



# Longfield Solar Farm

Environmental Statement PINS Ref: EN010118

Volume 1

Chapter 14: Air Quality

Document Reference EN010118/APP/6.1(A)

Revision Number: 2.0

November 2022

Longfield Solar Energy Farm Ltd

APFP Regulation 5(2)(a)

Planning Act 2008

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

Quality information

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## Table of Contents

14.	Air Quality .....	1
14.1	Introduction .....	1
14.2	Legislation and Planning Policy .....	1
14.3	Assessment Assumptions and Limitations .....	7
14.4	Stakeholder Engagement .....	8
14.5	Assessment Methodology .....	9
14.6	Baseline Conditions .....	13
14.7	Embedded Design Mitigation .....	15
14.8	Assessment of Likely Impacts and Effects .....	17
14.9	Additional Monitoring, Mitigation and Enhancement Measures .....	25
14.10	Residual Effects and Conclusions .....	25
14.11	Cumulative Effects .....	26
14.12	References .....	26

## Tables

Table 14-1:	Key Air Quality Strategy Objectives .....	2
Table 14-2:	Main matters raised during consultation .....	8
Table 14-3:	Local Authority NO <sub>2</sub> Monitoring in the Study Area .....	13
Table 14-4:	Background Pollutant Concentrations, 2024-2026 .....	14
Table 14-5:	Good Practice Dust Mitigation .....	15
Table 14-6:	Activity-Specific Good Practice Dust Measures .....	17
Table 14-7:	Dust Risk Assessment .....	18
Table 14-8:	Summary of Potential Dust Emission Magnitudes for Construction Phase Activities .....	23
Table 14-9:	Summary of Area Sensitivity to Construction Phase Activities .....	23
Table 14-10:	Summary of Risk of Dust Effects for Construction Phase Activities (Without Mitigation) .....	23
Table 14-11:	Summary of Magnitude of Impact and Significance of Effect .....	24
Table 14-12:	Summary of Residual Effects (Construction and Decommissioning) .....	25
Table 14-13:	Summary of Residual Effects (Operation) .....	26

# 14. Air Quality

## 14.1 Introduction

14.1.1 This chapter identifies and proposes measures to address the potential impacts and effects of the Scheme on air quality during construction, operation, and decommissioning. This includes dust generation and emissions from additional road traffic and onsite equipment.

14.1.2 The potential impact of the Scheme on local air quality will be determined at sensitive (human and ecological) receptors identified in the vicinity of the Order limits. This comprises sensitive receptors within 350m of the Order limits, within 50m of roads expected to be affected by the construction phase traffic, and up to 500m from the site access points.

## 14.2 Legislation and Planning Policy

14.2.1 Legislation, planning policy, and guidance relating to air quality, and pertinent to the Order limits is outlined in this section.

### *Legislation*

#### Local Air Quality Management

14.2.2 The provisions of Part IV of the Environment Act 1995 established a national framework for air quality management, which requires all local authorities in England, Scotland and Wales to conduct local air quality reviews. Section 82(1) of the Environment Act 1995 requires these reviews to include an assessment of the current air quality in the area and the predicted air quality in future years. Should the reviews indicate that the objectives prescribed in the UK Air Quality Strategy (AQS) (Ref 14-1) and the Air Quality Standards Regulations (Ref 14-2, Ref 14-3 and Ref 14-4) will not be met, the local authority is required to designate an Air Quality Management Area (AQMA). Action must then be taken at a local level to ensure that air quality in the area improves. This process is known as 'local air quality management' or LAQM.

#### UK Air Quality Strategy

14.2.3 The UK Air Quality Strategy (AQS) (Ref 14-1) identifies nine ambient air pollutants that have the potential to cause harm to human health and two for the protection of vegetation and ecosystems. The Strategy defines objectives for these pollutants that aim to reduce the impacts of these pollutants to negligible levels. The objectives are not mandatory but rather targets that local authorities should try to achieve.

14.2.4 In 2019, the UK Government released its Clean Air Strategy (Ref 14-5), part of its 25 Year Environment Plan.

14.2.5 LAQM focus in recent years has primarily related to nitrogen dioxide (NO<sub>2</sub>), and its principal source in the UK, which is road traffic. However, the 2019 Strategy broadens the focus to other areas, including domestic emissions from wood burning stoves and from agriculture. This shift in emphasis is part of a goal to reduce the levels of fine particulate matter (PM<sub>2.5</sub>) in the air to below

the World Health Organisation guideline level (Ref 14-22); lower than the current objective.

### European Air Quality Directives

- 14.2.6 The UK is no longer a member of the European Union. EU legislation as it applied to the UK on 31 December 2020 is now a part of UK domestic legislation, under the control of the UK Parliament and devolved administrations.
- 14.2.7 The Clean Air for Europe (CAFE) programme consolidated and replaced (with the exception of the 4th Daughter Directive) preceding directives with a single directive, the Ambient Air Quality and Cleaner Air for Europe Directive 2008/50/EC (hereafter referred to as the ‘EU Air Quality Framework Directive’) (Ref 14-8). This directive is implemented into domestic law in England by the Air Quality Standards Regulations 2010 which came into force on 11 June 2010 (Ref 14-3). The 2010 Regulations were amended by the Air Quality Standards Regulations 2016 (Ref 14-4), which came into force on 31 December 2016. The limit values defined therein are legally-binding and apply everywhere in England (with the exception of the carriageway and central reservation of roads where the public do not normally have access, on factory premises or at industrial locations (which are instead subject to health and safety at work) and any locations where the public do not have access and there is no fixed habitation).
- 14.2.8 The Air Quality Standards Regulations 2010 (as amended) set legally binding limits for concentrations of certain air pollutants in outdoor air, termed ‘limit values’, with the aim of avoiding, preventing or reducing harmful effects on human health and on the environment as a whole. Where the concentrations exceed limit values, the Secretary of State is required to develop an air quality plan that sets out measures in order to attain compliance with the Limit Values. The Court of Justice of the European Union (CJEU) ruled in March 2021 that the UK has ‘systematically and persistently’ exceeded legal limits for NO<sub>2</sub> since 2010 (Ref 14-9).
- 14.2.9 The pollutants of concern for this assessment are PM<sub>10</sub> and PM<sub>2.5</sub> and NO<sub>2</sub>.
- 14.2.10 The UK’s national Air Quality Objective values for the pollutants of relevance to this assessment are summarised in **Table 14-1**.

**Table 14-1: Key Air Quality Strategy Objectives**

Pollutant	Objective	Averaging Period	Maximum Permitted Exceedances
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>	200 µg/m <sup>3</sup>	1 hour	18 times per year (i.e. 99.79 <sup>th</sup> percentile)
	40 µg/m <sup>3</sup>	Annual	-
<b>Particulate Matter (PM<sub>10</sub>)</b>	40 µg/m <sup>3</sup>	Annual	-
	50 µg/m <sup>3</sup>	24-hour	35 times per year (i.e. 90.4 <sup>th</sup> percentile)
<b>Particulate Matter (PM<sub>2.5</sub>)</b>	25 µg/m <sup>3</sup>	Annual	-

### **National Planning Policy**

#### 14.2.11 Overarching National Policy Statement (NPS) for Energy (EN-1), states:

“The construction, operation and decommissioning phases can involve emissions to air which could lead to adverse impacts on health, on protected species and habitats, or on the wider countryside.

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).

The ES should describe:

- a. *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;*
- b. *the predicted absolute emission levels of the proposed project, after mitigation methods have been applied;*
- c. *existing air quality levels and the relative change in air quality from existing levels; and*
- d. *any potential eutrophication impacts.*

Where a project is likely to lead to a breach of [national air quality objectives] the developers should work with the relevant authorities to secure appropriate mitigation measures to allow the proposal to proceed.”

#### 14.2.12 NPS EN-3 and EN-5 do not contain requirements relevant to the air quality assessment for this Scheme.

#### 14.2.13 A consultation draft of an updated version of EN-1 has been published. Whilst this is not yet in force, the policies on air quality largely mirror those of the existing EN-1. The only substantive difference is a requirement to engage with the relevant local authority where a project is in, or in close proximity to a Local Air Quality Management Area or Clean Air Zone to ensure compatibility with the local air quality plan.

### **National Planning Policy Framework**

#### 14.2.14 The revised National Planning Policy Framework (NPPF) was published in July 2018 (and amended in February 2019 and July 2021) and sets out the Government’s planning policies for England and how these are expected to be applied (Ref 14-10). This NPPF supersedes the previous NPPF published in March 2012.

#### 14.2.15 The revised NPPF maintains the presumption in favour of sustainable development which should be delivered in accordance with three main objective areas: economic, social and environmental (Paragraph 8). The revised NPPF aims to enable local people and their local authorities to produce their own distinctive local and neighbourhood plans, which should be interpreted and applied in order to meet the needs and priorities of their communities.

#### 14.2.16 Important factors for local authorities to consider in planning and decision-making include identification of the types of development (including housing)

needed, local market conditions, the capacity of existing infrastructure and services and potential for improvements, maintenance of an area's character whilst promoting regeneration and change, and the importance of well-designed, healthy and sustainable places.

#### 14.2.17 Paragraph 105 of the NPPF states that:

"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health."

#### 14.2.18 Air quality is considered as an important element of the natural environment. On conserving and enhancing the natural environment, Paragraph 174 states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by: ...

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality ..."

#### 14.2.19 Air quality in the UK has been managed through the Local Air Quality Management (LAQM) regime using national objectives. The effect of a proposed development on the achievement of such policies and plans may be a material consideration by planning authorities when making decisions for individual planning applications. Paragraph 186 of the NPPF states that:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

#### 14.2.20 The different roles of a planning authority and a pollution control authority are addressed by the NPPF in paragraph 188:

*"The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."*

### Planning Practice Guidance

14.2.21 The Planning Practice Guidance (PPG) (Ref 14-11) was published on 6 March 2014 to provide more in-depth guidance to the NPPF. It sets out the government's planning policies for England and how these are expected to be applied. The PPG aims to make planning guidance more accessible, and to ensure that the guidance is kept up to date. As such, the PPG was amended in July 2017 to reflect the updated EIA Regulations, and subsequently revised again in 2019.

14.2.22 The PPG notes:

"Where air quality is a relevant consideration the local planning authority may need to establish:

- a. *The 'baseline' local air quality, including what would happen to air quality in the absence of the development;*
- b. *Whether the proposed development could significantly change air quality during the construction and operational phases (and the consequences of this for public health and biodiversity); and*
- c. *Whether occupiers or users of the development could experience poor living conditions or health due to poor air quality".*

14.2.23 The guidance also advises that the application should proceed to decision with appropriate planning conditions or planning obligations to ensure that the proposed development (with mitigation) would not lead to an unacceptable risk from air pollution, prevent sustained compliance with EU limit values or fail to comply with the regulation of the Conservation of Habitats and Species Regulations 2010 (Ref 14-12).

### Local Planning Policy

14.2.24 The Scheme traverses the Braintree District Council/Chelmsford City Council administrative boundary. The consideration of air quality within local policy has therefore been identified for both local authorities.

### Braintree District Council Local Plan (2005)

14.2.25 Braintree District Council's last official Local Plan was published in 2005; a new Local Plan is currently in draft and is under consultation. The 2005 Local Plan (Ref 14-13) was developed to provide a framework for the development of the Braintree area between 2005-2011. The plan is based on sustainability principles which seek to guide development in such a way as to conserve and protect resources and not to compromise future generations in meeting their own needs.

14.2.26 Policy 'RLP 63 Air Quality' states:

"Where the District Council considers that air quality objectives are likely to be prejudiced, as a result of development proposals and/or resultant traffic movements, applicants will be required to submit a specialist assessment. Planning permission will be refused for developments where air quality objectives cannot be met."



### Braintree District Council Draft New Local Plan to 2033

14.2.27 A New Local Plan is currently under development and is set to replace the Local Plan Review (2005) and Core Strategy (2011). The Council's Publication Draft Local Plan (Ref 14-14) was approved on 5 June 2017 for a Regulation 19 Consultation and Submission by Council.

14.2.28 The Draft New Local Plan to 2033 has been submitted (in two parts) to the Planning Inspectorate for consideration. Section 1 was formally adopted in February 2021 (Ref 14-14), and Section 2 is anticipated to undergo examination in July 2021.

14.2.29 'Policy LPP 73 - Protecting and Enhancing Natural Resources, Minimising Pollution and Safeguarding from Hazards' of the Publication Draft Local Plan states:

"Proposals for all new developments should prevent unacceptable risks from all emissions and other forms of pollution (including light and noise pollution) and ensure no deterioration to either air or water quality. All applications for development where the existence of, or potential for creation of, pollution is suspected must contain sufficient information to enable the Local Planning Authority to make a full assessment of potential hazards. Development will not be permitted where, individually or cumulatively, there are likely to be unacceptable impacts arising from the development on:

[...]

c. Air quality

[...]"

### Braintree District Council Local Development Framework Core Strategy

14.2.30 Braintree District Council adopted its Local Development Framework Core Strategy in September 2011 and was amended following the adoption of Section 1 of the Council's New Local Plan in February 2021. The Core Strategy sets out the overall spatial vision and objectives, spatial strategy, core policies of the Council between 2011 to 2026 and describes how they will be implemented and monitored (Ref 14-16).

14.2.31 'Policy CS8 – Natural Environment and Biodiversity' states:

"All development proposals will take account of the potential impacts of climate change and ensure the protection and enhancement of the natural environment, habitats and biodiversity and geo-diversity of the District. This will include where appropriate protection from:

[...]

Air, noise, light and other types of pollution

[...]"

### Chelmsford Local Plan (2020)

14.2.32 Chelmsford City Council adopted the Chelmsford Local Plan 2013-2036 in May 2020 (Ref 14-17). The Local Plan outlines the strategic priorities and long-term vision for Chelmsford and identifies locations for delivering housing and

other strategic development needs such as employment, retail, leisure, community and transport development. It contains a Spatial Strategy to deliver this vision. The Local Plan sets out the amount and location of new development, and how places will change and be shaped throughout the Local Plan period and beyond. The Council's Local Plan provides a new planning framework to meet local development needs for the period 2013-2036.

14.2.33 'Policy DM30 – Contamination and Pollution' of the Local Plan states:

"B) Air Quality Management Area for developments in or adjacent to an Air Quality Management Area, or where an air quality impact assessment has been provided, permission will only be granted where the Council is satisfied that after selection of appropriate mitigation the development will not have an unacceptable impact on air quality and the health and wellbeing of people."

### **Other Relevant Guidance**

14.2.34 The determination of the significance of the results of the air quality assessment as a result of the Scheme will adhere to the non-statutory good-practice guidance relating to air quality and development control, published by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) (Ref 14-18). The guidance ensures that air quality is adequately considered during land-use planning and development control process and is applicable to assessing the effect of changes in exposure of members of the public consequential to residential and mixed-use developments. This is of particular importance in urban areas where air quality is of a poorer standard. The guidance states that:

*"Land-use planning can play a critical role in improving local air quality. At the strategic level, spatial planning can provide for more sustainable transport links between the home, workplace, educational, retail and leisure facilities, and identify appropriate areas for potentially polluting industrial development. For an individual development proposal, there may be associated emissions from transport or combustion processes providing heat and power."*

## **14.3 Assessment Assumptions and Limitations**

14.3.1 This ES Chapter has assessed the Design Principles. The traffic flows and non-road mobile machinery are based on a worst-case scenario of all infrastructure being built to its maximum parameters (associated with the Design Principles), which may in reality slightly overestimate the number of vehicles and equipment. The dust assessment is based on the area of construction and types of activity and is not reliant on a specific design; the assessment of dust is therefore based on the Design Principles.

14.3.2 It has been assumed for the purpose of the assessment that the Battery Energy Storage System (BESS) will be built out in a single phase, which is considered the worst-case in terms of road traffic numbers and exposure of sensitive receptors to elevated levels of dust. Should the BESS construction be phased, it is not considered likely to change the conclusions of this assessment.

## 14.4 Stakeholder Engagement

14.4.1 Consultation undertaken to date in relation to air quality is outlined in **Table 14-2**.

**Table 14-2: Main matters raised during consultation**

Consultee	Main matter raised	How has the concern been addressed	Location of response in chapter
Planning Inspectorate	The Scoping Report states that incorporation of air quality mitigation measures into an Outline Construction Environmental Management Plan (OCEMP) <b>[EN010118/APP/7.10(C)]</b> would negate the need for a specific air quality chapter in the ES. The air quality assessment would instead be presented as part of an 'Other Environmental Issues' chapter of the ES. The Inspectorate has considered the nature and characteristics of the Proposed Development and is content with this approach. The ES should describe the measures relied upon to manage dust and emissions during construction and decommissioning of the Proposed Development. It should be clear how all mitigation measures would be delivered and secured, through cross reference to the OCEMP <b>[EN010118/APP/7.10(C)]</b> and the DCO. The Inspectorate's agreement in this regard is on the basis that the predicted numbers of HGV movements (as stated in paragraph 2.4.6 of the Scoping Report) remain below the criterion for an air quality assessment as set out in EPUK guidance.	The HGV numbers remain below the IAQM screening criteria (refer to Paragraphs 14.5.12 to 14.5.14). However the Applicant decided to include air quality as a chapter within this ES rather than placing the topic within 'Other Environmental Topics' to ensure proportionate assessment.	N/A
Planning Inspectorate	Having had regard to the nature and characteristics of the Proposed Development, the Inspectorate is content that operation of the proposed solar farm would not lead to significant effects in terms of air quality. This matter can be scoped out of the ES.	No response required.	N/A
Natural England	Air quality in the UK has improved over recent decades but air pollution remains a significant issue; for example over 97% of sensitive habitat area in England is predicted to exceed the critical loads for ecosystem protection from atmospheric nitrogen deposition (England Biodiversity Strategy, Defra 2011). A priority action in the England Biodiversity Strategy is to reduce air pollution impacts on biodiversity. The planning system plays a key role in determining the location of developments which may give rise to pollution, either directly or from traffic generation, and hence planning decisions can have a significant impact on the quality	Ecosystems sensitive to air quality have been assessed following IAQM guidance.	Section 14.2.3

Consultee	Main matter raised	How has the concern been addressed	Location of response in chapter
Natural England	<p>of air, water and land. The assessment should take account of the risks of air pollution and how these can be managed or reduced. Further information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (<a href="http://www.apis.ac.uk">www.apis.ac.uk</a>). Further information on air pollution modelling and assessment can be found on the Environment Agency website.</p> <p>We note that section 14.2, identifies and proposes measures to address the potential impacts and effects of the Scheme on Air Quality during construction, operation, and decommissioning. For this Scheme there are potential minor adverse impacts from dust / air pollution on ecological receptors however with the embedded avoidance/mitigation it is deemed to not be significant.</p>	<p>Ecosystems sensitive to air quality have been assessed following IAQM guidance.</p>	<p>Section 14.2.3</p>

## 14.5 Assessment Methodology

- 14.5.1 There is currently no statutory guidance on the methodology for air quality impact assessments. Several non-statutory bodies have published their own guidance relating to air quality and development control, such as that by EPUK and the IAQM (Ref 14-18). This assessment has been carried out based on this guidance.
- 14.5.2 The impacts of the operational phase have been scoped out of the air quality assessment, and as such this section details the methods used to assess the potential effects on air quality during the construction and decommissioning phases of the Scheme. Whilst the details of the decommissioning phase are not fixed at this stage, it is expected that the decommissioning phase will be similar in nature to construction, albeit of a slightly shorter duration, with less earth moving onsite, and fewer road traffic movements and onsite equipment; it is therefore less likely to cause an impact than the construction phase. As such the construction phase is considered to be a worst-case proxy for the decommissioning phase.
- 14.5.3 The potential for fugitive emissions of particulate matter from construction and decommissioning-phase activities has been qualitatively assessed via a dust risk assessment. Construction-phase road traffic volumes are not predicted to meet thresholds above which detailed modelling is required. This is discussed in Paragraphs 14.5.12 to 14.5.14.
- 14.5.4 As set out in the Preliminary Environmental Information (PEI) Report, due to the nature of the Scheme, a significant change to traffic flows is not anticipated to occur once the Scheme is complete and operational and there are no other likely significant air quality impacts predicted during operation. A detailed assessment of emissions from operational road traffic and the subsequent impact upon local air quality is therefore not required and will not be

considered further within this assessment. This was agreed in the Scoping Opinion.

#### Methodology for Assessment of Fugitive Emissions of Particulate Matter during Construction Phase

- 14.5.5 A qualitative risk-based assessment has been undertaken to assess the significance of any effects on sensitive receptors associated with the construction phase. The assessment is based on IAQM guidance (Ref 14-19) and considers potential sources of emissions on the basis of the three main activity groupings:
- Earthworks;
  - Construction; and
  - Trackout.
- 14.5.6 The emphasis within the guidance is on clarifying the risk of dust impacts from the Order limits, which will allow mitigation measures commensurate with that risk to be identified.
- 14.5.7 For each activity group, the following steps are applied to identify the potential effects, before coming to an overall conclusion about the significance of the effects predicted.
- Identify the nature, duration and the location of activities being carried out;
  - Establish the risk of significant effects occurring as a result of these activities;
  - Review the proposed or embedded mitigation against good site practice;
  - Identify additional mitigation measures, if necessary, to reduce the risk of a significant adverse effect occurring at receptors; and
  - Summarise the overall effect of the works with respect to fugitive emissions of particulate matter and report the significance of the effects.
- 14.5.8 A 'Dust Risk Assessment' (DRA) has been undertaken based on the IAQM guidance (Ref 14-19) and the findings are presented within the 'Dust Risk Assessment' section of this chapter. Construction of the Scheme will take place over a number of phases and as such potential fugitive emissions may be lower than expected compared to the size of the Order limits, when considering the Scheme in reference to the IAQM guidance (Ref 14-19).
- 14.5.9 Based on the information available at the time of completing this ES, the following sources of emissions have been scoped out of the air quality assessment, as agreed in the Scoping Opinion.

#### Emissions from Non-Road Mobile Machinery (NRMM)

- 14.5.10 Emissions from construction Non-Road Mobile Machinery (NRMM) will have the potential to increase NO<sub>2</sub> and PM<sub>10</sub> concentrations locally when in use during construction. The IAQM guidance (Ref 14-19) suggests that, based on experience of assessing the exhaust emissions from on-site plant (NRMM) and site traffic, these are unlikely to make a significant impact on local air

quality, and in the vast majority of cases they will not need to be quantitatively assessed.

- 14.5.11 Emissions from NRMM will be temporary and localised; and will be controlled through best-practice mitigation measures. For that reason, construction phase NRMM emissions would not be significant and, therefore, these emissions have not been modelled nor are required to be considered any further in this assessment, as agreed in the Scoping Opinion.

#### Construction Phase Road Traffic Emissions

- 14.5.12 The construction phase of the Scheme is likely to lead to a small increase in the number of vehicles on the local highway network for the duration of the construction works. EPUK (Ref 14-18) set out criteria to establish the need for an air quality assessment for the construction phase of a development as being:

“Large, long-term construction sites that would generate large HGV flows (>200 per day) over a period of a year or more.”

- 14.5.13 There will be a daily maximum of 96 HGVs on the Strategic Road Network (SRN), of which 50 HGVs would then use the local highway network for the Solar PV Site, with the remainder travelling to/ from Bull’s Lodge Substation via the RDR and private road. This is a worst-case figure, as this assumes that the peak phases of the Solar PV Site construction works and Bull’s Lodge Substation Extension works coincide.

- 14.5.14 The impact associated with construction road traffic on local air quality can be considered not significant (in accordance with the EPUK criteria) and a detailed dispersion modelling exercise has therefore not been undertaken based on the information available at the time of writing.

#### **Study Area**

- 14.5.15 A study area comprising the Order limits and the surrounding area has been assessed. Sensitive receptors within 350m of the Order limits, within 50m of the roads expected to be affected by the construction phase traffic, and up to 500m from the site access point, have been considered. Sensitive ecological receptors considered within the assessment are depicted in **Figure 14-1** of the ES [EN010118/APP/6.3], in addition to the Dust Risk Assessment Zones for Human Health and Amenity receptors.

#### **Sources of Information**

- 14.5.16 The following sources of information that define the Scheme have been reviewed and form the basis of the assessment of likely significant effects on air quality:
- Site layout and site location plans (**Figure 1-1: Scheme Location [EN010118/APP/6.1]**, and **Figure 2-5: Illustrative Concept Design [EN010118/APP/6.3(A)]**);
  - Defra Air Quality Background Concentration Maps (Ref 14-21); and
  - Local Authority Review and Assessment Reports (Ref 14-20).

### **Impact Assessment Methodology**

- 14.5.17 Receptors of interest for the air quality assessment are those which represent locations where people are likely to be present as the assessment is most concerned with human health, and locations of ecological value where there is predicted to be an increase in air pollutant concentrations. The national air quality objective values for pollutants have been set at concentrations that provide protection to all members of society, including more vulnerable groups such as the very young, elderly or unwell. As such, the sensitivity of receptors has been accounted for in the definition of the air quality objective values and therefore all receptors that represent exposure of the public are of equal sensitivity as any member of the public could be present at those locations.
- 14.5.18 Receptors considered against the annual mean objective include public present in areas affected by regular exposure. This includes building facades of residential properties, schools, hospitals, care homes, etc. Receptors considered against the short-term objective include members of the public present in areas where the annual mean objective applies, but also areas with less regular exposure, such as any outdoor locations where the public might reasonably be expected to spend one hour or longer.
- 14.5.19 The methodology for determining sensitive receptors is described below.

#### **Construction Phase Sensitive Receptors**

- 14.5.20 For the purposes of the DRA, potentially affected air quality sensitive receptors have been identified for the assessment through a review of Ordnance Survey (OS) mapping and aerial photography.
- 14.5.21 Based upon guidance for qualitatively assessing the risk of dust impacts from demolition and construction (Ref 14-19), a number of residential (high sensitivity) properties have been included with regards to construction phase dust soiling and PM<sub>10</sub> receptors.
- 14.5.22 Dust deposition due to a range of potential construction related activities can affect sensitive habitats and plant communities. The presence of sensitive ecological receptors holding a National or European designation within 50m of the Order limits, or within 50m from a route used by construction vehicles on the public highway (up to 500m from the Site access point) has also been established. Sites with the following designations have been explicitly considered within the DRA:
- a. Sites of Special Scientific Interest (SSSI);
  - b. Special Protection Areas (SPA);
  - c. Special Areas of Conservation (SAC);
  - d. Ramsar Sites;
  - e. National Nature Reserves (NNR); and
  - f. Local Nature Reserves (LNR).
- 14.5.23 Sites possessing the following designations have also been reviewed; however, explicit consideration as part of the DRA is not required in accordance with the IAQM guidance (Ref 14-19). These include:

- a. Ancient Woodland (AW); and
- b. Local Wildlife Sites (LWS).

14.5.24 Ammonia-emitting developments, such as intensive livestock and poultry units, in close proximity to ancient woodland sites can cause a greater abundance of nitrogen tolerant plant species which out-compete and impact on many characteristic ancient woodland plants. Ammonia can be released in small quantities from engine exhausts, but because of the low numbers of construction traffic, the Scheme will not be more than a negligible emitter of ammonia, and therefore this impact has been scoped out of the assessment as significant effects are not anticipated.

14.5.25 Designated ecological sites in the study area and the presence of sensitive species within these ecological sites is discussed in **Chapter 8: Ecology** of the ES [EN010118/APP/6.1].

### Significance Criteria

14.5.26 The assessment of effects has been carried out qualitatively, using professional judgment and following the IAQM guidance. The risk of impacts during construction have been assessed, and after implementation of the appropriate controls the impacts significance will be negligible.

14.5.27 The criteria presented in **Chapter 5: EIA Methodology** of the ES [EN010118/APP/6.1] has been applied. Negligible and minor effects are considered to be not significant. Moderate and major effects are considered significant.

## 14.6 Baseline Conditions

14.6.1 This section describes the baseline environmental characteristics for the Order limits and surrounding areas with specific reference to air quality.

### Existing Baseline

14.6.2 The air quality in the study area is generally good. There are no AQMAs within 5km of the Order limits, and neither Braintree District Council nor Chelmsford City Council undertake extensive air quality monitoring around the Site as there are no concerns about air quality.

14.6.3 There is one passive (diffusion tube) NO<sub>2</sub> monitoring site within 1km of the Order limits, for which the recorded annual mean NO<sub>2</sub> concentrations over the past 5 years are provided in **Table 14-3**. Annual mean NO<sub>2</sub> concentrations recorded at this location are well below the air quality objective of 40 µg/m<sup>3</sup>.

**Table 14-3: Local Authority NO<sub>2</sub> Monitoring in the Study Area**

Monitor ID	Monitoring Operator	OS X, Y	Approx. distance to Site (m)	Site Type	Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )				
					2015	2016	2017	2018	2019
CB31	Chelmsford City Council	575265, 209975	445	Roadside	24.8	26.7	26.0	24.4	24.3



Source: Chelmsford City Council Air Quality Annual Status Report 2020 (Ref 14-20). Data for 2020 has not yet been made publicly available by Chelmsford City Council.

### Background Pollutant Concentrations

- 14.6.4 The total concentration of a pollutant comprises those contributions from explicit local emission sources such as roads, chimney-stacks, etc., and those that are transported into an area from indeterminate sources by wind from further away. If all the explicit local sources were removed, all that would remain is that which comes from indeterminate sources; it is this component that is called ‘background’. A good understanding of background concentrations is important when completing air quality assessments as it allows for a better understanding of local pollutant sources.
- 14.6.5 Background data for the relevant 1km x 1km grid squares (related to the study area) was sourced from Defra’s 2018-based Background Maps for the assessment years of 2024 to 2026 (the proposed construction period for the Scheme); this data is presented in **Table 14-4**. It is noted that the projections in the 2018 LAQM background maps are based on assumptions which were current before the Covid-19 pandemic in the UK. In consequence these maps do not reflect short or long-term impacts on emissions in 2020 and beyond resulting from behavioural change during the national or local lockdowns (Ref 14-21). The pandemic has been shown to have reduced pollutant concentrations during the lockdowns, but the long-term impact is highly uncertain, as it is unknown, for example, how many people will continue to work from home. The pandemic may also affect the assumptions made in the background maps about future fleet breakdown, as a financial downturn may result in fewer new cars being purchased. However, at present the published maps are the best estimate of future conditions available.

**Table 14-4: Background Pollutant Concentrations, 2024-2026**

Grid Square	2024 (µg/m <sup>3</sup> )			2025 (µg/m <sup>3</sup> )			2026 (µg/m <sup>3</sup> )		
	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>574500_215500</b>	7.0	15.3	8.9	6.8	15.1	8.7	6.7	15.1	8.8
<b>575500_215500</b>	7.0	15.1	8.8	6.8	14.9	8.7	6.7	14.9	8.7
<b>574500_214500</b>	7.3	15.1	8.9	7.0	15.0	8.7	6.9	15.0	8.7
<b>575500_214500</b>	7.3	15.2	8.9	7.1	15.0	8.7	7.0	15.0	8.7
<b>575500_213500</b>	7.4	16.1	9.1	7.2	15.9	9.0	7.1	15.9	9.0
<b>576500_213500</b>	7.5	15.8	9.1	7.3	15.6	8.9	7.2	15.6	8.9
<b>576500_212500</b>	7.9	15.5	9.0	7.6	15.3	8.9	7.5	15.4	8.9
<b>573500_213500</b>	7.4	15.2	8.9	7.2	15.0	8.7	7.1	15.0	8.8
<b>574500_213500</b>	7.5	15.2	8.9	7.3	15.0	8.8	7.2	15.0	8.8
<b>574500_212500</b>	7.7	15.5	9.0	7.5	15.3	8.9	7.3	15.3	8.9
<b>575500_212500</b>	7.8	15.7	9.1	7.5	15.5	8.9	7.3	15.5	8.9
<b>575500_211500</b>	8.5	15.8	9.1	8.2	15.6	9.0	8.0	15.6	9.0
<b>576500_211500</b>	8.9	15.6	9.2	8.5	15.4	9.0	8.3	15.4	9.0
<b>574500_210500</b>	9.6	15.7	9.4	9.3	15.5	9.3	9.0	15.5	9.3
<b>575500_210500</b>	11.9	17.0	10.1	11.3	16.8	10.0	10.9	16.8	10.0

### Baseline Dust Levels

- 14.6.6 A background level of dust exists in all urban and rural locations in the UK. Dust can be generated on a local scale from vehicle movements and from the

action of wind on exposed soils and surfaces. Dust levels can be affected by long range transport of dust from distant sources into the local vicinity.

14.6.7 This baseline rate of soiling is considered normal and varies dependent on prevailing climatic conditions. The tolerance of individuals to deposited dust is therefore shaped by their experience of baseline conditions.

14.6.8 Existing local sources of particulate matter includes wind-blown dust from exhaust emissions from energy plant and road vehicles, brake and tyre wear from road vehicles and the long-range transport of material from outside the study area.

### **Future Baseline**

14.6.9 Air quality across the study area in the absence of the Scheme is anticipated to remain largely unchanged from baseline conditions, with the exception of background pollutant concentrations which are expected to change per Defra’s predictions (as shown in **Table 14-4**) (Ref 14-21).

## **14.7 Embedded Design Mitigation**

14.7.1 Taking into account the scale of the Order limits and associated construction works, it is considered prudent to adopt the good site practice for controlling dust as outlined within the IAQM’s ‘Guidance on the assessment of Dust from Demolition and Construction’ document for high risk sites (Ref 14-19). These measures represent good industry practice and are therefore embedded within the Scheme design.

14.7.2 These good site practice mitigation measures will be incorporated into the **OCEMP ([EN010118/APP/7.10(C))**. These are also presented in **Table 14-5** and **Table 14-6**.

**Table 14-5: Good Practice Dust Mitigation**

<b>Activity</b>	<b>Mitigation Measure</b>
<b>Communica-tions</b>	Develop and implement a stakeholder communications plan that includes community engagement before work commences on-site
	Display the name and contact details of person(s) accountable for air quality and dust issues on the Order limits. 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 may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM <sub>10</sub> continuous monitoring and/or visual inspections.
<b>Site Management</b>	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, either on-site or off-site, and the action taken to resolve the situation in the logbook.
	Hold regular liaison meetings with other high-risk construction sites within 500m of the Order limits (if applicable) to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to

<b>Activity</b>	<b>Mitigation Measure</b>
	<p>understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.</p> <p>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</p> <p>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.</p> <p>Agree dust deposition, dust flux, or real-time PM<sub>10</sub> continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on-site or, if it a large site, which is the case for the Order limits, before work on a phase commences.</p>
<b>Preparing and Maintaining the Site</b>	<p>Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.</p> <p>Erect solid screens or barriers around dusty activities that are at least as high as any stockpiles on-site where stockpiles are within 100m of receptors.</p> <p>Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period where operations are within 100m of receptors.</p> <p>Avoid site runoff of water or mud.</p> <p>Keep site fencing, barriers and scaffolding clean using wet methods.</p> <p>Remove materials that have a potential to produce dust from the Order limits as soon as possible, unless being re-used on-site. If they are being re-used on-site cover as described below.</p> <p>Cover, seed or fence stockpiles to prevent wind whipping</p>
<b>Operating Vehicles / Machinery and Sustainable Travel*</b>	<p>Ensure all vehicles switch off engines when stationary where practicable.</p> <p>Avoid the use of diesel - or petrol-powered generators and use mains electricity or battery powered equipment where practicable.</p> <p>Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced 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.</p> <p>Produce a Construction Traffic Management Plan to manage the sustainable delivery of goods and materials.</p> <p>Implement a Construction Traffic Management Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).</p> <p>Static plant will be located away from the Order limit boundaries that are close to sensitive receptors, where reasonable and practicable.</p> <p>Measures will be taken to keep roads and accesses clean</p> <p>Vehicle, plant and equipment maintenance records will be kept on-site and reviewed regularly.</p>
<b>Operations</b>	<p>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.</p> <p>Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.</p> <p>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.</p>
<b>Waste Management</b>	<p>Avoid bonfires and burning of waste materials.</p>

**Table 14-6: Activity-Specific Good Practice Dust Measures**

Activity	Mitigation Measure
Earthworks	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
	Use Hessian, mulches or tackifiers 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.
Construction	Avoid scabbling (roughening of concrete surfaces) if possible.
	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.
	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.
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
	Regular inspection of haul routes and prompt repair (if required) will be undertaken.
	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 logbook.
	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 (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
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.	
Access gates to be located at least 10 m from receptors where possible.	
Haul routes will be maintained so as to control dust emissions, as far as reasonably practicable. The frequency of cleaning will be suitable for the purposes of suppressing dust emissions from the site boundaries.	
Enforcement of speed limits on haul roads for safety reasons and for the purposes of suppressing dust emissions will be implemented.	

## 14.8 Assessment of Likely Impacts and Effects

14.8.1 The impacts and effects (both beneficial and adverse) associated with the construction, operation, and decommissioning of the Scheme are outlined in the sections below. The impacts have been assessed following consideration of the embedded mitigation measures.

## Construction (not earlier than 2024 to 2026)

### Dust Risk Assessment

- 14.8.2 The DRA considers the potential dust emissions magnitude at each stage of the works in conjunction with the sensitivity of the surrounding area. Based on these parameters, the site will be classified as low, medium or high risk, and mitigation measures corresponding to the perceived level of risk can then be proposed.
- 14.8.3 The assessment considers the potential dust risk across a set of pre-defined zones following IAQM guidance, up to 350m from the Order limits. These zones are presented in **Figure 14-1** of the ES [EN010118/APP/6.1].
- 14.8.4 The DRA is provided in **Table 14-7**. Responses are written in italics.

**Table 14-7: Dust Risk Assessment**

#### Step 1 – Screening

<b>1a.</b>	<b>Is a human receptor site within:</b>	
	• 50m of site boundary	Yes
	• 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s)	Yes
<b>1b.</b>	<b>Is an ecological receptor site within:</b>	
	• 50m of the site boundary; and/or	Yes
	• 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s)	Yes

**If answers to 1a or 1b are ‘yes’, complete 1c and complete the assessment.**

<b>1c.</b>	<p>Provide a description of the proposed demolition and construction activities, their location and duration and any phasing of the development, including:</p> <ul style="list-style-type: none"> <li>• The proximity and number of receptors;</li> <li>• The specific sensitivity of the receptor(s), e.g. a primary school or hospital;</li> <li>• The duration for which the sources of dust emissions may be close to the sensitive receptors; and</li> <li>• In the case of PM<sub>10</sub> the local background concentration.</li> </ul> <p><i>The anticipated duration of the works is from 2024 to 2026 over a 24-month period, with peak construction occurring in 2025; sources of dust emissions are likely to occur during this period. The greatest potential for dust effects is likely to occur during the excavation and earthworks phases, in addition to the substructure construction period.</i></p> <p><i>The Site is located in a sparsely populated rural area and consequently there are a limited number of receptors in proximity to the Site that may be affected by the works. This includes high sensitivity receptors such as residential properties, as well as medium sensitivity receptors such as commercial, office and warehouse units. Additionally, there are a number of sensitive ecological sites holding statutory and non-statutory designations within close proximity to the Site.</i></p> <p><i>Defra background maps indicate an average background PM<sub>10</sub> concentration of 16.3 µg/m<sup>3</sup> across the study area in 2020 (Ref 14-21). This is well below the annual average objective value.</i></p>
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#### Step 2 – Assess the Risk of Dust Impacts

## Step 1 – Screening

### Step 2a – Define the Potential Dust Emission Magnitude

#### DEMOLITION PHASE - N/A

#### EARTHWORKS PHASE

2a(ii)	Is the scale of the earthworks:	
	<b>Large</b> <ul style="list-style-type: none"> <li>Total site area &gt;10,000m<sup>2</sup>; or</li> <li>Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size); or</li> <li>&gt;10 heavy earth moving vehicles active at any one time on-site; or</li> <li>Formation of stockpile enclosures &gt;8m in height; or</li> <li>Total material moved &gt;100,000 tonnes (where known).</li> </ul>	Yes
	<b>Medium</b> <ul style="list-style-type: none"> <li>Total site area 2,500 m<sup>2</sup>-10,000 m<sup>2</sup>; or</li> <li>Moderately dusty soil type (e.g. silt); or</li> <li>5-10 heavy earth moving vehicles active at any one time on-site; or</li> <li>Formation of stockpile enclosures 4-8m in height; or</li> <li>Total material moved 20,000-100,000 tonnes (where known).</li> </ul>	-
	<b>Small</b> <ul style="list-style-type: none"> <li>Total site area &lt;2,500 m<sup>2</sup>; or</li> <li>Soil type with large grain size (e.g. sand); or</li> <li>&lt;5 heavy earth moving vehicles active at any one time onsite;</li> <li>Formation of stockpile enclosures &lt;4m in height; or</li> <li>Total material moved &lt;10,000 tonnes (where known), or earthworks during wetter months.</li> </ul>	-

#### CONSTRUCTION PHASE

2a(iii)	Is the scale of the works:	
	<b>Large</b> <ul style="list-style-type: none"> <li>Total site area &gt;100,000 m<sup>2</sup>; or</li> <li>Piling; or</li> <li>On-site concrete batching; or</li> <li>Sandblasting.</li> </ul>	Yes
	<b>Medium</b> <ul style="list-style-type: none"> <li>Total building volume 25,000 m<sup>3</sup>-100,000 m<sup>3</sup>; or</li> <li>Potentially dusty construction material (e.g. concrete); or</li> <li>On-site concrete batching.</li> </ul>	-
	<b>Small</b> <ul style="list-style-type: none"> <li>Total building volume &lt;25,000 m<sup>3</sup>; or</li> <li>Construction material with low potential for dust release (e.g. metal cladding or timber).</li> </ul>	-

#### TRACKOUT

2a(iii)	<b>Only receptors within 50m of the route(s) used by vehicles on the public highway and up to 500m from the site entrance(s) are considered to be at risk from the effects of dust. Will the trackout be:</b>
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### Step 1 – Screening

	<p>Large</p> <ul style="list-style-type: none"> <li>• &gt;50 Heavy Duty Vehicle (HDV; &gt;3,5t) outward movements in one day;</li> <li>• Potentially dusty surface material (e.g. high clay/silt content); or</li> <li>• Unpaved road length &gt;100m.</li> </ul>	-
	<p>Medium</p> <ul style="list-style-type: none"> <li>• 10-50 HDV (&gt;3.5t) outward movements in any one day;</li> <li>• Moderately dusty surface material (e.g. high clay content); or</li> <li>• Unpaved road length 50-100m (high clay content)</li> </ul>	Yes
	<p>Small</p> <ul style="list-style-type: none"> <li>• &lt;10 HDV (&gt;3.5t) trips in any one day;</li> <li>• Surface material with low potential for dust release; or</li> <li>• Unpaved road length &lt;50m.</li> </ul>	-

### Step 2b – Define the Sensitivity of the Area

#### Define the Receptor Sensitivity

<b>2b(i)</b>	<b>Sensitivity of People to Dust Soiling Effects</b>	
	Is the location a:	
	• High sensitivity receptor	Yes
	• Medium sensitivity receptor	-
	• Low sensitivity receptor	-
<b>2b(ii)</b>	<b>Sensitivity of People to Health Effects of PM<sub>10</sub></b>	
	Is the location a:	
	• High sensitivity receptor	Yes
	• Medium sensitivity receptor	-
	• Low sensitivity receptor	-
<b>2b(iii)</b>	<p><b>Sensitivity of Receptors to Ecological Effects</b></p> <p><i>The following designated ecological sites have been identified within 50m of the Order limits and within 500m from the site entrance on routes expected to be used by HGVs:</i></p> <ul style="list-style-type: none"> <li>• River Ter SSSI;</li> <li>• Lost Wood Ancient Woodland (AW);</li> <li>• Sandy Wood AW;</li> <li>• Scarletts Wood AW;</li> <li>• Ringers Wood AW; and</li> <li>• Toppinghoehall Wood AW.</li> </ul> <p><i>Therefore, the risk of dust effects at Nationally or European designated ecological sites will be considered further in this assessment.</i></p>	

#### Estimate the number of receptors and the distance from the Site Boundary:

*There are between 25-30 residential dwellings within 20m of the Order limits, with approximately 150 additional receptors distributed within the remaining dust risk assessment zones.*

### Step 1 – Screening

Following the sensitivity tables in the guidance (Ref 14-19)

**Combined Sensitivity of the area for Dust Soiling Effects (see Table 2 - Ref 14-19): MEDIUM.** *There are <10 high sensitivity receptors within 20m of the Order limits boundary, resulting in a combined MEDIUM sensitivity for dust soiling effects.*

While the receptor sensitivity is high, taking into account the PM<sub>10</sub> concentrations and the low number of sensitive receptors the **Combined Sensitivity of the area to Human Health Impacts (see Table 3 - Ref 14-19): LOW.** *Annual mean PM<sub>10</sub> concentrations of <24 µg/m<sup>3</sup> across the study area in conjunction with the presence of <10 sensitive receptors within 20m of the Order limits result in a combined LOW sensitivity for Human Health Impacts.*

**Combined Sensitivity of the area to Ecological Impacts (see Table 3 - Ref 14-19): HIGH.** *Nationally designated, potentially sensitive ecosystems are situated within 20m of the Site boundary, thus a combined HIGH sensitivity of the study area to Ecological Impacts.*

#### Demolition

- 14.8.5 During construction, there will be no demolition, and there are no residential, community or commercial receptors within the Order limits that will require relocation. Demolition-phase impacts have therefore been scoped out of the DRA and have not been considered further.

#### Earthworks

- 14.8.6 The area of earthworks is approximately 453ha (including cable corridors) and therefore exceeds the 10ha threshold associated with a large magnitude of impact in the IAQM guidance.
- 14.8.7 The preparation of the Order limits for construction activities will include localised site levelling (where required); construction of the internal access roads; establishment of the perimeter fence; and location mark-up for Scheme infrastructure. The import of construction materials, plant and equipment to the Site is also anticipated at this stage.
- 14.8.8 Due to the size of the Order limits, and the anticipation of there being >10 heavy earth-moving vehicles active on-site at any one time, the potential dust emissions magnitude associated with earthworks is considered to be large.
- 14.8.9 The sensitivity of the area to dust soiling during the ground-enabling and earthworks phase is medium due to the presence of <10 sensitive receptors within 20m of the Order limits. The Site has consequently been determined to pose a medium risk of dust soiling.
- 14.8.10 The sensitivity of the area is low for human health impacts due to low background particulate matter concentrations, and the presence of <10 sensitive receptors within 20m of the Order limits. Therefore, the risk of dust impact for earthworks activities is classified as a low risk to human health.
- 14.8.11 Sensitivity of ecological sites within the study area to dust-related impacts is high due to their proximity to the Order limits, and therefore a high risk to ecology has been predicted.

#### Construction

- 14.8.12 Dust generation during the construction phase is anticipated to occur for the duration of the site works.



- 14.8.13 Trenching will be carried out to allow for the installation of electric cabling. Ramming is required on-site for the erection of PV Array Mounting Structures, with foundations to a maximum depth of 2m below ground. There may also be piling of the Longfield Substation.
- 14.8.14 A large dust emissions magnitude is anticipated for construction-phase activities, predominately attributable to piling works.
- 14.8.15 The sensitivity of the area to dust soiling during the construction phase is high due to the proximity of sensitive receptors, therefore, the risk of dust impact for construction activities is classified as medium risk to dust soiling.
- 14.8.16 The sensitivity of the area is low for human health impacts due to low background particulate matter concentrations (<24 µg/m<sup>3</sup>). Therefore, the risk of dust impact for construction activities is classified as posing a low risk to human health.
- 14.8.17 Sensitivity of ecological sites within the study area to dust-related impacts is high due to their proximity to the Order limits, and therefore a high risk to ecology has been predicted during construction activities.

#### Trackout

- 14.8.18 There are anticipated to be a maximum of 50 HGV movements per day during the peak construction phase, which is below the criteria for detailed assessment.
- 14.8.19 A self-contained wheel wash will be installed for use by vehicles prior to exiting the Site onto the public highway to prevent the transfer of mud or debris from the construction site. For loads unable to use the fixed wheel wash, localised wheel washing will be set up to cater for these vehicles individually and as required, to ensure no detrimental effect to the highway.
- 14.8.20 All traffic relating to construction, operation, and decommissioning activities will access and egress the site at the access point at the Waltham Road and Cranham Road junction, with the exception of traffic constructing the Bulls Lodge substation extension, which will access and egress the site at Brick House Lane.
- 14.8.21 Considering the size of the Order limits in conjunction with the anticipated HGV movements, the potential dust emissions magnitude for the trackout of materials is considered to be large.
- 14.8.22 The sensitivity of the area to dust soiling is high due to the presence of high-sensitivity receptors within 50m of the Order limits, and within 50m of the routes used by construction traffic, up to 500m from the Order limits access point.
- 14.8.23 Due to low background particulate matter concentrations, the sensitivity of the area to impacts on human health is considered to be low.
- 14.8.24 Sensitivity of ecological sites within the study area to dust-related impacts is high due to their proximity to the Order limits, and therefore a high risk to ecology has been predicted as a result of trackout of materials.

## Summary

14.8.25 A summary of the magnitude of emissions, sensitivity of receptors, and the significance of effects for each construction phase without any mitigation measures (including good site practice measures) is provided in **Table 14-8**, **Table 14-9** and **Table 14-10**.

**Table 14-8 Summary of Potential Dust Emission Magnitudes for Construction Phase Activities**

Activity	Potential Dust Emission Magnitude
Demolition	N/A
Earthworks	Large
Construction	Large
Trackout	Large

**Table 14-9: Summary of Area Sensitivity to Construction Phase Activities**

Activity	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Medium	Medium	Medium
Human Health (PM <sub>10</sub> effects)	N/A	Low*	Low*	Low*
Ecology	N/A	High	High	High

\* While the receptor sensitivity is high, taking into account the PM<sub>10</sub> concentrations and the low number of sensitive receptors the Combined Sensitivity of the area to Human Health Impacts (see Table 3 - Ref 14-19)

**Table 14-10: Summary of Risk of Dust Effects for Construction Phase Activities (Without Mitigation)**

Activity	Summary of Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Medium Risk	Medium Risk	Medium Risk
Human Health (PM <sub>10</sub> effects)	N/A	Low Risk	Low Risk	Low Risk
Ecology	N/A	High Risk	High Risk	High Risk

14.8.26 The IAQM guidance (Ref 14-19) recommends that mitigation measures be commensurate to the highest risk category identified during the DRA (as summarised in **Table 14-10**). The Site is classified as 'High-Risk', and mitigation measures for a high-risk site have therefore been proposed.

14.8.27 The adequate implementation of good industry practice measures, as detailed in **Table 14-5** and **Table 14-6**, is expected to prevent the occurrence of significant impacts arising from dust generation during the construction phase. Residual effects are therefore expected to be **negligible** and not significant.

**Table 14-11: Summary of Magnitude of Impact and Significance of Effect**

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
<b>Human Amenity</b>	High: receptors in the vicinity of the Order limits can expect to enjoy a high level of amenity. Includes diminishing effects on appearance, aesthetics and value of property.	Dust impacts during Scheme construction and decommissioning. Medium Risk (without mitigation)	Medium Risk of significant impact without mitigation; Negligible with embedded (industry standard) mitigation.	Negligible	No
<b>Human Health</b>	High: public present for >8 hours per day. Includes residential receptors, residential healthcare facilities and educational establishments.	Dust impacts during Scheme construction and decommissioning. Low risk (without mitigation).	Low Risk of significant impact without mitigation; Negligible with embedded (industry standard) mitigation.	Negligible	No
<b>Ecology</b>	High: site holding international/national designation and the designated feature is potentially sensitive to dust soiling effects.	Dust impacts during Scheme construction and decommissioning. High Risk (without mitigation)	High Risk of significant impact without mitigation; Negligible with embedded (industry standard).	Negligible	No

Source: IAQM (Ref 14-19)

**Operation (not earlier than 2026)**

14.8.28 The Scheme is expected to support eight permanent (on-site) operational jobs. Traffic generation from operational staff is not expected to induce significant changes to traffic flows on the local road network. There are no other significant sources of NO<sub>2</sub> or PM<sub>10</sub> on site.

14.8.29 The operation of the Scheme is therefore not anticipated to have a significant impact on local air quality. The effect on air quality during this phase will therefore be negligible.

### **Decommissioning (not earlier than 2065)**

14.8.30 Decommissioning is expected to generate similar (if not slightly lower) effects to those anticipated during the construction phase, and therefore the mitigation measures proposed for implementation during the construction phase will be appropriate for application to decommissioning. A **Decommissioning Strategy** has been prepared for the Scheme ([EN010118/APP/7.12(A)]).

14.8.31 Removal of equipment and reinstatement of ground is anticipated to span a duration of 12-14 months. Impacts on local air quality as a result of dust generation are expected to be confined to this timeframe, and therefore be short-term and temporary. Effects are considered to be negligible and not significant.

### **14.9 Additional Monitoring, Mitigation and Enhancement Measures**

14.9.1 Dust monitoring will be carried out during construction and decommissioning activities to confirm that dust levels are as anticipated in this assessment and not significant. This will be outlined in the DMP and is likely to comprise visual observations by the Site Environmental Manager supplemented by occasional, regular numerical monitoring.

14.9.2 Dust deposition, dust flux, or real-time PM<sub>10</sub> continuous monitoring locations will be agreed with the Local Authority following receipt of the DCO and as part of the DMP. It is not anticipated that widespread or frequent monitoring will be required given the significance of effect predicted, but where relevant baseline monitoring will commence before work on a phase commences.

### **14.10 Residual Effects and Conclusions**

14.10.1 **Table 14-12** and **Table 14-13** present the residual significant effects of the Scheme on air quality following the implementation of mitigation.

**Table 14-12: Summary of Residual Effects (Construction and Decommissioning)**

<b>Receptor</b>	<b>Description of impact</b>	<b>Significance of effect without mitigation</b>	<b>Mitigation/ Enhancement measure</b>	<b>Residual effect after mitigation</b>
Designated Ecological Sites	Dust deposition at designated habitats	Large adverse Significant	Embedded mitigation as outlined in Table 14-5 and 14-6	<b>Negligible</b> <b>Not significant</b>
Human Amenity	Dust deposition (soiling)	Moderate adverse Significant	Embedded mitigation as outlined in Table 14-5 and 14-6	<b>Negligible</b> <b>Not significant</b>
Human Health	Exposure to elevated concentrations of PM <sub>10</sub>	Low adverse Not significant	Embedded mitigation as outlined in Table 14-5 and 14-6	<b>Negligible</b> <b>Not significant</b>

**Table 14-13: Summary of Residual Effects (Operation)**

Receptor	Description of impact	Significance of effect without mitigation	Mitigation/ Enhancement measure	Residual effect after mitigation
Designated Ecological Sites	Nitrogen deposition at designated habitats	Negligible	N/A	<b><i>Negligible</i></b>
		Not significant		<b><i>Not significant</i></b>
Human Health	Exposure to elevated concentrations of NO <sub>2</sub> and PM <sub>10</sub> as a result of additional road traffic	Up to minor adverse	N/A	<b><i>Negligible</i></b>
		Not significant		<b><i>Not significant</i></b>

### 14.11 Cumulative Effects

14.11.1 This section of the chapter considers the potential effects of the Scheme in combination with the potential impacts of other development schemes (referred to as ‘cumulative developments’) within the surrounding area, as listed within **Chapter 17: Effect Interactions** of the ES [EN010118/APP/6.1].

14.11.2 It is not anticipated that there is any potential for cumulative effects on air quality, given the residual effects associated with the Scheme are predicted to be negligible. Should any significant effects occur, these would be the result of these other developments, either in isolation or in combination with each other, with the Scheme providing at worst a negligible contribution to this cumulative effect.

### 14.12 References

- Ref 14-1 Department for Environment, Food and Rural Affairs (Defra) (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.
- Ref 14-2 H.M. Government (2000). The Air Quality Standards Regulations (2000).
- Ref 14-3 H.M. Government (2010). The Air Quality Standards Regulations 2010.
- Ref 14-4 H.M. Government (2016). The Air Quality Standards (Amendment) Regulations 2016.
- Ref 14-5 Department for Environment Food and Rural Affairs (Defra) (2019). Clean Air Strategy.
- Ref 14-6 H.M. Government (1972). European Communities Act 1972
- Ref 14-7 H.M. Government (2018). European Union (Withdrawal) Act 2018.
- Ref 14-8 European Parliament, Council of the European Union (2008). Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe, 21 May 2008.
- Ref 14-9 Air Quality News (2011). Pippa Neill – (Article) Top court confirms UK has broken air pollution law. – The UK has ‘*systematically and persistently exceeded legal limits for nitrogen dioxide since 2010*’.
- Ref 14-10 Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework.

- Ref 14-11 Ministry of Housing, Communities & Local Government (2019). Planning Practice Guidance: Air Quality.
- Ref 14-12 H.M. Government (2010). The Conservation of Habitats and Species Regulations 2010.
- Ref 14-13 Braintree District Council (2005). Braintree District Council Local Plan.
- Ref 14-14 Braintree District Council (2017). Publication Draft Local Plan from 2017.
- Ref 14-15 Braintree District Council (2021). Local Plan Section 1.
- Ref 14-16 Braintree District Council (2021). Core Strategy.
- Ref 14-17 Chelmsford City Council (2020). Chelmsford Local Plan:
- Ref 14-18 Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM) (2017). Land-Use Planning & Development Control: Planning for Air Quality.
- Ref 14-19 Institute of Air Quality Management (IAQM) (2014). Guidance on the assessment of dust from demolition and construction.
- Ref 14-20 Chelmsford City Council (2020). Air Quality Annual Status Report for 2019.
- Ref 14-21 Department for Environment, Food and Rural Affairs (2020). Background Mapping Data for Local Authorities – 2018.
- Ref 14-22 Organization (2021). Ambirnet (outdoor) air pollution.