AQUIND Limited

PEIR CHAPTER 22

Air Quality

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22 AIR QUALITY

22.1 SCOPE OF THE ASSESSMENT

22.1.1 INTRODUCTION

22.1.1.1 This chapter provides the preliminary information regarding environmental effects on air quality in connection with the construction of the AQUIND interconnector, herein referred to as the 'Proposed Development'.

22.1.1.2 The air quality assessment considers qualitatively the potential impacts associated with the following activities for construction of the Converter Station, Onshore Cable Corridor and Landfall:

- Potential impact on human and ecological receptors from dust and particulate matter generated during the site preparation and construction stage;
- Potential impact on human and ecological receptors due to changes in local pollutant concentrations (nitrogen dioxide ('NO_2') and particulate matter) due to exhaust emissions from construction vehicles and plant; and
- Potential impact on human and ecological receptors due to changes in local pollutant concentrations (NO_2 and particulate matter) due to exhaust emissions from road vehicles delayed due to construction works and road closures.

22.1.1.3 At the scoping stage a number of effects were 'scoped out' of the assessment of impacts on air quality. Vessel exhaust emissions during marine cable installation will be distant from sensitive receptors and are not anticipated to result in significant effects. As such, an air quality assessment for the Proposed Development within the UK marine area is not considered to be necessary and is scoped out of the ES.

22.1.1.4 The proposed Converter Station and Onshore Cable Route will not generate any emissions to air when operational other than occasional vehicle trips (e.g. for routine maintenance). The number of trips generated is not expected to be above the indicative threshold presented in Environmental Protection UK ('EPUK')/Institute of Air Quality Management ('IAQM') Guidance ('Air Quality Planning Guidance') (EPUK and IAQM, 2017). An assessment of potential impacts on local air quality from operational traffic emissions has therefore been scoped out of the assessment.

22.1.1.5 A detailed, quantitative assessment of potential impacts to local air quality from construction traffic exhaust gas emissions has also been scoped out as the additional traffic generated is not expected to be above the indicative threshold presented in the Air Quality Planning Guidance document. Provided the estimated number of additional traffic movements generated remains below the indicative thresholds, a qualitative assessment based on professional judgement is to be undertaken only.

22.1.1.1 FOC infrastructure is anticipated to be located adjacent to the Converter Station (up to two Telecommunications buildings) and within approximately 1 km of Landfall (up to two Optical Regenerations Stations), and other associated equipment for auxiliary power supply, and security fencing, as described in Chapter 3. However, as the locations are not yet confirmed, the assessment of these elements of the Proposed Development will be considered in the ES when further details are available.

22.1.2 STUDY AREA

22.1.2.1 The IAQM published Guidance on the Assessment of Dust from Demolition and Construction in 2016 ('Air Quality Construction Guidance') (IAQM, 2016), which provides criteria for screening the need for detailed assessment. A detailed assessment is required if the following criteria are met:

- 'Human receptors' within 350 m of the Site Boundary, or within 50 m of the routes used by construction vehicles on the public highway, up to 500 m from the site entrances; and
- 'Ecological receptors' within 50 m of the Site Boundary or within 50 m of the routes used by construction vehicles on the public highway and up to 500 m from the site entrances.

22.1.2.2 The extent of the study area has, therefore, been determined by these criteria because receptors have been identified which fall within these boundaries for the Converter Station, Onshore Cable Route and Landfall.

22.2 LEGISLATION, POLICY AND GUIDANCE

22.2.1.1 This assessment has taken into account the current legislation, policy and guidance relevant to air quality at a European and national level.

22.2.2 LEGISLATION

- The air quality objectives required to be achieved in England are set out with the Air Quality (England) Regulations 2000 (as amended) ("AQR 2000"). These Regulations require pollutants in the air to be restricted to target levels within a specified timeframe ('objectives'). The objectives are shown in Appendix 22.1. The achievement or likely achievement of those air quality objectives is to be determined by reference to:

"…the quality of air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground; and where members of the public are regularly present"[1].

- The Air Quality Standards Regulations 2010 (as amended) ("AQS 2010") transpose the European Union Ambient Air Quality Directive (2008/50/EC) into law in England. These Regulations set out requirements of the Secretary of State in relation to the assessment of ambient air quality and duties to comply with legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health. These include PM_{10} (particulate matter with an aerodynamic diameter greater than 10µm), $PM_{2.5}$ (particulate matter with an aerodynamic diameter smaller than 2.5µm) and NO_2.
- Under Part IV of the Environment Act 1995, local authorities must review and document local air quality within their area by way of staged appraisals and respond accordingly, with the aim of meeting the air quality objectives defined in the AQR 2000. Where the objectives are not likely to be achieved, an authority is required to designate an AQMA. For each AQMA the local authority is required to draw up an Air Quality Action Plan ('AQAP') to secure improvements in air quality and show how it intends to work towards achieving air quality standards in the future.
- Portsmouth City Council's AQAP (2010) sets out measures which have been put in place to achieve cleaner ambient air for the city. The key priorities defined in the document include: reducing NO_x contributions from HDVs, reducing congestion from vehicle traffic and controlling background concentrations by reducing unnecessary discharges from domestic and industrial premises.

22.2.3 PLANNING POLICY

National Policy

National Policy Statement

- The NPS for Energy EN1 (Department of Energy and Climate Change, 2011) sets out national policy for energy infrastructure for which environmental impacts, such as those relating to air quality, can arise. Paragraph 5.2.6 of the NPS states for an Applicants Assessment:

[1] Regulation 4(2) of the Air Quality Regulations 2000.

"Where the project is likely to have adverse effects on air quality the applicant should undertake an assessment of the impacts of the proposed project as part of the Environmental Statement ('ES')."

- Paragraph 5.2.7 of the NPS summarises what the ES should describe:
  - any significant air emissions, their mitigation and any residual effects distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;
  - the predicted absolute emission levels of the proposed project, after mitigation methods have been applied;
  - existing air quality levels and the relative change in air quality from existing levels; and
  - any potential eutrophication impacts.
- Paragraph 5.2.8 states in IPC decision-making that many activities involving air emissions are subject to pollution control. Also, relevant to decision making are:
- Paragraph 5.2.9:

  "*The IPC should generally give air quality considerations substantial weight where a project would lead to a deterioration in air quality in an area, or leads to a new area where air quality breaches any national air quality limits. However, air quality considerations will also be important where substantial changes in air quality levels are expected, even if this does not lead to any breaches of national air quality limits."*

- Paragraph 5.2.10:

  "*In all cases the IPC must take account of any relevant statutory air quality limits. Where a project is likely to lead to a breach of such limits the developers should work with the relevant authorities to secure appropriate mitigation measures to allow the proposal to proceed. In the event that a project will lead to non-compliance with a statutory limit the IPC should refuse consent."*

- To mitigate air emissions, paragraph 5.2.11 states:

  "The IPC should consider whether mitigation measures are needed both for operational and construction emissions over and above any which may form part of the project application. A construction management plan may help codify mitigation at this stage."

- Paragraph 5.2.12 states that in doing so the IPC may refer to the conditions and advice in the AQS or any successor; and
- Paragraph 5.2.13 states that the mitigations identified in EN-1 on traffic and transport impacts will help mitigate the effects of air emissions from transport.

National Planning Policy Framework

- The Government's overall planning policies for England are described in the NPPF (Ministry of Housing, Communities and Local Government, 2018). The NPPF does not contain specific policies for NSIPs, which are determined in accordance with the Planning Act 2008 and relevant national policy statements for major infrastructure as well as matters that are relevant. In this context, the NPPF may contain information which is relevant to the determination of an NSIP.
- In relation to air quality, the following NPPF paragraphs are most relevant to the consideration of air quality and the Proposed Development:
  - Paragraph 170, which describes how planning policies and decisions should contribute to and enhance the natural and local environment;
  - Paragraph 180 concerning the likely effects of new development and the site sensitivity; and
  - Paragraph 181 which states that planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants.

Local Policy

Portsmouth City Council

- The Portsmouth Plan (Portsmouth's Core Strategy) (2012) and the community strategy is to encourage and enable healthy choices for all and provide appropriate access to health care and support.
- PCS14 of Portsmouth's Core Strategy provides that Portsmouth City Council will work to create a healthy city and improve the health and well-being of its residents.

Havant Borough Council

- DM10 (Pollution) of The Havant Borough Core Strategy (2011) states development that may cause pollution of water, air will only be permitted where relevant criteria can be met. One such criterion is that national air quality standards or objectives would not be breached.
- DM12 (Mitigating the Impacts of Travel) states new developments will be required to mitigate their travel impact including the environmental impacts of travel such as air, amenity, health and climate change.

Winchester City Council

- Core Policy 9 (High Quality Environment) of the Winchester City Council and South Downs National Park Authority Adopted Plan: Joint Strategy (2013) – the Habitats Regulation Assessment and Sustainability Appraisal advises that a

strategic approach to air quality management is required. The location of air quality monitoring sites and the setting of thresholds to trigger further investigation should be determined through lower level assessments and, where appropriate, be applied as a condition on planning permissions.

East Hampshire District Council

- The East Hampshire District Council and South Downs National Park Authority Adopted Plan: Joint Core Strategy (2014) states the following:
  - A Spatial Vision and Objective of the plan is to prevent development resulting in unacceptable levels of air, noise, land, light or other pollution and to ensure that new development is adequately protected against such pollution.
  - Core Policy 27 (Pollution) states that any development which is likely to lead to a significant effect on an internationally designated site is required to undertake an appropriate assessment under the Habitats Regulations.
- The Local Plan: Joint Core Strategy transport policies seek to reduce the use of the private car and encourage other initiatives to minimise the impact of air pollution. They identify the need to demonstrate that alternatives to the car are encouraged in new developments.

22.2.4 GUIDANCE

22.2.4.1 A summary of the publications referred to in the undertaking of this assessment is provided below.

- Defra has published their Local Air Quality Management Review and Assessment Technical Guidance for use by local authorities in their review and assessment work (Defra, 2016). This guidance, referred to in this document as LAQM.TG16, has been used where appropriate in the assessment presented herein. LAQM.TG16 also provides directions for implementing Defra's background mapping data.
- EPUK and the IAQM have published the Land-Use Planning and Development Control: Planning for Air Quality guidance that offers comprehensive advice on: when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures that may be implemented to minimise these impacts (EPUK and IAQM, 2017).
- The Air Quality Planning Guidance, which was produced to provide guidance to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance,

PM_{10} impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.

- The National Planning Practice Guidance for Air Quality will be updated to reflect changes to the NPPF (Ministry of Housing, Communities and Local Government, 2014). However, the current guidance provides a number of guiding principles on how the planning process can take into account the impact of new development on air quality. It explains how much detail air quality assessments need to include for proposed developments and how impacts on air quality can be mitigated. It also provides information on how air quality is taken into account by Local Authorities in both the wider planning context of Local Plans and neighbourhood planning, and in individual cases where air quality is a consideration in a planning decision.
- The IAQM published Guidance on the Assessment of Dust from Demolition and Construction in 2016 (Air Quality Construction Guidance) which provides guidance on how to undertake a construction impact assessment (including demolition and earthworks as appropriate).

22.3 SCOPING OPINION AND CONSULTATION

22.3.1 SCOPING OPINION

22.3.1.1 As detailed within Chapter 1 Introduction, a Scoping Opinion was received by the Applicant from the Local Planning Authorities (LPAs) prior to the Proposed Development being deemed to require a DCO. That response from the LPAs in relation to Air Quality, and how those requirements should be addressed by the Applicant, are set out in Appendix 22.4 and this PEIR Chapter and the forthcoming EIA will have regard to the LPA response. Additionally, Table 22.1 shows a summary of air quality comments from the DCO Scoping Opinion received latterly and which the EIA assessments will be undertaken in accordance with.

22.3.1.2 Appendix 5.3 provides a complete set of responses in the PEIR to the contents of the Scoping Opinion.

Table 22.1 – PINS Scoping Opinion Response (DCO)

Scoping Opinion Ref	Summary of Comment Received	How this has been addressed by the Applicant
Paragraph 25.3.1 Table C1 of Appendix C	On the basis of the information in the Scoping Report, the Inspectorate agrees that operational traffic emissions from the Proposed Development can be scoped out of the ES.	No further action required.
Paragraph 25.3.2	The Inspectorate notes that the Applicant intends to undertake qualitative assessments of effects during construction but that a quantitative assessment of potential impacts to local air quality from construction exhaust gas emissions is not proposed on the basis that the additional traffic generated in not expected to be above the indicative threshold presented in Environmental Protection UK and Institute for Air Quality (EPUK/IAQM) guidance documents either inside or outside the Air Quality Management Area (AQMA). On the basis of the numbers of additional traffic generated not exceeding the indicative threshold presented in EPUK/IAQM guidance documents either inside or outside the Air Quality Management Area (AQMA) the Inspectorate agrees that this assessment can be scoped out. However, if during the EIA process that construction numbers are determined likely to give rise to a significant effect then a quantitative assessment should be undertaken.	Traffic modelling will be kept under review and qualitative assessment to be actioned in the ES if required

22.3.2 CONSULTATION

22.3.2.1 Consultation is a key part of the DCO application process. Further consultation will continue to be undertaken once the PEIR is made available to support the assessment for the ES.

22.4 METHODS OF ASSESSMENT

22.4.1 POLLUTANTS

22.4.1.1 Dust comprises particles typically in the size range 1-75 µm in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials. These larger dust particles (larger than 10 µm in aerodynamic diameter) fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Larger dust particles, therefore, are unlikely to cause long-term or widespread changes to local air quality; however, its deposition on property and cars can cause 'soiling' and discolouration.

22.4.1.2 The smaller particles of dust (PM_{10}) represent only a small proportion of total dust released; this includes a finer particle fraction, known as $PM_{2.5}$. As $PM_{2.5}$ is at the smaller end of the size range of dust particles, they remain suspended in the atmosphere for a longer period of time than PM_{10} particles, and can therefore be transported by wind over a wider area. PM_{10} and $PM_{2.5}$ are small enough to be drawn into the lungs during breathing which can adversely impact health. However, it is worth noting that, according to the Air Quality Construction Guidance, $PM_{2.5}$ is less likely to majorly affect human health as the majority of fugitive particulate emissions arising from construction sites are expected to relate to the coarser fractions (i.e. $PM_{2.5-10}$) with just 10-15% expected to comprise $PM_{2.5}$. The above guidance therefore focusses on PM_{10} for the purposes of assessment.

22.4.1.3 Air pollution in urban areas is dominated by emissions from road vehicles. The main pollutants posing a risk to human and ecological receptor health are NO_x, PM_{10} and $PM_{2.5}$ in road traffic exhaust gas releases. These pollutants are most likely to approach their respective air quality objective thresholds in proximity to major roads and in congested urbanised areas.

22.4.1.4 NO_2, PM_{10} and $PM_{2.5}$ have been identified in LAQM.TG16 as the pollutants of main concern for the UK. As such, the concentrations of these pollutants associated with the Proposed Development provide the focus of this assessment.

22.4.2 APPROACH

22.4.2.1 An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and PM_{10} during the Construction Stage has been undertaken using the Air Quality Construction Guidance.

Construction Site Emissions

22.4.2.2 The Air Quality Construction Guidance methodology assesses the risk of potential dust and PM_{10} impacts from demolition; earthworks; general construction activities and trackout (the transport of dust from the construction site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network).

22.4.2.3 To assign a level of risk, it takes into account the nature and magnitude of the activities undertaken for each source and the sensitivity of the area to an increase in dust and PM_{10} levels. Risks are described in terms of there being a low, medium or high risk of dust impacts for each activity. Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined.

22.4.2.4 Appendix 22.2 provides the relevant tables used to complete the assessment as follows:

- Defining the potential dust emission magnitude (Step 2A) – Appendix 22.2 Table 1;
- Defining the sensitivity of the project area (Step 2B) – Appendix 22.2 Table 2 (dust soiling), Table 3 (human health) and Table 4 (ecological impacts); and
- Assessing the risk of impacts (Step C) - Appendix 22.2 Table 5.

22.4.2.5 The sensitivity of the project area to human health impacts is dependent on background concentrations of fine particulate matter (PM_{10}) as described ion Appendix 22.2 Table 3. For example, where PM_{10} concentrations are <24 µg/m^3, the sensitivity of the area to human health impacts will always be Low unless there are more 100 high sensitivity receptors within 20 m of the Site, in which case the sensitivity is classed as Medium. These concentrations are represented by Defra 1 km^2 mapped background concentrations (Defra, 2018) which are reported in the Baseline Environment section for each construction site.

On-road Construction Vehicles and Plant

22.4.2.6 In addition to impacts on local air quality due to on-site construction activities, exhaust emissions from on-road and off-road construction vehicles and plant may impact local air quality adjacent to the routes used by vehicles accessing the Proposed Development and in the vicinity of the Site. A semi-quantitative assessment of their impact on local air quality has been undertaken using the Air Quality Planning Guidance indicative criteria for requiring an air quality assessment Appendix 22.3, professional judgement and by considering the following:

- The number and type of construction traffic and plant likely to be generated by this phase of the Proposed Development;

- The number and proximity of sensitive receptors to the Site and along the likely routes to be used by construction vehicles; and
- The likely duration of the Construction Stage and the nature of the construction activities to be undertaken.

22.4.3 RECEPTORS

22.4.3.1 An IAQM dust assessment is undertaken following the screening criteria described in Section 22.2.1. It is within these distances that the impacts of dust soiling and increased particulate matter in ambient air will have the greatest impact on local air quality at sensitive receptors.

22.4.3.2 The Air Quality Construction Guidance defines an 'human receptor' as any location where a person or property may experience the adverse effects of airborne dust, dust soiling, or exposure to PM_{10} over a time period relative to the air quality objectives as defined in the Government's technical guidance for Local Air Quality Management (Defra, 2016).

22.4.3.3 The Air Quality Construction Guidance defines an 'ecological receptor' as sites with a statutory designation such as SAC or SSSI. Non-statutory sites may be considered if they are considered to be particularly sensitive to dust deposition.

22.4.3.4 The number of receptors within bands of <20 m, <50 m, <100 m and <350 m have been estimated from detailed mapping and Ordnance Survey's ('OS') Address Layer 2 data (OS, 2019) to determine the sensitivity of the Converter Station and Landfall construction sites in accordance with the Air Quality Construction Guidance. This exercise has not been completed for the Onshore Cable Route because some sections of the route remain to be finalised. A generic, conservative approach has therefore been applied to receptor counts from the Onshore Cable Route in this assessment.

22.4.3.5 For trackout, the Air Quality Construction Guidance requires receptor counts to be made at 50 m from the edge of construction routes for 500 m from large sites, 200 m from medium sized sites and 50 m from small sites as measured from the site exit. These have been estimated using aerial photography.

22.4.4 SIGNIFICANCE CRITERIA

22.4.4.1 The IAQM assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity with appropriate mitigation measures in place. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.

22.4.4.2 For the assessment of the impact of exhaust emissions from plant used on-site and construction vehicles on local concentrations of NO_2 and particulate matter, the significance of residual effects is determined using professional judgement and the principles outlined in Section 7 of the Air Quality Planning Guidance.

22.4.5 ASSUMPTIONS AND LIMITATIONS

22.4.5.1 This chapter of the PEIR provides preliminary information as it relates to the Proposed Development to date and to data currently available and gathered at this point of the assessment process.

22.4.5.2 The information contained herein is intended to inform consultation responses at this stage. A more detailed assessment of potential significant impacts as a result of the Proposed Development on identified sensitive receptors will be undertaken at subsequent stages to inform the ES.

22.4.5.3 Any gaps in information identified at this PEIR stage will be considered and addressed along with specific mitigation measures as part of the assessments for the production of the ES. For example, the sensitivity of the Onshore Cable Route to dust soiling, human health and ecological impacts has not been determined because some sections of the route remain to be finalised. A generic approach has therefore been applied to emissions from the Onshore Cable Route in this assessment assuming a fixed number of receptors along the entire Onshore Cable Route.

22.4.5.4 The extent of decommissioning is not yet fully known. It is assumed that if equipment and cables are not left in situ when decommissioned, then impacts from decommissioning would be similar to those during construction.

22.4.5.5 Information regarding the traffic related to the Construction Stage of the Proposed Development was limited at the time of writing. Therefore, assumptions have been made regarding the number of HDV movements during this Stage. These assumptions have been made using professional judgement and experience of developments of a similar size in conjunction with the project Traffic and Transport consultant. The assumptions underpinning these estimates can be found in Chapter 21 Traffic and Transport. Further assessment will be undertaken regarding traffic routing and sensitive receptors, particularly for the Onshore Cable Route, in the ES.

22.4.5.6 Some sections of the Onshore Cable Route remain under consideration therefore, a generic and conservative approach has been applied to receptor counts until all route options are finalised. It is assumed for the purpose of the preliminary assessment that receptor counts corresponding to urban Portsmouth are applicable to the entire Onshore Cable Route.

22.5 BASELINE ENVIRONMENT

22.5.1 WIND SPEED AND DIRECTION

22.5.1.1 To describe wind speed and direction in the whole study area, a wind rose was generated using meteorological data for the observation station at Thorney Island (Appendix 22.4). The observation station is approximately 10 km to south-east and is considered broadly representative of the entire Site. The wind rose shows that the wind blows from four quadrants as follows: south-westerly 75%, north-westerly 10%, north-easterly 10% and the south-easterly quadrant for 5% of all hours. The wind is at its strongest when blowing from the south-westerly quadrant and so it has the highest range of dust transport.

22.5.2 SECTION 1 – LOVEDEAN (CONVERTER STATION AREA)

Site Context

22.5.2.1 The Converter Station is proposed to be within approximately 400 m of the Lovedean National Grid substation, Hampshire. WCC is the local authority responsible for the review and assessment of Air Quality in the area where the anticipated site of the Converter Station is located, and EHDC is the local authority responsible for the review and assessment of Air Quality in the area where the anticipated new access road would join the local highway network.

22.5.2.2 The Converter Station construction site includes the Converter Station Area. The area of the Converter Station construction site within the Converter Station Area will vary during different stages of construction. The construction site area will be larger than the Converter Station footprint of 400 m^2 but within the Converter Station Area depicted in Chapter 3 Figure 3.10. Therefore, it is assumed conservatively that the construction site area will be in the range 2,500 m^2 to 10,000 m^2 [2]. The soil type is assumed to be moderately dusty.

22.5.2.3 The construction of the proposed Converter Station would be undertaken over a period of approximately two years commencing in 2021 with the interconnector commissioned in 2023.

22.5.2.4 The road closest to the Converter Station Area (to be used for access to/from the Site) is Broadway Lane, to the east of the indicative Converter Station Location. Exhaust gas emissions from traffic on this road are the closest source of air emissions to the Site.

[2] This range corresponds to a medium sized construction site for earthworks in accordance with the Air Quality Construction Guidance.

22.5.2.5 The proposed Converter Station will be surrounded by agricultural fields and woodland including:

- Ancient Woodland Crabdens Copse, Stoneacre Copse and Crabdens Row (3.57 ha in total) within 50 m of Lovedean substation to the north-east and south-west;
- Woodland surrounding Lovedean substation adjacent to the proposed Converter Station, which is deciduous (Priority Habitat Inventory) and broadleaved (National Forest Inventory);
- SDNP 0.4 km north; and
- Yeoll's Copse LNR approximately 1.5 km to the east.

22.5.2.6 The surrounding Priority Habitat Inventory and National Forest Inventory woodland sites (Crabdens Row and Crabdens Copse) consist of broadleaf oak and ash species (WSP, 2017). Photosynthesis is not highly likely to be impacted by light and intermittent dust deposition from the Converter Station. Therefore, as the surrounding woodland is not considered to be sensitive to dust deposition over the two-year construction period, ecological receptors are scoped out of the assessment of the impacts in connection with the Converter Station.

Receptors

22.5.2.7 There are 'high' sensitivity human receptors within 350 m of the Site Boundary and 50 m of the construction traffic route which are residential properties. These counts are shown in Table 22.2.

Table 22.2 – Converter station receptor counts

Band	Count
0 – 20 m	0
0 – 50 m	0
0 – 100 m	0
0 – 200 m	8
0 – 350 m	8

22.5.2.8 There are approximately eight residential properties within approximately 200 m of the Converter Station to the south and east on Broadway Lane. On Old Mill Lane, Mill View Farm is approximately 230 m to the west. There are residential properties 150 m to the north. There are no sensitive receptors within 100 m of the site where the risk of exposure would be at its highest. The closest village is Lovedean, approximately 1.3 km to the south-east of the indicative Converter Station location.

Construction Traffic

22.5.2.9 The construction route traverses the Catherington Downs SSSI along Lovedean Lane.

22.5.2.10 It is anticipated that all construction traffic movements will travel to and from the site from the A3(M) via the following route:

- B2149 Dell Piece West between Junction 2, A3 (M) and A3 Portsmouth Road;
- A3 Portsmouth Road between the junction with B2149 Dell Piece West/Catherington Lane and the junction with Lovedean Lane;
- Lovedean Lane between the junction with A3 Portsmouth Road and the junction with Day Lane;
- Day Lane; and
- Broadway Lane between the junction with Day Lane and Lovedean substation.

22.5.2.11 Peak in construction is anticipated to occur in 2022 and it is anticipated there will be the following construction traffic movements to/from the Converter Station Area:

- 45 HDV two-way construction traffic movements per day (90 in total);
- 55 non-HDV two-way construction traffic movements per day (110 in total); and
- 150 staff working on-site at the Converter Station.

22.5.2.12 Chapter 21 Traffic and Transport shows baseline traffic flows on these roads which are summarised in Table 22.3.

Table 22.3 – Traffic Flows (Converter Station)

Road	AADT	%HDV
B2149	20,523	6.8
A3 Portsmouth Road	16,067	6.6
Lovedean Lane – between Day Lane and A3 Portsmouth Road	6,994	6.7
Lovedean Lane, Downhouse Road and South Lane – between Day Lane and Chalton Lane	4,216	6.7
Broadway Lane	1,875	7.9

Existing Air Quality

22.5.2.13 EHDC does not monitor PM_{10} within the district. Table 22.4 summarises the 2021, 2022 and 2023 background annual mean PM_{10} concentrations taken from the Defra maps (Defra, 2018) for the grid squares surrounding the indicative Converter Station location. All the annual mean background concentrations are well below the annual average objective of 40 µg/m^3 provided by the relevant legislation.

Table 22.4 - Defra Background Annual Mean PM_{10} Concentrations (µg/m^3) (Converter Station)

1 km^2 grid square centre		PM_{10} (µg/m^3)		
X	Y	2021	2022	2023
466500	111500	13.3	13.3	13.2
466500	112500	13.1	13.1	13.0
466500	113500	12.8	12.8	12.8
467500	111500	13.5	13.4	13.4
467500	112500	13.5	13.5	13.4
467500	113500	12.9	12.9	12.8
468500	111500	13.4	13.4	13.3
468500	112500	12.8	12.7	12.7
468500	113500	12.7	12.7	12.6
Annual Mean Objective		**40.0**		

22.5.2.14 There are no AQMAs adjacent to the Converter Station or along the Onshore Cable Corridor.

22.5.3 SECTIONS 2 – 9 - ONSHORE CABLE CORRIDOR

Site Context

22.5.3.1 The proposed Onshore Cable Route for the DC and fibre optic cables will run within the Onshore Cable Corridor from the proposed Landfall site in Eastney (near Portsmouth) to the Converter Station along a route of approximately 20 km in length. From the Eastney Landfall, the cables will either follow the A288 or utilise residential roads/green space to the east of the A288, join the A2030, cross from Portsea Island to the mainland (utilising HDD), then follow the B2177, A3, B2150 and local country roads/fields before terminating at the proposed Converter Station.

22.5.3.2 The Onshore Cable Corridor is currently broken down into ten different sections and associated sub-sections which are route options which remain under consideration at this stage of the development.

22.5.3.3 EHDC, HBC, WCC and PCC are the local authorities responsible for the review and assessment of Air Quality along the Onshore Cable Route.

Receptors

22.5.3.4 The Onshore Cable Route construction site will be transient in nature and its extent will change on a daily basis corresponding to the rate of progress of the cable installation.

22.5.3.5 The cable installation will be sequential in 100 m sections, some 'high' sensitivity residential receptors will be exposed for short periods. As the installation construction site migrates, it is possible that more than 100 residential receptors could lie within 20 m of the construction site[3] particularly on the fringe of the outskirts of Portsmouth such as Eastney, Milton, Farlington, Widley, Purbrook and Waterlooville. Receptor counts will be lower on other sections of the route. Therefore, as a conservative approach these receptor numbers are assumed for the whole route in this preliminary assessment.

22.5.3.6 The Onshore Cable Route crosses and, for a short section in the Portsmouth area runs adjacent to, Langstone Harbour which is designated as a Ramsar Site, SSSI, SAC and SPA. Other ecologically sensitive areas include Ancient Woodland in close proximity to the DC cable termination points at the Converter Station.

Construction Traffic

22.5.3.7 It is anticipated that the Onshore Cable Route construction will generate the following construction traffic movements:

- 4 two-way HDV movements (8 in total) per day outside of peak hours of 08:00-09:00 and 17:00-18:00;
- 2 two-way LGV movements carrying personnel/equipment to site (4 in total) per day; and
- There will be 6-8 construction workers per gang, who will travel to site via the LGVs listed above from the nearest site compound. It is proposed that there will be a site compound located at the Converter Station near Lovedean and one at the car park south of Fort Cumberland Road at Landfall. It is anticipated

[3] This corresponds to the criteria used to define sensitivity in Tables 2 and 3 of Appendix 22.2.

that there may also be another site compound at an appropriate location elsewhere along the Onshore Cable Corridor, although the location of this compound has yet to be confirmed.

22.5.3.8 The Onshore Cable Corridor and associated construction vehicles will enter the Portsmouth no. 9 AQMA on Milton Road (A288), Velder Avenue (A2030) and Eastern Road (A2030), declared because of exceedances of the NO_2 annual mean objective. Traffic flows on these roads are shown in Table 22.5.

Table 22.5 – Traffic Flows (Onshore Cable Route (Portsmouth no.9 AQMA)

Road	AADT	%HDV
A288 Milton Road – between A2030 Velder Avenue and Bransbury Road	19,810	--
A2030 Velder Avenue – between A2030 Eastern Road and A288 Milton Road	26,722	--
A2030 Eastern Road – between Tangier Road and A2030 Velder Avenue	27,183	--

--not available

22.5.3.9 The proposed 400kV AC Onshore Cable Route will pass through agricultural land to connect the Converter Station to the existing National Grid Lovedean substation.

Existing Air Quality

22.5.3.10 As a conservative approach it is assumed that background concentrations at all locations within the Onshore Cable Corridor correspond to the location of the Portsmouth No.9 AQMA in an urban setting. Background PM_{10} will be higher in this location than the majority of the Onshore Cable Corridor. Table 22.6 summarises the 2021, 2022 and 2023 maximum background annual mean PM_{10} concentrations taken from the Defra maps within the Portsmouth No.9 AQMA and Table 22.7 the neighbouring council areas. All the maximum annual mean background concentrations are well below the relevant annual average objectives of 40 µg/m^3.

Table 22.6 - Defra Background Maximum Annual Mean PM_{10} Concentrations (µg/m^3) (Onshore Cable Route)

1 km^2 grid square centre		PM_{10} (µg/m^3)		
X	Y	2021	2022	2023
466500	99500	19.7	19.7	19.7
466500	100500	18.7	18.7	18.7

1 km² grid square centre		PM10 (µg/m³)		
467500	101500	14.3	14.2	14.2
Annual Mean Objective		**40.0**		

Table 22.7 - Defra Background Maximum Annual Mean PM_{10} Concentrations (µg/m³) (Onshore Cable Route)

Local Authority	X	Y	2021	2022	2023
East Hampshire District Council	473500	123500	16.14	16.09	16.04
Winchester City Council	453500	108500	16.53	16.51	16.49
Havant Brough Council	470500	107500	19.14	19.10	19.05
Portsmouth City Council	465500	101500	19.91	19.88	19.85

22.5.4 SECTION 10 – EASTNEY (LANDFALL)

Site Context

22.5.4.1 The proposed Landfall location is in the district of Eastney, to the south east of Portsmouth on Portsea Island. PCC is the local authority responsible for the review and assessment of air quality for the area in which the proposed Landfall is located.

22.5.4.2 The proposed Landfall location is contained within a triangular-shaped car park area south of Fort Cumberland Road north of Eastney Beach. Sub-surface directional drilling will be used to install cables beneath the tidal area and so no trenching is required on Eastney Beach or the nearshore area. The Landfall construction site is therefore defined as the Transition Join Bay in the car park area which will be the site of construction vehicles and plant.

22.5.4.3 The Landfall construction site area is defined by the triangular car parking area where the directional drilling duct locations end as shown Chapter 3 Figure 3.3. The area is estimated to be approximately 500 m^2.

22.5.4.4 It is anticipated that the construction of the onshore duct and cable installation will be undertaken 2021-2023 (inclusive) with Landfall installation in 2022.

22.5.4.5 The Fort Cumberland Site of Interest for Nature Conservation site is located immediately to the east of the proposed Landfall, and there is public access route, leading to Fraser Range and Eastney Beach immediately to the west of the Landfall construction site.

Receptors

22.5.4.6 There are 'high' sensitivity residential properties directly to the north of the Landfall on Fort Cumberland Road. South of the Landfall is Southsea Leisure Park caravan park, Eastney Beach. A children's play area is located to the west of the Landfall site. Banded counts for these receptors are shown in Table 22.8.

Table 22.8 – Landfall receptor counts

Band	Count
0 – 20 m	1
0 – 50 m	11
0 – 100 m	57
0 – 200 m	265
0 – 350 m	523

22.5.4.7 Langstone Harbour is approximately 1 km north east of the Landfall location and is designated as a Ramsar Site, SSSI, SAC and a SPA.

Construction Traffic

22.5.4.8 It is anticipated that construction vehicles will access the Landfall construction site via Henderson Road and Fort Cumberland Road. Available traffic flows on these roads are shown in Table 22.9.

Table 22.9 – Traffic Flows (Landfall)

Road	AADT	%HDV
Henderson Road-between Bransbury Road and Melville Road	8,243	7.0
Fort Cumberland Road – between Henderson Road and Fraser Range Access Road	4,707	6.6
Fraser Range Access Road	--	--

--not available

22.5.4.9 It has been assumed that given the size of the construction area there will be less than 10 HDV outward movements in any one day.

22.5.4.10 The length of unpaved road is likely to be less than 50 m.

Existing Air Quality

22.5.4.11 PCC does not monitor PM_{10} in the vicinity of the landfall. Table 22.10 summarises the 2021, 2022 and 2023 background annual mean PM_{10} concentrations taken from the Defra maps for the grid squares containing (467500,99500) and surrounding the Landfall construction site. All the annual mean background concentrations are well below the annual average objective of 40 µg/m^3.

Table 22.10 - Defra Background Annual Mean PM_{10} Concentrations (µg/m^3) (Landfall)

1 km^2 grid square centre		PM_{10} (µg/m^3)		
X	**Y**	**2021**	**2022**	**2023**
466500	98500	12.8	12.8	12.8
466500	99500	19.7	19.7	19.7
466500	100500	18.7	18.7	18.7
467500	98500	12.2	12.1	12.1
467500	99500	14.3	14.3	14.3
467500	100500	14.4	14.4	14.4
468500	98500	11.2	11.2	11.2
468500	99500	12.1	12.0	12.0
468500	100500	12.6	12.6	12.6
Annual Mean Objective		**40.0**		

22.5.4.12 There are no AQMAs adjacent to the Landfall construction site or the along the immediate construction route. However, it is possible that construction traffic could pass through the Portsmouth AQMA No.9 on Milton Road en-route to the Landfall site.

22.5.5 FUTURE BASELINE

22.5.5.1 Background air quality is expected to reduce over time as cleaner, less polluting vehicles enter the fleet. However, this is likely to be manifest over a number of years with the downward trend in NO_2 concentrations expected to be steeper than fine particles. This could influence compliance within the annual mean NO_2 objective within the AQMA. Background particulate matter concentrations are expected to reduce very slowly over time as shown in Tables 22.4, 22.6, 22.7 and 22.10.

22.5.5.2 It is likely that baseline traffic will steadily increase across the study area in line with Department for Transport future traffic projects (DfT, 2018).

22.6 PREDICTED IMPACTS

22.6.1.1 The Air Quality Construction Guidance has been used to determine the potential dust emission magnitude for the following construction activities: demolition; earthworks; construction; and trackout (Appendix 22.2).

22.6.1.2 The majority of releases are likely to occur during the 'working week' (i.e. Monday to Friday between 9am and 5pm). However, for some potential sources e.g. wind erosion from exposed surfaces, dust generation has the potential to occur outside working hours in the absence of appropriate dust control measures.

22.6.2 SECTION 1 – LOVEDEAN – (CONVERTER STATION AREA)

Dust and PM_{10} Sources

22.6.2.1 The activities and sources of dust likely to be released during construction of the proposed Converter Station relate to construction, earthworks and trackout. They are summarised in Table 22.11.

Table 22.11 - Dust and PM_{10} Sources (Converter Station)

Activity	Source	Dust	Exhaust gases
Construction	Preparation of temporary access/egress to the Site and haulage routes	ü	ü
	All buildings will typically be constructed of steel frame and cladding	ü	
	Temporary laydown areas (1-2ha total) (welfare facilities, vehicle parking, site offices, equipment storage, local power and water supplies and spoil/waste containment)	ü	
	For temporary laydown areas, all vegetation will be removed and some earthworks may be required to create a level platform covered in gravel	ü	
	A new permanent access road will be established from Broadway Lane used throughout construction and operation	ü	ü

Activity	Source	Dust	Exhaust gases
	Materials handling, storage, stockpiling, spillage and disposal	ü	
	Internal and external finishing and refurbishment	ü	
	Exhaust emissions from site plant, especially when used at the extremes of their capacity and during mechanical breakdown		ü
Earthworks	Site clearance and preparation	ü	
	Bulk earthworks to create a level platform and construction laydown area to build the Converter Station	ü	
	Surplus excavated material from the creation of the platform to be reused within the Site Boundary to build bunds	ü	
	Materials excavated on higher parts of the site would be used to fill lower levels, to minimise material movement off site	ü	
	Landscaping (bunding and associated planting) will be implemented around the perimeter of the site and other necessary/appropriate locations as identified in the Landscape and Visual Impact Assessment	ü	
	Following the commissioning of the interconnector, the ground will be restored to its original condition or enhanced to provide landscape mitigation or biodiversity improvement.	ü	ü
	Exhaust emissions from site plant, especially when used at the extremes of their capacity and during mechanical breakdown		ü
Trackout	HDV deliveries of steel frames/cladding, cement, gravel and plant		ü
	Once construction is underway there will be HDV moving large amounts of material especially during excavation and levelling	ü	ü

Dust Emission Magnitude

22.6.2.2 Table 22.12 provides a summary of the potential dust emission magnitude determined for each construction activity considered. The criteria ranges described for site area, earth moving vehicles, building volume, HDV numbers and unpaved road lengths correspond to the magnitude criteria found in the Air Quality Construction Guidance (Table 1, Appendix 22.2).

Table 22.12 - Dust Emission Magnitude (Converter Station)

Activity	Criteria	Magnitude
Earthworks	The total area of the Site is between 2,500 m^2 to 10,000 m^2 and the soil type is assumed to be moderately dusty. Significant earthworks are required during construction in 2021. The number of earth moving vehicles is assumed to be between 5 and 10 per day for a site of this magnitude during earthworks.	Medium
Construction	The total volume of buildings to be constructed on the Site is less than the IAQM threshold of 25,000 m^3. Buildings will be constructed of steel frame and cladding. Construction of the temporary laydown area of 1-2ha (1-2000 m^2) is less than the small magnitude for earthworks.	Small
Trackout	The number of HDVs accessing the site has been estimated to be 13,500 which equates to approximately 45 two-way HDV movements a day assuming 300 construction days/year. The length of unpaved roads within the construction site is likely to be between 50 and 100 m.	Medium

Site Sensitivity

22.6.2.3 Sensitive receptors located to the north-east of the construction site are more likely to be affected by dust and particulate matter emitted and re-suspended during the Construction Stage. Raised dust is less likely to be blown towards sensitive receptors to the west and south and when the wind is lighter.

22.6.2.4 Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. The areas immediately surrounding the Converter Station sites are largely agricultural, with scattered residential properties and woodland. Unlike the residential properties, the adjacent woodland is not considered to be sensitive to dust emissions which will be light and intermittent over the construction period.

22.6.2.5 In the absence of local monitoring, annual mean PM_{10} concentrations from the Defra background maps have been used in this dust assessment. These data show that annual mean PM_{10} concentrations in the vicinity of the Converter station site are expected to be less than <14 µg/m^3 (Table 22.4) during construction.

22.6.2.6 For trackout, the Converter Station construction site is classified as Medium (Table 22.12). Therefore, dust soiling and human health impacts due to tracking of material from the construction site could occur 50 m from the edge of Broadway Lane and Day Lane, approximately 200 m from the site exit. There are no receptors 200 m to the north or south on Broadway Lane, or for 200 m when accessing Day Lane via Broadway Lane as per the indicative General Arrangement Plan shown in Figure 3.10.

22.6.2.7 Considering wind direction, receptor sensitivity, background concentrations of PM_{10} and sensitive receptor counts in accordance with the IAQM assessment methodology (Table 2, Appendix 22.2), the sensitivity of the area to changes in dust and PM_{10} has been derived for each of the construction activities considered. The results are shown in Table 22.13.

Table 22.13 - Sensitivity of the Study Area (Converter Station)

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	Low	Low	Low
Human Health	Low	Low	Low

22.6.2.8 Table 22.13 shows that the study area has Low sensitivity to impacts from earthworks, construction and trackout driven by the lack of sensitive receptors in the study area.

Risk of Impacts

Construction Site Emissions

22.6.2.9 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the Construction Stage, prior to mitigation and according to the methodology outlined in Air Quality Construction Guidance (Appendix 22.2). Table 22.14 provides a summary of the risk

of dust impacts for the Converter Station. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Table 22.14 - Summary Dust Risk Table to Define Site Specific Mitigation (Converter Station)

Potential Impact	Risk		
	Earthworks	Construction	Trackout
Dust Soiling	Low Risk	Low Risk	Low Risk
Human Health	Low Risk	Low Risk	Low Risk

22.6.2.10 Table 22.14 shows that the Converter Station is **low** risk for all construction activities. Therefore, based on existing Construction Stage information the Site is likely to have a **negligible** effect with the implementation of appropriate mitigation.

On-road Construction Vehicles and Plant

22.6.2.11 The greatest impact on air quality due to emissions from vehicles and plant associated with the Construction Stage will be in the areas immediately adjacent to the site access because the traffic will be slowest moving. Queuing and associated idling could increase concentrations of NO_2. It is anticipated that construction traffic will access the site via Day Lane and Broadway Lane which has a small number of residential properties and Catherington Downs SSSI is located 1 km to the north. Therefore, the Catherington Downs SSSI will not be impacted as any raised dust and vehicle emissions will be well dispersed at this location.

22.6.2.12 Peak HDV flows are expected to be 45 per day which is less than the IAQM Planning Guidance criteria of an increase of 100 AADT at which detailed quantitative assessment is required (Appendix 22.3). This number of vehicles is not expected to lead to queuing and idling on local roads adjacent to the site because movements are likely to be spread throughout the day and the increase in flows on these roads (90 AADT) is small in comparison to existing flows such as those on Broadway Lane (1,875 AADT) and Lovedean Lane (4,216-6,994 AADT). However, this risk would be further mitigated by traffic management approved by EHDC particularly during peak periods. This provides the opportunity to minimise air emissions through measures aimed at minimising idling during queuing and slow-moving traffic on local roads and tight junctions (Chapter 21 Section 21.7).

22.6.2.13 Through the implementation of traffic management, increases in concentrations of NO_2 caused by queuing on local roads adjacent to the site, will be temporary and is lower than the IAQM criteria for quantitative assessment. Therefore, the impact of pollutant emissions from on-road construction vehicles and plant are therefore likely to be **negligible**.

Decommissioning

22.6.2.14 It is assumed that if the Converter Station is decommissioned, then impacts from decommissioning would be similar to those during construction. Impacts during decommissioning will be assessed when further information is available.

22.6.3 SECTIONS 2 – 9 - ONSHORE CABLE CORRIDOR

22.6.3.1 Table 22.5 and Table 22.6 show that background PM_{10} concentrations will vary from approximately 14 µg/m^3 in rural areas to 20 µg/m^3 in urban areas along the Onshore Cable Corridor. Background PM_{10} concentrations are not expected to exceed 24 µg/m^3 in any location.

22.6.3.2 Typically, the installation rate for cable ducts is approximately 18-30 m/day within urban areas and 50 m/day for arable areas.

Dust and PM_{10} Sources

22.6.3.3 The activities and sources of dust likely to be released during trenching and laydown of the cables relate to construction, earthworks and trackout. They are summarised in Table 22.15.

Table 22.15 - Dust and PM_{10} Sources (Onshore Cable Corridor)

Activity	Source	Dust	Exhaust gases
Construction	*Terrestrial Cable Duct Installation*		
	Creation of joint bay, drum and winch area	ü	ü
	Creation of joint bay, drum and winch area	ü	ü
	Cable jointing		ü
	Trench fill by cementing or bentonite sand cement slurry	ü	ü
	Partial backfilling of joint bays	ü	ü
	Jointing activities powered by diesel generator		ü
	Permanent easement along the entire Onshore Cable Route	ü	ü
	Horizontal directional drilling		ü
Earthworks	*Terrestrial Cable Duct Installation*		
	Excavation of trench (≤5m depth)	ü	ü

Activity	Source	Dust	Exhaust gases
	Reinstatement of final grade	ü	ü
	Stripping for some temporary construction corridors of 24m	ü	ü
Trackout	*Cable Pulling, Jointing and Reinstatement*		
	Transport of plant, cable pulling drums and winches		ü
	All activities		
	Transport of plant, staff and construction materials	ü	

22.6.3.4 Each section of the Onshore Cable Route will be subject to the dust and PM_{10} sources described above as works migrate along the route at a rate of approximately 18-30 m/day within urban areas and 50 m/day for arable areas. Therefore, the differentiator in impact risk between different sections of the Onshore Cable Corridor is determined by the number and proximity of sensitive receptors as the cable installation progresses combined with the specific construction activity at the relevant section. It will be possible to assess the number of exposed receptors in different sections of the route as the scheme design evolves.

Dust Emission Magnitude

22.6.3.5 Table 22.16 provides a summary of the magnitude of impact for dust emissions determined for each construction activity considered.

Table 22.16 - Dust Emission Magnitude (Onshore Cable Route)

Activity	Criteria	Magnitude
Earthworks	The maximum width of a cabling construction zone is 10 m for the creation of two 1 m trenches separated by 5m. With a maximum cable installation length of 18-30 m/day this equates to approximately 1,500 m^2. Some temporary construction corridors of 23 m width (including haul road) may be required in rural areas to enable access. Soil type is assumed to be moderately dusty. The number of earth moving vehicles is assumed to be < 5/day for a site of this magnitude.	Small

Activity	Criteria	Magnitude
Construction	The maximum volume of the daily cabling construction zone is 1,500 m^2 x 5 m depth (7,500 m^2) which is less than the IAQM threshold of 25,000 m^3. Temporary structures will be constructed of steel frame and cladding. For each site, construction of the temporary joint bays and permanent easement will be far less than the 2,000 m^2 threshold for small magnitude earthworks in the Air Quality Construction Guidance.	Small
Trackout	8 HDV movements/day made up of HDVs and 4-axle tipper lorries for each of 6 crews. A cable winch will be towed by an LDV.	Small

Site Sensitivity

22.6.3.6 The Thorney Island observation station, which at the closest point is approximately 5 km to the east of the Onshore Cable Corridor, is considered broadly representative of wind conditions along the route. The wind rose (Appendix 22.3) shows that the wind blows from four quadrants as follows: south-westerly 75%, north-westerly 10%, north-easterly 10% and the south-easterly quadrant for 5% of all hours. The wind is at its strongest when blowing from the south-westerly quadrant and so it has the highest range of dust transport. Therefore, sensitive receptors located to the north - east of the Onshore Cable Route are more likely to be affected by dust and particulate matter emitted and re-suspended during construction of the cable. Raised dust is less likely to be blown towards sensitive receptors to the west and south and when the wind is lighter.

22.6.3.7 Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the Onshore Cable Route. The area immediately surrounding the Onshore Cable Route close in the north is largely agricultural and with scattered residential properties. Further south the area is more urban and the route is located in or adjacent to existing roads and adjacent to residential receptors. The south of the route can therefore be considered more sensitive than the north.

22.6.3.8 It is assumed that at Onshore Cable Route there will be more than 100 sensitive receptors within 20 m of the site and so the site sensitivity for dust soiling on people and property along the Onshore Cable Route is assessed as High. It should be noted that this is conservative representation and there will be sections of the route in non-urban areas where sensitivity will be Low.

22.6.3.9 Background PM_{10} is represented by data for the Portsmouth No.9 AQMA (Table 22.7) and the values range from 14.2 to 19.7 µg/m^3. As these are all under 24 µg/m^3, only where there are >100 receptors within 20 m of the Onshore Cable Route can the sensitivity of the area to human health impacts be greater than Low. This is assumed for the Onshore Cable Route as a preliminary assessment approach. Sensitivity to health impacts is likely to be lower for most other sections of the route because only in urban areas will there be such a concentration of receptors.

22.6.3.10 As a small site for track-out, there is potential for there to be over 100 sensitive human receptors within 50 m of the construction traffic routes within 50 m of the site exit in urban areas.

22.6.3.11 Considering wind direction, background concentrations and sensitive receptors in accordance with the IAQM assessment methodology, the sensitivity of the area during Onshore Cable Route construction has been derived for each of the construction activities considered. The results are shown in Table 22.17.

Table 22.17 - Sensitivity of the Study Area (Onshore Cable Route)

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	High	High	High
Human Health	Medium	Medium	Medium

Risk of Impacts

Construction Site Emissions

22.6.3.12 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the Construction Stage, prior to mitigation and according to the methodology outlined in Air Quality Construction Guidance (Appendix 22.2). Table 22.18 provides a summary of the risk of dust impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Table 22.18 - Summary Dust Risk Table to Define Site Specific Mitigation (Onshore Cable Route)

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

22.6.3.13 Table 22.18 shows that the Onshore Cable Route is likely to be **negligible** to **low** risk for all construction activities in the AQMA. The risk classifications are influenced by the magnitude of the construction site. The risk is likely to be lower in non-urban areas. Therefore, based on existing Construction Stage information the Onshore Cable Route is likely to have a **negligible** effect with the implementation of appropriate mitigation.

On-road Construction Vehicles and Plant

22.6.3.14 Generated traffic from the cabling installation is unlikely to exceed 6 HDVs a day which is below the recommended threshold for detailed air quality assessment in the Air Quality Planning Guidance (EPUK and IAQM, 2017) of 25 AADT inside or adjacent to an AQMA. The greatest impact on air quality due to emissions from vehicles and plant associated with the cable installation will be in the areas where existing traffic is disrupted by the works leading to slow moving traffic and queuing. This could lead to elevated levels of NO_2 emissions.

22.6.3.15 Where the Onshore Cable Route is in or immediately adjacent to roads, the installation will require traffic management (Chapter 21 Section 21.7) to minimise disruption. This will have to be agreed and approved by the relevant local authority. This provides the opportunity to limit air emissions through management measures aimed at minimising idling during queuing and slow-moving traffic. The anticipated pace of migration of the cable installation (18-30 m/day) and disruption to traffic will be transient along the Onshore Cable Route and temporary. The Portsmouth AQMA, which is approximately 1.8 km long, could expect slightly elevated emissions for 60-100 days but these will be negligible such is the anticipated HDV generation. Furthermore, trip generation is so low and short-term that the impact on the Langstone Harbour designated sites will be negligible.

22.6.3.16 Detailed quantitative assessment is not required because the number of HDVs is lower than the IAQM criteria for quantitative assessment. However, it is recommended that likely HDV generation is reviewed in subsequent assessments to screen the need for quantitative assessment.

22.6.3.17 Through the implementation of traffic management, queuing will be temporary and increases in concentrations of NO_2 caused by queuing on local roads will be minimised. Although the impact of pollutant emissions from on-road construction vehicles and plant is likely to negligible, further assessment is required when the Onshore Cable Route has been finalised.

Decommissioning

22.6.3.18 It is assumed that if the DC cables are not left in situ when decommissioned, then impacts from decommissioning would be similar to those during construction.

22.6.4 SECTION 10 – EASTNEY (LANDFALL)

Dust and PM_{10} Sources

22.6.4.1 The activities and sources of dust likely to be released during construction of the Landfall relate to construction, earthworks and trackout. They are summarised in Table 22.19.

Table 22.19 - Dust and PM_{10} Sources (Landfall)

Activity	Source	Dust	Exhaust gases
Construction	Horizontal directional drilling	ü	ü
	Pulling of the cables		ü
	Jointing activities powered by diesel generator		ü
	Trench fill by cementing or bentonite sand cement slurry	ü	ü
	Hardstanding construction	ü	ü
Earthworks	Stripping for temporary 50*50 m construction area	ü	ü
	Excavation of trench (≤5m depth)	ü	ü
	Reinstatement of final grade	ü	ü
Trackout	Transport of earthworks plant, horizontal directional drill, pulling winch and cable	ü	ü
	Transport of staff and construction materials	ü	ü

Dust Emission Magnitude

22.6.4.2 Table 22.20 provides a summary of the potential dust emission magnitude determined for each construction activity considered.

Table 22.20 - Dust Emission Magnitude (Landfall)

Activity	Criteria	Magnitude
Earthworks	The total area of the Site is approximately 500 m^2 and the soil type is assumed to be sandy. A small amount of material will be moved during surface stripping and trenching The number of earth moving vehicles is assumed to be < 5/day for a site of this magnitude.	Small
Construction	Construction of the temporary laydown area will be approximately of 250 m^2 which less than the small magnitude for earthworks (Appendix 22.2). Construction activities have low potential for dust release and diesel emissions will be temporary.	Small
Trackout	It has been assumed that given the size of the construction area there will be less than 10 HDV outward movements in any one day. The length of unpaved road length is likely to be less than 50 m.	Small

Site Sensitivity

22.6.4.3 Sensitive receptors located to the north-east of the proposed Landfall (Fort Cumberland Road) are the receptors most likely be affected by dust and particulate matter emitted and re-suspended during the Construction Stage. Raised dust is likely to be blown towards sensitive receptors to the west and south infrequently and when the wind is lighter.

22.6.4.4 Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the Landfall site. The area immediately surrounding the Landfall site is suburban with public spaces, community facilities and residential properties. There are 10-100 sensitive receptors within 20 m of the Landfall and >100 within 50 m.

22.6.4.5 In the absence of local monitoring, annual mean PM_{10} concentrations from the Defra background maps have been used in this dust assessment. These data show that annual mean PM_{10} concentrations in the vicinity of the Landfall site are expected to be <20 µg/m^3 (Table 22.3) during construction.

22.6.4.6 For trackout, the Landfall construction site is classified as Small (Table 22.9). Therefore, dust soiling and human health impacts due to tracking of material from the construction site could occur 50 m from the edge of Fort Cumberland Road heading west from the site exit for 50 m.

22.6.4.7 Considering wind direction, receptor sensitivity, background concentrations of PM_{10} and sensitive receptor counts in accordance with the IAQM assessment methodology (Table 2, Appendix 22.2), the sensitivity of the area to changes in dust and PM_{10} has been derived for each of the construction activities considered. The results are shown in Table 22.21.

Table 22.21 - Sensitivity of the Study Area (Landfall)

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium
Human Health	Low	Low	Low

22.6.4.8 Table 22.21 shows that the study area has Medium sensitivity to dust soiling impacts from earthworks, construction and trackout because of the proximity of the Southsea Leisure Park caravan park and a children's play area located within 20 m of the site exit. For human health the sensitivity is low because background PM_{10} is <24 µg/m^3.

Risk of Impacts

Construction Site Emissions

22.6.4.9 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the Construction Stage, prior to mitigation and according to the methodology outlined in Air Quality Construction Guidance. Table 22.22 provides a summary of the risk of dust impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Table 22.22 - Summary Dust Risk Table to Define Site Specific Mitigation (Landfall)

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

22.6.4.10 Table 22.22 shows that the Landfall is likely to be **negligible** to **low** risk for all construction activities. Therefore, based on existing Construction Stage information the Landfall is likely to have a **negligible** effect with the implementation of appropriate mitigation.

On-road Construction Vehicles and Plant

22.6.4.11 It is anticipated that construction traffic will access the site via Henderson Road and Fort Cumberland Road to which residential properties are adjacent. Construction

traffic also could pass through the Portsmouth AQMA No.9 on Milton Road en-route to the Site.

22.6.4.12 Final details of the exact plant and equipment likely to be used will be determined by the appointed contractor. However, it is considered likely to comprise a small number of trucks, tracked excavators, diesel generators, asphalt spreaders, rollers and compressors. The amount of plant and their location within the site are likely to be variable over the construction period.

22.6.4.13 Due to the scale of the construction works (10 HDV movements/day for a short period), construction traffic will be negligible in comparison to the existing traffic flows on these roads. Flows are so low that long queues which could cause peaks in exhaust gas emissions are unlikely.

22.6.4.14 With reference to Table 22.9, the number of daily HDVs currently on Henderson Road is estimated as 577 and on Fort Cumberland Road 311. Anticipated construction traffic movements are 10 HDV movements/day expected for a short period of time. This is less than the IAQM Planning Guidance criteria of an increase of 100 AADT at which detailed quantitative assessment is required (Appendix 22.3) and less than the 25 AADT criteria for detailed assessment where the traffic passes through an AQMA.

22.6.4.15 Adverse impacts on Langstone Harbour Ramsar Site, SSSI, SAC and SPA and Fort Cumberland Site of Importance for Nature Conservation are highly unlikely such is the volume and temporary nature of anticipated construction traffic and the distance to this ecological site.

22.6.4.16 Based on existing local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles, and the likely numbers of construction vehicles and plant that will be used, the impacts are likely to be of **negligible** significance. However, although the impact of pollutant emissions from on-road construction vehicles and plant is likely to be negligible, further assessment may be required as the design evolves.

Decommissioning

22.6.4.17 It is assumed that if equipment and cables are not left in situ when decommissioned, then impacts from decommissioning would be similar to those during construction.

22.6.5 CUMULATIVE IMPACT ASSESSMENT

22.6.5.1 There is the potential for cumulative impacts relating to the construction of permitted or foreseeable development across the entire study area. Any assessment of air quality using modelled traffic data could address cumulative impacts as cumulative traffic will be included in the transport model.

22.6.5.2 The implementation of the mitigation measures set out in Section 22.7 (concerning traffic management) will ensure that potential for air emissions during construction is minimised to an acceptable level.

22.6.5.3 It is anticipated that the impacts associated with decommissioning will be the same as the Construction Stage, however, this will be assessed further when the more information is available.

22.6.5.4 Therefore, providing all necessary remediation/mitigation measures are implemented, it is considered likely that the development will have a **negligible** cumulative effect in conjunction with other committed developments. However, this should be further assessed and reported in the ES as more Construction Stage information becomes available.

22.6.6 RESIDUAL EFFECTS

22.6.6.1 The residual effects of dust and PM_{10} generated by construction activities following the application of the mitigation measures described above and good site practice is likely to be **negligible** for the Converter Station, Onshore Cable Route and Landfall.

22.6.6.2 The residual effects of emissions to air from construction vehicles and plant on local air quality is likely to be **negligible** for the Converter Station, Onshore Cable Route and Landfall.

22.6.6.3 However, all residual effects are subject to an update to the impact risk when more detailed construction information becomes available.

22.7 PROPOSED MITIGATION

Construction Site Emission Mitigation

22.7.1.1 As the risk from all activities in the assessment is classed as Low, in accordance with the Air Quality Construction Guidance, Low Risk mitigation measures have been applied for the general management of the Converter Station, Onshore Cable Route and Landfall construction sites.

22.7.1.2 Based on the assessment results, the mitigation measures which are recommended to be implemented to mitigate the assessed dust and particulate matter impacts associated with construction are shown in Table 22.23.

Table 22.23 – Potential Mitigation measures applicable to all sites

Mitigation Classification	Mitigation Measure	Converter Station (South)	Onshore Cable Route	Landfall
General Communication	A stakeholder communications plan that includes community engagement before work commences on site should be developed and implemented.			
	The name and contact details of person(s) accountable for air quality and dust issues should be displayed on the site boundary. This may be the environment manager/engineer or the site manager.	ü	ü	ü
	Display the head or regional office contact information.	ü	ü	ü
General Dust Management	A Dust Management Plan ('DMP'), which may include measures to control other emissions, in addition to the dust and PM_{10} mitigation measures given in this report, should be developed, implemented and approved by the relevant local authorities or the Secretary of State for the Department for Business, Energy and Industrial Strategy.	ü	ü	ü
Site Management	All dust and air quality complaints should be recorded and causes identified. Appropriate remedial action should be taken in a timely manner with a record kept of actions	ü	ü	ü

	taken including of any additional measures put in-place to avoid reoccurrence.			
	The complaints log should be made available to the relevant local authority on request.	ü	ü	ü
	Any exceptional incidents that cause dust and/or air emissions, either on- or offsite should be recorded, and then the action taken to resolve the situation recorded in the log book.	ü	ü	ü
Monitoring	Frequent on-site and off-site inspections should be undertaken, where sensitive receptors (including roads) are nearby to monitor dust. The inspection results should be recorded and made available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.	ü	ü	ü
	Regular site inspections to monitor compliance with the DMP should be carried out, inspection results recorded, and an inspection log made available to the local authority when asked.	ü	ü	ü
	The frequency of site inspections should be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	ü	ü	ü

Preparing and Maintaining the Site	Plan the site layout so that machinery and dust causing activities are located away from sensitive receptors, as far as is practicable.	ü	ü	ü
	Where practicable, erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	ü	ü	ü
	Where practicable, fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	ü	ü	ü
	Avoid site runoff of water or mud.	ü	ü	ü
	Keep site fencing, barriers and scaffolding clean using wet methods.	ü	ü	ü
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover appropriately.	ü		ü
	Where practicable, cover, seed or fence stockpiles to prevent wind whipping.	ü		ü
Operating Vehicle/Machinery and Sustainable Travel	Ensure all vehicle operators switch off engines when stationary - no idling vehicles.	ü	ü	ü
	Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	ü	ü	ü

	A maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas should be imposed (if long haul routes are required, these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	ü		
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	ü	ü	ü
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	ü		ü
	Use enclosed chutes and conveyors and covered skips.	ü	ü	ü
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	ü		ü
	Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	ü		ü
Waste Management	Avoid bonfires and burning of waste materials.	ü		ü

Measures Specific to Earthworks	Stockpile surface areas should be minimised (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up.	ü		ü
	Where practicable, windbreak netting/screening should be positioned around material stockpiles and vehicle loading/unloading areas, as well as exposed excavation and material handling operations, to provide a physical barrier between the Site and the surroundings.	ü		ü
	Where practicable, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of the prevailing wind direction.	ü		ü
	During dry or windy weather, material stockpiles and exposed surfaces should be dampened down using a water spray to minimise the potential for wind pick-up.	ü		ü
	Revegetate earthworks and exposed areas/soil stockpiles to stabilise surface as soon as possible.	ü	ü	ü
	Use Hessian mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil as soon as possible	ü		ü
	Only remove the cover in small areas during work and not all at once	ü		ü
Measures Specific to Construction	Avoid scabbling (roughening of concrete surfaces) if possible.		ü	ü

	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	ü		ü
	All construction plant and equipment should be maintained in good working order and not left running when not in use.	ü	ü	ü
	Ensure bulk cement and sand cement slurry are delivered in enclosed tankers and stored in silos with suitable emissions control systems to prevent escape of material and overfilling during delivery	ü	ü	
	For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust	ü	ü	ü
Measures Specific to Trackout	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being in frequent use.	ü		ü
	Avoid dry sweeping of large areas.	ü		ü
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	ü	ü	ü
	Record all inspections of haul routes and any subsequent action in a site log book.	ü		ü

	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	ü		
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits	ü		

On-road Construction Vehicles and Plant Mitigation

22.7.1.3 Detailed mitigation measures to control construction traffic should be discussed with the relevant Local Authority to establish the most suitable access and haul routes for the site traffic. These are described in Chapter 21 Traffic and Transport and include Construction Traffic Management Plans, Construction Traffic Management Strategy and dynamic management of signals during peaks. The most effective mitigation will be achieved by ensuring that construction traffic does not pass along sensitive roads (e.g. residential roads, congested roads, via unsuitable junctions) where possible, and that vehicles are kept clean through the application of water, and sheeted when on public highways. Timing of abnormal loads movements to avoid peak hours on the local road network will also be beneficial.

22.7.1.4 Where the Onshore Cable Route is in or immediately adjacent to roads, the installation will require traffic management, which will have to be agreed and approved by the relevant local authority. This provides the opportunity to minimise air emissions through traffic management measures aimed at minimising idling during queuing and slow-moving idling traffic.

22.8 SUMMARY AND CONCLUSIONS

Baseline

22.8.1.1 Baseline wind speed and direction, concentrations of fine particulate matter, sensitive receptors and existing traffic have been assessed to characterise the baseline for the Converter Station, Onshore Cable Route and Landfall construction sites.

22.8.1.2 Future traffic is expected to increase and background air quality to reduce without the development. There is the potential for the number of sensitive receptors to change over time as permitted development.

Assessment

22.8.1.3 A qualitative preliminary assessment of the potential impacts on both the amenity and health of human and ecological receptors as a result of air quality impacts from the following has been undertaken:

- Dust and particulate matter releases during the site preparation and construction stage;
- Changes in local pollutant concentrations (NO_2 and particulate matter) due to exhaust emissions from construction vehicles and plant; and
- Changes in local pollutant concentrations (NO_2 and particulate matter) due to exhaust emissions from road vehicles delayed due to construction works and road closures.

22.8.1.4 It is concluded that a **negligible** impact is likely from construction activities at the Converter Station, Onshore Cable Route and Landfall.

22.8.1.5 Chapter 21 Traffic and Transport shows that significant numbers of on-road construction vehicles will not traverse or run adjacent to sensitive ecological designations. Small numbers of construction vehicles could traverse or run adjacent to ecological receptors on the construction traffic route for the Onshore Cable Route and Landfall but these are expected to be low in number and the impact is likely to be **negligible**.

22.8.1.6 The residual effects of emissions to air from construction vehicles and plant on local air quality is likely to be **negligible** for the Converter Station, Onshore Cable Route and Landfall.

Mitigation

22.8.1.7 Mitigation measures have been proposed which reflect the assessed Low risk of impacts on amenity and human health in accordance with the Air Quality Construction Guidance. All impacts are likely to be **negligible** with the proper implementation of these measures.

22.8.1.8 A key consideration in mitigating NO_2 emissions where the Onshore Cable Route is in or immediately adjacent to roads, is the installation of traffic management to reduce disruption to existing traffic, particularly in locations where NO_2 emissions are already elevated such as the Portsmouth NO.9 AQMA. Where measures are agreed and approved by the relevant local authority to minimise disruption, the impact on NO_2 is expected to be **negligible**.

Conclusion

22.8.1.9 Based on existing local air quality in each construction area, the proximity of sensitive receptors to the site where construction works are to take place and the roads likely to be used by construction vehicles, the impacts are likely to be **not significant** with the implementation of recommended mitigation measures. However, this conclusion is dependent on further work taking into consideration updated construction information.

22.9 ASSESSMENTS AND SURVEYS STILL TO BE UNDERTAKEN

22.9.1.1 No further assessments or surveys are required to assess air emissions. However, background PM_{10} data sourced from the Defra background maps should be updated in a subsequent air quality assessment to inform the Environmental Statement.

22.9.1.2 The incorporation of updated construction information for the onshore works, with particular focus on proposed construction traffic routes and HDV numbers, and sensitive receptor counts would enhance any future assessment of air quality to inform the application. However, based on emerging information for the project it is considered that significant effects are unlikely.

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