



**POWER
FOR GOOD**

Chapter 14: Air Quality

Preliminary Environmental Information Report

Volume 1

Steeple Renewables Project

Land at Sturton le Steeple, Nottinghamshire

14. Air Quality

14.1 Introduction

14.1.1 This Chapter considers the likely significant effects to air quality as a result of the Proposed Development. The focus is on the potential effects to air quality which would be generated by the Proposed Development at existing sensitive receptors during the following processes:

- Dust emissions during the construction phase of the Proposed Development;
- Road Traffic emissions during the construction, operational and decommissioning phases; and
- Emissions from plant and equipment during the construction, operational and decommissioning phases of the Proposed Development.

14.1.2 The pollutants of concern for human health from construction and operational road traffic are nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). During construction, there is also the potential for impacts to occur from dust soiling and elevated PM₁₀ emissions.

14.1.3 Please see **Appendix 1.4 ‘EIA Statement of Expertise’** for further details on the lead author.

14.2 Legislation and Planning Policy

14.2.1 The Air Quality Chapter has been prepared with consideration of the following documents:

- Overarching National Policy Statement for Energy (EN-1)¹
- National Policy Statement for Renewable Energy Infrastructure (EN-3)²
- The Environment Act 1995³;
- The Environment Act 2021⁴;
- The Air Quality strategy for England, Scotland, Wales and Northern Ireland⁵;
- The National Planning Policy Framework (NPPF)⁶;

¹ DESNZ (2023) Overarching National Policy Statement for Energy (EN-1) [online] (Last accessed: 01/07/2024), Available at: <https://assets.publishing.service.gov.uk/media/65bbfdbc709fe1000f637052/overarching-nps-for-energy-en1.pdf>

² DESNZ (2023) National Policy Statement for Renewable Energy Infrastructure (EN-3) [online] (Last accessed: 01/07/2024), Available at: <https://assets.publishing.service.gov.uk/media/65a7889996a5ec000d731aba/nps-renewable-energy-infrastructure-en3.pdf>

³ The Stationery Office (1995) The Environment Act 1995 (Part IV), London

⁴ The Stationery Office (2021) The Environment Act 2021, London

⁵ Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland – [online] (Last accessed: 01/07/2024), Available at: www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-1

⁶ Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework, Department for Communities and Local Governments, London

- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023⁷;
- Planning Practice Guidance (PPG)⁸;
- Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction⁹;
- Environmental Protection UK (EPUK), and IAQM Land-Use Planning & Development Control: Planning for Air Quality¹⁰;
- Defra Local Air Quality Management Technical Guidance (LAQM.TG(22))¹¹;
- Design Manual for Roads and Bridges (DMRB) guidance¹²;
- Defra PM_{2.5} Targets: Interim Planning Guidance¹³;
- Institute of Air Quality Management A guide to the assessment of air quality impacts on designated nature conservation sites¹⁴; and
- Bassetlaw District Council Core Strategy & Development Management Policies Development Plan Document (DPD)¹⁵.

14.2.2 Further details of the Legislation, Policy and guidance used within this Chapter are outlined within **Appendix 14.1**.

Air Quality Strategy

14.2.3 The European Union has set limit values for NO₂, PM₁₀ and PM_{2.5}; these are legally binding and have been implemented into English legislation by The Air Quality Standards Regulations 2010¹⁶ and The Air Quality Standards (Amendment) Regulations 2016¹⁷.

⁷ Environmental Protection (2023) The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 – [online] (Last accessed: 10/12/2024), Available at: [The Environmental Targets \(Fine Particulate Matter\) \(England\) Regulations 2023](#).

⁸ Ministry of Housing, Communities & Local Government (2019) Planning Practice Guidance, London

⁹ Institute of Air Quality Management (2024) Guidance on the assessment of dust from demolition and construction v2.2 – [online], (Last accessed: 01/07/2024), Available at: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>

¹⁰ Environmental Protection UK and Institute of Air Quality Management (2017), Land-Use Planning & Development Control: Planning For Air Quality v1.2 – [online] (Last accessed: 01/07/2024), Available at: iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

¹¹ Defra (2022) Local Air Quality Management Technical Guidance (TG22) – [online] (Last accessed: 12/06/2024), Available at: <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>

¹² Design Manual for Roads and Bridges (2024) LA 105 Air quality (vertical barriers) (Last accessed: 10/12/2024), Available at: [af7f4cda-08f7-4f16-a89f-e30da703f3f4](https://www.dmr.gov.uk/media/af7f4cda-08f7-4f16-a89f-e30da703f3f4)

¹³ Defra (2024) PM_{2.5} Targets: Interim Planning Guidance (Last accessed: 10/12/2024), Available at: <https://uk-air.defra.gov.uk/pm25targets/planning>

¹⁴ Institute of Air Quality Management, (2020) A guide to the assessment of air quality impacts on designated nature conservation sites – [online], (Last accessed: 10/12/2024) Available at: <https://www.iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf>

¹⁵ Bassetlaw District Council (2011) Bassetlaw District Council Core Strategy & Development Management Policies DPD – [online] (Last accessed: 05/03/2024), Available at: <https://www.bassetlaw.gov.uk/media/1543/cs1adoptedcorestrategy.pdf>

¹⁶ The Stationery Office (2010) Statutory Instrument 2010, No 1001, The Air Quality Standards Regulations 2010, London

¹⁷ The Stationery Office (2016) Statutory Instrument 2016, No 1184, The Air Quality Standards (Amendment) Regulations 2016, London

- 14.2.4 The Air Quality Objectives (AQOs) for NO₂, PM₁₀ and PM_{2.5} are set out in **Table 14.1**. The AQOs for NO₂, PM₁₀ and PM_{2.5} were to have been achieved by 2005, 2004 and 2020 respectively and continue to apply in all future years thereafter.
- 14.2.5 The Environment Act 2021 acts as the UK’s new framework of environmental protection and came into force on 1st April 2022. With regard to air quality, the Environment Act 2021 establishes a legally binding duty on the UK Government to bring forward at least two new air quality targets in secondary legislation. This was implemented through the Environmental Improvement Plan which outlines new PM_{2.5} targets for future years. These are a long term maximum annual mean target of 10 µg/m³ to be achieved by 2040 and an interim target of 12 µg/m³ to be achieved by 31st January 2028.
- 14.2.6 In addition, the more recently published Environmental Targets (Fine Particulate Matter) (England) Regulations 2023⁷ set out a maximum Annual Mean Concentration Target (AMCT) for PM_{2.5} of 10 µg/m³ to be achieved by 2040 and a Population Exposure Reduction Target (PERT) of 35% compared to 2018 to be achieved by 2040. These targets are expected to focus on reducing concentrations of, and exposure to, PM_{2.5}.
- 14.2.7 Additionally, a new Air Quality Strategy has been published in April 2023 which sets out a framework which should be followed by local authorities in support of Defra’s long term air quality goals including new PM_{2.5} targets¹⁸.
- 14.2.8 Defra have recently published their PM_{2.5} Targets: Interim Planning Guidance¹³ to advise on how developments can demonstrate appropriate consideration of the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023⁷ in the planning application process.

Table 14.1: Air Quality Objectives for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Objective
NO ₂	1-hour Mean	200 µg/m ³ Not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m ³
PM ₁₀	24-hour Mean	50 µg/m ³ Not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³
PM _{2.5}	Annual Mean	20 µg/m ³

¹⁸ Defra(2023) Air Quality Strategy: framework for local authority delivery

Pollutant	Time Period	Objective
<i>µg/m³ – microgram per cubic meter.</i>		

- 14.2.9 The AQOs apply at locations where members of the public are likely to be regularly present and exposed over the averaging period of the AQO. Examples of where the annual mean AQOs should apply are provided in the Local Air Quality Management Technical Guidance (LAQM.TG(22)) and include building façades of residential properties, schools and hospitals. The annual mean AQOs are not relevant for the building façades of offices or other places of work where members of the public do not have regular access, kerbsides or gardens.
- 14.2.10 The 24-hour mean AQO for PM₁₀ is considered to apply at the same locations as the annual mean AQO, as well as in gardens of residential properties and at hotels.
- 14.2.11 The 1-hour mean AQO for NO₂ also applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations, pavements of busy shopping streets, car parks and bus stations which are not fully enclosed. The 1-hour mean AQO does not apply at kerbside sites where the public do not have regular access.
- 14.2.12 Therefore, in line with LAQM.TG(22), since the Site is only to be accessed by Operations and Management personnel, as well as for land management as required, only the short term objective for NO₂ (the 1-hour mean NO₂ AQO) applies to the Site.
- 14.2.13 However, in line with LAQM.TG(22), both the long term (annual mean AQOs for NO₂, PM₁₀ and PM_{2.5}) and short term objectives (the 1-hour mean NO₂ and 24-hour mean PM₁₀ AQOs) apply to any high sensitivity receptors (residential, schools or hospitals) within 200 m of the anticipated construction traffic routes.

14.3 Assessment Methodology

Construction

Screening Criteria for Construction Traffic

- 14.3.1 The impacts of vehicle emissions (NO₂, PM₁₀ and PM_{2.5}) associated with the construction of the Proposed Development have the potential to affect existing sensitive receptors located at the roadside of the proposed construction traffic route. During construction the access points shown on **Figure 2.1** Construction

Phase Parameter Plan are currently being considered, which will be confirmed in the subsequent ES:

- 14.3.2 The Construction Phase of the Proposed Development is expected to last 24 months.
- 14.3.3 The EPUK/IAQM planning guidance¹⁰ sets out thresholds for traffic generation for both construction and operational phases, that have the potential to cause impacts to air quality at which point a detailed assessment of road traffic impacts should be undertaken. As the Proposed Development is not within or adjacent to an AQMA the criteria considered for this assessment are as follows:
- Change of light duty vehicles (LDV) flows of more than 500 annual average daily traffic (AADT); and
 - Change of heavy-duty vehicles (HDV) flows of more than 100 AADT.
- 14.3.4 A criterion of 1000 AADT and/or 200 HDV AADT increase will be considered for designated ecological receptors within 200m of the road which may be impacted by construction phase traffic, as outlined within IAQM guidance for designated sites¹⁴ and Design Manual for Roads and Bridges (DMRB)¹².

Non-Road Mobile Machinery (NRMM) Emissions

- 14.3.5 Exhaust emissions of oxides of nitrogen (NO_x), PM₁₀ and PM_{2.5} from Non-Road Mobile Machinery (NRMM) associated with construction sites may have a significant effect on local air quality. These emissions have been screened in line with LAQM.TG(22)¹¹ and IAQM Guidance⁹.
- 14.3.6 The IAQM construction guidance⁹ states that ***“Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed.”***
- 14.3.7 On that basis, there are expected to be no likely significant effects to air quality at existing sensitive human and ecological receptors from NRMM emissions and so these have been scoped out of further assessment.

Dust Emissions from Construction Phase

- 14.3.8 In addition, dust emissions associated with construction activities may impact local air quality concentrations. The works being undertaken during the construction

phase include earthworks, construction and trackout¹⁹. Due to the large scale/magnitude of the Proposed Development the proximity of nearby sensitive receptors such as residential properties, education buildings and ecological sites, the Site is considered to have a high risk of impact when unmitigated. This is considered a worst case, robust assessment. The methodology of the construction dust assessment and identification of sensitive receptors is outlined within **Appendix 14.3**.

- 14.3.9 It is anticipated that dust and particulate matter emissions produced during construction phase activities would be inherently controlled through the implementation of a Construction Environmental Management Plan (CEMP), to a negligible impact level. The type of mitigation measures required to control the fugitive dust emission during the construction phase will be outlined within the oCEMP submitted as part of the application, with the detailed CEMP to be secured by DCO requirement. The relevant mitigation measures are listed within **Appendix 14.3**.

Operation

Road Traffic Emissions

- 14.3.10 Air quality effects at sensitive human and ecological receptors from the operational phase of the Proposed Development have been scoped out from the assessment via the formal EIA Scoping process, which was agreed with PINS via their formal EIA Scoping Opinion, as traffic flows are expected to be minimal.
- 14.3.11 As confirmed by the Applicant's transport consultants, there will be limited number of vehicle movements associated with the operation of the Proposed Development, expected to be approximately 17 two-way movements daily on average to the Site for the maintenance of equipment.
- 14.3.12 As such, it is not anticipated that there are any potential likely significant environmental effects from operational phases of the Proposed Development as traffic is expected to be very limited and as such associated impacts have been scoped out; no further consideration is made to the operational phase within this PEIR Chapter.

¹⁹ Trackout is the transport of dust and dirt from a construction site onto the wider road network by construction vehicles, where it may be deposited and re-suspended.

- 14.3.13 Additionally, there will be no permanent users of the Proposed Development. The Site will be accessed by Operations and Management personnel, as well as for land management as required. Therefore, no assessment of the Site's suitability,
- 14.3.14 in terms of air quality, is required.

Combustion Sources

- 14.3.15 As no combustion plant is to be present on Site, it is not anticipated that there are any potential likely significant environmental effects from operational phases of the Proposed Development as there will be no combustion emissions during the operational phase of the Proposed Development; no further consideration is made to the operational combustion sources within this PEIR Chapter.

Decommissioning

- 14.3.16 The Proposed Development is anticipated to comprise an operational lifespan of approximately 40 years, by which time it is expected that baseline air quality conditions will be much improved due to improving vehicle technology and emerging national policy to reduce vehicle emissions. The impacts of the decommissioning phase are often similar to, or of a lesser magnitude than the air quality impacts associated with road traffic emissions generated during the construction phase.
- 14.3.17 At this stage it is assumed that the number of construction vehicles and NRMM during the decommissioning phase will be no greater than during construction.
- 14.3.18 Similarly, it is anticipated that dust and particulate matter emissions produced during decommissioning phase activities would be inherently controlled through the implementation of a decommissioning plan to a negligible impact level. The type of mitigation measures required to control the fugitive dust emission during the construction phase and therefore to be implemented during decommissioning are listed within **Appendix 14.3**.
- 14.3.19 As such, decommissioning has not been assessed separately.

Key Receptors

- 14.3.20 Existing sensitive receptors at the roadside of the construction traffic routes, have the potential to be affected by an increase in emissions of NO₂, PM₁₀ and PM_{2.5} from construction traffic for the duration of the construction phase, anticipated to be approximately 24 months.

- 14.3.21 The sensitivity of existing receptors to human health effects from construction traffic emissions has been determined utilising professional judgement in line with the IAQM guidance⁹ depending on the amount of time typically spent at the receptor location.
- 14.3.22 There are high sensitivity receptors including residential dwellings, healthcare facilities and schools located along the proposed construction routes. Construction routes associated with the Proposed Development are outlined **within Chapter 13**. Commercial and industrial uses are also included however, they are considered to be medium to low sensitivity receptors. **Figure 14.1** shows the locations of sensitive receptors in close proximity to the proposed construction routes.
- 14.3.23 There are no internationally designated ecological sites within 200m of the proposed construction routes, therefore there are no likely significant effects to national sensitive habitats or species. The closest statutory designated ecological receptor is Clarborough Tunnel, which is classed as a Site of Special Scientific Interest (SSSI). In addition, there are various low sensitivity locally designated habitat sites, Sites of Importance for Nature Conservation (SINCs) both within the Site boundary and in the immediate vicinity of the Site, also demonstrated in **Figure 14.1** (with the relevant locally designated sites taken from **Figure 7.2.3**). Construction and operational traffic are not anticipated to be routed in the locality of Clarborough Tunnel SSSI, with only the low sensitivity West Burton Meadow SINC identified within 50 m of a construction access point (Compound A) from Gainsborough Road. However, the number of vehicle movements on all construction and operational routes is expected to be below the threshold to cause a likely significant effect (additional vehicle movements of greater than 1000 AADT per day as outlined in the DMRB¹² and IAQM guidance¹⁴), which indicates that no likely significant effects are expected on designated ecological sites.

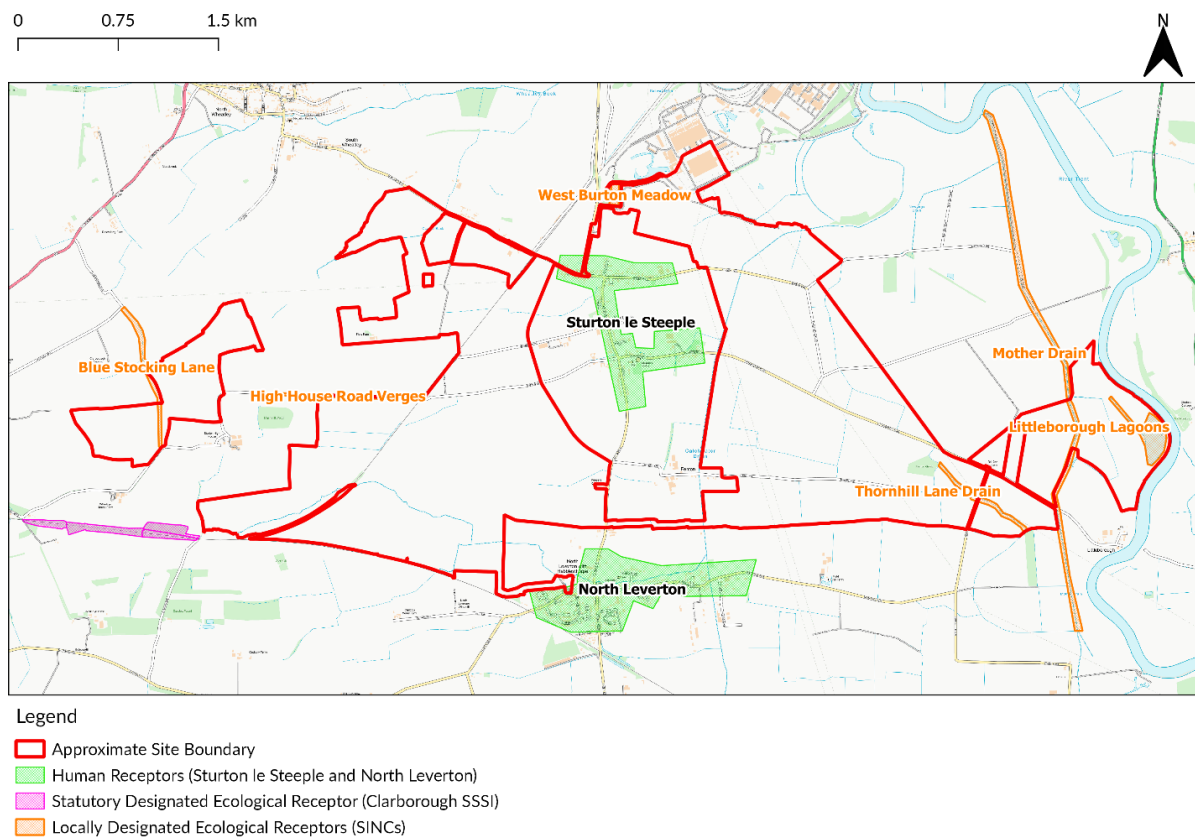


Figure 14.1: Location of Human and Ecological receptors in relation to the Site Boundary. Contains OS Data © Crown Copyright and Database rights 2024.

Assessment of Significance

Construction and Decommissioning Traffic

- 14.3.24 With reference to the EPUK/IAQM planning guidance¹⁰, if the changes in vehicle flows on local roads that a development generate, are below the relevant screening criteria for human receptors (500 LDV) and/ or 100 HDV) and ecological receptors (1000 total AADT and/or 200 HDV) for the determination of whether emissions from road traffic generated by a development have the potential for significant air quality effects, then there should be no requirement to carry out a detailed air quality assessment and the effect to air quality on sensitive human and ecological receptors can be considered as negligible and leads to a not significant effect.

Assessment Assumptions and Limitations

- 14.3.25 To ensure transparency within the PEIR process, the following limitations and assumptions have been identified:
- It has been assumed that the construction stage mitigation measures outlined in **Appendix 14.3** will be effectively implemented through the oCEMP and outline Construction Traffic Management Plan (oCTMP) submitted in support of the planning application, with detailed management plans to be secured by

requirements in the DCO, and, as such, no significant effects will arise from construction dust activities; and

- The ability to predict likely significant air quality effects is dependent upon the traffic flow predictions made by the Transport Consultants for the Proposed Development. It has been assumed that construction traffic flows and routing are robustly assessed.

14.4 Stakeholder Engagement

14.4.1 **Table 14.2** provides an overview of the consultation that has been undertaken to inform the Proposed Development and PEIR, including the consideration of likely significant effects and the methodology for assessment. Further details of the correspondence with the local authority are outlined within **Appendix 14.2**.

Table 14.2: Summary of Consultation

Consultee	Summary of consultation	Summary Of Consultee Response
Bassetlaw District Council (BDC) Environmental Health	<p>Hoare Lea provided BDC information regarding the assessment methodology, specifically the monitoring sites considered suitable for model verification for the baseline and future year assessments, where required. BDC requested further clarification on the diffusion tube locations.</p> <p>Response: Hoare Lea provided clarity on the monitoring locations. Acceptance of the methodology was received by BDC.</p> <p>A copy of the consultation with BDC is provided in Appendix 14.2.</p>	No comments to be addressed as methodology was agreed.

14.4.2 A summary of Planning Inspectorate (PINS) comments within the Scoping Opinion is included within **Table 14.3**.

Table 14.3: Scoping Opinion Response

PINS Comment	Response
<p>The Inspectorate does not consider that sufficient information has been provided at this stage regarding dust suppression techniques and the location of potential dust sensitive environmental receptors to support the scoping out of dust emissions during construction and decommissioning from further assessment.</p> <p>An assessment of dust impacts that conforms with relevant guidance (e.g., the Institute of Air Quality Management (IAQM)) on construction dust should be provided to demonstrate that mitigation measures proposed are appropriate for the scale of effects.</p> <p>The Inspectorate considers that once operational, the Proposed Development is unlikely to result in significant air quality effects as the components of the Proposed Development do not produce dust emissions.</p>	<p>It is considered that due to the size and proximity of development to nearby sensitive receptors that the highest risk of impact, ‘high risk’, has been assessed in line with the IAQM guidance and therefore associated high risk mitigation measures will be implemented and included in the oCEMP. The list of high-risk measures mitigation measures is outlined within Appendix 14.3 and includes details from the construction dust risk assessment. These measures would also be applicable to the decommissioning phases.</p>
<p>The Inspectorate agrees that emissions from NRMM can be scoped out provided information on the type, duration and location of NRMM is shown in the ES to demonstrate that this would not result in LSE.</p>	<p>Further information on NRMM will be included within the oCEMP. All NRMM will adhere to European regulations (EU 2016/1628) demonstrating compliance with emission limits.</p>
<p>The Applicant proposes to scope out impacts to air quality at sensitive human and ecological receptors from the operational phase on the basis that road traffic flows during operation are expected to be minimal and no combustion plant would be present on site.</p> <p>The Inspectorate agrees that operational vehicle emissions may be scoped out from further assessment, subject to the description of development demonstrating that vehicle numbers are sufficiently low as to not trigger the thresholds for an air quality assessment.</p>	<p>It has been confirmed by the Applicant that initial construction traffic is likely to fall below the Operational Phase the EPUK/IAQM planning guidance with traffic flows of 40 two-way AADT. As such, the impact to air quality can be considered as negligible and leads to a not significant effect. Further details on the operational phase traffic movements can be found in Chapter 13: Transport and Access.</p>

PINS Comment	Response
<p>The Scoping Report proposes to scope out a separate assessment of air quality impacts associated with road traffic emissions on the basis that potential air quality effects during decommissioning are anticipated to be similar to, or of lesser magnitude than the construction phase and proposes to scope this matter out.</p> <p>The Inspectorate agrees that this matter can be scoped out, subject to evidence provided in the ES demonstrating that road traffic emission effects during the decommissioning phase would be similar to or less than during the construction phase, or there is clear agreement with relevant consultation bodies.</p>	<p>It has been confirmed by the Applicant that initial construction traffic is likely to fall below the Construction Phase the EPUK/IAQM planning guidance with traffic flows of 66 LDV and 69 HDV AADT across the 24 months construction phase period.</p> <p>It is considered that the decommission phase traffic flows will be similar to the construction phase as confirmed by the transport consultants within Chapter 13. As such, the impact to air quality can be considered as negligible and leads to a not significant effect.</p>
<p>The Scoping Report states that the study area for sensitive ecological receptors will be up to 50m from the Site boundary or 50m from the edge of the routes used by construction vehicles. The ES should provide justification with reference to the relevant guidance for the study area for ecological receptors and agree this where possible with relevant consultation bodies.</p> <p>The ES should include a plan showing the extent of the final study area, including proposed construction routes, the location of receptors (human and ecological) considered in the assessment.</p>	<p>It has been confirmed by the Applicant that construction traffic is to be routed as detailed within section 14.3.1. Further details of the construction routes can be found in Chapter 13: Transport and Access.</p> <p>Following a review of the construction routes, it has been confirmed that there are no statutory designated ecological sites (SSSI/SPA/SAC/Ramsar) within 50m of the proposed construction routes. However, a locally designated SINC - West Burton Meadow, has been identified to be located within 50 m of the Gainsborough Road access point to the construction Primary Compound A. As such, this SINC is sensitive to fugitive dust emissions from trackout activities. An assessment of the potential dust impacts from trackout has therefore been undertaken within Appendix 14.3.</p> <p>Clarborough Tunnel (SSSI), classed as a medium sensitivity ecological receptor and the West Burton Meadow SINC classed as a low sensitivity</p>

PINS Comment	Response
	<p>ecological receptor, are both located within 50 m of the Site Boundary. In addition, there are five locally designated and low sensitivity SINCS within the Site Boundary. Therefore, the SSSI and locally designated SINCS are sensitive to fugitive dust emissions during the construction phase. An assessment of construction dust risk on these ecological receptors has therefore been undertaken within Appendix 14.3.</p> <p>Although there are sensitive ecological receptors within 200m of the roads affected by construction traffic, since the construction traffic AADT falls below the (1000 AADT / 200 HDV) criteria as detailed within section 14.3.24, the effects of construction traffic on local air quality at designated ecological receptors would be considered insignificant and was scoped out of this assessment.</p>
<p>The Scoping Report details that dispersion modelling calculations (if required) would be verified using data gathered in the baseline air quality survey and Local Authority monitoring stations where appropriate. From the information provided within the Scoping Report it is unclear whether primary data collection is planned.</p> <p>Effort should be made to reach agreement with relevant consultation bodies including the local authorities, as to whether any additional survey or monitoring work is required to inform the baseline, including for other pollutants.</p>	<p>Consultation with BDC council has been undertaken and the methodology, including monitoring stations to use for model verification, was agreed as outlined within Table 14.2 and Appendix 14.2.</p> <p>Following receipt of traffic data, traffic flows during the construction, operational and decommissioning phases of the Proposed Development are to fall below the screening criterion for either sensitive human (500 LDV and/ or 100 HDV) or ecological receptors (1000 LDV and/ or 200 HDV), as such detailed dispersion modelling is not required. Further details of the construction routes can be found in Chapter 13: Transport and Access.</p>

14.5 Baseline Conditions

Site Description and Context

- 14.5.1 The Site (see **Figure 1.1**) extends to 892.18 hectares (ha) and comprises multiple agricultural fields with the field boundaries defined by hedgerow and individual trees.
- 14.5.2 The northern area of the Site also includes a section of the existing West Burton Power Station site, covering the area around the existing West Burton Power Station 400 kV substation. There is a network of roads located both within the Site and adjacent to the Site boundary. The River Trent lies adjacent to the eastern boundary of the Site.
- 14.5.3 Within the wider surrounding area (zone of influence of 6 km from the Site) there are the following settlements:
- Sturton le Steeple;
 - Knaith;
 - North Leverton with Hablesthorpe;
 - Fenton;
 - South Leverton;
 - Claborough;
 - North Wheatley and South Wheatley; and
 - Gainsborough.

Baseline Air Quality Review and Local Air Quality Monitoring

- 14.5.4 A baseline air quality review has been undertaken to determine existing air quality within the vicinity of the Proposed Development with reference to the following:
- Air quality monitoring data from local authorities Annual Status Reports (ASR)^{20,21, 22}; and
 - Background pollution maps from the Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management (LAQM) website²³.

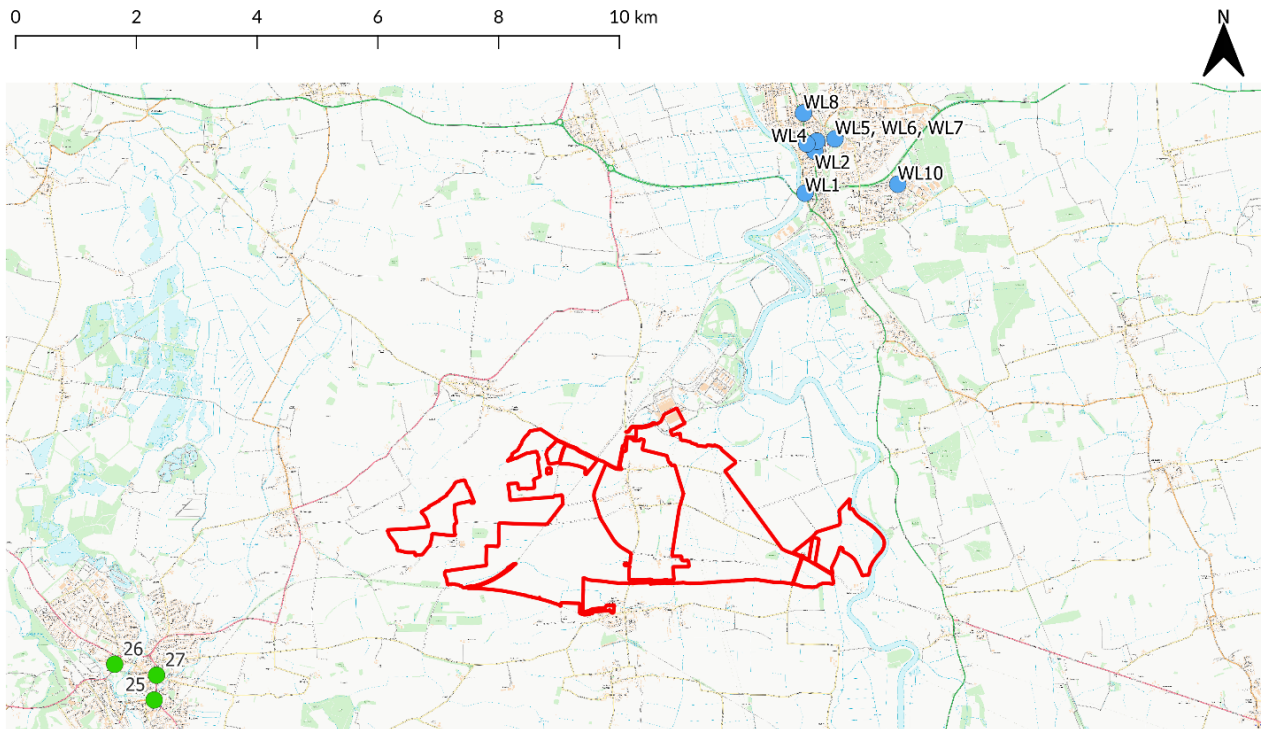
²⁰ Bassetlaw District Council (2023) 2023 Air Quality Annual Status Report (ASR) – [online] (Last accessed: 04/03/2024)

²¹ West Lindsey District Council (2023) Annual Progress Report 2023 – [online] (Last accessed: 04/03/2024), Available at: <https://www.west-lindsey.gov.uk/sites/default/files/2024-02/Air%20Quality%20Report%202023.pdf>

²² West Lindsey District Council (2024) Annual Progress Report 2024 – [online] (Last accessed: 04/03/2024), Available at: <https://www.west-lindsey.gov.uk/sites/default/files/2024-06/Air%20Quality%20Report%202024.pdf>

²³ Defra (2020) Background Pollution Maps – 2018 – [online], (Last accessed: 01/07/2024), Available at: uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

- 14.5.5 The Site is not located within an AQMA and is approximately 18.6 km north west from the nearest AQMA, named 'Lincoln NO₂ AQMA', which is located in City of Lincoln Council's (CoLC's) administrative area. This AQMA was declared in 2001, for exceedances of the annual mean NO₂ Air Quality Objective (AQO) only.
- 14.5.6 The Proposed Development is located within BDC's administrative area. The Proposed Development is also located in proximity to the administrative area of West Lindsey District Council (WLDC).
- 14.5.7 There is currently no automatic monitoring of NO₂, PM₁₀ or PM_{2.5} undertaken by BDC or WLDC.
- 14.5.8 BDC and WLDC use passive diffusion tube monitoring locations to record annual mean NO₂ concentrations within their respective administrative areas. Monitoring data from passive diffusion tube monitoring locations within the BDC and WLDC administrative area has been provided by the most recent BDC ASR 2022, WLDC ASR 2023 and WLDC ASR 2024.
- 14.5.9 The pollutant concentrations recorded in 2020 and 2021 are not considered to be representative of 'normal' air quality conditions. Whilst it is expected that as a result of the COVID-19 pandemic behaviours will change in the future, the impact of this on air quality long-term is currently unknown and therefore the use of 2020 and 2021 data will be omitted from any analysis, but has been included for information. Monitoring data for 2022 is available for use as the latest year of representative monitoring data. 2023 data has been published by WLDC however this is currently not available from BDC.
- 14.5.10 There are no passive diffusion tube monitoring locations in the immediate vicinity of the Site, however there are ten passive diffusion tube monitoring locations positioned within 6 km of the Site. Three passive diffusion tube monitoring locations are situated in BDC's administrative area whereas seven passive diffusion tube monitoring locations are located within the WLDC area of administration. Table 14.4 provides the recorded annual mean NO₂ concentrations at the nearest passive diffusion tube monitoring locations to the Proposed Development from the years 2018 to 2023. The locations of the passive diffusion tube monitoring locations are illustrated in **Figure 14.2**.



Legend

- Approximate Site Boundary
- Passive Diffusion Tube Monitoring Locations - BDC
- Passive Diffusion Tube Monitoring Locations - WLDC

Figure 14.2: Passive Diffusion Tube Monitoring Locations within 6 km of the Proposed Development. Contains OS Data © Crown Copyright and Database rights 2024.

Table 14.4: Passive Diffusion Tube Monitoring Location Data (2018 – 2023)

Site ID	Site Type	Local Authority	Dist. (m).	Annual Mean NO ₂ Concentration (µg/m ³)					
				2018	2019	2020	2021	2022	2023
WL1	Road side	WLDC	4.6	24.6	22.8	16.3	20.6	-	-
WL2	Road side	WLDC	5.3	18.6	19.0	14.4	15.0	14.1	13.2
WL4	Road side	WLDC	5.3	21.4	20.7	15.2	16.7	15.3	14.6
27	Road side	BDC	5.4	28.2	28.7	22.6	23.2	22.8	N/A
WL3	Road side	WLDC	5.4	20.6	17.3	14.2	13.8	14.1	12.7
25	Road side	BDC	5.5	25.7	24.7	21.7	21.3	20.8	N/A
WL10	Road side	WLDC	5.6	16.8	15.0	12.0	11.7	12.3	11.0
WL5, WL6, WL7	Industrial	WLDC	5.6	11.5	11.3	9.1	8.7	9.1	7.6
WL8	Kerbside	WLDC	5.7	15.0	14.7	11.9	11.3	10.6	9.8

Site ID	Site Type	Local Authority	Dist. (m).	Annual Mean NO ₂ Concentration (µg/m ³)					
				2018	2019	2020	2021	2022	2023
26	Road side	BDC	6.0	31.1	30.1	23.8	26.1	25.2	N/A

NOTE: 'N/A' represents monitoring data not publicly published at time of writing
 '-' represents no monitoring data being recorded

14.5.11 There have been no exceedances of the annual mean NO₂ AQO of 40 µg/m³ at any of the passive diffusion tube monitoring locations within 6 km of the Site in 2022, the most recent year of available monitoring data. The passive diffusion tube monitoring location with the highest concentration in 2022 was Site ID: 26, recording an annual mean NO₂ concentration of 25.2 µg/m³ or 63% of the annual mean AQO.

14.5.12 The 1-hour mean AQO for NO₂ is 200 µg/m³ and should not be exceeded more than 18 times within a year. In line with LAQM.TG(22)11, an annual mean NO₂ concentration of 60 µg/m³ or above is often used to indicate a possible exceedance of the 1-hour mean NO₂ AQO. There has been no recorded exceedance of the 60 µg/m³ threshold at any of the passive diffusion tube monitoring locations within 6 km of the Site in the baseline year 2022.

Defra Predicted Background Concentrations

14.5.13 The Defra predicted background concentrations²³ have been obtained from the national maps published by Defra. These estimated concentrations are produced on a 1 km by 1 km grid basis for the whole of the UK. The Proposed Development falls into 27 grid squares. The minimum and maximum Defra predicted background concentrations²³ for the Proposed Development for pollutants NO₂, PM₁₀ and PM_{2.5} are provided in **Table 14.5** for 2022, the most recent year of available monitoring data.

Table 14.5 Defra Predicted Background Concentrations at the Application Site in 2022

Year	Annual Mean NO ₂ Concentration (µg/m ³)		
	NO ₂	PM ₁₀	PM _{2.5}
2022	6.7 – 7.2	14.0 – 15.4	7.9 – 8.4

- 14.5.14 It can be seen that the modelled Defra predicted background concentrations²³ are below the respective AQO limits for pollutants NO₂, PM₁₀ and PM_{2.5} in 2022, the baseline year.

14.6 Assessment of Likely Significant Effects

Construction and Decommissioning

Construction and Decommissioning Dust Emissions

- 14.6.1 As outlined within Section 14.3, it is considered that due to the size and proximity of development to nearby sensitive receptors that the highest risk of impact, 'high risk', has been applied to the Site in line with the IAQM guidance. Therefore, associated high risk mitigation measures should be implemented. An assessment of construction dust risk has been undertaken within **Appendix 14.3**.

- 14.6.2 A list of the high risk mitigation measures are to be implemented and included as part of an oCEMP to minimise dust emission during the construction phase and control impacts to a negligible level (outlined within **Appendix 14.3**). On that basis, there are expected to be no likely significant effects to air quality at existing sensitive receptors.

Construction and Decommissioning Traffic Emissions

- 14.6.3 The impacts of vehicle emissions (NO₂, PM₁₀ and PM_{2.5}) associated with the construction of the Proposed Development have the potential to effect existing sensitive receptors located at the roadside of the proposed construction routes for the anticipated construction period of 24 months.

- 14.6.4 The Applicant's transport consultants have provided traffic flows for the construction phase of the Proposed Development. Construction vehicles will access the Site via the access points shown on **Figure 2.1** Construction Phase Parameter Plan.

- 14.6.5 At this stage, there is predicted to be an average of 69 LDV AADT and 66 HDV AADT construction vehicle flows on anticipated construction road links during the 24-month construction period.

- 14.6.6 When screened against the EPUK/ IAQM criteria for the potential of effects to air quality, predicted construction traffic flows are below the screening criteria (500 LGV's and or 100 HGV's) for detailed assessment. On this basis and in line with EPUK/ IAQM planning guidance¹⁰, the effect to air quality is considered to be insignificant.

- 14.6.7 At this stage a definitive number of additional vehicles during the peak of the construction (Month 7) is unknown at this stage, however, when the EIA is progressed further if more exact information on the construction vehicle movements at peak time is known this will be reviewed and assessed.

14.7 Mitigation and Enhancement

Mitigation by Design

- 14.7.1 The mitigation measures outlined within the oCTMP and oCEMP submitted with the application seek to control activity during the construction phase, and as such emissions to air will be mitigated. Detailed management plans will be secured by DCO requirement. Recommended mitigation measures to be implemented and included as part of an oCEMP to minimise dust emission during the construction and commissioning phase and control impacts to a negligible level and are outlined within **Appendix 14.3**.
- 14.7.2 Furthermore, routing arrangements during the construction period (and decommissioning) to ensure that they minimise travel through the village of Sturton le Steeple, which will be secured by DCO requirement as part of the detailed CTMP. As such, minimising emissions at sensitive receptors within the village of Sturton le Steeple.

14.8 Residual Effects

Construction

- 14.8.1 The measures implemented via the oCTMP (outline within **Appendix 14.3**) and oCEMP are considered sufficient to minimise impacts to air quality from emissions associated with construction traffic and NRMM effects with regard to air quality. The residual effects are therefore considered to be **negligible** at this stage.

Operation

- 14.8.2 There is considered to be no significant residual effects pertaining to increased NO₂, PM₁₀ or PM_{2.5} concentrations as a result of operational road traffic emissions on existing sensitive receptors in the vicinity of Proposed Development.

14.9 Cumulative and In-combination Effects

- 14.9.1 The PEIR assessment also requires consideration of the cumulative impact of the Proposed Development in conjunction with other developments. Notable

- substantial projects in close proximity to the Site that have the potential to impact on construction and operational phases are outlined within **Chapter 2** of this PEIR.
- 14.9.2 The closest cumulative development is the consented Wood Lane solar farm (Ref: 20/00117/FUL) within BDC administrative area and was approved by their planning committee. This solar farm is located adjacent to the western boundary of the Site on land north west and south of Field Farm, Wood Lane, Sturton le Steeple. The application was granted in August 2020. Construction for this scheme is anticipated to commence in 2025 and be operational by 2026, as such construction phases are unlikely to overlap with the Proposed Development. Additionally, with the implementation of mitigation measures within their respective applications, it is anticipated that there would be no likely significant effects due to construction traffic emissions, dust or NRMM emission at local receptors.
- 14.9.3 Gate Burton Energy Park (Ref: EN010131), West Burton C Power Station (Ref: EN010088) are located approximately 2 km east and directly north adjacent to the Site respectively. As such, these two developments are in close enough proximity to the Site for there to be potential for significant cumulative effects to occur as a result of on-site activities (fugitive dust emissions or NRMM emissions) at local receptors (pre-mitigation).
- 14.9.4 The other five cumulative developments identified (Cottam Solar, Great North Road Solar Park, Tillbridge Solar Project, West Burton Solar Project and One Earth Solar Farm) are located beyond the 6 km zone of influence considered for any significant cumulative impacts from on-site activities (fugitive dust emissions or NRMM emissions) to occur. As such, these five developments have not been considered further in the cumulative assessment of on-site activities but have been considered for cumulative impacts from construction traffic emissions.
- 14.9.5 To determine a worst-case scenario, it is assumed that the construction of Gate Burton Energy Park, West Burton C Power Station and the Proposed Development would take place at the same time. With the implementation of mitigation measures within their respective applications to ensure that fugitive dust release and NRMM emission are minimised, it is anticipated that there would be no likely significant effects due to fugitive dust emission or NRMM emission at local receptors.
- 14.9.6 Furthermore, there is a consented quarry, Sturton le Steeple Quarry (Ref 1/46/11/00002/R) adjacent to the Site. However, since the operations at the

- consented quarry are likely to be controlled by an environmental permit, the potential emissions to air from the consented quarry will be controlled. As such, the consented quarry is not anticipated to contribute to any significant cumulative effects from fugitive dust emissions. Therefore, the effect to air quality is considered to be insignificant.
- 14.9.7 As outlined within their respective applications, the construction routes from Gate Burton Energy Park (Ref: EN010131), are not anticipated to coincide with those associated with the Proposed Development, and so there is no risk of cumulative impacts of construction traffic emissions of Gate Burton Energy Park and the Proposed Development.
- 14.9.8 However, construction traffic for West Burton Power Station (Ref: EN010088) is expected to be routed along Gainsborough Road, an anticipated construction route of the Proposed Development. As such, there is the potential for cumulative impacts from construction traffic emissions on sensitive receptors in the vicinity of this road from construction vehicle movements associated with the West Burton Power Station and the Proposed Development.
- 14.9.9 Detailed information on the anticipated construction traffic routing of all identified cumulative developments has not been made available. However, it is anticipated that the individual cumulative developments will have a commitment to ensure that peak vehicle movements do not coincide, which will minimise the potential for air quality impacts from construction traffic emissions at local receptors.
- 14.9.10 In addition, construction movements associated with the identified cumulative developments (including West Burton C Power Station (Ref: EN010088²⁴)) alongside the Proposed Development are anticipated to be controlled through the implementation of the detailed CTMP, which will be secured by DCO requirement, to minimise impacts to air quality from emissions associated with construction traffic and NRMM residual effects with regard to air quality. As such it is considered that, the effects to air quality from NRMM and construction traffic emissions are to be insignificant.

²⁴ Framework Construction Traffic Management Plan Applicant: EDF Energy (Thermal Generation) Limited. (2020). Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010088/EN010088-000531-Document%207.6D%20-%20WBC%20-%20Framework%20Construction%20Transport%20Management%20Plan_R.pdf [Accessed 29 Oct. 2024].

- 14.9.11 Therefore, it is not considered likely that there will be any cumulative effects from construction or operation traffic associated with the Proposed Development and other developments located within Lincolnshire area due to the implementation of relevant mitigation measures and management plans within their respective applications.
- 14.9.12 Regarding in-combination effects, given that the residual effects associated with the construction and operational phases of the Proposed Development are predicted to be negligible on an air quality basis, it is not anticipated for there to be any significant in-combination effects on local receptors caused by air quality impacts. Should any significant in-combination effects occur, these will not be a result of air quality but a result of other factors considered, with air quality effects providing at worst a negligible contribution to any potential significant in-combination effects.
- 14.9.13 However, the cumulative and in-combination effects will be reviewed, with additional information provided at in the subsequent ES.

14.10 Summary

Introduction

- 14.10.1 This Air Quality PEIR Chapter focuses on the potential air quality effects at existing sensitive receptors during the construction phase.

Baseline Conditions

- 14.10.2 The Proposed Development is not located within or near to an AQMA.
- 14.10.3 Monitored concentrations in the vicinity of the Proposed Development show pollutant concentrations have been below the AQOs in 2022, the most recently available year of monitoring data.

Likely Significant Effects

- 14.10.4 Predicted construction traffic flows have been screened against the criteria within the EPUK and IAQM planning guidance criteria and considered to fall below the screening criterion (500 LDV and/or 100 HDV AADT), with average traffic flows of 66 LDV and 69 HDV AADT across the 24-month construction phase period. The effects of the decommissioning phase are likely to be similar to the construction phase.

14.10.5 In addition, dust emissions during the construction phase will be controlled via an oCEMP and as such are considered to be negligible and therefore the effects are not significant.

14.10.6 Predicted operational traffic flows have been screened against the criteria within the EPUK and IAQM planning guidance criteria for human receptors and IAQM and DMRB criteria for ecological receptors and considered to be not significant.

Mitigation and Enhancement

14.10.7 Construction phase emissions to air will be controlled by an oCEMP and oCTMP, to be finalised and secured by DCO requirement.

Cumulative and In-combination Effects

14.10.8 It is not considered likely that there will be any cumulative effects from construction or operational traffic associated with the Proposed Development and other developments located within Lincolnshire area due to the implementation of relevant mitigation measures and management plans within their respective applications.

14.10.9 Regarding in-combination effects, given that the residual effects associated with the construction and operational phases of the Proposed Development are predicted to be negligible on an air quality basis, it is not anticipated that there would be any significant in-combination effects on local receptors pertaining to Air Quality from the construction or operational phase of the Proposed Development.

14.10.10 However, the cumulative and in-combination effects will be reviewed, with additional information provided in the subsequent ES.

Conclusion

14.10.11 It is concluded that the proposed package of mitigation will ensure that the Proposed Development is acceptable and that there will be no adverse significant effects to air quality.

14.10.12 **Table 14.6** provides a summary of effects, mitigation and residual effects.

Table 14.6: Summary of Effects, Mitigation and Residual Effects

Receptor	Description of Effect	Nature of Effect *	Sensitivity Value **	Magnitude of Effect **	Geographical Importance ***	Significance of Effects ****	Mitigation/Enhancement Measures	Residual Effects *****
Construction								
Existing Human Health Receptors and Ecological Receptors	Effects from Dust Soiling	Temporary, Direct	High	Negligible	Local	Not Significant	Construction Measures set out in Appendix 14.3 to be included within an oCEMP	Not significant
	Effects from emissions of PM ₁₀ and dust on human health and environment	Temporary, Direct	High	Negligible	Local	Not Significant	Construction Measures set out in Appendix 14.3 to be included within an oCEMP	Not significant
	Potential increase in concentrations of NO ₂ , PM ₁₀	Temporary, Direct	High	Negligible	Local	Not Significant	Construction Measures set out in Appendix 14.3	Not significant

Receptor	Description of Effect	Nature of Effect *	Sensitivity Value **	Magnitude of Effect **	Geographical Importance ***	Significance of Effects ****	Mitigation/Enhancement Measures	Residual Effects ****
	and PM _{2.5} as a result of additional construction traffic movements						to be included within an oCTMP	
Operation								
Existing Human Health Receptors and Ecological Receptors	Potential increase in concentrations of NO ₂ , PM ₁₀ and PM _{2.5} as a result of additional traffic movements	Neutral, Long-term	High	Negligible	Local	Not Significant	N/A	Not significant
Cumulative and In Combination								
Existing and committed developments	Effects from Dust Soiling	Permanent, Direct	High	Negligible	Local	Not Significant	N/A	Not significant
	Potential increase in	Permanent, Direct	High	Negligible	Local	Not Significant	N/A	Not significant

Receptor	Description of Effect	Nature of Effect *	Sensitivity Value **	Magnitude of Effect **	Geographical Importance ***	Significance of Effects ****	Mitigation/Enhancement Measures	Residual Effects ****
	concentrations of NO ₂ , PM ₁₀ and PM _{2.5} as a result of additional construction traffic or NRMM movements							

Notes:

* Enter either: Permanent or Temporary / Direct or Indirect

** Only enter a value where a sensitivity v magnitude effects has been used – otherwise ‘Not Applicable’

*** Enter either: International, European, United Kingdom, Regional, County, Borough/District or Local

**** Enter either: Major / Moderate / Minor / Negligible AND state whether Beneficial or Adverse (unless negligible)