

# Rosefield Solar Farm

## Preliminary Environmental Information Report

Volume 1  
Chapter 6: Air Quality

September 2024



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## 6. Air Quality

### 6.1. Introduction

6.1.1. This chapter presents a preliminary assessment of the likely significant effects arising from the construction, operation (including maintenance) and decommissioning of Rosefield Solar Farm upon air quality and should be read in conjunction with the following appendix in **Volume 3**:

- **Appendix 6.1: Request for Comments on the Proposed Air Quality Assessment**

### 6.2. Stakeholder engagement

6.2.1. A method statement, as reproduced in **Appendix 6.1 in Volume 3**, detailing the proposed air quality assessment scope and methodology was submitted to Buckinghamshire Council on 24 May 2024 to seek their agreement on the proposed approach to the air quality assessment. We are awaiting feedback on the proposed approach at the time of writing.

### 6.3. Legislative framework, planning policy and guidance

6.3.1. The preliminary assessment has been undertaken with regard to the following legislation, planning policy and guidance.

#### Legislation

- Directive 2008/50/EC of the European Parliament and of the Council of 21<sup>st</sup> May 2008 on Ambient Air Quality and Cleaner Air for Europe<sup>1</sup>;
- Air Quality (England) Regulations 2000<sup>2</sup>;
- Air Quality (England) (Amendment) Regulations 2002<sup>3</sup>;
- Air Quality Standards Regulations 2010<sup>4</sup>;
- Air Quality Standards (Amendment) Regulations 2016;<sup>5</sup>

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<sup>1</sup> Directive 2008/50/EC. Available online: <https://faolex.fao.org/docs/pdf/eur80016.pdf>

<sup>2</sup> Air Quality (England) Regulations 2000. Available online: <https://www.legislation.gov.uk/ukxi/2000/928/contents/made>

<sup>3</sup> Air Quality (England) (Amendment) Regulations 2002. Available online: <https://www.legislation.gov.uk/ukxi/2002/3043/contents/made>

<sup>4</sup> Air Quality Standards Regulations 2010. Available online: <https://www.legislation.gov.uk/ukxi/2010/1001/contents/made>

<sup>5</sup> Air Quality Standards (Amendment) Regulations 2016. Available online: <https://www.legislation.gov.uk/ukxi/2016/1184/contents/made>

- Environment Act 2021<sup>6</sup>; and
- Environmental Targets (Fine Particulate Matter) (England) Regulations 2023<sup>7</sup>.

### National planning policy

- Overarching National Policy Statement for Energy (NPS EN-1) (2023)<sup>8</sup> – Section 5.2 details the planning policy for air quality, including guidance on undertaking the EIA.
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (2023)<sup>9</sup> – Section 2.10 gives specific consideration to solar development including the assessment of traffic and transport impacts.
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (2023)<sup>10</sup> which details issues relating to underground cables, in connection with soil and contamination, although predominantly dealing with overhead cables.
- National Planning Policy Framework (NPPF) (2023)<sup>11</sup> which includes several requirements and considerations of developments in relation to air quality. These provisions aim to guide local authorities and developers in addressing air quality issues within the planning process.

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<sup>6</sup> Environment Act 2021. Available online:

<https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

<sup>7</sup> Environmental Targets (Fine Particulate Matter) (England) Regulations 2023.

Available online: <https://www.legislation.gov.uk/uksi/2023/96/contents/made>

<sup>8</sup> Department for Energy Security and Net Zero. (2023). Overarching National Policy Statement for Energy (EN-1). Available online:

<https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>

<sup>9</sup> Department for Energy Security and Net Zero (2023). National Policy Statement for Renewable Energy Infrastructure (EN-3). Available online:

<https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3>

<sup>10</sup> Department for Energy Security and Net Zero (2023). National Policy Statement for Electricity Networks Infrastructure (EN-5). Available online:

<https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5>

<sup>11</sup> [Ministry of Housing, Communities and Local Government and Department for Levelling Up, Housing and Communities \(2023\) National Planning Policy Framework.](https://www.gov.uk/government/publications/national-planning-policy-framework) Available online: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

- The Clean Air Strategy 2019<sup>12</sup>. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 1<sup>13</sup>.
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 2<sup>14</sup>.

### Local planning policy

- Vale of Aylesbury Local Plan (VALP) 2013 – 2033 Adopted Plan (2021)<sup>15</sup>, specifically Policy NE5 ‘Pollution, air quality and contaminated land’.
- Buckinghamshire Council Climate Change and Air Quality Strategy (2021)<sup>16</sup>.

### Guidance

- IAQM, Guidance of the Assessment of Dust from Demolition and Construction, v1.1 (2024)<sup>17</sup>.
- Land-Use Planning and Development Control: Planning for Air Quality (Environmental Protection UK (EPUK) and IAQM, 2017)<sup>18</sup>; and
- Local Air Quality Management (LAQM) Technical Guidance (TG22) (Department for Environment, Food and Rural Affairs (Defra), 2022)<sup>19</sup>.

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<sup>12</sup> The Clean Air Strategy (2019). Available online: [Clean Air Strategy 2019 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/clean-air-strategy-2019)

<sup>13</sup> The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 1 Available online: [Volume 1 \(www.gov.uk\)](https://www.gov.uk/air-quality-strategy-volume-1)

<sup>14</sup> The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 2 Available online: [Volume 2 \(www.gov.uk\)](https://www.gov.uk/air-quality-strategy-volume-2)

<sup>15</sup> Vale of Aylesbury Local Plan (VALP) 2013 – 2033 Adopted Plan (2021). Available online: [https://buckinghamshire-gov-uk.s3.amazonaws.com/documents/Aylesbury\\_local\\_plan\\_L46JWaT.pdf](https://buckinghamshire-gov-uk.s3.amazonaws.com/documents/Aylesbury_local_plan_L46JWaT.pdf)

<sup>16</sup> Buckinghamshire Council Climate Change and Air Quality Strategy (2021). Available online: [Climate Change and Air Quality Strategy | Buckinghamshire Council](https://www.buckinghamshire.gov.uk/Climate-Change-and-Air-Quality-Strategy)

<sup>17</sup> IAQM Guidance of the Assessment of Dust from Demolition and Construction (2024). Available online: [Construction-Dust-Guidance-Jan-2024.pdf \(iaqm.co.uk\)](https://www.iaqm.co.uk/construction-dust-guidance-jan-2024.pdf)

<sup>18</sup> Environmental Protection UK and Institute of Air Quality Management (2017) Land-Use Planning and Development Control: Planning for Air Quality. Available online: <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

<sup>19</sup> Department for Environment, Food and Rural Affairs (2022) Local Air Quality Management (LAQM) Technical Guidance (TG.22). Available online: <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>

- IAQM, A guide to the assessment of air quality impacts on designated nature conservation sites, v1.1 (2020)<sup>20</sup>.

## 6.4. Study area

- 6.4.1. Based on the Institute of Air Quality Management (IAQM) construction dust guidance<sup>21</sup>, the study area for the construction and decommissioning phase assessments for sensitive human receptors for earthworks and general construction activities is up to 250 m from the Site boundary, (see **Plate 6.1** below).

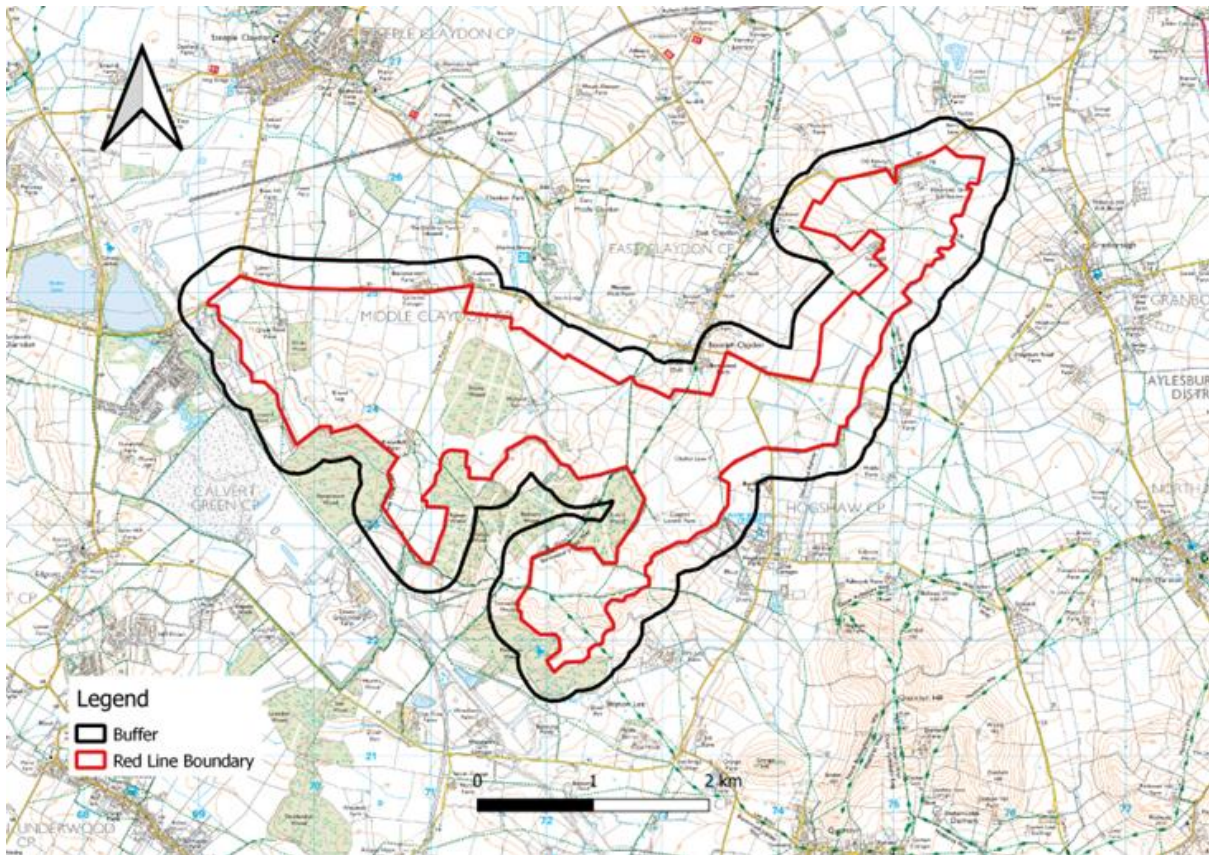


Plate 6.1: Construction dust study area

- 6.4.2. For trackout activities (which is defined as the transport of dust and dirt from the construction/demolition sites onto the public road network), the

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<sup>20</sup> IAQM A guide to the assessment of air quality impacts on designated nature conservation sites (202). Available online: <https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf>

<sup>21</sup> Institute of Air Quality Management (2024) Guidance of the Assessment of Dust from Demolition and Construction (Version 2.2). Available online: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>



study area is up to 50 m from the edge of the roads likely to be affected by trackout.

- 6.4.3. The study area for sensitive ecological receptors for earthworks and general construction activities is up to 50 m from the Site boundary and trackout.
- 6.4.4. Based on the IAQM impacts on designated nature conservation sites guidance<sup>22</sup>, the study area for sensitive ecological receptors for road traffic impacts is 200 m for any road that will have a cumulative increase of 1000 Annual Average Daily Traffic (AADT).
- 6.4.5. The study area for the assessment of traffic exhaust emissions is determined by the roads predicted by the traffic assessment as likely to experience a significant change in traffic flows.

## 6.5. Establishing baseline conditions

- 6.5.1. A desk-based baseline air quality review has been undertaken to establish existing air quality conditions within the study area.
- 6.5.2. The following data sources have been used to understanding the existing air quality conditions:
- Buckinghamshire Council (2023) Air Quality Annual Status Report (ASR) (2023)<sup>23</sup>;
  - The Magic Map application available online from the Defra website<sup>24</sup>; and
  - Estimated background air quality data from background maps published by Defra<sup>25</sup>.
- 6.5.3. No surveys have been undertaken to inform the existing air quality conditions. No surveys are planned to be undertaken to inform the ES as publicly available data will be utilised.

## 6.6. Environmental baseline

- 6.6.1. Rosefield Solar Farm is located within the administrative area of Buckinghamshire Council. There are currently nine Air Quality

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<sup>22</sup> IAQM A guide to the assessment of air quality impacts on designated nature conservation sites (202). Available online: <https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf>

<sup>23</sup> Buckinghamshire Council Air Quality Annual Status Report (2023). Available online: [Microsoft Word - ASR 2023 Buckinghamshire Council Final 0623 \(buckinghamshire-gov-uk.s3.amazonaws.com\)](https://www.buckinghamshire.gov.uk/media/1000000/microsoft-word-asr-2023-buckinghamshire-council-final-0623-buckinghamshire-gov-uk.s3.amazonaws.com)

<sup>24</sup> Available online: <https://magic.defra.gov.uk/magicmap.aspx>

<sup>25</sup> Available online: <https://uk-air.defra.gov.uk/>

Management Areas (AQMA) declared within this administrative area. However no AQMA are located close to the Site; the closest AQMA is located in the neighbouring administrative area of Cherwell District Council in Bicester approximately 14 km from Rosefield Solar Farm.

- 6.6.2. Various small settlements (and therefore sensitive human receptors) are located close to Rosefield Solar Farm, of which Botolph Claydon is located within 250 m.
- 6.6.3. Rosefield Solar Farm is located is within 50 m of Sheephouse Wood and Finemere Wood Sites of Special Scientific Interest (SSSI) which are considered sensitive ecological receptors and the Ham Home-cum-Hamgreen Woods SSSI is located within 200 m of the A41.
- 6.6.4. According to the Buckinghamshire Council 2023 Air Quality ASR<sup>26</sup>, there were two automatic monitoring stations and a network of 149 nitrogen dioxide (NO<sub>2</sub>) diffusion tubes across the district in 2022. Particulate matter (PM) monitoring data is not available in the vicinity (within 3 km) of the approximate centre of the Site.
- 6.6.5. The nearest monitoring location is a NO<sub>2</sub> diffusion tube (Buckinghamshire Council ref: AV8 - 29 High Street, Winslow) situated approximately 7.5 km from the approximate centre of the Site. The measured annual average NO<sub>2</sub> concentrations at this diffusion tube site, for years 2017 - 2021, ranged between 23.0 µg/m<sup>3</sup> and 28.8 µg/m<sup>3</sup>. These are well below the annual mean NO<sub>2</sub> air quality objective of 40µg/m<sup>3</sup>.
- 6.6.6. Estimated background air quality data is available from the UK-AIR website operated by Defra<sup>27</sup>. The website provides estimated annual average background concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> on a 1 km<sup>2</sup> grid basis from LAQM background maps. The estimated 2024 annual average background NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations at the Site are 6.7µg/m<sup>3</sup>, 13.7µg/m<sup>3</sup> and 8.4µg/m<sup>3</sup>, respectively, which are below the relevant air quality objectives (NO<sub>2</sub> air quality objective is 40µg/m<sup>3</sup>; PM<sub>10</sub> air quality objective is 40µg/m<sup>3</sup>; and PM<sub>2.5</sub> air quality objective is 20µg/m<sup>3</sup>). Overall, air quality is considered to be good within the study area.
- 6.6.7. With regards to the future baseline, the estimated annual average NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> background concentrations for 2026 from the UK-AIR website operated by Defra<sup>28</sup> are predicted to be 6.4 µg/m<sup>3</sup>, 13.6 µg/m<sup>3</sup> and 8.3 µg/m<sup>3</sup> respectively. No exceedance of the annual average NO<sub>2</sub>, PM<sub>10</sub>

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<sup>26</sup> Buckinghamshire Council Air Quality Annual Status Report (2023). Available online: [Microsoft Word - ASR 2023 Buckinghamshire Council Final 0623 \(buckinghamshire-gov-uk.s3.amazonaws.com\)](https://www.buckinghamshire.gov.uk/s3.amazonaws.com/microsoft-word-asr-2023-buckinghamshire-council-final-0623)

<sup>27</sup> Available online: <https://uk-air.defra.gov.uk/>

<sup>28</sup> Available online: <https://uk-air.defra.gov.uk/>



and PM<sub>2.5</sub> air quality objectives are predicted. Background concentrations are predicted to fall with time because of the reduction in emissions to air resulting from newer technology vehicles (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 objectives.

## Future baseline

6.6.8. Air quality across the study area in the absence of Rosefield Solar Farm is anticipated to remain largely unchanged from the levels in the current baseline conditions.

## 6.7. Mitigation embedded into the design

6.7.1. This preliminary assessment has been based on the principle that measures have been ‘embedded’ into the design of Rosefield Solar Farm to remove potential likely significant effects as far as practicable, for example by the considered placement of infrastructure. Embedded (primary) environmental mitigation measures that are considered to be an inherent part of Rosefield Solar Farm are detailed within **Chapter 5: Approach to the EIA**. The embedded mitigation measures relevant to air quality and the benefits these provide are outlined in **Table 6.1** below.

Table 6.1 – Embedded mitigation measures relevant to air quality

Embedded mitigation measures relevant to air quality	Benefit
There will be a minimum 250 m offset from the fence line around ITS, BESS, Rosefield Substation and Collector Compounds to residential properties, determined on a case by case basis.	Reduces risk of construction dust impacting on sensitive receptors during construction phase.
There will be a minimum 30 m offset from all fence lines within Rosefield Solar Farm to statutorily and locally designated wildlife sites.	
There will be a minimum 30 m offset from all fence lines within Rosefield Solar Farm to ancient woodland.	
There will be a minimum 10 m offset from all fence lines within Rosefield Solar Farm to all existing hedgerows.	
Construction traffic routes are planned to avoid passing sensitive villages and residential receptors where possible.	Reduces risk of trackout dust and vehicle emissions impacting on sensitive receptors.

## 6.8. Optionality

- 6.8.1. **Chapter 5: Approach to the EIA** sets out those elements of Rosefield Solar Farm for which optionality is present within the current design and sets out the scenarios assessed for the purpose of this PEIR.
- 6.8.2. The preliminary design principles as outlined in **Chapter 5: Approach to the EIA** and preliminary parameter plans (**Figures 3.1 to 3.5 in Volume 2**) set out the reasonable ‘worst case scenario’ that has been assessed within this chapter. The ‘worst case scenario’ options in relation to this preliminary air quality assessment are described in **Table 6.2 below**.

Table 6.2 – Optionality scenarios assessed

Project element	Scenario assessed for this preliminary assessment
Satellite Collector Compounds	There are five fields that are considered suitable for Satellite Collector Compounds, as shown on the proposed Zonal Masterplan in <b>Figure 1.2 in Volume 2</b> (Fields B10, B23, D8, D9 and D17). The preliminary assessment is based on the overall Site boundary and assumes impacts are consistent across the entire Site. The final positioning of the Satellite Collector Compounds would not impact the assessment and thus all locations have been considered for the purposes of this preliminary assessment.
Construction Compounds	Potential locations for the proposed Construction Compounds are outlined in <b>Figure 3.6 in Volume 2</b> . The preliminary assessment is based on the overall Site boundary and assumes impacts are consistent across the entire Site. The final positioning of the Satellite Collector Compounds would not impact the assessment and thus all locations have been considered for the purposes of this preliminary assessment.
BESS	There are two scenarios outlined for the proposed location of the BESS in <b>Chapter 5: Approach to the EIA</b> . The proposed BESS are within Fields D8, D9 and E23 for both scenarios. The preliminary assessment will use the overall Site boundary and assume impacts are consistent across the entire Site. The final positioning of the BESS would not impact the assessment and thus all locations have been considered for the purposes of this preliminary assessment.
Rosefield Substation and Main Collector Compound	There are two scenarios outlined for the proposed location of the Rosefield Substation in <b>Chapter 5: Approach to the EIA</b> . Rosefield Substation will either be in Field E11 for Scenario 1, or the predominately northern area of Field E23 for Scenario 2. The preliminary assessment will use the overall Site boundary and assume impacts are consistent across the

Project element	Scenario assessed for this preliminary assessment
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	entire Site. The final positioning of the Rosefield Substation would not impact the assessment and thus all locations have been considered for the purposes of this preliminary assessment.
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### Preliminary assessment assumptions

6.8.3. For the purposes of this preliminary assessment, it has been assumed that the construction phase of Rosefield Solar Farm will require a ‘worst-case’ daily trip generation of 218 Light Duty Vehicles (LDV) AADT trips and 144 Heavy Duty Vehicles (HDV) AADT trips. This is based on the ‘worst case’ month (month 4) of the construction period, and is not likely to be a reflection of the entire construction phase. It has been assumed that the decommissioning phase will be similar to the construction phase albeit with slightly shorter duration and fewer traffic movements.

### 6.9. Approach to the preliminary assessment

6.9.1. At this preliminary assessment stage, detailed construction and decommissioning activities and equipment lists have not been defined, and details to inform an assessment of dust emissions arising from construction and decommissioning activities are therefore not yet available to quantify impacts and their significance. A full assessment utilising significance criteria will be conducted and reported in the ES based on the methodology presented in **Appendix 6.1** in **Volume 3**. However this preliminary assessment does provide commentary on potential significant effects of likely anticipated construction activities.

6.9.2. Although details of the decommissioning phase are not fixed at this stage, it is expected that the activities during the decommissioning phase will be similar in nature to the construction phase, albeit of a slightly shorter duration, with fewer road traffic movements and on-site equipment (as described in **Chapter 3: Description of Rosefield Solar Farm**). The decommissioning phase is therefore likely to cause a lesser impact than the construction phase. As such, the construction phase is considered to be the worst-case scenario for both construction and decommissioning phases in this preliminary air quality assessment.

6.9.3. The principal pollutants relevant to this preliminary assessment are considered to be NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. These are regarded as the most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions.

6.9.4. A screening level qualitative assessment for traffic exhaust emissions (construction phase only) has been undertaken as part of this preliminary

assessment with reference to EPUK and IAQM guidance<sup>29</sup>, using professional judgement and by considering the following information that will form part of the final design of Rosefield Solar Farm, where available:

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

6.9.5. **Table 6.3** below presents the EPUK-IAQM 2017 guidance screening criteria that have been used for the preliminary assessment of construction phase traffic exhaust emissions.

**Table 6.3 – Indicative criteria for requiring an air quality assessment**

The development will...	Indicative criteria to proceed to an air quality assessment
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors	A change of LDV flows of: <ul style="list-style-type: none"> <li>• More than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA;</li> <li>• More than 500 AADT elsewhere.</li> </ul>
Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors.	A change of HDV flows of: <ul style="list-style-type: none"> <li>• More than 25 AADT within or adjacent to an AQMA;</li> <li>• More than 100 AADT elsewhere.</li> </ul>

6.9.6. Initial estimates of construction phase traffic generation AADT (two-way trips) for 2028 are presented in **Table 6.4**. 2028 represents a reasonable ‘worst-case’ year of assessment, as construction is scheduled to commence in 2028 and as traffic growth increases year on year and any percentage impacts would therefore reduce beyond 2028. LDV and HDV modelling data will be updated in the ES to demonstrate that the predicted number of HGV movements during the construction programme will be considered cumulatively with other existing development and/or approved development(s).

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<sup>29</sup> Environmental Protection UK and Institute of Air Quality Management (2017) Land-Use Planning and Development Control: Planning for Air Quality. Available online: <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

Table 6.4 – Construction phase traffic data

Road	Estimated 2028 construction traffic associated with Rosefield Solar Farm	
	LDVs (AADT)	HDVs (AADT)
A34	11	124
M40 North	11	8
M40 South	11	8
A41	33	140
A41 Bicester	109	140
A41 West	109	140
A41 East	109	5
Station Road	218	144
Snake Lane	218	144
Claydon Road	218	144
Granborough Road	74	83

## 6.10. Assessment of likely effects (without additional mitigation)

6.10.1. This section considers the effects that may arise during the construction, operation (including maintenance) and decommissioning phases of Rosefield Solar Farm in the absence of additional mitigation, taking into account the above embedded mitigation measures outlined in **Table 6.1** and assessing the reasonable worst case scenarios as outlined in **Table 6.2**.

### Construction and decommissioning phases

6.10.2. Construction and decommissioning works have the potential to release dust including fine particulate matter impacting air quality at nearby sensitive human and ecological receptors (e.g. residential properties, ancient woodland and Local Wildlife Sites) within the study area. The operation of Site construction equipment and machinery would result in emissions to the atmosphere of exhaust gases such as NO<sub>2</sub>.

6.10.3. However, dust emitting activities can be effectively controlled by appropriate dust control measures and any adverse effects can be greatly reduced or eliminated. A dust risk assessment will be undertaken within the ES and will outline appropriate construction and decommissioning phase mitigation measures. With the implementation of these measures, construction dust impacts on sensitive ecological and human receptors are anticipated to be negligible.

6.10.4. 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 access and the nearby road network within the study area.

- 6.10.5. Initial construction traffic data, based on the worst-case month of the construction period, suggests that Rosefield Solar Farm would generate LDVs flows well below the EPUK-IAQM screening criterion<sup>30</sup> in **Table 6.3** (i.e. a change of LDVs of more than 500 AADT). However, it does suggest that Rosefield Solar Farm is likely to generate HDVs flows slightly exceeding the EPUK-IAQM screening criterion on some roads (being a change of HDVs of more than 100 AADT).
- 6.10.6. The A41 west is the only road that is within 200 m of a sensitive ecological site. The A41 will have a maximum impact of 249 additional AADT split into 109 LDVs and 140 HDVs. This is well below the 1000 AADT criterion for impacts to ecological sites (refer to **Table 6.3**) and therefore the impact is considered to be negligible.
- 6.10.7. Traffic effects during the construction phase would be limited to a relatively short period of approximately 30 months, and would occur along pre-designed traffic routes with few sensitive receptors. Baseline air quality is likely to be good and the annual mean NO<sub>2</sub> concentration within the study area is expected to be well below the air quality objective. Therefore it is considered likely overall that the additional traffic emissions as a result of the construction of Rosefield Solar Farm would not cause a significant adverse effect on local air quality.
- 6.10.8. Details of the decommissioning phase are not fixed at this stage. It is expected that the decommissioning phase would be similar in nature to construction, albeit of a slightly shorter duration, with fewer road traffic movements. It is therefore considered reasonable to assume that traffic impacts during the decommissioning phase would be the same as, or no greater than, the construction phase. Based on the temporary nature of the decommissioning activities and low background pollutant concentrations in the vicinity of the Site, it is considered that traffic exhaust emissions during the decommissioning phase would not result in a significant adverse effect on local air quality.

### Operational (including maintenance) phase

- 6.10.9. Given the nature of Rosefield Solar Farm, no activities resulting in significant emissions are anticipated during the operational (including maintenance) phase. There would be only limited movement of vehicles to Rosefield Solar Farm for maintenance (as described in **Chapter 3**:

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<sup>30</sup> Environmental Protection UK and Institute of Air Quality Management (2017) Land-Use Planning and Development Control: Planning for Air Quality. Available online: <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>



**Description of Rosefield Solar Farm**). Therefore the operational (including maintenance) phase of Rosefield Solar Farm is not considered further in this preliminary assessment.

## 6.11. Additional mitigation

### Construction and decommissioning phases

- 6.11.1. Construction phase site-specific dust mitigation measures would be based on the results of the pre-mitigation dust impacts assessment (to be presented in the ES), which would also be applied for the decommissioning phase, where relevant.
- 6.11.2. Mitigation measures will be set out in an Outline Construction Environmental Management Plan and Outline Decommissioning Environmental Management Plan that will be submitted in support of the DCO application. This would also include general measures such as construction site management and machinery operation.
- 6.11.3. Any effects from traffic emissions on air quality would be temporary and can be suitably controlled by the employment of mitigation measures appropriate to Rosefield Solar Farm. Mitigation measures will be set out in an Outline Construction Traffic Management Plan that will be submitted in support of the DCO application. The route of construction traffic will be documented within the Construction Traffic Management Plan, including details and controls of road crossings by HDVs and minimising use of sensitive routes by HDVs.

## 6.12. Assessment of residual effects (with additional mitigation)

### Construction and decommissioning phases

- 6.12.1. The residual effects of dust and PM emissions and exhaust emissions from construction equipment and machinery within the study area during the construction phase is likely to be temporary, and **not significant** for human and ecological receptors, provided that dust controls, site management and dust mitigation measures are applied as described in **Section 6.11**. Any residual effects on air quality within the study area during decommissioning would also be temporary and **not significant**, provided that dust controls, site management and dust mitigation measures are applied as described in **Section 6.11**.
- 6.12.2. The residual effect of traffic exhaust emissions during the construction and decommissioning phases of Rosefield Solar Farm within the study area is predicted to be **not significant**.

## 6.13. Opportunities for enhancement

- 6.13.1. Rosefield Solar Farm would produce a clean, sustainable energy source. Rosefield Solar Farm would help reduce the energy requirements from fossil fuels, which emit harmful air pollutants, such as carbon dioxide, NO<sub>2</sub>, sulphur dioxide and PM. As a result, no further opportunities to enhance the environment from an air quality perspective have been identified at this stage.

## 6.14. Difficulties and uncertainties

- 6.14.1. The following difficulties and uncertainties have been encountered in undertaking this preliminary assessment:
- The information provided in this PEIR is preliminary and is based on the information available at the time of writing. A full assessment of likely significant effects will be reported in the ES.
  - Details of plant/equipment during the construction and decommissioning phases of Rosefield Solar Farm have not been defined. The plant selection and programme will be defined during the preparation of the ES, as further information becomes available.

## 6.15. Further work required to inform the ES

- 6.15.1. To form a robust ES, the following work is proposed so that all aspects will be suitably considered:
- 6.15.2. Assessments of the likely significant effects of the dust and PM generated during the construction and decommissioning phases of Rosefield Solar Farm on sensitive receptors within the study areas will be undertaken having regard to IAQM 2024 guidance<sup>31</sup> and applying professional judgement. The full assessment will be detailed within the ES.
- 6.15.3. The IAQM 2024 guidance makes reference to the use of professional judgement when assessing the risks of dust impacts from construction and decommissioning activities. Owing to this, professional judgement will be used when determining whether a risk is considered to be significant or not for the purpose of the construction and decommissioning phase assessments.
- 6.15.4. The assessments will consider the risk of potential dust and PM effects from the following three sources: earthworks, general construction

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<sup>31</sup> Institute of Air Quality Management (2024) Guidance of the Assessment of Dust from Demolition and Construction (Version 2.2). Available online: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>

activities and trackout activities. They will take into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to increases in dust and PM levels to assign a level of risk. **Table 6.5** and **Table 6.6** below indicate the scale of impact magnitude and the receptor sensitivity respectively that will be used in undertaking the construction and decommissioning phase assessments. Dust risks will be described in terms of low, medium or high as shown in **Table 6.6**. Once the level of risk has been ascertained, the site-specific mitigation proportionate to the level of risk will be identified. The assessments will determine the significance of any residual effects once any appropriate additional mitigation measures have been identified.

- 6.15.5. The criteria presented in **Table 6.5**, **Table 6.6** and **Table 6.7** are from the updated construction dust guidance was published by IAQM in January 2024<sup>32</sup> which supersedes the criteria presented in the EIA Scoping Report. The updated criteria which are set out below will be used to inform the detailed assessment for the ES.
- 6.15.6. A Plume Assessment to assess the impact of a fire event within the BESS battery components and an Outline Battery Safety Management Plan will be submitted in support of the DCO application.

**Table 6.5 – Scale of magnitude for dust emission impacts**

Activity	Magnitude	Description of activity/source
Earthworks	Large	Total site area >110,000 m <sup>2</sup> , potentially dusty soil type (e.g. clay), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height.
	Medium	Total site area 18,000 – 110,000 m <sup>2</sup> , moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 3 m – 6 m in height.
	Small	Total site area <18,000 m <sup>2</sup> , soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height.
Construction	Large	Total building volume >75,000 m <sup>3</sup> , on-site concrete batching, sandblasting.
	Medium	Total building volume 12,000 m <sup>3</sup> – 75,000 m <sup>3</sup> , potentially dusty construction material (e.g. concrete), piling, on-site concrete batching.

<sup>32</sup> Institute of Air Quality Management (2024) Guidance of the Assessment of Dust from Demolition and Construction (Version 2.2). Available online: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>

Activity	Magnitude	Description of activity/source
	Small	Total building volume <12,000 m <sup>3</sup> , construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	Large	>50 HDV (>3.5 tonnes) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.
	Medium	20 – 50 HDV (>3.5 tonnes) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.
	Small	<20 HDV (>3.5 tonnes) trips in any one day, surface material with low potential for dust release, unpaved road length <50 m.

Table 6.6 – Scale of receptor sensitivity

Sensitivity of area	Dust soiling	Human receptors	Ecological receptors
High	<p>Users can reasonably expect an enjoyment of a high level of amenity. The appearance, aesthetics or value of their property would be diminished by soiling.</p> <p>The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Examples include dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.</p>	<p>Locations where members of the public are exposed over a time period relevant to the air quality objective for PM<sub>10</sub> (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. These should also be considered as having equal sensitivity to residential areas for the purposes of this preliminary assessment.</p>	<p>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. 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.</p>
Medium	<p>Users would expect to enjoy a reasonable level of amenity but would not reasonably expect to enjoy the same level of amenity as in their home. The appearance, aesthetics or value of their property could be diminished by soiling.</p>	<p>Locations where the people exposed are workers and exposure is over a time period relevant to the air quality objective for PM<sub>10</sub> (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).</p>	<p>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</p>

Sensitivity of area	Dust soiling	Human receptors	Ecological receptors
	<p>The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.  Examples include parks and places of work.</p>	<p>Examples include office and shop workers, but will generally not include workers occupationally exposed to PM<sub>10</sub>, as protection is covered by Health and Safety at Work legislation.</p>	<p>may be affected by dust deposition.  An example is a SSSI with dust sensitive features.</p>
Low	<p>The enjoyment of amenity would not reasonably be expected.  Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling.  There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.  Examples include playing fields, farmland (unless commercially-sensitive) horticultural land, footpaths, short-term car parks and roads.</p>	<p>Locations where human exposure is transient.  Indicative examples include public footpaths, playing fields, parks and shopping streets.</p>	<p>Locations with a local designation where the features may be affected by dust deposition.  An example is a Local Nature Reserve with dust sensitive features.</p>



Table 6.7 – Level of effects for dust emission impacts

Sensitivity of area		Dust emissions magnitude		
		Large	Medium	Small
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



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