

Rosefield Solar Farm

Environmental Statement

Volume 2
Chapter 6: Air Quality
(Clean)

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Revision 3
Deadline 6
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Rosefield Energyfarm Limited

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6. Air Quality

6.1. Introduction

- 6.1.1. This document has been updated at Deadline 6 in response to further engagement with Natural England who has requested the removal of Field B3 from consideration of the Secondary Construction Compound. The document references have not been updated from the original submission. Please refer to the **Guide to the Application [EN010158/APP/1.2.12]** for the list of current versions of documents.
- 6.1.2. This chapter presents an assessment of likely significant effects arising from the construction, operation (including maintenance), and decommissioning of the Proposed Development upon air quality. The full description of the Proposed Development is provided within **ES Volume 1, Chapter 3: Proposed Development Description [EN010158/APP/6.1]**.
- 6.1.3. This chapter is supported by the following figures presented in **ES Volume 3 [EN010158/APP/6.3]**:
- **Figure 6.1: Demolition (During Decommissioning Phase)/Earthworks/Construction Activities Study Areas;**
 - **Figure 6.2: Trackout Activities Study Areas; and**
 - **Figure 6.3: Location of Sensitive Air Quality Receptors.**
- 6.1.4. This chapter is further supported by the following technical appendices presented in **ES Volume 4 [EN010158/APP/6.4]**:
- **Appendix 6.1: Air Quality Assessment.**
- 6.1.5. This chapter is also supported by the following document:
- **Battery Energy Storage System (BESS) Plume Assessment Summary [EN010158/APP/7.13].**
- 6.1.6. This chapter should also be read in conjunction with the following assessment chapter(s):
- **Chapter 7: Biodiversity [EN010158/APP/6.2];**
 - **Chapter 15: Transport and Access [EN010158/APP/6.2]; and**
 - **Chapter 17: Cumulative Effects [EN010158/APP/6.2].**

6.2. Legislative framework, planning policy and guidance

- 6.2.1. This assessment has been undertaken with regard to the following legislation, planning policy and guidance. Further details of the legislation

framework, planning policy and guidance are presented in **ES Volume 4, Appendix 6.1: Air Quality Assessment [EN010158/APP/6.4]**.

- 6.2.2. It should be noted that this chapter does not assess the compliance of the Proposed Development against relevant planning policy. Such an assessment is presented in the **Planning Statement [EN010158/APP/5.7]**.

Legislation

- Air Quality (England) Regulations 2000 **[Ref. 6-1]**;
- Air Quality (England) (Amendment) Regulations 2002 **[Ref. 6-2]**;
- Air Quality Limit Values Regulations 2003 **[Ref. 6-3]**;
- Air Quality Standards Regulations 2010 **[Ref. 6-4]**;
- Air Quality Standards (Amendment) Regulations 2016 **[Ref. 6-5]**;
- Directive 2008/50/EC of the European Parliament and of the Council of 21st May 2008 on Ambient Air Quality and Cleaner Air for Europe **[Ref. 6-6]**;
- The Environment Act 1995 **[Ref. 6-7]**;
- The Environment Act 2021 **[Ref. 6-8]**; and
- The Environment Targets (Fine Particulate Matter) (England) Regulations 2023 **[Ref. 6-9]**.

National planning policy

- Overarching National Policy Statement for Energy (NPS EN-1) (2023) – Sections 5.2 and 5.7 detail the planning policy for air quality, including guidance on undertaking the Environmental Impact Assessment (EIA) **[Ref. 6-10]**;
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (2023) – Sections 2.10 gives specific consideration to the assessment of emissions resulting from the proposed infrastructure **[Ref. 6-11]**; and
- National Planning Policy Framework (NPPF) (2024) – presents several considerations related to air quality. These provisions aim to guide local authorities and developers in addressing air quality issues within the planning process **[Ref. 6-12]**.

Local planning policy

- Vale of Aylesbury Local Plan (VALP) 2013 – 2033 (adopted September 2021) – specifically Policy NE5 Pollution, air quality and contaminated land, which states that developments requiring planning permission that

may have an adverse impact on air quality will be required to prove through a submitted air quality impact assessment that the effect of the proposal would not exceed the National Air Quality Strategy Standards or the surrounding area would not be materially affected by existing and continuous poor air quality [Ref. 6-13]; and

- Buckinghamshire Council Climate Change and Air Quality Strategy (adopted September 2021) – specifically Section 9 entitled ‘The Council’s Emissions’, which states that Buckinghamshire Council will explore the potential for renewable energy generation projects on the Council’s land to mitigate emissions to air [Ref. 6-14].

Guidance

- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 (Volume 1) [Ref. 6-15];
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 (Volume 2) [Ref. 6-16];
- The Clean Air Strategy 2019 [Ref. 6-17];
- Interim Planning Guidance on the consideration of the Environment Act PM_{2.5} targets in planning decisions (2024) [Ref. 6-18];
- Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management Technical Guidance (TG22) (2022) [Ref. 6-19];
- Environmental Protection United Kingdom (UK) and Institute of Air Quality Management Land-Use Planning and Development Control: Planning for Air Quality (2017) [Ref. 6-20];
- Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction v2.2 (2024) [Ref. 6-21];
- Greater London Authority Non-Road Mobile Machinery Practical Guide v.6. (2024)¹ [Ref. 6-22]; and
- National Highways Design Manual for Roads and Bridges LA 105 Air Quality (2024) [Ref. 6-23].

6.3. Stakeholder engagement

- 6.3.1. **Table 6.1** provides a summary of the stakeholder engagement activities undertaken separate from the EIA Scoping, Phase One Consultation,

¹ In the absence of any recommended guidance on the assessment of construction equipment, Great London Authority Non-Road Mobile Machinery Practical Guide has been adopted, which sets out the type of plant which is likely to have effects on air quality based on the size of plant.

Phase Two Consultation and Targeted Consultation process. This table also details the matters raised, how such matters have been addressed, and where they have been addressed within the DCO Application documentation.

- 6.3.2. **ES Volume 4, Appendix 5.3: EIA Scoping Opinion Response Matrix [EN010158/APP/6.4]** presents the responses received in the EIA Scoping Opinion and the Applicant's response to each matter that has been raised.
- 6.3.3. **Appendices A4, J1, J2 and K3 of the Consultation Report Appendices [EN010158/APP/5.2]**, which is submitted in support of the DCO Application, sets out the feedback received during Phase One Consultation, Phase Two Consultation and Targeted Consultation and how regard has been afforded by the Applicant to each matter raised.

Table 6.1: Summary of stakeholder engagement

Consultee	Date of engagement	Summary of matters raised	Outcome of engagement	Where this matter is addressed in the DCO Application documentation
Buckinghamshire Council	24 May 2024	Proposed air quality assessment methodology was sent to Buckinghamshire Council on 24 May 2024 for comment. An email response was received from Buckinghamshire Council on 30 August 2024, stating they would review the methodology; no comments were received thereafter. A follow up email was sent to Buckinghamshire Council on 12 May 2025 seeking comments on the proposed air quality assessment methodology. An email response was received from Buckinghamshire Council on 21 May 2025 stating acceptance of the suggested assessment approach.	The air quality assessment has been prepared in accordance with the agreed assessment approach and follows best practice and relevant guidance documents.	ES Volume 2, Chapter 6: Air Quality [EN010158/APP/6.2]
Natural England	15 July 2025	An online meeting was held with Natural England on 15 July 2025.	No further assessment was requested and	N/A

Consultee	Date of engagement	Summary of matters raised	Outcome of engagement	Where this matter is addressed in the DCO Application documentation
		Potential Air Quality impacts on nearby SSSIs were raised in the meeting, however Natural England indicated they were not concerned with potential impacts, and no further assessment was requested.	therefore none was undertaken.	

6.4. Approach to identifying the scope of the assessment

Study area

- 6.4.1. Based on Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21], the study area for demolition, earthworks and general construction activities on sensitive human receptors for the construction and decommissioning phase assessments is up to 250m from the Order Limits (refer to **ES Volume 3, Figure 6.1: Demolition (During Decommissioning Phase)/Earthworks/Construction Activities Study Areas [EN010158/APP/6.3]**); the study area has been subdivided into 20m, 50m 100m and 250m and have been considered in the assessment as per the above-mentioned guidance. For trackout activities, which are defined as the transport of dust and dirt from the construction/demolition sites onto the public road network, the study area is up to 50m from the edge of the roads likely to be affected by trackout (refer to **ES Volume 3, Figure 6.2: Trackout Activities Study Areas [EN010158/APP/6.3]**); the study area has been subdivided into 20m and 50m and have been considered in the assessment as per the above-mentioned guidance. The study area for designated habitats for demolition, earthworks, general construction and trackout activities is up to 50m from the Order Limits, again as per the above-mentioned guidance.
- 6.4.2. The study area for the assessment of road traffic exhaust emissions is determined by the proximity of receptors to roads predicted by the traffic assessment to experience a significant change in traffic flows (refer to **ES Volume 2, Chapter 15: Transport and Access [EN010158/APP/6.2]** for further details), as per Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20]. Designated habitats within 200m of the affected road network are included in the assessment, as per Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23].

Scope of the assessment

- 6.4.3. The scope of this assessment has been established throughout the EIA process and design of the Proposed Development. Further information can be found in **ES Volume 1, Chapter 5: Approach to the EIA [EN010158/APP/6.1]**.
- 6.4.4. This section provides an update to the scope of the assessment from that presented in **ES Volume 4, Appendix 5.1: EIA Scoping Report [EN010158/APP/6.4]** and re-iterates/updates the evidence base for scoping receptors/matters in or out following further iterative assessment.
- 6.4.5. An assessment of impacts of the dust emissions arising from construction and decommissioning activities on human receptors and designated habitats has been conducted with reference to Institute of Air Quality

Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21].

- 6.4.6. A qualitative screening level assessment of the construction, operation (including maintenance), and decommissioning phase traffic impacts on air quality has been carried out with reference to Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] and Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23].

Receptors/matters scoped into the assessment

- 6.4.7. **Table 6.2** presents the receptors/matters that are scoped into the assessment reported within this ES, together with appropriate justification.

Table 6.2: Receptors/matters scoped into the assessment

Receptor/matter	Phase	Justification
Dust and particulate matter emissions resulting from the Proposed Development activities (demolition (during decommissioning phase only), earthworks, construction and trackout), including the operation of the construction equipment	Construction and decommissioning	Construction and decommissioning activities and the operation of equipment during construction and decommissioning phases would result in dust and exhaust gases emissions to the atmosphere. This matter is scoped into the assessment, as detailed within ES Volume 4, Appendix 5.1: EIA Scoping Report [EN010158/APP/6.4] and confirmed within ES Volume 4, Appendix 5.2: EIA Scoping Opinion [EN010158/APP/6.4].
Road traffic exhaust emissions (including emissions haulage/construction vehicles and vehicles used for workers' trips to and from the Site)	Construction and decommissioning	Construction and decommissioning traffic would comprise haulage/construction vehicles and vehicles used for workers' trips to and from the Site. The greatest impact on air quality due to emissions from construction and decommissioning phase vehicles would be in areas adjacent to the Site accesses and nearby road network within the study area. This matter is scoped into the assessment, as detailed within ES Volume 4, Appendix 5.1: EIA

Receptor/matter	Phase	Justification
		Scoping Report [EN010158/APP/6.4] and confirmed within ES Volume 4, Appendix 5.2: EIA Scoping Opinion [EN010158/APP/6.4].
Road traffic exhaust emissions	Operation (including maintenance)	Given the nature of the Proposed Development, there will only be limited movement of vehicles to the Site for operation and maintenance. This matter was therefore proposed to be scoped out of the assessment, as detailed within ES Volume 4, Appendix 5.1: EIA Scoping Report [EN010158/APP/6.4]. However, the Planning Inspectorate has requested that the ES must provide information on the nature of vehicle movements during the operation (including maintenance) phase (alone and cumulatively) and confirm these projections fall below the relevant thresholds set out in Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] and Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23] screening criteria. Therefore, a screening level qualitative assessment for operational road traffic exhaust emissions has been undertaken and presented in Paragraphs 6.8.12 and 6.8.13 of this chapter to confirm the predicted operational traffic levels fall below the aforementioned screening criteria.

Receptors/matters scoped out of the assessment

6.4.8. **Table 6.3** presents the receptors/matters that are scoped out of the assessment that are therefore not considered as part of this ES, together with appropriate justification.

Table 6.3: Receptors/matters scoped out of the assessment

Receptor/matter	Phase	Justification
Dust and particulate matter emissions resulting from demolition works	Construction	There are no demolition works proposed during the construction phase. This matter is scoped out of the assessment, as detailed within ES Volume 4, Appendix 5.1: EIA Scoping Report [EN010158/APP/6.4] and confirmed within ES Volume 4, Appendix 5.2: EIA Scoping Opinion [EN010158/APP/6.4].
Dust and particulate matter emissions resulting from the Proposed Development activities (operation of the Proposed Development and maintenance activities)	Operation (including maintenance)	Given the nature of the Proposed Development, no site activities resulting in significant emissions to air quality are anticipated during operation. No significant combustion sources such as combined heat and power plant or biomass boilers are proposed as part of the Proposed Development. The exception to this is the inclusion of two backup diesel generators, which will run for one hour per month for testing purposes. As the 1-hour NO₂ objective allows for 18 exceedances per year, it is considered highly unlikely that the 12 hours of operational use will combine with other nearby sources to cause an exceedance of the 1-hour NO₂ objective. Therefore, this assessment has not considered emissions related to stationary combustion emissions any further. This matter is scoped out of the assessment, as detailed within ES Volume 4, Appendix 5.1: EIA Scoping Report [EN010158/APP/6.4] and confirmed within ES Volume 4, Appendix

Receptor/matter	Phase	Justification
Potential air quality impacts of a fire incident at the BESS forming part of the Proposed Development	Operation (including maintenance)	5.2: EIA Scoping Opinion [EN010158/APP/6.4].
		In the unlikely event of a fire at the BESS, there is unlikely to be any significant effects on sensitive receptors. However, a Battery Energy Storage System (BESS) Plume Assessment Summary [EN010158/APP/7.13] is submitted in support of the DCO Application. This matter is scoped out of the assessment, as detailed within ES Volume 4, Appendix 5.1: EIA Scoping Report [EN010158/APP/6.4] and confirmed within ES Volume 4, Appendix 5.2: EIA Scoping Opinion [EN010158/APP/6.4].

6.5. Environmental baseline

Establishing baseline conditions

Data sources to inform the EIA baseline characterisation

- 6.5.1. The following data sources have been used to understand the existing air quality baseline conditions:
- 2024 Air Quality Annual Status Report published by Buckinghamshire Council **[Ref. 6-24]**;
 - Magic Map available online by Defra **[Ref. 6-25]**; and
 - Estimated background air quality data from background maps published by Defra **[Ref. 6-26]**.

Site visits/surveys

- 6.5.2. Latest local air quality monitoring data are publicly available (Air Quality Annual Status Report published by Buckinghamshire Council **[Ref. 6-24]**) and therefore no on-site air quality monitoring, survey or site visits have been undertaken to inform the baseline characterisation, as agreed with Buckinghamshire Council.

Existing baseline

- 6.5.3. The following section presents a summary of the baseline conditions for the receptors/matters scoped into the assessment, as detailed within the **Table 6.2** above.
- 6.5.4. The Proposed Development is located within the administrative area of Buckinghamshire Council. There are currently five Air Quality Management Areas (AQMAs) declared within this administrative area. However, no AQMAs are located close to the Site. The closest AQMA is located in the neighbouring administrative area of Cherwell District Council in Bicester approximately 14km from the Order Limits.
- 6.5.5. According to the Buckinghamshire Council 2024 Air Quality Annual Status Report [**Ref. 6-24**], Buckinghamshire Council undertook automatic monitoring at two sites and non-automatic nitrogen dioxide (NO₂) diffusion tube monitoring at 176 locations during 2023.
- 6.5.6. NO₂ monitoring data is not available in the vicinity (within 3km) of the Order Limits. The nearest monitoring location to the study area is a roadside NO₂ diffusion tube location (Buckinghamshire Council ref: AV8) situated approximately 5.4km north east from the approximate centre of the Site. The measured annual average NO₂ concentrations at this diffusion tube site, for years 2019 - 2023, ranged between 19.3µg/m³ and 27.3µg/m³. The measured annual average NO₂ concentration at this diffusion tube site was 20.2µg/m³ in 2023. These are below the annual mean NO₂ Air Quality Objective of 40µg/m³. Particulate matter monitoring data is not available in the vicinity (within 3km) of the Site.
- 6.5.7. Estimated background air quality data are available from the Local Air Quality Management website operated by Defra [**Ref. 6-26**]. The website provides estimated annual average background concentrations of NO₂, particulate matter (PM₁₀ and PM_{2.5}) on a 1km² grid basis from Local Air Quality Management background maps. The estimated 2025 annual average background NO₂, PM₁₀ and PM_{2.5} concentrations at the Site are 5.8µg/m³, 11.7µg/m³ and 6.4µg/m³ respectively, which are below the relevant Air Quality Standards (NO₂ and PM₁₀ Air Quality Standards are 40µg/m³ and PM_{2.5} Air Quality Standard is 20µg/m³). Overall, air quality is considered to be good within the study area.
- 6.5.8. The following designated habitats have been identified within 200m of the Order Limits (refer to **ES Volume 2, Chapter 7: Biodiversity [EN010158/APP/6.2]** for further details):
- Bernwood Biodiversity Opportunity Area (within Order Limits - overlaps with Parcels 1, 1a and 2 and Interconnecting Cable Corridors);

- Sheephouse Wood Site of Specific Scientific Interest (SSSI) (adjacent to Parcel 1 and Parcel 1a);
- Finemere Wood SSSI (adjacent to Parcel 2);
- Shrub Woods LWS (adjacent to Parcel 1);
- Decoypond Wood LWS (adjacent to Parcel 1);
- Romer Wood LWS (within Order Limits - overlaps with access track within existing hardstanding);
- Runts Wood LWS (adjacent to Parcel 2);
- Home Wood, Middle Claydon LWS (adjacent to Interconnecting Cable Corridors);
- Balmore Wood LWS (95m west of Parcel 2);
- Greatsea Wood LWS (Within Order Limits - overlaps with access track within existing hardstanding);
- Finemere Wood (adjacent to Parcel 2); and
- Calvert Railway Station LWS (174m west of Parcel 1).

6.5.9. The following designated habitats have been identified within 200m of the proposed traffic routes (refer to **ES Volume 2, Chapter 7: Biodiversity [EN010158/APP/6.2.5]** for further details):

- Ham Home-cum-Hamgreen Woods SSSI; and
- Long Herdon Meadow SSSI.

Future baseline in the absence of the Proposed Development

- 6.5.10. **Table 6.4** presents the estimated annual average NO₂, PM₁₀ and PM_{2.5} background concentrations based on the latest 2021 background concentration maps published by Defra **[Ref. 6-26]** for the grid square containing the Proposed Development for years 2026 through to 2029 (the latter representing the year during which construction is anticipated to commence).
- 6.5.11. No exceedance of the annual average NO₂, PM₁₀ and PM_{2.5} Air Quality Standards are predicted. Background concentrations are in general predicted to fall with time because of the reduction in emissions to air resulting from newer technology (for example, improved engine performance, electric vehicles and improvement in fuel quality). Therefore, background concentrations in future years are not expected to exceed their respective annual mean standards.

- 6.5.12. Air quality across the study area in the absence of the Proposed Development is anticipated to remain largely unchanged from the levels in the current baseline conditions.

Table 6.4: Defra Local Air Quality Management estimated background annual average NO₂, PM₁₀ concentrations at the Site (from 2021 base map)

Assessment year	Estimated annual average pollutant concentrations derived from the Local Air Quality Management support website		
	Annual average NO ₂ (µg/m ³)	Annual average PM ₁₀ (µg/m ³)	Annual average PM _{2.5} (µg/m ³)
2026	5.7	11.6	6.3
2027	5.5	11.5	6.3
2028	5.4	11.5	6.2
2029 (expected construction commencement)	5.2	11.4	6.1
Air Quality Standards	40	40	20

Note: Presented concentrations for 1km² grid centred on 473500, 223500; approximate centre of the Site is 473901, 223918.

6.6. Approach to the assessment

Approach to design flexibility

- 6.6.1. The parameters, as outlined in **ES Volume 1, Chapter 3: Proposed Development Description [EN010158/APP/6.1]** and the parameter plans presented in **ES Volume 3, Figure 3.1: Height Parameters [EN010158/APP/6.3]** and secured in **Appendix 1: Green and Blue Infrastructure Parameters** and **Appendix 3: Vegetation Removal Parameters** of the **Outline Landscape and Ecological Management Plan (LEMP) [EN010158/APP/7.6]**, **Design Commitments [EN010158/APP/5.11]** and **Works Plans [EN010158/APP/2.3]** set out the reasonable 'worst-case' parameters for the Proposed Development.
- 6.6.2. **ES Volume 1, Chapter 5: Approach to the EIA [EN010158/APP/6.1]** sets out those elements of the Proposed Development for which optionality is present within the design. The reasonable 'worst-case' scenario that has been assessed in this air quality chapter for each

element of the Proposed Development where optionality is present within the design is outlined within **Table 6.5**.

Table 6.5: Reasonable worst-case scenario assessed for air quality

Project element	Reasonable worst-case scenario that has been assessed
Solar PV modules	This assessment assumes that the Solar PV modules would be located throughout the fields shown in light blue as outlined in ES Volume 3, Figure 3.5: Zonal Masterplan [EN010158/APP/6.3] and secured in the Works Plans [EN010158/APP/2.3] .
Balance of Solar System (BoSS)	This assessment assumes that the BoSS would be located throughout the fields shown in light blue as outlined in ES Volume 3, Figure 3.5: Zonal Masterplan [EN010158/APP/6.3] and secured in the Works Plans [EN010158/APP/2.3] .
Satellite Collector Compounds	This assessment assumes that the Satellite Collector Compounds would be located in Parcel 1 at Field B23 (South) and in Parcel 2 at Field D8 as these are considered the closest point to the sensitive receptors.
Main Collector Compound	This assessment assumes that the Main Collector Compound would be located in Parcel 3 at Field E20 as this is considered the closest point to the sensitive receptors.
BESS	This assessment assumes that BESS would be located in Parcel 2 at both Fields D8 and D9 as outlined in ES Volume 3, Figure 3.5: Zonal Masterplan [EN010158/APP/6.3] and secured in the Works Plans [EN010158/APP/2.3] .
Rosefield Substation	This assessment assumes that the Rosefield Substation would be located within Parcel 3 across Fields E11 and E20 as outlined in ES Volume 3, Figure 3.5: Zonal Masterplan [EN010158/APP/6.3] and secured in the Works Plans [EN010158/APP/2.3] .
Primary Construction Compounds	This assessment assumes that the Primary Construction Compounds would be located in Parcel 1 at Field B23 (South), Parcel 2 at Field D7 and Parcel 3 at Field E22 as outlined in ES Volume 3, Figure 3.8: Indicative Location of Primary and Secondary Construction Compounds [EN010158/APP/6.3.5] and secured in the Works Plans

Project element	Reasonable worst-case scenario that has been assessed
	[EN010158/APP/2.3.5] as these are considered the closest point to the sensitive receptors.
Secondary Construction Compounds	This assessment assumes that the Secondary Construction Compounds would be located in Parcel 1 at Field B3 ² , Parcel 2 at Field D27 and Parcel 3 at Field E11 as outlined in ES Volume 3, Figure 3.8: Indicative Location of Primary and Secondary Construction Compounds [EN010158/APP/6.3] and secured in the Works Plans [EN010158/APP/2.3] as these are considered the closest point to the sensitive receptors.
Interconnecting Cable Corridor(s)	The dust risk 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 Commitments [EN010158/APP/5.9] .
Grid Connection Cable Corridor	
Abnormal Indivisible Load (AIL) Access Corridor	
Internal Access Corridor(s)	
Indicative site access locations	The trackout part of the dust risk assessment has taken into account all potential Site access locations outlined in ES Volume 3, Figure 3.5: Zonal Masterplan [EN010158/APP/6.3] and secured in the Works Plans [EN010158/APP/2.3] .

Assessment assumptions

- 6.6.3. As per the Greater London Authority Non-Road Mobile Machinery Practical Guide **[Ref. 6-22]**, plant sized between 37kW and 560kW that the Applicant has assumed would likely be used during the construction

² Field B3 has been removed from consideration of the location of the Secondary Construction Compound at Deadline 6 of the Examination. As Field B3 represented the worst-case scenario assessed, locating the Secondary Construction Compound within Field B10 would not result in impacts greater than those assessed. Therefore, the conclusions presented in this chapter remain unchanged.

and decommissioning of the Proposed Development is listed in **Paragraph 6.8.4** of this chapter.

- 6.6.4. The assessment of the air quality impact of construction traffic has been based on the assumptions set out in **ES Volume 1, Chapter 3: Proposed Development Description [EN010158/APP/6.1]** and **ES Volume 2, Chapter 15: Transport and Access [EN010158/APP/6.2]**, alongside the traffic routing and future baseline traffic values derived in **ES Volume 2, Chapter 15: Transport and Access [EN010158/APP/6.2]**.
- 6.6.5. The construction phase is anticipated to have a duration of 30 months, and the decommissioning phase is anticipated to have a duration of 24 months. The peak of construction traffic will occur in the early phases of construction (Month 8). As there would be a lower base traffic in earlier phases compared to later years, the Proposed Development would generate a higher percentage impact in an earlier year compared to undertaking the assessment for later years (refer to **ES Volume 2, Chapter 15: Transport and Access [EN010158/APP/6.2]** for further details).

Assessment methodology and criteria

Dust and particulate matter emissions during construction and decommissioning phases

- 6.6.6. Construction and decommissioning works have the potential to release dust, including fine particulate matter, which may impact on nearby sensitive human receptors and designated sites. A qualitative assessment of the likely significant effects of dust and particulate matter at sensitive receptors during the construction and decommissioning phases has been undertaken following Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [**Ref. 6-21**]. Three separate potential dust impacts have been considered:
- Annoyance due to dust soiling;
 - The risk of health effects due to an increase in exposure to PM₁₀; and
 - Harm to ecological receptors.
- 6.6.7. The criteria presented in **Table 6.6, Table 6.7, Table 6.8, Table 6.9** and **Table 6.10** are different from that presented in **Appendix D** of **ES Volume 4, Appendix 5.1: EIA Scoping Report [EN010158/APP/6.4]**, as updated construction dust guidance was published by Institute of Air Quality Management in January 2024 [**Ref. 6-21**].
- 6.6.8. A detailed assessment methodology is presented in **ES Volume 2, Appendix 6.1: Air Quality Assessment [EN010158/APP/6.2]**.

Sensitivity of the area

- 6.6.9. The sensitivity of the area takes into account a number of factors, comprising:
- The specific sensitivities of receptors in the area;
 - The proximity and number of those receptors;
 - In the case of PM₁₀, the local background concentration; and
 - Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.
- 6.6.10. **Table 6.6, Table 6.7 and Table 6.8** below are derived from Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21] and show how the sensitivity of the area may be determined for dust soiling, human health and ecological impacts respectively. These tables take account of a number of factors which may influence the sensitivity of the area when determining dust impacts during the construction and decommissioning phases.

Table 6.6: Sensitivity of the area to dust soiling effects on people and property

Receptor sensitivity	Number of receptors	Distance from the source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Notes are derived from Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21] and explain how the sensitivity of the area to dust soiling effects on people and property is determined:

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout.

Estimate the total number of receptors within the stated distance. Only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20m of the source and 95 high sensitivity receptors between 20m and 50m, then the total of number of receptors <50m is 102. The sensitivity of the area in this case would be high.

For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the Order Limits and it

Receptor sensitivity	Number of receptors	Distance from the source (m)			
		<20	<50	<100	<250
<i>is only necessary to consider trackout impacts up to 50m from the edge of the road.</i>					

Table 6.7: Sensitivity of the area to human health impacts

Receptor sensitivity	Annual mean PM ₁₀ concentration	Number of receptors	Distance from the source (m)			
			<20	<50	<100	<250
High	>32 µg/m ³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m ³	>100	High	Medium	Low	Low
		10-100	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m ³	>100	Low	Low	Low	Low
		10-100	Low	Low	Low	Low

Receptor sensitivity	Annual mean PM ₁₀ concentration	Number of receptors	Distance from the source (m)			
			<20	<50	<100	<250
	24-28 µg/m ³	1-10	Low	Low	Low	Low
		>100	Low	Low	Low	Low
		10-100	Low	Low	Low	Low
	<24 µg/m ³	1-10	Low	Low	Low	Low
		>100	Low	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	Low	-	Low	Low	Low	Low
		≥1	Low	Low	Low	Low

Notes are derived from Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21] and explain how the sensitivity of the area to human health impacts is determined):

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout.

Estimate the total number of receptors within the stated distance (e.g. the total within 250m and not the number between 100 and 250m), noting that only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20m of the source and 95 high sensitivity receptors between 20 and 50m, then the total of number of receptors <50m is 102. If the annual mean PM₁₀ concentration is 29µg/m³, the sensitivity of the area would be high.

Data can be taken from the national background maps but should also take account of local sources. The values are based on 32µg/m³ as it is the annual mean concentration at which an exceedance of the 24-hour objective is likely in England, Wales and Northern Ireland. In Scotland there is an annual mean objective of 18µg/m³.

In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) estimate the number of people likely to be present. In the case of residential dwellings, use the number of properties.

For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the Order Limits, and it is only necessary to consider trackout impacts up to 50m from the edge of the road.

Table 6.8: 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

Notes (are derived from Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21] and explain how the sensitivity of the area to ecological impacts is determined):

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout and for each designated site.

Only the highest level of area sensitivity from the table needs to be considered.

For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the Order Limits.

Dust emission magnitude

6.6.11. **Table 6.9** below is derived from Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21] and indicates the scale of magnitude for dust emission impacts.

Table 6.9: Scale of magnitude for dust emission impacts

Activity	Dust emissions magnitude	Description
Demolition	Large	Total building volume >75,000m ³ , potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12m above ground level.
	Medium	Total building volume 12,000m ³ – 75,000m ³ , potentially dusty construction material, demolition activities 6-12m above ground level.
	Small	Total building volume <12,000m ³ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6m above ground, demolition during wetter months.
Earthworks	Large	Total site area >110,000m ² , potentially dusty soil type (e.g. clay), >10 heavy earth moving vehicles active at any one time, formation of bunds >6m in height.

Activity	Dust emissions magnitude	Description
	Medium	Total site area 18,000m ² – 110,000m ² , moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 3 – 6m in height.
	Small	Total site area <18,000m ² , soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height.
Construction	Large	Total building volume >75,000m ³ , on-site concrete batching, sandblasting.
	Medium	Total building volume 12,000m ³ – 75,000m ³ , potentially dusty construction material (e.g. concrete), on-site concrete batching.
	Small	Total building volume <12,000m ³ , construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	Large	>50 Heavy Duty Vehicle (>3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m.
	Medium	20 – 50 Heavy Duty Vehicle (>3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m.
	Small	<20 Heavy Duty Vehicle (>3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

Significance of effect

- 6.6.12. The dust risk assessment for the construction and decommissioning phases has taken into account the sensitivity of the areas being assessed (as shown in **Table 6.6**, **Table 6.7** and **Table 6.8**), the nature and scale of the activities undertaken for each source (i.e. demolition, earthworks, construction and trackout activities) (as shown in **Table 6.9**) to assign a level of risk. Dust risks are described in terms of 'high', 'medium', 'low' or 'negligible', as shown in **Table 6.10** below and are derived from Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [**Ref. 6-21**]. Institute of Air Quality

Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21] suggests that significance is only assigned to the effects after considering the construction activities with mitigation. Therefore, only the level of dust risk is presented for pre-additional mitigation effects (refer to **Section 6.8**), and significance criteria is applied, and significance is assigned for residual (post-additional mitigation) effects (refer to **Section 6.10**). The determination of the risk category determines the level of mitigation that must be applied. For those cases where the risk category is 'negligible', no mitigation measures beyond those required by legislation will be required.

- 6.6.13. Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21] makes reference to the use of professional judgement when assessing the significance of the effects of dust impacts from construction and decommissioning activities. 'High risk' is considered to be **significant** and 'medium risk', 'low risk' and 'negligible' are considered to be **not significant**.

Table 6.10: Level of effects for dust emission impacts

Activity	Sensitivity of the area	Dust emission magnitude		
		Large	Medium	Small
Demolition	High	High risk	Medium risk	Medium risk
	Medium	High risk	Medium risk	Low risk
	Low	Medium risk	Low risk	Negligible
Earthworks	High	High risk	Medium risk	Low risk
	Medium	Medium risk	Medium risk	Low risk
	Low	Low risk	Low risk	Negligible
Construction	High	High risk	Medium risk	Low risk
	Medium	Medium risk	Medium risk	Low risk
	Low	Low risk	Low risk	Negligible
Trackout	High	High risk	Medium risk	Low risk
	Medium	Medium risk	Medium risk	Low risk
	Low	Low risk	Low risk	Negligible

Operation of equipment during construction and decommissioning phases

- 6.6.14. Exhaust emissions from construction and decommissioning plant may have an impact on local air quality in the vicinity of the Site. A qualitative impact assessment has been undertaken with reference to the Greater

London Authority Non-Road Mobile Machinery Practical Guide [Ref. 6-22], and based on professional judgement considering the following factors:

- The duration of the construction/decommissioning phase;
- The number and type of construction/decommissioning plant that could be required; and
- The number and proximity of sensitivity receptors to the Site.

Road traffic exhaust emissions during construction, operation (including maintenance) and decommissioning phases

6.6.15. Construction and decommissioning traffic will comprise haulage/construction vehicles and vehicles used for workers' trips to and from the Site. The greatest impact on air quality due to emissions from construction and decommissioning phase vehicles will be in areas adjacent to the Site accesses and nearby road network. A screening level qualitative assessment for construction and decommissioning road traffic exhaust emissions has been undertaken with reference to Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] and Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23], using professional judgement and by considering the following information:

- The number of road traffic movements likely to be generated;
- The number and proximity of sensitive receptors to the Site and along the likely routes to be used by construction/decommissioning vehicles; and
- The likely duration and the nature of the construction/decommissioning activities undertaken.

6.6.16. As stated in **Table 6.2** above, a screening level qualitative assessment for operational road traffic exhaust emissions has been undertaken and presented in **paragraphs 6.8.12** and **6.8.13** to confirm the predicted operational traffic movements fall below Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] and Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23] screening criteria.

Sensitivity of the receptor

6.6.17. Matrices for determining the sensitivity of the receptor are not available in Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] or Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23], and therefore matrices from Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21] as shown in **Table 6.11** are used.

Table 6.11: Scale of receptor sensitivity

Sensitivity of receptor	Human receptors	Ecological receptors
High	Locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Examples include residential properties, hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	Locations with an international or national designation and the designated features may be affected by dust soiling. Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain published by Joint Nature Conservation Committee [Ref. 6-27]. Examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	Locations where the people exposed are workers and exposure is over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Examples include office and shop workers but will generally not include workers occupationally exposed to PM₁₀, as protection is covered by health and safety at work legislation.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. Locations with a national designation where the features may be affected by dust deposition. Example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
Low	Locations where human exposure is transient. Examples include public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition. Example is a Local Nature Reserve (LNR) with dust sensitive features.

Magnitude of change

6.6.18. **Table 6.12** below presents the Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] and Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23] screening criteria respectively that is used for assessing construction, operation (including maintenance), and decommissioning phase road traffic exhaust emissions.

Table 6.12: Indicative criteria for requiring an air quality assessment

Environmental Protection UK and Institute of Air Quality Management Guidance [Ref. 6-20]	
The development will...	Indicative criteria to proceed to an air quality assessment
Cause a significant change in Light Duty Vehicle traffic flows on local roads with relevant receptors	A change of Light Duty Vehicle flows of: - more than 100 Annual Average Daily Traffic within or adjacent to an Air Quality Management Area - more than 500 Annual Average Daily Traffic elsewhere.
Cause a significant change in Heavy Duty Vehicle flows on local roads with relevant receptors	A Change of Heavy Duty Vehicle flows of: - more than 25 Annual Average Daily Traffic within or adjacent to an Air Quality Management Area - more than 100 Annual Average Daily Traffic elsewhere.
Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23]	
- Daily traffic flow changes of 1,000 Annual Average Daily Traffic or more; or - Heavy Duty Vehicle flow changes of 200 or more.	
*Internationally, nationally and locally designated sites of ecological conservation importance on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity (known as designated habitats³) within 200m of the affected road network shall be included in the air quality assessment.	

³ Designated habitats include 'Ramsar' sites, special protection areas, special areas of conservation, sites of special scientific interest, local nature reserves, local wildlife sites, nature improvement areas, ancient woodland and veteran trees.

Significance of effect

- 6.6.19. Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] and Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23] make reference to the use of professional judgement when assessing the significance of the effects of road traffic exhaust emissions during construction and decommissioning phases.
- 6.6.20. Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] recommends that the following factors should be taken into account when making judgement on the overall significance of effect of a development:
- The existing and future air quality in the absence of the development;
 - The extent of current and future population exposure to the impacts; and
 - The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

6.7. Mitigation embedded into the design

- 6.7.1. This assessment has been based on the principle that measures have been 'embedded' into the design of the Proposed Development to avoid or reduce potential significant effects as far as practicable, for example by the considered placement of infrastructure. The embedded mitigation has been established based on Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21] and embedded mitigation relevant to this assessment is detailed in **Table 6.13** below.

Table 6.13: Embedded mitigation relevant to air quality

Embedded mitigation measures relevant to air quality	Function	Securing mechanism
Rosefield Substation, BESS, Collector Compounds, Standalone Inverter, Transformer and Switchgear and ITS (part of the balance of solar system plant comprised in Work No. 1) will be offset a minimum distance of 50m from all existing residential properties.	To minimise the construction dust and exhaust emission impacts from the Proposed Development to residential properties.	Design Commitments [EN010158/APP/5.9]

Embedded mitigation measures relevant to air quality	Function	Securing mechanism
Perimeter fencing surrounding the Solar PV development will be offset at least 30m from existing statutory and locally designated wildlife sites.	To minimise the construction dust and exhaust emission impacts from the Proposed Development to statutorily and locally designated wildlife sites.	Design Commitments [EN010158/APP/5.9]
Perimeter fencing surrounding the Solar PV development will be offset at least 30m from existing ancient woodlands. Perimeter fencing surrounding the Solar PV development will be offset at least 20m from all other existing woodlands, including HS2 planting.	To minimise the construction dust and exhaust emission impacts from the Proposed Development to ancient woodland, all other woodlands and HS2 planting.	Design Commitments [EN010158/APP/5.9]
Perimeter fencing surrounding the Solar PV development will be offset at least 10m either side from all existing hedgerows as far as reasonably practicable, except where a hedgerow crossing is required for access tracks and/or cable routes. Principal components of the Proposed Development will avoid Root Protection Areas of trees and hedgerows as far as reasonably practicable, except where a hedgerow crossing is required for access tracks and/or cable routes.	To minimise the construction dust and exhaust emission impacts from the Proposed Development to existing hedgerows and trees.	Design Commitments [EN010158/APP/5.9]

Embedded mitigation measures relevant to air quality	Function	Securing mechanism
Perimeter fencing surrounding the Solar PV development will be offset at least 10m from either side of existing PRow.	To minimise the construction dust and exhaust emission impacts from the Proposed Development to users of public rights of way.	Design Commitments [EN010158/APP/5.9]
Construction traffic routes are planned to avoid passing sensitive villages and residential receptors where possible	To minimise the exhaust emission impacts from the Proposed Development to residential properties.	Outline Construction Traffic Management Plan [EN010158/APP/7.5] Outline Decommissioning Environmental Management Plan [EN010158/APP/7.4]

6.8. Assessment of likely effects (without additional mitigation)

Dust and particulate matter emissions during construction and decommissioning phases, including the operation of construction equipment

- 6.8.1. Construction and decommissioning works have the potential to release dust and impact on nearby sensitive human receptors and designated sites. The potential sources of dust emissions are demolition, earthworks, construction and trackout activities.
- 6.8.2. Human receptors have been identified within 250m of the Order Limits, comprising the settlements of Botolph Claydon and East Claydon. Two SSSIs, eight Local Wildlife Sites (LWSs) and five ancient woodlands and ancient semi-natural woodlands have been identified adjacent to the Order Limits.
- 6.8.3. With reference to Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [Ref. 6-21], the dust emissions magnitude for demolition, earthworks, construction and trackout activities and the sensitivity of the areas have been determined. A detailed assessment on dust and particulate matter emissions during construction and decommissioning phases is presented in **ES Volume 2, Appendix 6.1: Air Quality Assessment [EN010158/APP/6.2]**. The dust risk impacts of construction and decommissioning activities from the

Proposed Development prior to the consideration of additional mitigation are presented in **Table 6.14**.

Table 6.14: Summary of the dust risk from construction and decommissioning activities prior to the consideration of additional mitigation

Potential impact	Dust risk impact			
	Demolition (during decommissioning phase only)	Earthworks	Construction	Trackout
Dust soiling	Medium risk	Medium risk	Medium risk	Low risk
Human Health	Low risk	Low risk	Low risk	Low risk
Ecological	Low risk-Medium risk	Low risk-Medium risk	Low risk-Medium risk	Low risk

6.8.4. The operation of construction equipment and vehicles will result in emissions to the atmosphere of exhaust gases. As set out in the Greater London Authority Non-Road Mobile Machinery Practical Guide **[Ref. 6-22]**, only construction and decommissioning plant with a rated power output between 37-560kW is likely to give rise to air quality effects. Plant sized between 37-560kW which is likely to be used during the construction and decommissioning of the Proposed Development is likely to comprise:

- excavator;
- dump truck;
- vibrating roller;
- piling rig;
- concrete mixer;
- tele-handler
- unloading crane; and
- mobile elevating work platform.

6.8.5. The above plant would be used intermittently during the 30-month construction programme, depending on the construction activities to be undertaken and would move across the Site as the Proposed Development is built out. Construction working hours are proposed to be from 07:00 until 19:00 Monday to Friday and from 07:00 until 12:00 on Saturday. There will be no working on Sundays or Bank Holidays unless necessary.

6.8.6. As detailed in **Table 6.13**, setback distances from residential properties and environmental designated sites are included within the **Design**

Commitments [EN010158/APP/5.9]. These distances, as well as the temporary nature of the plant to be used, and the low levels of air pollution at the Site in future years (refer to **Table 6.4**) means it is unlikely there would be a risk of emissions (either in isolation or combination) that could result in an exceedance of the Air Quality Standards.

Road traffic exhaust emissions during construction and decommissioning phases

6.8.7. Construction phase Annual Average Daily Traffic (AADT) data (two-way trips) assumes that the year 2029 is the anticipated construction traffic peak. Construction phase traffic data is provided in **Table 6.15**.

Table 6.15: Construction phase traffic data

Road	2029 construction traffic associated with the Proposed Development	
	Light Duty Vehicles (AADT)	Heavy Duty Vehicles (AADT)
A34	10	0
M40 North	10	18
M40 South	10	24
A41	29	100
A41 Bicester	109	100
A41 West	109	138
A41 East	109	3
Station Road/Dewes Lane	218	141
Snake Lane/Fidlers Field	218	141
Claydon Road	218	141
Granborough Road	74	31

6.8.8. The Proposed Development is not predicted to generate Light Duty Vehicle movements exceeding the Environmental Protection UK-Institute of Air Quality Management guidance **[Ref. 6-20]** screening criteria (i.e. a change of Light Duty Vehicle flows of more than 500 AADT) during the construction phase. The predicted construction phase Heavy Duty Vehicle generation slightly exceeds the Environmental Protection UK-Institute of Air Quality Management guidance **[Ref. 6-20]** screening criteria (i.e. a

change of Heavy Duty Vehicle flows of more than 100 AADT) on A41 West, Station Road/Dewes Lane, Snake Lane/Fidlers Field and Claydon Road. However, as per the review of baseline conditions in **Section 6.5**, the annual mean NO₂, PM₁₀ and PM_{2.5} concentrations at the Site are expected to be well below the Air Quality Standards. The traffic effects during construction would be limited to a relatively short period at each phase of the Proposed Development and would be along traffic routes employed by haulage/construction vehicles and workers. Therefore, it is considered unlikely that the additional construction phase traffic emissions as a result of the Proposed Development would cause a significant adverse effect on local air quality and on nearby human receptors.

- 6.8.9. The Proposed Development and cumulative developments are not predicted to generate traffic exceeding the Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 6-23]** screening criteria (i.e. Light Duty Vehicle flow changes of 1,000 AADT or more or Heavy Duty Vehicle flow changes of 200 AADT or more) (refer to **Table 6.12**) during the construction phase. Therefore, it is considered likely that construction phase traffic emissions would not cause a significant adverse effect on the Ham Home-cum-Hamgreen Woods SSSI or the Long Herdon Meadow SSSI which are within 200m of proposed traffic routes. As such, no significant increase in air pollution which may contribute towards exceeding the relevant critical loads or levels for these habitats above current baseline is expected.
- 6.8.10. The decommissioning year is assumed to be 40 years from commissioning. It is assumed that vehicular generation during the decommissioning phase is similar or slightly less than the construction phase (refer to **ES Volume 2, Chapter 15: Transport and Access [EN010158/APP/6.2]** for further details).
- 6.8.11. The Proposed Development is not expected to generate traffic exceeding Environmental Protection UK-Institute of Air Quality Management guidance **[Ref. 6-20]** and Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 6-23]** screening criteria (refer to **Table 6.12**) during the decommissioning phase. Therefore, it is considered unlikely that the additional decommissioning phase traffic emissions as a result of the Proposed Development would cause a significant adverse effect on local air quality, or nearby human receptors and designated habitats.

Road traffic exhaust emissions during operation (including maintenance)

- 6.8.12. Due to the nature of the Proposed Development, the principal operation (including maintenance) phase air quality impact is likely to be associated with traffic emissions as a result of any changes in traffic flows or flow composition the Proposed Development may bring. The vehicle trip generation for the Proposed Development once operational is anticipated

to be minimal in comparison to the construction and decommissioning phases. It is anticipated that there would be four two-way Light Duty Vehicle trips per day during the operation (including maintenance) phase (refer to **ES Volume 2, Chapter 15: Transport and Access [EN010158/APP/6.2]** for further details).

- 6.8.13. The Proposed Development is not expected to generate traffic exceeding Environmental Protection UK and Institute of Air Quality Management guidance [**Ref. 6-20**] and Design Manual for Roads and Bridges LA 105 Air Quality [**Ref. 6-23**] screening criteria (refer to **Table 6.12**) once operational. Therefore, it is considered that further assessment of the operation (including maintenance) phase traffic emissions is not required. The increased road traffic emissions resulting from the Proposed Development are expected to have a negligible impact on air quality, and nearby human receptors and designated sites during the operation (including maintenance) phase.

6.9. Additional mitigation

Dust and particulate matter emissions during construction and decommissioning phases, including the operation of construction equipment

- 6.9.1. Dust emissions during construction and decommissioning phases can be effectively controlled by appropriate dust control measures and any adverse effects can be greatly reduced or eliminated. The mitigation measures described in **Table 6.16** will be used to control potential dust and particulate matter emissions during the construction and decommissioning phases. Mitigation measures are detailed in and secured by the **Outline Construction Environmental Management Plan (Outline CEMP) [EN010158/APP/7.2]**, the **Outline Decommissioning Environmental Management Plan (Outline DEMP) [EN010158/APP/7.4]** and the **Outline Construction Traffic Management Plan (Outline CTMP) [EN010158/APP/7.5]**.
- 6.9.2. The dust risk categories identified in **Table 6.14** above have been used to define appropriate, site-specific mitigation measures for the Proposed Development, which are divided into general measures and measures specific to demolition, earthworks, construction and trackout. Depending on the level of risk, different mitigation measures are assigned, in accordance with Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction [**Ref. 6-21**]. For general mitigation measures, the highest risk assessed has been applied.

Table 6.16: Dust emissions mitigation measures

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on Site.
- Display the name and contact details of people accountable for air quality and dust issues with respect to the Proposed Development at the Primary Construction Compound. This may be the Environmental Manager/engineer or the Site Manager.
- Implement a Construction Environmental Management Plan, which includes measures to control all emissions, approved by the Local Planning 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 Planning Authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on or off-site and the action taken to resolve the situation in the logbook.

Monitoring

- Undertake regular 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 Planning Authority when asked. Monitoring will, where possible, should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of the Order Limits in agreement with the relevant homeowners/landowners.
- Carry out regular Site inspections to monitor compliance with the Construction Environmental Management Plan, record inspection results, and make an inspection log available to the Local Planning 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.
- During the construction and decommissioning phases, agree dust deposition, dust flux, or real-time PM₁₀ continuous monitoring locations with the Local Planning Authority. Where possible, commence baseline monitoring at least three months before work commences on Site.

Preparing and maintaining the Site

- Plan the Site layout so that machinery and dust causing activities are located away from sensitive receptors, as far as is possible.
- Erect solid screens or barriers around activities where there is a high potential for dust production.

- Avoid runoff of water or mud from the Site. This may include measures such as diverting run-off, installing sediment traps and/or swales.
- Keep Site fencing, barriers and scaffolding clean.
- Remove materials that have a potential to produce dust from Site as soon as possible, unless being re-used on Site. If they are being re-used on-site cover as described below.
- 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.
- Impose and signpost a maximum speed limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.
- Implement a Travel Plan (part of the Outline CTMP [EN010158/APP/7.5]) that supports and encourages sustainable travel.

Construction operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the Site 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 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.

Measures specific to demolition (during decommissioning phase only)

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

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 stages during work and not all at once.

Measures specific to 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 power 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.
- Avoid any dry sweeping of large areas.
- Ensure vehicles entering and leaving Site are covered to prevent escape of materials during transport.
- Record all inspections of haul routes and any subsequent action in a Site logbook.
- Implement a wheel washing system.

- 6.9.3. Any emissions from non-road mobile machinery can be reduced by ensuring that any plant used on-site comply with the nitrogen oxides, particulate matter and carbon monoxide emissions standards specified in the Regulation (EU) 2016/1628 of the European Parliament and of the Council (as amended) [**Ref. 6-28**] as a minimum, where they have net power of between 37kW and 560kW. The emissions standards vary depending on the net power the engine produces. The emission controls are detailed in and secured by the **Outline CEMP [EN010158/APP/7.2]** and the **Outline DEMP [EN010158/APP/7.4]** which have been prepared and are submitted in support of the DCO Application. The construction working hours are detailed within the **Outline CEMP [EN010158/APP/7.2]**.

Road traffic exhaust emissions during construction and decommissioning phases

- 6.9.4. Any effects on air quality from traffic during construction and decommissioning of the Proposed Development would be temporary (i.e.

during the construction/decommissioning period only) and can be suitably controlled by the employment of mitigation measures (described in **Table 6.16** above and documented within the **Outline CTMP [EN010158/APP/7.5]** and **Outline Travel Plan** (part of the **Outline CTMP [EN010158/APP/7.5]**) which has been prepared and is submitted in support of the DCO Application.

Road traffic exhaust emissions during operation (including maintenance)

- 6.9.5. No specific mitigation measures are required. Nevertheless, best practice mitigation measures (described in **Table 6.16** above) can be considered to further reduce any residual effects on air quality. An **Outline Operational Environmental Management Plan (Outline OEMP) [EN010158/APP/7.3]**, including such measures described, has been prepared and is submitted in support of the DCO Application.

6.10. Assessment of residual effects (with additional mitigation)

Dust and particulate matter emissions during construction and decommissioning phases, including the operation of construction equipment

- 6.10.1. The sensitivity of the area to dust soiling effects on people and property is considered to be **high** during demolition (during decommissioning phase only), earthworks and construction activities, and **low** for trackout activities. The dust emission magnitude, following additional mitigation, is considered to be **small** for every activity. Therefore, it has been concluded there is a **medium** risk of dust emissions impacts from demolition activities (during decommissioning phase only), a **low** risk of dust emissions impacts from earthworks, construction activities and a **negligible** risk of dust emissions impacts from trackout activities. Therefore, the residual effect of dust soiling following the implementation of additional mitigation measures is considered to be **not significant**.
- 6.10.2. The sensitivity of the area to human health impacts is considered to be **low** for every activity (demolition (during decommissioning phase only), earthworks, construction and trackout). The dust emission magnitude, following additional mitigation, is considered to be **small** for every activity. Therefore, it has been concluded there is a **negligible** risk of dust emissions impacts for every activity. Therefore, the residual effect on human health following the implementation of additional mitigation measures is considered to be **not significant**.
- 6.10.3. The sensitivity of the area to ecological impacts is considered to be **medium-low** for demolition (during decommissioning phase only), earthworks and construction and **low** trackout. The dust emission magnitude, following additional mitigation, is considered to be **small** for every activity. Therefore, it has been concluded there is a **low-negligible**

risk of dust emissions impacts for every activity. Therefore, the residual effect on designated habitats following the implementation of additional mitigation measures is considered to be **not significant**.

Road traffic exhaust emissions during construction and decommissioning phases

- 6.10.4. The sensitivity of the human receptors is considered to be **high** and the magnitude of change, following additional mitigation, is considered to be below Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] screening criteria. Therefore, the residual effect on human receptors following the implementation of additional mitigation measures is considered to be **not significant**.
- 6.10.5. The sensitivity of the designated habitats is considered to be **medium-low** and the magnitude of change, following additional mitigation, is considered to be below the Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23] screening criteria. Therefore, the residual effect on the designated habitats following the implementation of additional mitigation measures is considered to be **not significant**.

Road traffic exhaust emissions during operation (including maintenance)

- 6.10.6. The sensitivity of the human receptors is considered to be **high** and the magnitude of change, with additional best practice mitigation measures, is considered to be below Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] screening criteria. Therefore, the residual effect on human receptors following the implementation of additional mitigation measures is considered to be **not significant**.
- 6.10.7. The sensitivity of the designated sites is considered to be **medium-low** and the magnitude of change, with additional best practice mitigation measures, is considered to be below the Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23] screening criteria. Therefore, the residual effect on the designated sites following the implementation of additional mitigation measures is considered to be **not significant**.

6.11. Opportunities for enhancement

- 6.11.1. The Proposed Development will produce energy from the sun, which is a clean, sustainable source of energy. It will help to reduce the energy requirements from fossil fuels which emit harmful air emissions, such as carbon dioxide, nitrogen dioxide, sulphur dioxide, and particulate matters. The Proposed Development contributes towards the transition to clean energy on a national scale and the reduction in harmful air emissions would be possible through phasing out fossil fuels uses.

6.12. Monitoring requirements

- 6.12.1. Monitoring for the construction and decommissioning phases (as outlined in **Table 6.16**) is proposed to commence at least three months before work commences on-site and will be secured by the **Outline CEMP [EN010158/APP/7.2]** and the **Outline DEMP [EN010158/APP/7.4]**. Dust flux, or real-time PM₁₀ continuous monitoring locations would be agreed with the Local Planning Authority.

6.13. Difficulties and uncertainties

- 6.13.1. No difficulties or uncertainties have been encountered in the undertaking of this air quality assessment.

6.14. Summary

- 6.14.1. A summary of this assessment is presented in **Table 6.17**. The sensitivity of each area/receptor is identified alongside any relevant embedded mitigation and the likely effects that could arise on those receptors. Any proposed additional mitigation measures are stated, and the dust emission magnitude/magnitude of change and residual effects then assessed. Finally, any monitoring requirements are stated where applicable.
- 6.14.2. There are no significant residual effects during the construction, operation (including maintenance) and/or decommissioning phases.

Table 6.17: Summary of the air quality assessment

Receptor/matter	Phase	Sensitivity of the area/receptor	Embedded mitigation	Likely effect (without additional mitigation)	Additional mitigation	Dust emission magnitude/ Magnitude of change	Residual effect (with additional mitigation)	Monitoring requirement
Dust and particulate matter emissions resulting from the Proposed Development activities (demolition (during decommissioning phase only), earthworks, construction and trackout), including the operation of the construction equipment	Construction and decommissioning	Sensitivity of the area to dust soiling effects on people and property: • high for demolition (during decommissioning only), earthworks and construction activities; and • low for trackout activities.	The Proposed Development would incorporate a minimum offset distance of 50m from ITS from all residential receptors. The Proposed Development would incorporate a minimum offset distance of 10m from all perimeter fencing surrounding the Solar PV development to existing public rights of way.	For dust soiling effects on people and property: • medium risk for demolition (during decommissioning phase only), earthworks and construction activities; and • low risk for trackout activities.	Outline CEMP [EN010158/APP/7.2] Outline DEMP [EN010158/APP/7.4]	Small for every activity	For dust soiling effects on people and property: • medium risk for demolition (during decommissioning phase only) activities. • low risk from earthworks, construction activities. • negligible risk for trackout activities. The residual effect of dust soiling is not significant.	Dust deposition, dust flux, or real-time PM ₁₀ continuous baseline monitoring during construction and decommissioning phases.
	Construction and decommissioning	Sensitivity of the area to human health impacts: • low for every activity.	The Proposed Development would incorporate a minimum offset distance of 50m from ITS from all residential receptors. The Proposed Development would incorporate a minimum offset distance of 10m from all perimeter fencing surrounding the Solar PV development to existing public rights of way.	For human health impacts: • low risk for demolition (during decommissioning phase only), earthworks, construction and trackout activities.	Outline CEMP [EN010158/APP/7.2] Outline DEMP [EN010158/APP/7.4]	Small for every activity	For human health impacts: • negligible risk for every activity. The residual effect on human health is not significant.	Dust deposition, dust flux, or real-time PM ₁₀ continuous baseline monitoring during construction and decommissioning phases.
	Construction and decommissioning	Sensitivity of the area to ecological impacts:	The Proposed Development would	For ecological impacts:	Outline CEMP [EN010158/APP/7.2]	Small for every activity	For ecological impacts:	Dust deposition, dust flux, or real-

Receptor/matter	Phase	Sensitivity of the area/receptor	Embedded mitigation	Likely effect (without additional mitigation)	Additional mitigation	Dust emission magnitude/ Magnitude of change	Residual effect (with additional mitigation)	Monitoring requirement
		- medium-low for demolition (during decommissioning phase), earthworks and construction. - low for trackout.	incorporate a minimum offset distance of 30m from all perimeter fencing surrounding the Solar PV development to statutorily and locally designated wildlife sites and ancient woodland. The Proposed Development would incorporate a minimum offset distance of 20m from all perimeter fencing surrounding the Solar PV development to all other woodlands and HS2 planting. The Proposed Development would incorporate a minimum offset distance of 10m from all perimeter fencing surrounding the Solar PV development to existing hedgerows.	- medium-low risk from demolition, earthworks and construction activities; and - low risk from trackout activities.	Outline DEMP [EN010158/APP/7.4]		low-negligible risk for every activity. The residual effect on designated habitats is not significant.	time PM ₁₀ continuous baseline monitoring during construction and decommissioning phases.
Road traffic exhaust emissions (including emissions haulage/construction vehicles and vehicles used for workers' trips to and from the Site) during construction and decommissioning	Construction and decommissioning	Human receptors: high	Construction traffic routes are planned to avoid passing sensitive villages and residential receptors where possible.	The Proposed Development is not expected to generate Light Duty Vehicle movements exceeding Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] screening criteria during the construction phase. The predicted construction phase	Outline CTMP [EN010158/APP/7.5] Outline DEMP [EN010158/APP/7.4]	Below Environmental Protection UK and Institute of Air Quality Management guidance [Ref. 6-20] screening criteria.	The residual effect on human receptors is not significant .	N/A

Receptor/matter	Phase	Sensitivity of the area/receptor	Embedded mitigation	Likely effect (without additional mitigation)	Additional mitigation	Dust emission magnitude/ Magnitude of change	Residual effect (with additional mitigation)	Monitoring requirement
				Heavy Duty Vehicle generation slightly exceeds Environmental Protection UK and Institute of Air Quality Management [Ref. 6-20] screening criteria. The Proposed Development is not expected to generate traffic exceeding Environmental Protection UK and Institute of Air Quality Management [Ref. 6-20] screening criteria during the decommissioning phase.				
	Construction and decommissioning	Designated habitats: • low	N/A	The Proposed Development is not expected to generate traffic exceeding the Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23] screening criteria during construction and decommissioning phases.	Outline CTMP [EN010158/APP/7.5] Outline DEMP [EN010158/APP/7.4]	Below the Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23] screening criteria.	The residual effect on designated habitats is not significant .	N/A
Road traffic exhaust emissions during operation (including maintenance)	Operation (including maintenance)	Human receptors: • high	N/A	The Proposed Development is not expected to generate traffic exceeding Environmental Protection UK and Institute of Air Quality	No specific mitigation measures are required, but best practice mitigation measures are included in Outline OEMP [EN010158/APP/7.3]	Below Environmental Protection UK and Institute of Air Quality Management guidance [Ref.	The residual effect on human receptors is not significant .	N/A

Receptor/matter	Phase	Sensitivity of the area/receptor	Embedded mitigation	Likely effect (without additional mitigation)	Additional mitigation	Dust emission magnitude/ Magnitude of change	Residual effect (with additional mitigation)	Monitoring requirement
				Management guidance [Ref. 6-20] screening criteria once operational.		6-20] screening criteria.		
	Operation (including maintenance)	Designated sites: low	N/A	The Proposed Development is not expected to generate traffic exceeding the Design Manual for Roads and Bridges LA105 Air Quality [Ref. 6-23] screening criteria once operational.	No specific mitigation measures are required, but best practice mitigation measures are included in Outline OEMP [EN010158/APP/7.3] .	Below the Design Manual for Roads and Bridges LA 105 Air Quality [Ref. 6-23] screening criteria.	The residual effect on designated habitats is not significant .	N/A

6.15. References

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