduce	Manager
	emissions in a timely manner, and record the	anage.
	measures taken.	
	Make the complaints log available to the local	Community Liaison Officer
	authority when asked.	community Elaborromeer
	Record any exceptional incidents that cause dust	Principal Contractor/Site
	and/or air emissions, either on- or off-site, and the	Manager
	action taken to resolve the situation in the logbook.	ivialiagei
		Principal Contractor
	If any high-risk construction sites are identified within 500m of the site boundary, liaison will be undertaken	Principal Contractor
	to ensure plans are co-ordinated and dust and	
	particulate matter emissions are minimised, including	
	with respect to interactions of the off-site	
	transport/deliveries which might be using the same	
	strategic road network routes.	Duin singl Control to
	Temporary cover, screen or revegetate	Principal Contractor
	earthworks/stockpiles, if possible, as soon as is	
	practicable. A low maintenance grass mix will be sown	
	as soon as possible after creation of top soil storage	
	mounds which are intended to remain in situ for more	
	than 6 months or over the winter period. The	
	optimum months for sowing grass seed are April or	
	September to October.	Britania di Controlata
	Use Hessian, mulches or tackifiers where it is not	Principal Contractor
	possible to re-vegetate or cover with topsoil, as soon	
	as practicable	
	Only remove the topsoil cover in small areas during	Principal Contractor
	work and not all at once.	
	Ensure sand and other aggregates are stored in	Site Manager/Principal
	bunded areas and are not allowed to dry out, unless	Contractor
	this is required for a particular process, in which case	
	ensure that appropriate additional control measures	
	are in place.	
	Wetting/dampening of dust generating stockpiles.	Principal Contractor
	Avoid scabbling (roughening of concrete surfaces) if	Site Manager/Principal
	possible.	Contractor
	Stockpiles would be kept in place for the shortest	Principal Contractor
	possible time.	
	Dust-generating activities will be minimised.	All personnel
	Where diesel- or petrol-powered generators are used,	Principal Contractor
	best practice measures will be implemented including	
-	regular inspections with respect to black smoke and	
	siting away from pedestrian areas.	
	Fine powder materials (e.g. bulk cement/ grouts) to	Principal Contractor
	be delivered in enclosed tankers and stored in silos	,
	with suitable emission control systems to prevent	
	escape of material and overfilling during delivery.	
	For smaller supplies of fine powder materials, ensure	Principal Contractor
	1 . 5. Smaller Supplies of fine powder materials, chaute	
	bags are sealed after use and stored appropriately to	

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Mitigation Measure - Category	Description	Responsibility
	Inspections and monitoring to be undertaken as set out in Section 9 of this AQMP.	Principal Contractor
	Runoff of mud and silty water will be prevented or	Principal Contractor
	controlled and managed.	
Trackout	Use water-assisted road sweeper(s) on the access	Principal Contractor
	roads to remove, as necessary, any material tracked	
	out of the site. This may require the sweeper being	
	continuously in use.	
	Install hard surfaced haul routes, which are regularly	Principal Contractor
	damped down with fixed or mobile sprinkler systems,	
	or mobile water bowsers and regularly cleaned.	
	Inspect on-site haul routes for integrity and instigate	Principal Contractor/Site
	necessary repairs to the surface as soon as reasonably practicable and regularly dampen down with fixed or mobile sprinkler systems, where necessary.	Manager
	Avoid dry sweeping of large areas.	Principal Contractor
	Ensure all vehicles entering and the leaving the site	Site Manager/Principal
	which are carrying loads are covered to prevent	Contractor
	escape of materials during transport.	
	Record all inspections of haul routes and any	Principal Contractor/all
	subsequent action in a site logbook.	personnel
	Implement a wheel washing system to dislodge accumulated dust and mud prior to leaving the site.	Principal Contractor
	Vehicles leaving site will be washed if necessary.	Principal Contractor
	Ensure there is an adequate area of hard surfaced	Principal Contractor
	road between the wheel wash facility and the site	
	exit, wherever site size and layout permits. Locate site	
	access gates at least 10m from receptors where practicable.	
Waste Management	Bonfires and burning of waste will not be allowed on site.	Principal Contractor/all personnel
NRMM	All NRMM should be well maintained. If any emissions	Principal Contractor
	of dark smoke occur, then the relevant machinery	
	should stop immediately, and any problem rectified.	
	All NRMM will use ultralow sulphur diesel (fuel	Principal Contractor
	meeting the specification within EN590:2004), where	
	available.	
	Best endeavours will be used to hire/use only plant	Principal Contractor
	less than 2 years of age, where this does not impact	
	on plant availability. Such plant will generally	
	therefore be in compliance with Stage V	
	requirements, which came into force 2019, noting	
	that certain specialist plant may only be available as	
	pre-2014 (i.e. pre-Stage IV) stock.	Dringinal Contractor
	All NRMM to comply with either the current or	Principal Contractor
	previous EU Directive Staged Emission Standards. All NRMM will be fitted with Diesel Particulate Filters	Principal Contractor
	(DPF) conforming to defined and demonstrated	Principal Contractor
	filtration efficiency (load/duty cycle permitting).	
	The on-going conformity of plant retrofitted with DPF,	Principal Contractor
	to a defined performance standard will be ensured	i i i i cipai conti actoi
	through a programme of onsite checks.	
	Implementation of fuel conservation measures	Principal Contractor
	including instructions to throttle down or switch off	
	idle construction equipment; switch off the engines of	
	trucks while they are waiting to access the site and	
	while they are being loaded or unloaded, ensure	
	equipment is properly maintained to ensure efficient	

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Mitigation Measure - Category	Description	Responsibility
	Regular servicing and checks of all plant/equipment e.g. black smoke from exhausts.	Principal Contractor

In addition to the above mitigation, a Traffic Management Plan (EA3-LDC-CNS-REP-IBR-000080) and a Travel Plan (EA3-LDC-CNS-REP-IBR-000087) have been developed for the cable works to manage the sustainable delivery of goods and materials and to support and encourage sustainable travel for contractor operatives and staff (public transport, cycling, walking and car-sharing) and thereby minimise the associated air quality impacts.

9. **MONITORING**

- The principal purpose of monitoring will be to ensure that the mitigation measures on site are effective in the management of dust propagation.
- If the 'ongoing' controls detailed in Section 8 are implemented appropriately during the onshore construction works, then likely dust generation and other emissions from the construction activities will be minimised and rendered 'not significant'. However, site inspections and visual monitoring will be undertaken as an effective way to verify that air pollution control measures have been properly designed and implemented. This will also inform whether supplementary controls (i.e. those marked as 'as necessary' or 'as needed') are required. This process is illustrated in Appendix A.
- 100. Details of the monitoring programme are provided below.

9.1. Visual Inspections

Visual inspections for dust generated from haul trucks, vehicle traffic, earthworks and other relevant activities will be undertaken every morning and afternoon and observations recorded after each inspection. These inspections will be undertaken in the vicinity of the working site boundary (external and internal), and where these checks indicate the potential for off-site dust impacts, then further checks will be undertaken at sensitive receptor locations within proximity of the site (subject to landowner approval) – as outlined in Table 9-1 and illustrated in Figure 2 Air Quality Sensitive Areas. These locations represent areas of sensitivity where monitoring should be focussed at or in proximity to, on the upwind side relative to the dust sources.

Table 9-1 Sensitive Areas for Visual Inspections

Sensitive Area	Address	Туре
SA1	Bawsdsey Hall, Ferry Road, Bawsdey	Residential Properties
SA2	Ferry Road, Bawsdey	Residential Properties
SA3	Unnamed Road, Alderton	Residential Property
SA4	Unnamed Road, Alderton	Residential Property
SA5	Lower Falkenham Road / Falkenham Road, Falkenham	Residential Properties
SA6	Lower Falkenham Road, Falkenham	Residential Properties
SA7	Park Lane, Kirton	Residential Properties
SA8	Park Lane / The Drift, Kirton	Residential Property
SA9	The Street, Newbourne	Residential Properties
SA10	Woodbridge Road, Newbourne	Newbourne Springs SSSI
SA11	Woodbridge Road, Newbourne	Residential Properties
SA12	Ipswich Road / School Road, Waldringfield	Residential Properties
SA13	Waldringfield Road, Waldringfield	Residential Property
SA14	Off Waldringfield Road, Waldringfield	Residential Property
SA15	Waldringfield Road, Waldringfield	Residential Properties
SA16	Off Waldringfield Road, Waldringfield	Lumber Wood AW
SA17	Waldringfield Road, Waldringfield	Residential Property
SA18	Church Lane, Martlesham	Residential Properties
SA19	Sandy Lane, Woodbridge	Residential Properties

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Sensitive Area	Address	Туре
SA20	Sandy Lane, Woodbridge	Residential Property
SA21	Top Street, Martlesham	Residential Properties
SA22	B1438 Ipswich Road, Woodbridge	Residential Properties
SA23	Cherry Tree Farm, off Seckford Hall Road, Great Bealings	Farm Property
SA24	Seckford Hall Road, Great Bealings	Residential Property
SA25	Lodge Road, Great Bealings	Residential Properties
SA26	Lodge Road, Great Bealings	Residential Properties
SA27	Lodge Road, Great Bealings	Residential Properties
SA28	Manor Farm, Lodge Road, Great Bealings	Farm and Residential Properties
SA29	Bealings Road, Great Bealings	Residential Properties
SA30	Bealings Road / Butts Road, Culpho	Residential Property
SA31	Branson Lane, Playford	Residential Property
SA32	Bealings Road, Culpho	Residential Property
SA33	Grundisburgh Road, Tuddenham	Residential Properties
SA34	Off Grundisburgh Road, Tuddenham	Commercial Properties and Farm
SA35	Clopton Road, Tuddenham	Residential Properties
SA36	Sandy Lane, Witnesham	Residential Properties
SA37	Off Rose Hill, Witnesham	Events Venue and Golf Course
SA38	Witnesham Road, Witnesham	Residential Properties
SA39	Sandy Lane, Witnesham	Residential Properties
SA40	Henley Road, Henley	Residential Property
SA41	Henley Road, Henley	Residential Properties
SA42	Old Ipswich Road, Claydon	Commercial Properties
SA43	Old Ipswich Road, Claydon	Residential Properties
SA44	Paper Mill Lane, Claydon	Residential Properties and Hotel
SA45	Bramford Road, Claydon	Residential Properties
SA46	Bramford Road, Claydon	Residential Properties
SA47	Somersham Road	Residential and Commercial Properties
SA48	Farm Track/No Road, Bramford	Millers Wood AW
SA49	Bullenhall Farm, Bullen Lane, Bramford	Residential Properties

- The visual inspections will check for the presence of deposited dust on surrounding surfaces (cars and vegetation) within 100m of the site and at sensitive areas subject to landowner approval, if site inspections indicate off-site deposition is a possibility. If dust is noticed, or there is deemed to be a 'dust episode' then this will be recorded and the information made available to MSDC/ESC on request. The source(s) of emissions will be investigated to determine if any site activity is responsible, with remedial action taken and documented. The dust record should include:
 - Time and date;
 - Confirmation of any visible dust sources;
 - Remedial actions taken if on-site emissions observed; and
 - Wind direction and strength.
- The frequency of visual inspections will be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions particularly when in close proximity to receptors. The weather forecasts will be checked in advance to determine the potential for high-risk dust events (e.g. dry weather and strong winds towards sensitive receptors). Forecasts will be used as a trigger for preventive dust management action to be taken. In some cases there may be an opportunity to modify (or delay) potentially dusty site activities until the risk has reduced.

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9.2. Site and Equipment Audits

- Application of the controls detailed in Section 8 will be monitored regularly by the Principal Contractor, Site Manager and Environmental Clerk of Works (EnvCoW) throughout the construction phase, as set out in the Project Environmental Management Plan (Appendix 10 of the CoCP) and Contractors' Construction Environmental Management Plans. If non-conformity with any of the control and mitigation measures is identified, it will be recorded and appropriate remedial actions will be implemented.
- 105. Any incidents that cause dust and/or air quality emissions and the respective remedial actions shall be recorded.
- Site inspections should verify if vehicle traffic and/or NRMM emissions are consistently black. This is a signal that an engine is not operating optimally and should be turned off until rectified.

10. RESPONSIBILITIES

10.1. Implementation

The responsibility for ensuring this AQMP is adhered to lies with the Principal Contractor, Site Manager and EnvCoW. They will be assisted by the Contractor's Site Manager. There shall be a competent person on site during working hours responsible for the dust management measures. Responsibilities will be allocated to specific personnel to ensure dust generation is effectively controlled.

10.2. Roles and Responsibilities

- The persons nominated to be responsible for tasks as defined in this AQMP are outlined below:
 - EnvCoW:
 - · Responsible for the implementation of this plan and preparing reports to the client and the stakeholders as required;
 - Responding to complaints in consultation with the Site Manger and informing the relevant stakeholders where necessary
 of the complaint, the source of the complaint and any action which was taken;
 - Ensures any complaints are responded to promptly by the Contractor's Site Manager; and
 - The EnvCoW will normally be a person located centrally within the developer's management structure. Alternatively, a
 member of the site team could be designated EnvCoW for the site, they should however be a different person to the
 Contractor's Site Manager.
 - Site Manager:
 - Ensure mitigation measures are in place and that the AQMP is being followed. This should be undertaken in consultation with the EnvCoW; and
 - Responding to complaints, assisting with the investigation as to the causes of complaints, and ensuring appropriate
 mitigation measures are being used or employ further measures if required in consultation with the EnvCoW and MSDC
 and/or ESC.

10.3. Training

- All employees, contractors and staff working on site will undergo site induction training, which will include environmental awareness training, including an understanding of air quality management issues. Individually focussed toolbox talks will also be required to be delivered by those contractors involved in the activities most likely to impact on the air quality.
- 110. The training will provide specific instructions about:
 - Requirement for dust suppression at all times;
 - How to avoid and suppress dust across the worksite;
 - Available dust suppression options;
 - Work methods to prevent dust generation, such as maintaining site speed limits;
 - Covering trucks loads;
 - Cleanliness of vehicles, prior to exiting site;
 - Road cleanliness, with regard to vehicles leaving the site onto public roads;
 - Sensitive areas / receptors;
 - Potential for condition changes and response strategies in windy conditions; and
 - The importance of equipment maintenance.

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Plant and equipment operators will be trained and experienced in the plant that they operate. Certification will be held on-site and available for inspection.

The importance of working to the requirements of the AQMP will be communicated at staff inductions and during daily activity briefings when activities that may create dust are to be undertaken.

11. COMMUNICATION

- The following measures are mandatory and relate specifically to communication and are the responsibility of the Contractor's Site Manager and Principal Contractor.
 - Display and name the contact details of the Community Liaison Officer (CLO) on the construction site boundary. The location of these signs will be on fencing adjacent to the dust sensitive receptors; and
 - Display the head or regional office contact information.

11.1. Community Liaison

EATL is committed to providing clear communication to local residents and will manage public relations with local residents and businesses that may be affected by construction dust. Proactive community liaison will be maintained, keeping local residents informed of the type and timing of works involved, paying particular attention to potential evening and night time works and activities which may occur in close proximity to receptors. As outlined in the Project Community and Public Relations Procedure (Appendix 8 of the CoCP), a combination of communication mechanisms such as posters, notices, exhibitions, letters, newsletters, website updates and parish council meetings will be employed to keep local residents and businesses informed.

11.2. Complaints Procedure

- In order that dust complaints can be substantiated, it is imperative that EATL is immediately informed either by the complainant themselves or MSDC and/or ESC. An EA THREE Complaints Procedure will be published on the project website. This will set out how complaints will be managed and will state that all enquiries will be logged, investigated and any rectifying action taken when deemed appropriate. The CLO's telephone number shall be clearly displayed at the site entrance and local residents should be encouraged to contact the CLO and/or MSDC and/or ESC in the event of dust soiling. In the event of an emergency outside of normal office hours, the CLO's telephone number will be directed through to an on-duty member of the construction team for resolution.
- The Principal Contractor's Site Manager and the EnvCoW will record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. All complaints regarding air quality and dust will be shared with MSDC and ESC and within 48 hours, including a note of the actions taken and the measures put in place to rectify any problem.

12. UPDATING THE AQMP

- This AQMP is a 'live' document and as such it will be reviewed periodically; following any on-site incidents, changes in site operations or if elevated dust levels occur over a prolonged period requiring the AQMP to be updated. This will ensure that the AQMP will be updated with the release of new information.
- 118. Any updates will be agreed between EATL, Principal Contractor, Subcontractor/s, MSDC and ESC.

13. REFERENCES

Defra: Local Air Quality Management Technical Guidance (LAQM.TG(22)) (2022).

Environment Agency: Monitoring Particulate Matter in Ambient Air around Waste Facilities, (2013).

EPUK and IAQM: Land Use Planning & Development Control: Planning for Air Quality, (2017).

IAQM: Guidance on the Assessment of Dust from Demolition and Construction, v1.1 (2016).

IAQM: Guidance on Monitoring in the Vicinity of Demolition and Construction Sites, v1.1 (2018).

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APPENDIX A MONITORING CONTROL PROCEDURE













































































