

**Byers Gill Solar  
EN010139**

# 6.4.2.4 Environmental Statement Appendix 2.4 Construction Dust Assessment

Planning Act 2008

APFP Regulation 5(2)(a)

Infrastructure Planning (Applications: Prescribed Forms  
and Procedure) Regulations 2009

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# 1. Introduction

## 1.1 Background

- 1.1.1 This document details the Air Quality Construction Dust Assessment for Byers Gill Solar (the Proposed Development). Powers to construct, operate and maintain the Proposed Development are being sought by RWE (the Applicant) through an application for a Development Consent Order (DCO).
- 1.1.2 An Environmental Impact Assessment (EIA) has been undertaken for the Proposed Development and an Environmental Statement (ES) (Document Reference 6.1 to 6.4) has been prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations). In accordance with the requirements of the EIA Regulations, the ES contains the assessment of the likely significant effects on the environment that may be caused during construction, operation and decommissioning of the Proposed Development and describes proposed mitigation measures.
- 1.1.3 The Applicant has prepared this Air Quality Construction Dust Assessment following the receipt of the EIA Scoping Opinion from PINS which is provided in ES Appendix 4.2 EIA Scoping Opinion (Document Reference 6.4.4.2). Within this opinion, PINS agreed that Air Quality could be scoped out of the ES on the basis that a construction dust assessment is provided in support of the ES and to inform mitigation proposals and management plans.
- 1.1.4 The aspects considered within this Air Quality Construction Dust Assessment for the Proposed Development include:
- a summary of relevant air quality policies and legislation;
  - a description of the existing air quality conditions in the vicinity of the Proposed Development;
  - the methods used to consider and assess the potential impacts; and
  - a summary of any likely significant effects and, where necessary, recommendations for mitigation.
- 1.1.5 Following this, the design, mitigation, and residual effects of the Proposed Development are discussed, along with the limitations of the assessment.

## 1.2 The Proposed Development

- 1.2.1 The Proposed Development is a renewable energy scheme, covering an area of approximately 490 hectares (ha), and comprising solar photovoltaic (PV) panels, on-site Battery Energy Storage Systems (BESS), associated infrastructure as well as underground cable connections between panel areas and to connect to the existing National Grid

Substation at Norton. The Proposed Development will have the capacity to generate over 50 Megawatts (MW) of electricity and is located in the north-east of England.

- 1.2.2 A full description of the Proposed Development and a detailed description of the design and environmental mitigation is provided in ES Chapter 2 The Proposed Development (Document Reference 6.2.2).

### **1.3 Proposed Development Location**

- 1.3.1 The majority of the Proposed Development is located within the administrative boundary of Darlington Borough Council, with a section of the cable route situated within the administrative boundary of Stockton-on-Tees Borough Council. A very small section of the Order Limits is within the administrative boundary of Durham County Council.
- 1.3.2 The Order Limits and surroundings are primarily comprised of agricultural fields, interspersed with individual trees, hedgerows, farm access tracks, woodlands and local farmholdings. There are several local villages located within close proximity to the Proposed Development, including Brafferton, Newton Ketton, Great Stainton, Bishopton and Old Stillington.
- 1.3.3 The Order Limits for the Proposed Development are shown in ES Figure 1.1 Location Plan (Document Reference 6.3.1.1).

## 2. Air Quality Legislation

### 2.1 Environment Act 2021

- 2.1.1 The Environment Bill became an Act in November 2021. The Environment Act 2021 amends the following legislation: Environment Act 1995, the Clean Air Act 1993 to give local authorities more power at reducing local pollution, particularly that from domestic burning; and it also amends the Environmental Protection Act 1990 to reduce smoke from residential chimneys by extending the system of statutory nuisance to private dwellings.
- 2.1.2 Some sections of the Environment Act 1995 have been transposed into the Environment Act 2021. This includes for the Secretary of State to develop, implement and maintain an Air Quality Strategy. This places a statutory duty, also under Part IV of the Environment Act 1995, for local authorities to undergo a process of local air quality management and declare an Air Quality Management Area (AQMA) where pollutant concentrations exceed the national air quality objectives. Where an AQMA is declared, the local authority needs to produce an Air Quality Action Plan (AQAP) which outlines the strategy for improving air quality in these areas.
- 2.1.3 The Environment Act 2021 will implement key parts of the government's Clean Air Strategy and include targets for tackling air pollution in the UK. The requirements relevant to air quality are:
- for the Secretary of State to set long-term legally binding targets on air quality with at least 15 years duration;
  - for the Secretary of State to publish a report reviewing the air quality strategy every five years;
  - for the Government to set two targets by October 2022: the first on the amount of PM<sub>2.5</sub> pollutant in the ambient air (the figure and deadline for compliance remain unspecified) and a second long-term target set at least 15 years ahead to encourage stakeholder investment;
  - for the Office for Environmental Protection to be established to substitute the watchdog function previously exercised by the European Commission;
  - for Local Authorities' powers to be extended under the current local air quality management framework, including responsibilities to improve local air quality and to reduce public exposure to excessive levels of air pollution;
  - for "air quality partners" to have a duty to share responsibility for dealing with local air pollution among public bodies; and
  - for the introduction of a new power for the government to compel vehicle manufacturers to recall vehicles and non-road mobile machinery (NRMM) if they are found not to comply with the environmental standards that they are legally required to meet.

## 2.2 Air Quality Standards Regulations 2010

- 2.2.1 The Air Quality Standards Regulations 2010 (amended in 2016) defines the policy framework for 12 air pollutants known to have harmful effects on human health or the natural environment. The Secretary of State for the Environment has the duty of ensuring compliance with the air quality limit values (pollutant concentrations not to be exceeded by a certain date).
- 2.2.2 Following the UK's withdrawal from the European Union, the Air Quality Standards Regulations (EU-derived domestic legislation) were retained under S.2 of the European Union (Withdrawal) Act 2018, and updated to replace references to EU authorities with domestic equivalents in the Air Quality (Miscellaneous Amendment and Revocation of Retained Direct EU Legislation) (EU Exit) Regulations.
- 2.2.3 Some pollutants have standards expressed as annual average concentrations due to the chronic way in which they affect health or the natural environment, i.e., effects occur after a prolonged period of exposure to elevated concentrations. Other pollutants have standards expressed as 24-hour, 1-hour or 15-minute average concentrations due to the acute way in which they affect health or the natural environment, i.e., after a relatively short period of exposure. Some pollutants have standards expressed in terms of both long and short-term concentrations. Air quality limit values and objectives are quality standards for clean air. Therefore, in this assessment, the term 'air quality standard' has been used to refer to the national limit values.
- 2.2.4 The standards for nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) have been provided in Table 2-1 and used in the assessment. Other pollutants have been screened out of this air quality assessment, since they are not considered likely to cause exceedances of their respective standards.

**Table 2-1 Air quality standards**

Pollutant	Averaging period	Limit value/objective
<b>Human Health</b>		
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>	▪ Annual mean	▪ 40µg/m <sup>3</sup>
	▪ 1-hour mean	▪ 200µg/m <sup>3</sup> [1]
<b>Particulate Matter (PM<sub>10</sub>)</b>	▪ Annual mean	▪ 40µg/m <sup>3</sup>
	▪ 24-hour mean	▪ 50µg/m <sup>3</sup> [2]
<b>Particulate Matter (PM<sub>2.5</sub>)</b>	▪ Annual mean	▪ 12µg/m <sup>3</sup> [3]
		▪ 10µg/m <sup>3</sup> [3]
<p>[1] not to be exceeded more than 18 times a year (99.79th percentile)</p> <p>[2] not to be exceeded more than 35 times a year (90.41st percentile)</p> <p>[3] the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 updated in 2023, to state that "the annual mean level of PM<sub>2.5</sub> in ambient air must be equal to or less than 10µg/m<sup>3</sup> ("the target level") by 31<sup>st</sup> December 2040 [1]. The Environmental Improvement Plan (2023) sets an interim target of 12µg/m<sup>3</sup>, to be achieved by 31 January 2028.</p>		

## 2.3 Dust nuisance

- 1.1.6 Dust is the generic term used in the British Standard document BS 6069 (Part Two) to describe particulate matter in the size range 1–75µm in diameter. Dust nuisance is the result of the perception of the soiling of surfaces by excessive rates of dust deposition. Under provisions in the Environmental Protection Act 1990, dust nuisance is defined as a statutory nuisance.
- 1.1.7 There are currently no standards or guidelines for dust nuisance in the UK, nor are formal dust deposition standards specified. This reflects the uncertainties in dust monitoring technology and the highly subjective relationship between deposition events, surface soiling and the perception of such events as a nuisance. In law, complaints about excessive dust deposition would have to be investigated by the local authority and any complaint upheld for a statutory nuisance to occur. However, dust deposition is generally managed by suitable on-site practices and mitigation rather than by the determination of statutory nuisance and/or prosecution or enforcement notice(s).

## 3. Policy and Guidance

### 3.1 Policy and Guidance

#### National Policy Statements

1.1.8 Under Section 104 of the Planning Act 2008 (the Act), the Secretary of State (SoS) is directed to determine a DCO application with regard to the relevant National Policy Statement (NPS), the local impact report, matters prescribed in relation to the Proposed Development, and any other matters regarded by the SoS as important and relevant. Following their designation on 17 January 2024, there are three NPSs which are considered to be 'relevant NPS' under Section 104 of the Act:

- Overarching NPS for energy (NPS EN-1)
- NPS for renewable energy infrastructure (NPS EN-3)
- NPS for electricity networks infrastructure (NPS EN-5)

1.1.9 It is considered that other national and local planning policy will be regarded by the SoS as 'important and relevant' to the Proposed Development. A detailed account of the planning policy framework relevant to the Proposed Development is provided in the Planning Statement (Document Reference 7.1). The Policy Compliance Document (Document Reference 7.1.1) evidences how this assessment has been informed by and is in compliance with the NPSs and relevant national and local planning policies. It provides specific reference to relevant sections of the ES which address requirements set out in policy.

#### Guidance

##### Planning Practice Guidance

3.1.2 National Planning Practice Guidance (NPPG) on various topics, including air quality was developed in order to support the National Planning Policy Framework (NPPF). The guidance provides a concise outline as to how air quality should be considered in order to comply with the NPPF and states when air quality is considered relevant to a planning application. This includes factors such as changes in traffic volumes, vehicle speeds, congestion or traffic composition, the introduction of new point sources of air pollution, exposure of people to existing sources of air pollutants, and the potential to give rise to air quality impacts at nearby sensitive receptors.

##### Clean Air Strategy

3.1.3 The Department for Environment, Food and Rural Affairs' (Defra) Clean Air Strategy [2] was published in 2019 and sets targets for improving air quality across the country. It includes actions for reducing emissions from various sources, such as transport, domestic activities, farming and industry. There is also a long-term target for reducing population exposure to PM<sub>2.5</sub> concentrations to meet the World Health Organisation's



(WHO) target of  $10\mu\text{g}/\text{m}^3$  as an annual mean. In particular, the Clean Air Strategy [2] states:

- 3.1.4 “New legislation will create a stronger and a more coherent framework for action to tackle air pollution. This will be underpinned by new England-wide powers to control major sources of air pollution, in line with the risk they pose to public health and the environment, plus new local powers to take action in areas with an air pollution problem. These will support the creation of Clean Air Zones to lower emissions from all sources of air pollution, backed up with clear enforcement mechanism.”

#### Local Air Quality Management Policy Guidance

- 3.1.5 The policy guidance note, LAQM.PG [3] is for local authorities in England. It provides local authority-led action to improve local air quality using available levers, including planning, public health and transport responsibilities. This guidance is also relevant to Mayoral Combined Authorities, and external organisations who may need to engage with the local authority to assist in the delivery of their statutory duties on managing air quality. There are several updates detailed in the LAQM.PG [3], as follows:

- local AQAP are required to demonstrate that local air quality objectives are met and achieved;
- an AQMA is required to be declared within 12 months of identifying an exceedance of the air quality objectives;
- local authorities are required to produce an AQAP within 18 months of declaring an AQMA; and
- the introduction of a system of reminder and warning letters to increase transparency and accountability on local air quality.

- 3.1.6 The technical guidance, LAQM.TG(22) [3] is designed to support local authorities across the UK in carrying out their duties to review and assess and take action to improve air quality under the Environment Act 1995, as amended by the Environment Act 2021. It provides detailed guidance on how to assess the impact of measures using existing air quality tools. Where relevant, this guidance has been taken into account in this air quality assessment.

#### Institute of Air Quality Management Dust Guidance

- 3.1.7 The Institute of Air Quality Management (IAQM) [4] guidance provides guidance to development consultants and environmental health officers on how to assess air quality impacts from construction. The IAQM guidance [4] provides a method for classifying the significance of effect from construction activities based on the ‘dust magnitude’ (high, medium or low) and proximity of the Proposed Development to the closest receptors. The guidance recommends that once the significance of effect from construction is identified, the appropriate mitigation measures are implemented. Experience has shown that once the appropriate mitigation measures are applied, in most cases the resulting dust impacts can be reduced to negligible levels.

- 3.1.8 The IAQM [4] methodology has been considered in this assessment, as this is the latest document during the writing of this report.

## 4. Methodology

### 4.1 Methodology of Baseline Assessment

- 4.1.1 Existing or baseline ambient air quality refers to the concentration of relevant substances that are already present in the environment. These are present from various sources, such as industrial processes, commercial and domestic activities, traffic and natural sources.
- 4.1.2 A desk-based review of the following data sources has been undertaken to determine the baseline air quality conditions in this assessment:
- Darlington Borough Council Annual Status Report (ASR) [5]
  - Durham County Council Air Quality Status Report [6]
  - Stockton-on-Tees Borough Council website [7]
  - the Environment Agency website [8], and
  - the UK Air Information Resource [9] website.

### 4.2 Methodology of Construction Dust Assessment

- 4.2.1 The effects from construction of the Proposed Development have been assessed using the qualitative approach described in the latest guidance by the IAQM [4]. The guidance considers the potential for dust emissions arising from activities such as demolition, earthworks, construction and trackout, and the effects these may have on human health, dust soiling and ecological harm.
- 4.2.2 An 'impact' is described as a change in pollutant concentrations or dust deposition, while an 'effect' is described as the consequence of an impact. The main impacts that may arise during construction of the Proposed Development are:
- dust deposition, resulting in the soiling of surfaces;
  - visible dust plumes;
  - elevated PM<sub>10</sub> concentrations as a result of dust generating activities on the Proposed Development; and
  - an increase in NO<sub>2</sub> and PM<sub>10</sub> concentrations due to exhaust emissions from NRMM and vehicles accessing the Proposed Development.
- 4.2.3 The IAQM guidance [4] considers the potential for dust emissions from activities such as demolition of existing structures, earthworks, construction of new structures and trackout. Earthworks refer to the processes of soil stripping, ground levelling, excavation and land capping, while trackout is the transport of dust and dirt from the Proposed Development onto the public road network where it may be deposited and then re-suspended by vehicles using the network. This arises when vehicles leave the Proposed

Development with dust materials, which may then spill onto the road, or when they travel over muddy ground on site and then transfer dust and dirt onto the road network.

4.2.4 For each of these dust-generating activities, the guidance considers three separate effects:

- annoyance due to dust soiling;
- harm to ecological receptors; and
- the risk of health effects due to a significant increase in PM<sub>10</sub> exposure.

4.2.5 The receptors can be human or ecological and are chosen based on their sensitivity to dust soiling and PM<sub>10</sub> exposure.

4.2.6 The methodology takes into account the scale to which the above effects are predicted to be generated (classed as small, medium or large), as well as the levels of background PM<sub>10</sub> concentrations and the distance to the closest receptor, in order to determine the sensitivity of the area. This is then taken into consideration when deriving the overall risk for the Proposed Development. Suitable mitigation measures are also proposed to reduce the risk of the Proposed Development.

4.2.7 There are five steps in the assessment process described in the IAQM guidance [4]. These are summarised as:

### **Step 1: Need for assessment**

4.2.8 The first step is the initial screening for the need for a detailed assessment. According to the IAQM guidance [4], an assessment is required where there are sensitive receptors within 250m of the Order Limits (for ecological receptors that is 50m) and/or within 50m of the route(s) used by the construction vehicles on the public highway and up to 250m from the Proposed Development entrance(s).

### **Step 2: Assess the risk of dust impacts**

4.2.9 This step is split into three sections as follows:

- 2A: Define the potential dust emission magnitude
- 2B: Define the sensitivity of the area; and
- 2C: Define the risk of impacts.

4.2.10 Each of the dust generating activities is given a dust emission magnitude depending on the scale and nature of the works (step 2A) based on the criteria presented in Table 4-1.

**Table 4-1 Dust emission magnitude**

Small		Medium	Large
<b>Demolition</b>			
No demolition works are being undertaken for the Proposed Development.			
<b>Earthworks</b>			
<ul style="list-style-type: none"> <li>total site area &lt;18,000m<sup>2</sup></li> <li>soil type with large grain size (e.g. sand)</li> <li>&lt;5 heavy earth moving vehicles active at any one time</li> <li>formation of bunds &lt;4m in height</li> <li>total material moved</li> </ul>	<ul style="list-style-type: none"> <li>total site area 18,000m<sup>2</sup> – 110,000m<sup>2</sup></li> <li>moderately dusty soil type (e.g., silt)</li> <li>5 – 10 heavy earth moving vehicles active at any one time</li> <li>formation of bunds 3 - 6m in height</li> <li>total material moved</li> </ul>	<ul style="list-style-type: none"> <li>total site area &gt;110,000m<sup>2</sup></li> <li>potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size)</li> <li>&gt;10 heavy earth moving vehicles active at any one time</li> <li>formation of bunds &gt;6m in height</li> </ul>	
<b>Construction</b>			
<ul style="list-style-type: none"> <li>total building volume &lt;12,000m<sup>3</sup></li> <li>construction material with low potential for dust release (e.g., metal cladding or timber)</li> </ul>	<ul style="list-style-type: none"> <li>total building volume 12,000 – 75,000m<sup>3</sup></li> <li>potentially dusty construction material (e.g. concrete)</li> <li>on-site concrete batching</li> </ul>	<ul style="list-style-type: none"> <li>total building volume &gt;75,000m<sup>3</sup></li> <li>on-site concrete batching</li> <li>sandblasting</li> </ul>	
<b>Trackout</b>			
<ul style="list-style-type: none"> <li>&lt;20 HDV (&gt;3.5t) outward movement in any one day</li> <li>Surface material with low potential for dust release</li> <li>Unpaved road length &lt;50m</li> </ul>	<ul style="list-style-type: none"> <li>20 – 50 HDV (&gt;3.5t) outward movement in any one day</li> <li>Moderately dusty surface material (e.g., high clay content)</li> <li>Unpaved road length 50 – 100m</li> </ul>	<ul style="list-style-type: none"> <li>&gt;50 HDV (&gt;3.5t) outward movement in any one day</li> <li>Potentially dusty surface material (e.g. high clay content)</li> <li>Unpaved road length &gt;100m</li> </ul>	

4.2.11 The sensitivity of the surrounding area is then determined (step 2B) for each dust effect from the above dust generating activities, based on the proximity and number of receptors, their sensitivity to dust, the local PM<sub>10</sub> background concentrations and any other site-specific factors. Table 4-2 to Table 4-3 show the criteria for defining the sensitivity of the area to different dust effects.

**Table 4-2 Sensitivity of the area to dust soiling effects**

Receptor Sensitivity		Number of receptors	Distance from the source (m)			
			< 20	< 50	< 100	< 350
High	>100	High	High	Low	Low	
	10 - 100	High	Medium	Low	Low	
	<10	Medium	Low	Low	Low	
Medium		>1	Medium	Low	Low	Low
Low		>1	Low	Low	Low	Low

**Table 4-3 Sensitivity of the area to human health impacts**

Background PM <sub>10</sub> concentrations (annual mean)	Number of receptors	Distance from the source (m)				
		<20	<50	<100	<200	<350
<b>High receptor sensitivity</b>						
>32µg/m <sup>3</sup>	>100	High	High	High	Medium	Low
	10 - 100			Medium	Low	
	1 - 10		Medium	Low		
28 - 32µg/m <sup>3</sup>	>100	High	High	Medium	Low	Low
	10 - 100		Medium	Low		
	1 - 10					
24 - 28µg/m <sup>3</sup>	>100	High	Medium	Low	Low	Low
	10 - 100					
	1 - 10		Medium	Low		
<24µg/m <sup>3</sup>	>100	Medium	Low	Low	Low	Low
	10 - 100		Low			
	1 - 10					
<b>Medium receptor sensitivity</b>						
>32µg/m <sup>3</sup>	>10	High	Medium	Low	Low	Low
	1 - 10	Medium	Low			
28 - 32µg/m <sup>3</sup>	>10	Medium	Low	Low	Low	Low
	1 - 10	Low				
24 - 28µg/m <sup>3</sup>	>10	Low	Low	Low	Low	Low
	1 - 10					
<24µg/m <sup>3</sup>	>10	Low	Low	Low	Low	Low
	1 - 10					
<b>Low receptor sensitivity</b>						
-	≥1	Low	Low	Low	Low	Low

4.2.12 Overall risk of the impacts of each activity is then determined (step 2C) prior to the application of any mitigation measures (Table 4-4) and an overall risk for the Proposed Development derived.

**Table 4-4 Sensitivity of the area to ecological impacts**

Receptor Sensitivity	Distance from the source (m)	
	< 20	< 50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

**Step 3: Determine the site-specific mitigation**

- 4.2.13 Once each of the activities is assigned a risk rating, appropriate mitigation measures are identified. Where the risk is negligible, no mitigation measures beyond those required by legislation are necessary.

**Step 4: Determine any residual effects**

- 4.2.14 Once the risk of dust impacts has been determined and the appropriate dust mitigation measures identified, the final step is to determine whether there are any residual significant effects. The IAQM guidance [4] notes that it is anticipated that with the implementation of effective site-specific mitigation measures, the environmental effect will not be significant in most cases.

**Step 5: Prepare a dust assessment report**

- 4.2.15 The last step of the assessment is the preparation of a Dust Assessment Report, i.e., this document.

## 5. Baseline Assessment

5.1.1 The baseline conditions for the Proposed Development at the time of the assessment are presented below.

### 5.2 Sources of Air Pollution

#### Industrial Processes

5.2.1 Industrial air pollution sources are regulated through a system of operating permits or authorisations, requiring stringent emission limits to be met and ensuring that any releases to the environment are minimised or rendered harmless. Regulated (or prescribed) industrial processes are classified as Part A(1), A(2), Part B or Medium Combustion Plant (MCP) processes, and are regulated through the Pollution Prevention and Control (PPC) system [10, 11]. The larger more polluting processes are regulated by the Environment Agency (EA), and the smaller, less polluting ones by the local authorities. Local authorities regulate only for emissions to air, whereas the EA regulates emissions to air, water and land.

5.2.2 According to the EA website [8], there are no regulated industrial installations within 1km of the Proposed Development.

### 5.3 Road Traffic

5.3.1 In recent decades, atmospheric emissions from transport on a national basis have grown to match or exceed other sources in respect of many pollutants, particularly in urban areas. The local air quality close to the Proposed Development is mainly influenced by the A1, A167 and Lodge Lane.

### 5.4 Local Air Quality

5.4.1 The Environment Act 2021 requires local authorities to review and assess air quality with respect to the objectives for pollutants specified in the National Air Quality Strategy. Where objectives are not predicted to be met, local authorities must declare the area as an AQMA. In addition, local authorities are required to produce an AQAP which outlines measures to improve air quality within the AQMA.

5.4.2 The Proposed Development is situated within the administrative boundaries of Darlington Borough Council, Stockton-on-Tees Borough Council and a small section within Durham County Council. There are no declared AQMAs within the Darlington area [12], or for Stockton-on-Tees.

5.4.3 Durham County Council declared an AQMA in Durham City due to elevated concentrations of NO<sub>2</sub> near to major roads, in excess of the annual mean air quality objective, and published the AQAP [13]. However, the effects of the Proposed



Development upon the AQMA are unlikely to occur due to the distance (~20km north) from the Proposed Development.

## 5.5 Local monitoring

5.5.1 There are no monitoring sites within 1 – 2km of the Proposed Development from Darlington and Durham. The nearest monitoring site from Stockton-on-Tees is 1.7km away from the Order Limits, it is located in Junction Road, Norton. This roadside diffusion tube location recorded annual mean NO<sub>2</sub> concentrations between 2020 and 2022, monitored concentrations are well below the objective of 40µg/m<sup>3</sup>.

## 5.6 Background concentrations

5.6.1 Background concentrations refer to the existing levels of pollution in the atmosphere, produced by a variety of stationary and non-stationary sources, such as roads and industrial processes. The Defra website [9] includes estimated background pollutant concentrations for NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for each 1km by 1km OS grid square in the UK.

5.6.2 The current and future background pollutant concentrations are shown in Table 5-1. The values represent the average concentrations across the full area covered by the Proposed Development.

**Table 5-1 Estimated background annual mean pollutant concentrations for the Proposed Development.**

Year	Annual mean concentration (µg/m <sup>3</sup> )			
	NO <sub>2</sub>	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2023	6.5	8.3	11.3	6.4
2030	5.6	7.0	11.0	6.2

## 6. Construction Assessment

### 6.1 Construction dust

6.1.1 This section provides the results of the assessment of potential impacts from construction activities on air quality. The Proposed Development will require construction, earthworks and associated trackout (no demolition works will take place for the Proposed Development).

#### **Sensitive receptors**

6.1.2 Sensitive receptors considered are defined in IAQM guidance [4], high sensitivity receptors include residential properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction of a Proposed Development.

6.1.3 There are between 10 and 100 residential receptors within 20m of the Proposed Development. There are more than 100 residential receptors within 50m of the Proposed Development. Residential properties are considered 'high sensitivity' receptors in accordance with IAQM guidance [4]. The full Order Limits has been considered in the assessment with distances to receptors being taken from the Order Limits rather than where works could occur as a conservative estimate.

6.1.4 Sensitive ecological receptors are defined as those sites whose features have been designated as sensitive to pollutants, either directly or indirectly. There are no ecological receptors within 50m of the Proposed Development. The nearest ecological receptor to the Proposed Development is a Site of Special Scientific Interest (SSSI) called Newton Ketton Meadow which is over 100m south of the Proposed Development. Following the IAQM guidance [4], impacts on ecological receptors have therefore not been considered for this assessment due to their distance from the Proposed Development.

#### **Dust emission magnitude**

6.1.5 Each dust-generating activity has been assigned a dust emission magnitude. The dust emission magnitudes associated with construction of the Proposed Development are outlined in Table 6-1. Where construction data is not available, assumptions have been made based on professional judgement.

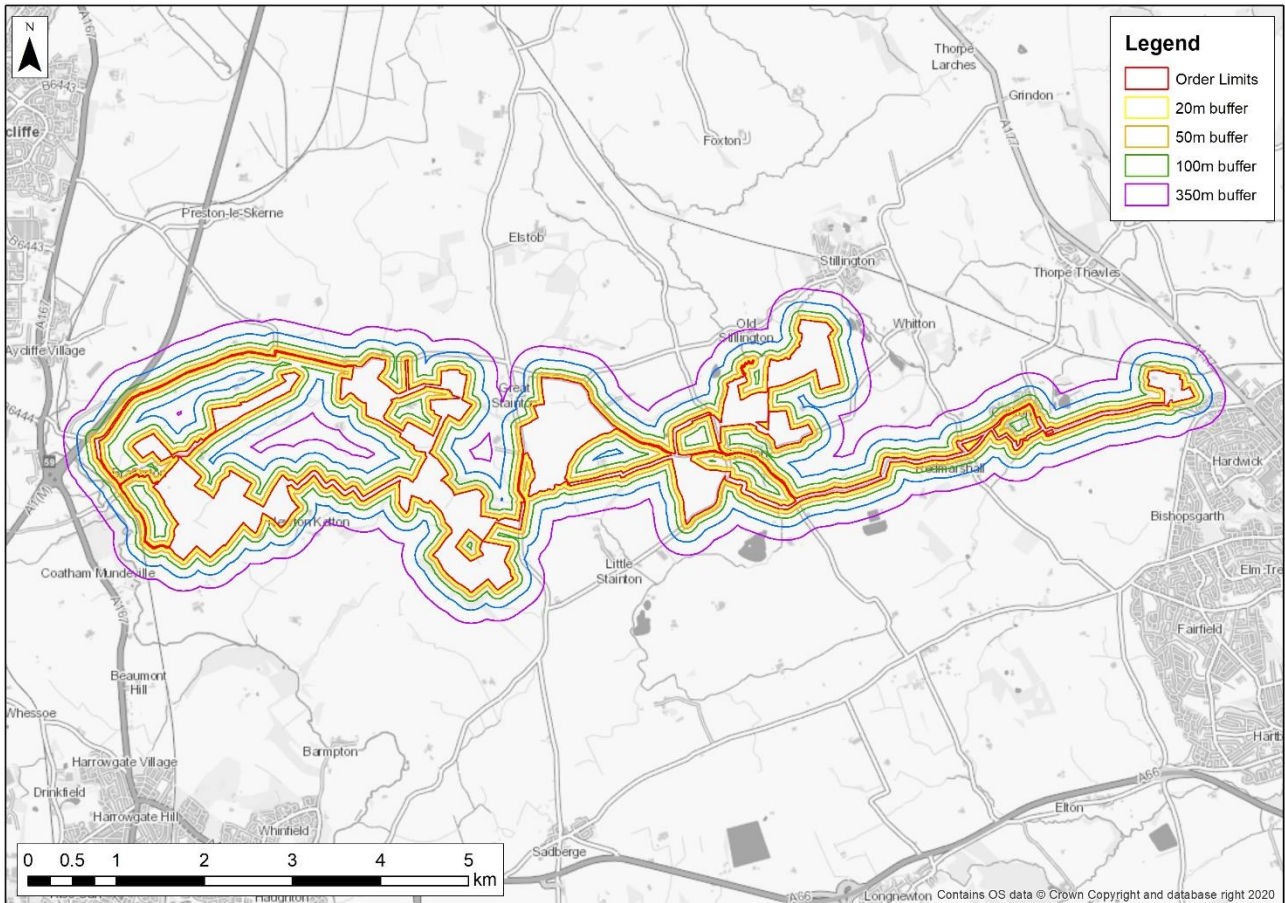
**Table 6-1 Dust emission magnitude for construction activities at the Proposed Development**

Activity	Dust emission magnitude	Reasoning Response
<b>Demolition</b>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>No demolition works will be undertaken for the Proposed Development.</li> </ul>
<b>Earthworks</b>	<ul style="list-style-type: none"> <li>Large</li> </ul>	<ul style="list-style-type: none"> <li>Total site area &gt;110,000m<sup>2</sup>, involving access roads, inverters / battery containers, substation and cable trenches.</li> <li>Soil type is assumed to be clay following a conservative approach.</li> <li>The number of heavy-earth moving vehicles active at any one time is assumed to be more than 10.</li> <li>No bunds will be created.</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>Medium</li> </ul>	<ul style="list-style-type: none"> <li>No buildings will be constructed.</li> <li>The nature of construction activity will include piling, and the potentially dusty construction material of concrete batching (which will be low volume, to create pads for containers and substations).</li> </ul>
<b>Trackout</b>	<ul style="list-style-type: none"> <li>Medium</li> </ul>	<ul style="list-style-type: none"> <li>Estimated daily Heavy Goods Vehicles (HGV) outward movement is 18 movements, on the basis that three Panel Areas will to be constructed simultaneously.</li> <li>Potentially dusty surface due to high clay content.</li> <li>The unpaved road is assumed to be 50m – 100m</li> </ul>

### Sensitivity of the area

- 6.1.6 There are between 10 – 100 high sensitivity receptors within 20m of the Proposed Development. As such, the areas sensitivity to dust soiling has been classified as *high* in accordance with the IAQM guidance [4].
- 6.1.7 The Proposed Development is located where the average Defra PM10 background concentration is 11.3µg/m<sup>3</sup>, therefore the sensitivity of the area to human health has been assigned as low following the IAQM guidance [24].
- 6.1.8 The construction dust buffers are presented in Plate 6-1.

**Plate 6-1 Construction dust buffers**



**Risk of Impacts**

6.1.9 Taking into consideration the dust emission magnitude and the sensitivity of the area, the risk of impacts has been classified and presented on Table 6-2. The risk of potential dust soiling impacts ranges from medium to high, while the risk to human health impacts is predicted to be low risk.

**Table 6-2 Summary dust risk table prior to mitigation for the Proposed Development**

Activity	Dust soiling	Human health
Earthworks	<ul style="list-style-type: none"> <li>High risk</li> </ul>	<ul style="list-style-type: none"> <li>Low risk</li> </ul>
Construction	<ul style="list-style-type: none"> <li>Medium risk</li> </ul>	<ul style="list-style-type: none"> <li>Low risk</li> </ul>
Trackout	<ul style="list-style-type: none"> <li>Medium risk</li> </ul>	<ul style="list-style-type: none"> <li>Low risk</li> </ul>

6.1.10 Specific mitigation to minimise the risk of dust soiling and human health impacts from the Proposed Development is described in section 7.

6.1.11 Following the implementation of appropriate mitigation, the potential impacts of dust soiling and potential impacts on human health should be negligible and therefore no significant effects are considered to be likely.

## 7. Mitigation

### 7.1 Construction dust

7.1.1 The dust emitting activities can be greatly reduced or eliminated by applying site-specific mitigation measures. As a *high risk* has been determined for earthworks activities, the relevant high risk measures have been provided for this construction activity according to the IAQM guidance [4].

#### Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on the Proposed Development.
- Display the name and contact details of the person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.
- Develop and implement a Dust Management Plan (DMP), which will measure to control other emissions, approved by the local authority.

#### Site management

- 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.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, both on- or off-site and the action(s) taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high risk construction sites within 500m of the Order Limits, to ensure all plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

#### Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log 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 100m of the Proposed Development, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results and make an inspection log available to the local authority, when asked.

- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

### **Preparing and Maintaining the Site**

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as practical or possible.
- Erect solid screens or barriers around dusty activities or the Proposed Development that are at least as high as any stockpiles on the Proposed Development.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site.
- Cover, seed or fence stockpiles to prevent wind whipping.

### **Operating Vehicle/Machinery and Sustainable Travel**

- Ensure all vehicles switch off engines when stationary – no idling vehicles.
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on un-surfaced haul roads and work areas (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.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

### **Operations**

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques, such as water sprays or local extraction.
- Ensure an adequate water supply at the Proposed Development for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.

- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use the fine water sprays on such equipment wherever appropriate.
- 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.

### **Waste management**

- Avoid bonfires and burning of waste materials.

### **Measures specific to Earthworks**

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

### **Measures specific to Construction**

- Ensure sand and other aggregates 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.
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure bulk cement and other fine powder materials are 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 bags are sealed after use and stored appropriately to prevent dust.

### **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 continuously in use.
- Avoid dry-sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.

- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system.
- Ensure there is adequate area of hard surfaced road between the wheel wash facility and the Proposed Development exit, wherever the Proposed Development size and layout permits.
- Access gates to be located at least 10m from receptors where possible.



## 8. Conclusions

- 8.1.1 This report presents the Air Quality Construction Dust Assessment as part of an Application for a DCO for the construction, operation and decommissioning of the Proposed Development.
- 8.1.2 A review of the current legislation, planning policy and a baseline assessment describing the current air quality conditions in the vicinity of the Proposed Development has been carried out. The Proposed Development is not considered to contradict policy or legislation relating to air quality.
- 8.1.3 A baseline assessment has been carried out to review the air quality conditions in the vicinity of the Proposed Development.
- 8.1.4 Construction dust impacts have been considered and assessed using the qualitative approach described in the latest IAQM guidance [4]. It has been concluded that with the appropriate best practice mitigation measures suitable for medium risk sites in place, there is likely to be a negligible effect on existing receptors from the dust-generating activities on the Proposed Development.
- 8.1.5 Overall, it is considered that air quality and construction dust should not be a material consideration in relation to the Proposed Development.

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