East Midlands Gateway
Phase 2 (EMG2)

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ENVIRONMENTAL STATEMENT

Volume 1 Main Statement

Chapter 8

# Air Quality

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08

The East Midlands Gateway Phase 2 and Highway Order 202X and The East Midlands Gateway Rail Freight and Highway (Amendment) Order 202X

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# 8. Air Quality

## 8.1. Introduction

8.1.1. This Chapter considers the likely significant effects of the **Scheme** on local air quality; in particular it considers the potential effects of construction phase dust, and construction and operational phase road traffic emissions at existing and future receptor locations.

8.1.2. During site clearance and construction activities, temporary impacts may arise from the emission of air pollutants and dust. During both the construction and occupation phase(s), vehicular traffic and emissions from stationary plant has the potential to lead to changes in the total air quality concentrations at both human and ecological receptors.

8.1.3. The impact assessments of vehicular emissions will focus on air pollutants that are likely to arise from the construction and occupation of the **Scheme**. These pollutants are oxides of nitrogen ($NO_x$), nitrogen dioxide ($NO_2$), particulate matter in the 10 µm and 2.5 µm size fractions ($PM_{10}$ and $PM_{2.5}$) and dust for human and ecological receptors and nitrogen deposition (N) for ecological receptors.

8.1.4. [Note: Some of the information for the full impact assessments is not yet available (primarily traffic data) and where this information is not available details of the methodologies to be applied to assess the impacts has been set out.]

## 8.2. Scope and Methodology of the Assessment

### Scope

8.2.1. The scope of this Chapter includes the assessment of the air quality for the component parts of the **Scheme** that are detailed within Chapter 1: Introduction and Chapter 3: Project Description. These are:

- **EMG2 Main Site**;
- **Highways Works**; and
- **EMG1 Works**.

### Scoping Opinion

8.2.2. A Scoping Opinion request was submitted in August 2024. A response was adopted by PINS on 24th September 2024. The comments relating to air quality highlighted within the Scoping Opinion from PINS are set out in **Table 8.1**.

**Table 8.1: Planning Inspectorate's Comments from EIA Scoping Opinion in Relation to Air Quality (September 2024)**

| Inspectorate Comments | Project Consultant's Response |
|---|---|
| *The extents of the study area has not yet been defined. The ES should include a figure depicting the affected road network and the air study area for construction and operation. The extent of the study area should be discussed and, where possible, agreed with relevant consultation bodies.* | The study area will be defined and agreed upon receipt of the traffic data and screened against the relevant Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM) guidance[1] screening criteria. |
| *The Scoping Report refers to two Air Quality Management Areas (AQMAs) in North West Leicestershire District. The ES should clearly set out and justify the choice of the selected AQMAs included for assessment. The ES should consider impacts on any AQMAs which are located in different local authority areas where relevant (with reference to the affected road network). This should include consideration of the Coalville AQMA.*<br><br>*The ES should detail of all of the sensitive receptors identified for inclusion within the assessment and depict these on a plan. All receptors included within the assessment should be agreed with relevant consultation bodies, where possible.* | The study area will be defined and agreed upon receipt of the traffic data and screened against the relevant EPUK & IAQM guidance[2] screening criteria and the modelling receptor locations will be agreed with the relevant local authority. |
| *The Scoping Report refers to modelling sites which are located in the vicinity of the Proposed Development. The ES should explain why these locations are representative of air quality conditions at the site. Details of any additional monitoring data should be included within the ES. These data should be as up to date as possible and represent the area contained within the red line boundary and surrounding affected road network* | Upon completion of the air quality monitoring justifications for the use of the monitoring data will be set out in the final ES Chapter.<br><br>Details of the locations of the baseline $NO_2$ monitoring survey are provided in this ES Chapter and full details of the annualisation and bias adjustment process for the monitoring will also be provided in the final ES Chapter. |
| *The ES should consider the effects from increases in traffic as well as from changes to traffic movements.* | The traffic data (once available) to inform this ES chapter will be extracted from the Private Rapid Transit Model (in line with **Chapter 6**).<br><br>The Private Rapid Transit Model will consider the increase in traffic movements and any redistribution of traffic. |
| *The ES should also include consideration of the suitability of the site for the development proposed, having regard to air quality impacts of nearby uses.* | The national air quality standards considered for planning are not applicable to workplaces or locations where the public does not have regular access. As the **Scheme** is designated for commercial use, these objectives do not apply to the site. Consequently, no site suitability assessment regarding air quality will be conducted. |

[1] Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2017). Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London.

[2] Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2017). Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London.

| | |
|---|---|
| *The Inspectorate notes reference to considering the three elements of the Proposed Development separately in the assessment. The ES should set out and justify the approach taken and ensure that a worst-case assessment is provided.* | The traffic assessment scenarios will be in line with **Chapter 6**. |
| *The ES should include an assessment of air quality effects on ecological receptors, including Lockington Marshes Site of Special Scientific Interest, Attenborough Gravel Pits SSSI, March Covert Ancient Woodland and veteran and ancient trees. Appropriate cross reference should therefore be made with the ES ecology and biodiversity assessment.* | The ES will consider the potential impacts of the **Scheme** on identified designated ecological sites where these are located within the identified distances of the affected road network in accordance with DMRB[3] and Natural England[4] guidance and if the Project Ecologist confirms that sensitive features are present within the defined distances. Where required, the assessment will consider nitrogen and acid deposition.<br><br>The results of the assessment will be passed to the Project Ecologist for consideration and measures to mitigate road traffic emissions will be detailed, where applicable. |

8.2.3. Further comments relating to air quality are highlighted within the Scoping Opinion appendices, which are set out in **Table 8.2**.

**Table 8.2: Other Consultee Comments from EIA Scoping Opinion in Relation to Air Quality (September 2024)**

| Consultee | Consultee Comments Summary | Project Consultant's Response |
|---|---|---|
| Environment Agency | Requesting the use of Non-Road Mobile Machinery with a net rating power of 37kW to 560kW. | A consideration of this will be made within the Construction Environmental Management Plan (CEMP) |
| Leicestershire County Council | Requesting the cumulative impacts during both construction and operational phases, and also the consideration of the impacts on the more vulnerable population.<br><br>A request has also been made to consider the potential impacts of the NWLDC AQMA's | All of these points will be considered within the ES Chapter. Any impacts on the more vulnerable population will be cross refenced within the Equality Assessment within **Chapter 17** |
| National Highways | General comments on the requirements to consider changes in increases in traffic and movements and the cumulative impacts. | All of these points will be considered within the ES Chapter |

[3] Highways Agency (2024). Design Manual for Roads and Bridges (DMRB), LA 105. Air Quality (Vertical Barriers).

[4] Natural England (2018). Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001), H.M Government, York.

| | | |
|---|---|---|
| Natural England | Requesting the screening of the potential freight and traffic impacts on Lockington Marshes SSSI and Attenborough Gravel Pits SSSI | The ES will consider the potential impacts of the **Scheme** on identified designated ecological sites where these are located within the identified distances of the affected road network in accordance with DMRB[5] and Natural England[6] guidance and if the Project Ecologist confirms that sensitive features are present within the defined distances. Where required, the assessment will consider nitrogen and acid deposition.<br><br>The results of the assessment will be passed to the Project Ecologist for consideration and measures to mitigate road traffic emissions will be detailed, where applicable. |
| UK Health Security Agency | Statement supporting approaches in minimising or mitigating public exposure. | Upon competition of the traffic impacts assessments measures to mitigate road traffic emissions will be detailed, where applicable. |

## Consultation

### Consultation with NWLDC

8.2.4. In May 2022, an email was issued by Vanguardia to the Environmental Health Officer at North West Leicestershire District Council (NWLDC), setting out the proposed $NO_2$ diffusion tube monitoring to be carried out for the **Scheme**, which feeds into the model verification process. The location of these monitoring locations, as well as the methodology, was agreed on 31st May 2022, and was undertaken. Due to the lapse of time this monitoring programme was updated in 2024.

8.2.5. In light of the Scoping Opinion from PINS, further consultation was undertaken with NWLDC on 22nd October 2024, and the proposed methodologies which have informed this Chapter were agreed.

## The Identification of the Study Area

### Geographical Scope

#### *Construction Dust Phase Impacts on Human and Ecological Receptors*

8.2.6. There is currently no formal assessment criterion for dust, therefore, the approach developed and published by the IAQM, in the Guidance on the Assessment of Dust from Demolition and Construction (2024)[7] document, has been utilised as part of this assessment. The approach consists of a five step process to assess the potential level of risks, (Large, Medium, Small or

[5] Highways Agency (2024). Design Manual for Roads and Bridges (DMRB), LA 105. Air Quality (Vertical Barriers).

[6] Natural England (2018). Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001), H.M Government, York.

[7] Institute of Air Quality Management (2024) Guidance on the Assessment of Dust from Demolition and Construction, IAQM, London

Negligible), regarding the four main phases of development, (demolition, earthworks, construction, and trackout). The assessment includes consideration of pre-mitigation, and post-mitigation impacts, based upon the scale and nature of the **Scheme**.

8.2.7. The main air quality impacts that may arise during demolition and construction activities are:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes, which are evidence of dust emissions;
- Elevated $PM_{10}$ and $PM_{2.5}$ concentrations, as a result of dust generating demolition and construction activities; and
- An increase in concentrations of nitrogen dioxide ($NO_2$) due to exhaust emissions from vehicles and equipment.

8.2.8. In relation to the most likely impacts, the guidance states the following:

> *"The most common impacts are dust soiling and increased ambient $PM_{10}$ (including $PM_{2.5}$) concentrations due to dust arising from activities on the site.*
>
> *[...]*
>
> *Experience of assessing the exhaust emissions from on-site plant (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."*

8.2.9. The approach states that an assessment will normally be required where there are either:

- a 'human receptor' within:
  - 250 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).
- An 'ecological receptor' within:
  - 50 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

8.2.10. It is considered that within these distances the impacts of dust soiling and increased particulate matter in the ambient air will be greatest and have the biggest impacts on human and ecological health.

8.2.11. An ecological receptor refers to any sensitive habitat that is susceptible to dust soiling. For locations with a statutory designation, such as Ramsar Conservation Sites, Sites of Specific Scientific Interest (SSSI), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), consideration should be given as to whether the specific site is sensitive to dust. Some non-statutory sites (such as local nature reserves) may also have to be considered if appropriate.

8.2.12. The degree of risk is then derived from the level of the risk, and the sensitivity of the receptor being considered. To note, not all the criteria for a particular risk class needs to be met for magnitude or significance. It is suggested in the IAQM (2024) guidance that other criteria (such as professional judgement) can be used to justify the assessment.

8.2.13. The full methodology is set out in **Appendix 8a** and the full assessment of the **Scheme** dust risk assessment in isolation of any ongoing works or committed developments has been undertaken, with no allowance for inherent mitigation set out in this Chapter.

***Construction / Operational Phase Traffic Impacts on Human Receptors***

8.2.14. EPUK & IAQM (2017) Land-Use Planning & Development Control: Planning for Air Quality assessment guidance[8] sets thresholds for the recommended requirements for undertaking a full impact assessment on sensitive human receptors as a result of changes in daily vehicular traffic due to the **Scheme**. The following criteria, as listed in the guidance, will be considered when the traffic data is available:

8.2.15. Stage 1:

- If any of the following apply to the development:
  - Contains 10 or more residential units or a site area of more than 0.5ha; or
  - Contains more than 1,000 $m^2$ of floor space for all other uses or a site area greater than 1ha.
- Coupled with any of the following:
  - The development has more than 10 parking spaces; or
  - The development will have a centralised energy facility or other centralised combustion process.

8.2.16. If any of the criteria is met at Stage 1, then Stage 2 (as below) should be used to screen against.

- A change of LDV (light duty vehicle) flow of:
  - More than 100 annual average daily traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA); or
  - More than 500 AADT elsewhere.
- A change of HDV (heavy duty vehicles) flow of:
  - More than 25 AADT within or adjacent to an AQMA; or
  - More than 100 AADT elsewhere.

[8] Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2017). Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London.

***Construction / Operational Phase Traffic Impacts on Ecological Receptors***

8.2.17. The Design Manual for Roads and Bridges (DMRB) guidance (LA 105)[9] sets out for when a full impact assessment on sensitive ecological receptors is to be undertaken due to the changes in the following highway conditions (within 200 m of the centre of the affected highway):

- Horizontal road alignment will change by 5 m or more;
- Daily traffic flows will change by more than 1,000 Annual Average Daily Traffic (AADT);
- Heavy Duty Vehicle flows will change by more than 200 AADT; or
- Change in speed band (as per Table A.1 and A.2 in the DMRB guidance).

8.2.18. Paragraph 4.29 of the Natural England (2018)[10] document states:

> *"If the predicted change in traffic flow is less than 1000 AADT or the level of emissions is <1% of the critical load / level, the associated emissions are not likely to have a significant effect alone but run the risk of in-combination effects should be considered further."*

**Temporal Scope**

8.2.19. The assessment of air quality effects due to changes in traffic has been considered for both the construction and operational phases of the **Scheme**.

8.2.20. The construction and operational phase will be modelled in line with the traffic modelling set out in **Chapter 6**.

8.2.21. In addition to these modelling scenarios a verification process will be undertaken once the traffic data is available.

## Assessment Methodology

**Methods of Baseline Data Collection**

8.2.22. The existing baseline concentrations of nitrogen dioxide ($NO_2$), Particulate Matter 10 µm and 2.5 µm size fractions ($PM_{10}$ and $PM_{2.5}$), in the vicinity of the site have been assessed using the monitoring data in the local authority air quality review and assessment reports and specific site monitoring, which was carried out at the request of the local authority. The Department for Environment, Food and Rural Affairs (DEFRA) background mapping website has also been utilised to provide background, $NO_x$, $NO_2$, $PM_{10}$, and $PM_{2.5}$ concentrations. The DEFRA website[11] has mapped background concentrations at a resolution of 1x1km for the whole of the UK. Estimated concentrations are available for all years between 2021 and 2050.

[9] Highways Agency (2024). Design Manual for Roads and Bridges (DMRB), LA 105. Air Quality (Vertical Barriers).

[10] Natural England (2018). Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001), H.M Government, York.

[11] Department for Environment, Food and Rural Affairs (2024). Background Mapping data for local authorities – 2021, UK Air Information Resource, London, https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021

8.2.23. To identify any sensitive ecological designated sites, a review of the DEFRA Magic Map website and the UK Air Pollution Information System, (APIS)[12] website has been undertaken, along with consultation with the project ecologist, FPCR.

8.2.24. Due to concerns regarding the verification of the ADMS-Roads dispersion model it was proposed that a short-term diffusion tube monitoring programme was undertaken (in 2022 and updated in 2024) adjacent to the **EMG2 Main Site** and surrounding area to feed into the verification process.

8.2.25. Further information on the diffusion tube monitoring exercise is set out in this ES Chapter.

**Air Quality Model**

8.2.26. Air quality at specified receptor locations will be predicted using ADMS-Roads, (v5.0.1.3) dispersion modelling software, which is recognised as the leading air pollution modelling packages in the UK. The model uses advanced algorithms for the height-dependence of wind speed, turbulence and atmospheric stability to produce improved predictions of air pollutant concentrations. It can predict short and long-term concentrations, including percentile concentrations. The use of the ADMS-Roads model was agreed with the local authority during the consultation exercise.

8.2.27. The model requires the user to provide various input data, including emissions from each section of road and the road characteristics (including road width, where applicable), and meteorological data.

***Diurnal Profile***

8.2.28. The hourly specific emission rates can then be used to calculate a 24-hr diurnal emission profile which can be applied to that section of road. In this case an annual average diurnal profile of traffic flow across the study area will be estimated from the latest DfT TRA0307 national statistics[13] for traffic distribution by time of day (in line with the model verification year).

***Meteorological Data***

8.2.29. Meteorological data used within the model will be taken from East Midlands Airport Meteorological Site, located adjacent to the **Scheme**. Historically, TG(22) has advised that meteorological sites within 30 km should be used for assessments, which makes East Midlands Airport a suitable choice of meteorological site.

***Emissions Factors***

8.2.30. Version 12.1 of the emission factor tool kit (EFT)[14], released by DEFRA in November 2024, will be used to predict the traffic related emissions.

[12] UK Centre for Ecology & Hydrology (UK CEH). UK Air Pollution Information System, (APIS), UK CEH, Lancaster. http://www.apis.ac.uk/

[13] Department for Transport (2023). Road Traffic Statistics (TRA). H.M Government, London.

[14] Department for Environment & Rural Affairs (2024). *Emission Factors Toolkit v12.1*. https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/.

8.2.31. It has been widely known for some time that nationally $NO_x/NO_2$ levels are not reducing as quickly as anticipated, and this was identified by DEFRA in 2011. This was reiterated in an IAQM Interim Position Statement (v1.1)[15] released in July 2018 recognising that emissions from diesel vehicles have not declined as expected by DEFRA. This document has since been formally withdrawn, stating:

> *"There is a growing body of evidence to suggest that the latest COPERT vehicle emission factors, which feed into the EFT (v9 and onwards), reflect the real-world NOx emissions more accurately.*
>
> *It is judged that an exclusively vehicle emissions-based sensitivity test is no longer necessary.*
>
> *On this basis, the EFT may be used for future year modelling with greater confidence when considering the per vehicle emission, provided that the assessment is verified against measurements made in the year 2016 or later."*

8.2.32. On this basis it is anticipated the most up to date EFT that could be used in this assessment (v12.1) can be relied upon to provide a good representation of the air quality concentrations and effects, and no sensitivity test will be undertaken.

***$NO_X/NO_2$ Calculation***

8.2.33. The model has will be utilised to predict concentrations of $NO_x$, $PM_{10}$ and $PM_{2.5}$, based upon vehicle flow, composition and speed data. The $NO_x$ concentrations will be post processed to derive $NO_2$ concentrations using the $NO_x$ to $NO_2$ calculator (v9.1) available on the DEFRA LAQM air quality website[16].

***Model Verification***

8.2.34. While the ADMS-Roads model is widely accepted for its use in assessments of this nature, it is still important that a model verification process is undertaken to confirm that the model's performance is within an acceptable margin of error. Further details on the model uncertainty and the verification process will be undertaken once the traffic data is available.

***Modelling Scenarios***

8.2.35. The traffic data to inform this ES chapter will be extracted from the Private Rapid Transit Model (in line with **Chapter 6: Transport)** for the following scenarios traffic data:

**Stage 1 modelling**

- 2023/2024 baseline
- 2028 forecast year without the **Scheme** (with all Freeport and Local Plan sites)
- 2028 forecast year with the **Scheme** (with all Freeport and Local Plan sites)

[15] Institute of Air Quality Management (2018). Dealing with Uncertainty in Vehicle $NO_x$ Emissions within Air Quality Assessments, IAQM, London.

[16] Department for Environment, Food and Rural Affairs (2024). $NO_x$ to $NO_2$ Calculator Air Quality Assessment. Available at: https://laqm.defra.gov.uk/air-quality/air-quality-assessment/nox-to-no2-calculator/ [Accessed 25/11/2024]

- 2028 forecast year without the **Scheme** (without Local Plan sites)
- 2028 forecast year with the **Scheme** (without Local Plan sites)
- 2028 forecast year with construction traffic (details tbc)

**Stage 2 modelling**

- 2028 sensitivity test (with covid factors)
- 2028 with the **Scheme**, with mitigation (green package)

**Wider strategic assessment**

- 2041 forecast year without all Freeport and Local Plan sites
- 2041 forecast year with all Freeport and Local Plan sites
- 2041 forecast year with all Freeport and Local Plan sites, with mitigation (full package)

***Ecological Receptors Specific Modelling***

8.2.36. The Process Contribution (PC) and Predicted Environmental Concentration (PEC) of $NO_x$, $NH_3$ and N/acid deposition at the discrete receptors have been compared against the relevant Critical Level/Load. As per the Central Governments (2021) Air emissions risk Assessment for our Environmental Permit[17] guidance on screening emissions:

*"To screen out a PC for any substance so that you do not need to do any further assessment of it, the PC must meet both of the following criteria:*

- *the short term PC is less than 10% of the short term environmental standard*
- *the long term PC is less than 1% of the long term environmental standard*
- *If you meet both of these criteria you do not need to do any further assessment of the substance."*

8.2.37. Where the PC alone cannot be screened, the PEC has been calculated and the following hierarchy of assessment has been followed:

*"If your long-term PC is greater than 1% and your PEC is less than 70% of the long-term environmental standard, the emissions are insignificant – you do not need to assess them any further."*

*If your PEC is greater than 70% of the long-term environmental standard, you need to do detailed modelling."*

8.2.38. The considerations on the Significance of any impacts on ecological receptors will be set out in **Chapter 9: Ecology**.

[17] Environmental Agency and Department for Environment, Food & Rural Affairs. Air emissions risk assessment for your environmental permit at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit (last accessed November 2024)

**Receptors**

***Human Receptors***

8.2.39. The concentrations of $NO_x$, $NO_2$, $PM_{10}$, and $PM_{2.5}$ will be predicted at several locations along the local highway network, where the traffic data indicates changes in traffic flows, both within and outside the **Scheme** boundary.

8.2.40. When selecting the receptor locations, careful consideration will be made of junction locations, and where several highway links combine.

8.2.41. To note, according to the TG(22), air quality standards should only apply to locations where members of the public may be reasonably likely to be exposed to air pollution for the duration of the relevant limit value. As such, existing residential locations as well as commercial receptors surrounding the **Scheme** will be selected to inform the risk assessment in terms of the relevant annual mean exposure.

8.2.42. Schools and children's playgrounds are also often used as sensitive locations for comparison with annual mean objectives due to the increased sensitivity of young people to the effects of pollution (regardless of whether or not their exposure to pollution could be over an annual period). For shorter averaging periods of between 15 minutes, 1 hour or 1 day, the sensitive receptor location can be anywhere where the public could be exposed to the pollutant over these shorter periods of time.

8.2.43. In terms of receptors that will be exposed on a much shorter timescale compared to residential receptors, the TG(22) states:

> *"Dispersion models cannot predict short-term concentrations as reliably as annual mean concentrations…...Previous research carried out on behalf of Defra and the Devolved Administrations identified that exceedances of the $NO_2$ 1-hour mean are unlikely to occur where the annual mean is below 60 µg/m$^3$ This assumption is still considered valid; therefore local authorities should refer to it."*

***Ecological Receptors***

8.2.44. The air quality impacts associated with the **Scheme** have the potential to impact sensitive ecological receptors. The IAQM (2020) guidance sets out the type of ecological sites which may require an air quality impact assessment. These are:

- Site of Special Scientific Interest (SSSIs);
- Special Areas of Conservation (SACs);
- Special Protection Areas (SPAs);
- Ramsar Sites;
- Areas of Special Scientific Interest (ASSIs);
- National Nature Reserves (NNRs);
- Local Nature Reserves (LNRs);
- Local Wildlife Sites (LWSs); and,

- Areas of Ancient Woodland (AW).

8.2.45. A review of the Defra Magic Map[18] website and advice from the project ecologist (FPCR) indicates that a number of ecological receptors (Site of Special Scientific Interest (SSSI) / Special Area of Conservation (SAC)s / Special Protection Area's (SPAs) and Ramsar sites) are located near to the site which will need further consideration, as set out below:

- Donnington Park SSSI
- Breedon Cloud Wood & Quarry SSSI
- Pasture & Asplin Woods SSSI
- Oakley Wood SSSI
- Lount Meadows SSSI
- Dimminsdale SSSI
- Calke Park SSSI
- Ticknall Quarries SSSI
- Hedgerow near Wilson cLWS
- Squirrel Lane Hedgerow cLWS
- Diesworth Brook woodland
- Castle Donington, Woodland N of Racetrack historic cLWS & ancient semi-natural woodland
- Smooth Coppice historic pLWS & PAWS
- Tonge Gorse ancient semi-natural woodland

8.2.46. Once the traffic data is available the ecological receptors will be screened against the LA105 guidance to ascertain if a full impact assessment is required for each ecological receptor.

## Significance Criteria

### Construction Dust Impacts

8.2.47. The IAQM (2024) guidance does not provide a method for assessing the significance of effects before mitigation and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, (as set out in this ES Chapter) the IAQM (2024) guidance is clear that the residual effect will normally be 'not significant'.

[18] Magic Map Application. Accessible at: Magic Map Application (defra.gov.uk)

**Construction & Operational Traffic (Existing Human Receptors)**

***National Approach***

8.2.48. Currently there is no official guidance in the UK on how to describe the nature of air quality impacts, nor how to assess their significance. The approach developed by EPUK & IAQM (2017) will be used. This approach involves a two-stage process:

- A quantitative description of the impacts on local air quality arising from a **Scheme**; and
- A judgement on the overall significance of the effects of any impact.

8.2.49. The EPUK & IAQM (2017) guidance recommends that the degree of an impact is described by expressing the magnitude of incremental change in pollution concentration as a proportion of the relevant assessment level and examining this change in the context of the new total concentration and its relationship with the assessment criterion, as summarised in **Table 8.3**. The associated relevant air quality standards are set out in **Table 8.4**.

**Table 8.3: Impact Descriptors for Individual Receptors**

| **Long term average Concentration at Receptor in Assessment Year** | **% Change in concentration relative to Air Quality Assessment Level (AQAL)** | | | | |
|---|---|---|---|---|---|
| | **< 0.5** | **1** | **2-5** | **6-10** | **> 10** |
| 75% of less of AQAL | Negligible | Negligible | Negligible | Slight | Moderate |
| 76-94% of AQAL | Negligible | Negligible | Slight | Moderate | Moderate |
| 95-102% of AQAL | Negligible | Slight | Moderate | Moderate | Substantial |
| 103-109% of AQAL | Negligible | Moderate | Moderate | Substantial | Substantial |
| 110% or more of AQAL | Negligible | Moderate | Substantial | Substantial | Substantial |

Notes:
*Vales are rounded to the nearest whole number.*
*When defining the concentration as a percentage of the AQAL, use the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme;' concentration for an increase.*
*AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'.*

**Table 8.4: Air Quality Standards (England)**

| **Pollutant** | **Air Quality Standards** | | |
|---|---|---|---|
| | **Average Period** | **Concentration** | **Percentile** |
| Nitrogen Dioxide ($NO_2$) | Annual Mean | 40 µg/m³ [A] | - |
| | 1-hour Mean | 200 µg/m³ not to be exceeded more than 18 times a year. [A] | 99.79 |
| | Annual Mean | 40 µg/m³ | - |

| | | | |
|---|---|---|---|
| Particulate Matter ($PM_{10}$) | 24-hour Mean | 50 µg/m³ not to be exceeded more than 35 times a year | 90.41 |
| $PM_{2.5}$ | Annual Mean | 25 µg/m³ - Stage 1 limit value pre 2020 | - |
| | Annual Mean | 20 µg/m³ - Indicative Stage 2 limit value post 2020. 15% reduction in background to be achieved between 2010 & 2020 at Urban Background sites. [B] | - |
| | Annual Mean | 12 µg/m³ - Interim Target to be achieved by 2028 and 22% reduction in exposure achieved between 2018 & 2028. [C] | - |
| Notes:<br>*A Annual mean value of 60 µg/m³ used to assess whether the $NO_2$ 1-hour mean objective will be exceeded. A study carried out on behalf of DEFRA and the Devolved Administrations identified that exceedances of the $NO_2$ 1-hour mean are unlikely to occur where the annual mean is below this concentration.*<br>*B Current UK limit value.*<br>*C As set out in the Environmental Improvement Plan (2023). These targets will help drive reductions in the worst $PM_{2.5}$ hotspots across the country, whilst ensuring nationwide action to improve air quality for everyone.* | | | |

8.2.50. The EPUK & IAQM (2017) advice provides guidance on the severity of an impact as a descriptor. However, although the impacts might be considered 'Slight,' 'Moderate' or 'Substantial' at one or more receptor location, the overall effects of a **Scheme** may not always be judged as being significant in EIA terms.

8.2.51. The EPUK & IAQM (2017) guidance goes on to state:

> *"Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means."*

8.2.52. To note, when considering this, careful considerations has been made of the World Health Organisation (WHO) guidelines[19] . The current air quality objectives were set based on $NO_2$ in particular being a "threshold" pollutant – i.e. that there is a "safe" level of $NO_2$ in the ambient air that will not damage the health of an average person. In recent years this has been called into question, and the WHO Guidelines, while not statutory, are considerably lower (10 µg/m$^3$ compared to 40 µg/m$^3$ for $NO_2$). While using the current objectives is not technically incorrect, there is an argument to be made that any worsening of air quality, particularly within an AQMA and/or Clean Air Zone (CAZ), should not be allowed to occur as the potential to damage health is clear.

8.2.53. Air quality is now the leading environmental risk factor globally, and the issue is rising in prominence all the time. As such, worsening the air quality within an existing AQMA / CAZ, even by a small amount should be carefully considered.

[19] World Health Organization, 2021. *WHO global air quality guidelines.*

8.2.54. The guidance believes that the assessment of significance should be based on professional judgement, with the overall air quality impact of the **Scheme** described as either significant or not significant. In drawing this conclusion, the following factors should be taken into account:

- The number of properties/receptors affected by different levels of effects;
- The magnitude of any changes and descriptors;
- Whether a new exceedance of an objective or limit value is predicted to arise or an existing exceedance is removed, or an existing exceedance is substantially increased or reduced;
- The level of uncertainty, including the extent to which worst case assumptions have been made; and
- The extent of any exceedance of an objective or limit value.

8.2.55. In order to be consistent across the entire EIA, the EIA magnitudes of change (large, medium, small and negligible) have also been used in addition to the EPUK & IAQM (2017) descriptors to describe the air quality impact at all sensitive human receptors. The EPUK & IAQM (2017) impact descriptor of 'substantial' corresponds to a large magnitude of change, a 'moderate' impact corresponds to medium magnitude of change, a 'slight' impact corresponds to a small magnitude of change and a 'negligible' impact corresponds to a negligible magnitude of change.

***Construction & Operational Traffic (Existing Receptors) Determining the Level of Effect for EIA Purposes***

8.2.56. The level of effect has been informed by the magnitude of change due to the **Scheme** and the evaluation of the sensitivity of the affected receptor. The level of effect will be determined using professional judgement, current Air Quality Standards and World Health Organisation (WHO) knowledge (which is discussed further the *Determining Significance* section of this ES Chapter). **Table 8.5** has been a tool which has assisted with this process.

8.2.57. **Table 8.5** provides ranges, the level of effect is confirmed as a single level and not a range. For each effect, it will be concluded whether the effect is '*beneficial*' or '*adverse*'.

**Table 8.5: Matrix to Support Determining the Level of Effect**

| **Magnitude of Change** | | **Sensitivity** | | | |
|---|---|---|---|---|---|
| | | High | Medium | Low | Negligible |
| | Large | **Major*** | **Moderate to Major*** | Minor to Moderate | Negligible |
| | Medium | **Moderate to Major*** | Moderate | Minor | Negligible |
| | Small | Minor to Moderate | Minor | Negligible to Minor | Negligible |
| | Negligible | Negligible | Negligible | Negligible | Negligible |
| Notes:<br>** Could be Significant depending on the context* | | | | | |

8.2.58. The following terms will be used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: where the **Scheme** is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: where the **Scheme** is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect**: where the **Scheme** is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the **Scheme** is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and
- **Negligible**: where the **Scheme** is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

8.2.59. To note, both professional judgement and the overall air quality concentrations in relation to the relevant air quality standard should also be a key consideration when determining the effect, (as highlighted in the Determining Significance section below). The judgement of the significance should be made by a competent professional who is suitably qualified. A summary of the professional experience of the staff contributing to this ES Chapter is provided in **Chapter 1: Introduction**.

***Construction & Operational Traffic (Existing Receptors) Determining the Level of Significance for EIA Purposes***

8.2.60. There are no definitive thresholds for determining the significance of changes in nutrient nitrogen deposition. However, the hierarchy of assessment in the Environment Agency's on-line risk assessment guidance states that for any process contribution, (analogous to the change in nutrient nitrogen deposition from the road) that is under 1 %, effects from such changes can be screened out as 'not significant'.

8.2.61. The Significance of any impacts on ecological receptors will be set out in **Chapter 9: Ecology**. The current relevant annual mean Critical Level for $NO_x$ for the protection of vegetation and ecosystems, as transposed into UK law by the Air Quality Standards and Regulations 2010, as amended, are detailed in **Table 8.6**.

**Table 8.6: Annual Mean Critical Level for the Protection of Vegetation and Ecosystems**

| Pollutant | AQS/EAL/Target | Average Period | Critical Level |
|---|---|---|---|
| Oxides of Nitrogen ($NO_x$) | AQS | Annual Mean | 30 µg/m$^3$ |
| | AQS | Daily Mean | 200 µg/m$^3$ |
| | EAL* | Daily Mean | 75 µg/m$^{3*}$ |
| Notes:<br>** *WHO report16 states that where $SO_2$ and $O_3$ are not present at their respective limits, a 200 µgm$^3$ daily mean would be more appropriate.*[20] | | | |

[20] World Health Organization, 2021. *WHO global air quality guidelines.*

## East Midlands Airport Emissions

8.2.62. Due to the proximity of the site to East Midlands Airport, a consideration of the potential exposure impacts to airport emissions has been undertaken.

8.2.63. TG(22) states:

> *"Aircraft are potentially significant sources of $NO_x$ emissions, especially during take-off, and therefore the main risk is related to potential exceedances of the $NO_2$ air quality objectives. It is likely that all airports have been subject to a screening assessment in previous rounds of Review and Assessment; however, in case of significant changes (such as increase in airport capacity, or new population exposure near the airport), the local authority should be able to screen aircraft emissions from airports based on the following:*
>
> *Determine relevant exposure within 1km of the airport boundary;*
>
> *If exposure has been identified, determine whether the airport total equivalent passenger throughput is more than 10 million passengers per annum (mppa). Freight should also be considered, and converted to equivalent mppa using 100,000 tonnes = 1 mppa; and*
>
> *Identify whether the background annual mean $NO_x$ concentration is above 25µg/$m^3$ in these areas.*
>
> *If all of the above criteria are matched, then the local authority should conclude that there is a risk of exceedance of the $NO_2$ annual mean objective:*
>
> *[..]"*

8.2.64. A consideration of this is set out in this ES Chapter.

## Freight Emissions

8.2.65. Due to the nature of proximity to East Midlands Airport a consideration of the potential exposure impacts of freight airport emissions has been undertaken.

8.2.66. TG(22) states:

> *"Diesel or coal fired stationary locomotives can give rise to high short-term $NO_2$ and $SO_2$ concentrations near railway stations or depots. Additionally, moving locomotives can contribute to elevated short-term $NO_2$ and $SO_2$ concentrations close to the track. It is likely that all sources of concern have been assessed in previous rounds of Review and Assessment, given the few number of railway lines not yet electrified. However, in case of new exposure near the lines of concern, local authorities may need to reassess these, based on the following:*
>
> *<u>Stationary diesel or steam locomotives:</u>*
>
> - *Identify locations where diesel or steam locomotives are regularly (at least three times a day) stationary for periods of 15-minutes or more; and*

- *Determine relevant exposure within 15m of the locomotives*

*Moving diesel locomotives:*

- *Determine relevant exposure within 30m of the relevant railway tracks (Table 7-2 provides information on which lines should be considered); and*
- *Identify whether the background annual mean $NO_2$ concentration is above 25µg/$m^3$ in these areas.*

*If the above criteria are matched, then the local authority should conclude that there is a risk of exceedance of the SO2 15-minute mean objective (for stationary locomotives) or the $NO_2$ annual mean objective (for moving locomotives), and carry out a monitoring survey (6-month period minimum) at relevant receptors.*

8.2.67. A consideration of this is set out in this **ES** Chapter.

## Limitations and Assumption

8.2.68. There are many uncertainties when considering both measured and predicted pollution concentrations. The model is dependent upon the traffic data provided for the project, and should this be subject to change, so may the resulting pollution concentrations and assessment of significance.

8.2.69. The background air quality concentrations have been taken from the Defra background mapping[21]. The Defra website includes estimated background air pollution data for $NO_x$, $NO_2$, $PM_{10}$ and $PM_{2.5}$ for each 1km by 1km OS grid square. Background pollutant concentrations are modelled from the base year of 2021 and based on ambient monitoring, meteorological data from 2021 and then includes projections for future years, up to currently 2040. Therefore, background concentrations have been utilised for the 2023 (model verification) and 2028 scenarios.

8.2.70. There is discrepancy between the concentrations mapped by DEFRA and those recorded at local background sites. Therefore, a calibration factor will be derived from the ratio between monitored background concentrations (local authority monitoring) and DEFRA background mapped concentrations. This is supported by TG(22), which states:

*"Where a model has been used to predict background concentrations (for example based on an emissions inventory), the modelled background concentrations should also be verified and where necessary adjusted.*

*If national background maps are used, these should first be compared against any local monitoring to check they are representative of the area. In most cases there is good agreement with local monitoring, but some locations may not agree. Local authorities are not expected to verify and adjust the national background maps. Where these estimates do not agree with local monitoring, either local monitoring may be used, or local authorities may consider adjusting the background maps."*

[21] Department for Environmental Food and Rural Affairs. Accessible at: Background Mapping data for local authorities - 2021 - Defra, UK (last accessed November 2024)

8.2.71. Therefore, a calibration factor will be derived from the ratio between monitored background concentrations (local authority monitoring) and DEFRA background mapped concentrations for $NO_2$ to improve the accuracy of the background concentrations. It will not be possible to derive a calibration factor for $PM_{10}$ and $PM_{2.5}$ due to the lack of background monitoring data, therefore, the $NO_2$ calibration factor will be used to adjust the DEFRA background concentrations of $PM_{10}$ and $PM_{2.5}$.

8.2.72. In order to avoid double counting of potential source contributions already contained within the ADMS-Roads dispersion model, 'Motorway in' was removed from each relevant grid square, as recommended in the Defra Background Maps User Guide[22]. As the relationship between $NO_2$ and $NO_x$ is not linear, the $NO_2$ Adjustment for $NO_x$ Sector Removal Tool[23] will be utilised.

8.2.73. In order to reduce the uncertainty associated with predicted concentrations, model verification will be carried out following guidance set out in TG(22).

8.2.74. For the purposes of the considerations of the impacts on ecological receptors, the screening of air quality impacts on ecological receptors will consider the change in AADT as a result of the development. The Natural England (2018) guidance states:

> *"The AADT thresholds do not themselves imply any intrinsic environmental effects and are used solely as a trigger for further investigation. Widely accepted Environmental Benchmarks for imperceptible impacts are set at 1% of the critical load or level, which is considered to be roughly equivalent to the DMRB thresholds for changes in traffic flow of 1000 AADT and for HDV 200 AADT. This has been confirmed by modelling using the DMRB Screening Tool that used average traffic flow and speed figures from Department of Transport data to calculate whether the NOx outputs could result in a change of > 1% of critical/load level on different road types. A change of >1000 AADT on a road was found to equate to a change in traffic flow which might increase emissions by 1% of the Critical Load or Level and might consequentially result in an environmental effect nearby (e.g. within 10 metres of roadside)."*

## 8.3. Policy, Guidance and Legislative Context

8.3.1. The following legislation, policy and guidance is relevant to the **Scheme** and this ES Chapter:

### European Legislation

8.3.2. European air quality legislation is consolidated under Directive 2008/50/EC (as amended), which came into force on 11th June 2008. This Directive consolidated and replaced previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new air quality objectives for fine particulates. The consolidated Directives include:

- Directive 1999/30/EC – the First Air Quality "Daughter" Directive – sets ambient air limit values for nitrogen dioxide ($NO_2$) and oxides of nitrogen ($NO_X$), sulphur dioxide ($SO_2$), lead (Pb) and particulate matter (PM).

[22] Department for Environment, Food & Rural Affairs.2024. *Background Concentration Maps User Guide.*

[23] Department for Environment, Food & Rural Affairs. 2020. *$NO_2$ Adjustment for NOx Sector Removal Tool v9.1*

- Directive 2000/69/EC – the Second Air Quality "Daughter" Directive – sets ambient air limit values for benzene (C6H6) and carbon monoxide (CO).
- Directive 2002/3/EC – the Third Air Quality "Daughter" Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone ($O_3$) in ambient air.
- The 2008 Ambient Air Quality Directive (2008/50/EC) - The Directive sets limits for key pollutants in the air we breathe outdoors. These legally binding limit values are for concentrations of major air pollutants that impact public health, such as particulate matter ($PM_{10}$ and $PM_{2.5}$) and nitrogen dioxide ($NO_2$). The directive also sets limit values for a range of other pollutants, such as ozone, sulphur dioxide and carbon monoxide.
- Meanwhile, the 4th air quality “Daughter” directive (2004/107/EC) (as amended) sets targets for levels in ambient air, of certain heavy metals and polycyclic aromatic hydrocarbons.
- Both Directives are introduced into the UK through the Air Quality Standards Regulations 2010.

8.3.3. The European Commission (EC) Directive Limits, outlined above, have been transposed in the UK through the Air Quality Standards Regulations 2010[24]. In the UK responsibility for meeting ambient air quality limit values is devolved to the national administrations in Scotland, Wales and Northern Ireland.

8.3.4. Following the UK’s departure from the EU and the Brexit transition period the previous EU Legislation has been retained in the United Kingdom through new legislation [25] . A few more substantive changes have been made by EU Exit regulations. For one, a new limit value has been set for $PM_{2.5}$ of 20 µg/m³ (which was previously set at 25 µg/m$^{3.}$).

## Habitats Directive

8.3.5. The “Habitats Directive[26]” (European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, 1992), requires member states to introduce a range of measures for the protection of habitats and species. The Habitats Regulations (The Conservation of Habitats and Species Regulations 2017 Statutory Instrument 1012, 2017), transpose the Directive into law in England and Wales. They require the Secretary of State to provide the European Commission with a list of sites which are important for the habitats or species listed in the Directive. The Commission then designates worthy sites as Special Areas of Conservation (SACs). The Habitats Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs), with the latter classified under the “Birds Directive” (Directive 2009/147/EC of the European Parliament and of the Council, 2009). These sites form a network termed “Natura 2000”.

[24] The Air Quality Standards Regulations (2010).

[25] Statutory Instrument. (2019) Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations

[26] European Commission (EC). 1992. Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and wild fauna and flora. [online] URL: http://ec.europa.eu/environment/nature/ legislation/habitatsdirective/index_en.htm

8.3.6. The Habitats Regulations primarily provide measures for the protection of European Sites and European Protected Species, but also require local planning authorities to encourage the management of other features that are of major importance for wild flora and fauna.

8.3.7. In addition to SACs and SPAs, some internationally important UK sites are designated under the Ramsar Convention. Originally intended to protect waterfowl habitat, the Convention has broadened its scope to cover all aspects of wetland conservation. Planning policy requires that Ramsar Sites are treated in an equivalent manner to European sites.

8.3.8. The Habitats Directive, (as implemented by the Habitats Regulations) requires the competent authority, which in this case will be the planning authority, to firstly evaluate whether the development is likely to give rise to a significant effect on the European site. Where this is the case, it is required to carry out an Appropriate Assessment to determine whether the development will adversely affect the integrity of the site.

## National Legislation

### Air Quality Standards Regulations 2010 (as amended)

8.3.9. The EU Directives referred to above are implemented into domestic law by the Air Quality Standards Regulations 2016 (as amended)[27]. The limit values (re ambient air quality) defined within those Regulations are legally-binding and apply across England, with the exception of the carriageway and central reservation of roads where the public does not normally have access, on factory premises or at industrial locations (where health and safety provisions apply) and any locations where the public does not have access and there is no fixed habitation.

### The Air Quality Strategy

8.3.10. The Air Quality Strategy is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the effects of pollution.

8.3.11. For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates which should be aimed for; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations 2000[28].

### Environmental Protection Act 1990

8.3.12. Under Part III of the Environmental Protection Act (1990)[29], it is the duty of the local authorities to take steps as reasonably practical to investigate issues that could be a 'statutory nuisance'. Potential causes of statutory nuisance include:

- Any premises in such a state as to be prejudicial to health or a nuisance;

[27] Statutory Instrument. (2016) The Air Quality Standards (Amendment) Regulations, No. 1184

[28] Statutory Instrument. (2020) Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020, No. 1313.

[29] UK Public General Acts, 1990. *Environmental Protection Act 1990, Chapter 43.*

- Smoke emitted from premises so as to be prejudicial to health or a nuisance;
- Fumes or gases emitted from premises so as to be prejudicial to health or a nuisance;
- Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance; or
- Any accumulation or deposit which is prejudicial to health or a nuisance.

8.3.13. The local authority may serve an abatement notice on the person, premises owner or occupier if it is satisfied of the existence or likely existence of a statutory nuisance(s). Should the abatement notice not be complied with, the Local Authority may prosecute in the courts and this can result in penalties such as a fine. However, it is considered as a defence if the best practicable means to stop or reduce a nuisance are employed.

**Environmental Act 1995**

8.3.14. Part IV of the Environment Act 1995[30] requires local authorities to review and assess the air quality within their boundaries. As a result, the Air Quality Strategy was adopted in 1997[31], with national health-based standards and objectives set out for the, then, eight key air pollutants including benzene, 1-3 butadiene, carbon monoxide, lead, nitrogen dioxide ($NO_2$), ozone, particulate matter (PM) and sulphur dioxide.

**Environmental Act 2021**

8.3.15. Part IV of the Environment Act 2021[32] amends both the Environment Act 1995 and the Clean Air Act 1993[33]. It builds on the foundations provided by Part IV of the Environment Act 1995 and strengthens the local air quality management framework. The act allows the Secretary of State to make provisions for, about or connect with the recall of relevant products that do not meet relevant environmental standards.

8.3.16. The then government has resisted calls for the adoption of the recently updated World Health Organisation (WHO) air quality guidelines, specifically targeting particulate matter pollution. The act does introduce a duty on the government to bring forward at least two air quality targets by October 2022 for consultation that will be set in secondary legislation, which has now been introduced in secondary legislation[34]. The first aim of the legislation is to reduce the annual average level of fine particulate matter ($PM_{2.5}$) in ambient air. The second aim is to set a long-term target (set a minimum of 15 years in the future), which the then government said, *"will encourage long-term investment and provide certainty for businesses and other stakeholders."*

## National Policy Statement National Networks (NPS)

[section to be completed]

8.3.17. The NPS recognises that increases in emissions of pollutants during the construction or operation phases of projects on the national networks can result in the worsening of local air

[30] Parliament of the United Kingdom, 1995. *Environmental Act 1995,* Chapter 25.

[31] Department for Environment Food and Rural Affairs, 1997. *The United Kingdom National Air Quality Strategy*, Cm 3587.

[32] UK Public General Acts, 2021. *Environmental Act 2021*, *Chapter 30.*

[33] UK Public General Acts, 1993. *Clean Air Act 1993, Chapter 11.*

[34] Statutory Instrument, 2023. *The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. No.96.*

quality and could contribute to adverse impacts on human health, on protected species and habitats.

8.3.18. At Paragraph 5.13, the NPS sets out how the applicant should assess the air quality impact assessment, which includes:

- existing air quality emissions and concentrations
- forecasts of emissions and concentrations at the time of opening, assuming that the scheme is not built (the future baseline) and taking account of the impact of the scheme
- any significant air quality effects, their mitigation and any residual effects, distinguishing between the construction and operation stages and taking account of the impact of any road traffic generated by the project
- the predicted emissions, concentration change and absolute concentrations of the proposed project after mitigation methods have been applied
- any potential impacts on nearby designated habitats from air pollutants
- the proximity and nature of nearby receptors which could be impacted, including those more sensitive to poor air quality

8.3.19. At Paragraph 5.18, the NPS states that

> *Where a project is likely to lead to a breach of any relevant statutory air quality limits, objectives or targets, the applicant should work with the relevant authorities to secure appropriate mitigation measures.*

## National Planning Policy Framework (2024)

8.3.20. The National Planning Policy Framework (NPPF)[35] (2024) sets out the planning policy for England, to help achieve sustainable development within the planning sector, and that the planning system has three overarching objectives, one of which (Paragraph 8c) is an environmental objective:

> *"to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

8.3.21. Paragraph 110 states:

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

[35] Department for Levelling Up, Housing and Communities, 2024. *National Planning Policy Framework*.

*solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."*

8.3.22. Paragraph 187 states:

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

*[...]*

*e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;*

*[...]"*

8.3.23. Paragraph 193 states:

*"When determining planning applications, local planning authorities should apply the following principles:*

a. *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
b. *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
c. *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
d. *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate."*

8.3.24. Following on from Paragraph 193, Paragraph 194 states:

*"The following should be given the same protection as habitats sites:*

a. *potential Special Protection Areas and possible Special Areas of Conservation;*
b. *listed or proposed Ramsar sites; and*

c. *sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites."*

8.3.25. Paragraph 198 states:

> *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."*

8.3.26. Paragraph 199 states:

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

8.3.27. Paragraph 201 states:

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

8.3.28. The NPPF also sets out the national planning policy on biodiversity and conservation. This emphasises that the planning system should seek to minimise effects on and provide net gains in biodiversity, wherever possible, as part of the Government's commitment to halting decline and establishing coherent and resilient ecological networks.

## Planning Practice Guidance (2024)

8.3.29. The NPPF is supported by Planning Practice Guidance (PPG)[36] (DLUHC & MHCLG, 2024), which sets out the principles on how planning can take account of the impacts of new developments on air quality.

8.3.30. Paragraph 001 Reference ID: 32-001-20191101 states:

[36] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government. Planning Practice Guidance. Accessible at: http://planningguidance.planningportal.gov.uk/

*"The 2008 Ambient Air Quality Directive sets legally binding limits for concentrations in outdoor air of major air pollutants that affect public health such as particulate matter ($PM_{10}$ and $PM_{2.5}$) and nitrogen dioxide ($NO_2$).*

*The UK also has national emission reduction commitments for overall UK emissions of 5 damaging air pollutants:*

- *fine particulate matter ($PM_{2.5}$)*
- *ammonia ($NH_3$)*
- *nitrogen oxides ($NO_x$)*
- *sulphur dioxide ($SO_2$)*
- *non-methane volatile organic compounds (NMVOCs)*

*As well as having direct effects on public health, habitats and biodiversity, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems. Odour and dust can also be a planning concern, for example, because of the effect on local amenity."*

8.3.31. Paragraph: 005 Reference ID: 32-005-20191101 states:

*"Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity.*

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

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

## North West Leicestershire Local Plan 2011 to 2031 (2021)

8.3.32. The relevant Development Plan policy is currently provided by North West Leicestershire District Council's Local Plan. This was originally adopted in in November 2017, with a partial

review undertaken in February 2018 and adopted in 2021[37]. The following policies are pertaining to air quality within the Local Plan.

8.3.33. Policy En6 – Land and air quality states:

> *"Proposals for development on land that is (or is suspected of being) subject to land instability issues or contamination, or is located within the defined Development High Risk Area or within or close to an Air Quality Management Area or close to a known source of noise will be supported where:*
>
> *a. A planning application is accompanied by a detailed investigation and assessment of the issues; and*
>
> b. *Appropriate mitigation measures are identified which avoid any unacceptably adverse impacts upon the site or adjacent areas, including groundwater quality.*
>
> *Development should avoid any unacceptably adverse impact upon soils of high environmental value (for example wetland and other specific soils) and ensure that soil resources are conserved and managed in a sustainable way.*

8.3.34. Policy D2 – Amenity states:

> *"Proposals for development should be designed to minimise their impact on the amenity and quiet enjoyment of both existing and future residents within the development and close to it. As such, development proposals will be supported where:*
>
> *[..]*
>
> *2) They do not generate a level of activity, noise, vibration, pollution or unpleasant odour emission, which cannot be mitigated to an appropriate standard and so, would have an adverse impact on amenity and living conditions."*

## Draft North West Leicestershire Local Plan 2020 to 2040

8.3.35. NWLDC consulted on the Regulation 18 draft Local Plan in February and March 2024. The potential effects of pollution from new development are primarily addressed in point b) of Draft Policy AP2 – Amenity, which is similar to Policy D2 in the current Local Plan as detailed above:

> *"(1) New development should be designed to minimise its impact on the amenity and quiet enjoyment of both future residents and existing residents in the vicinity of the development. Development proposals will be supported where:*
>
> *[..]*
>
> *(b) They do not generate a level of activity, noise, vibration, pollution or unpleasant odour emission, which cannot be mitigated to an appropriate standard and so, would have an adverse impact on amenity and living conditions."*
>
> *[..]*

[37] North West Leicestershire District Council, 2021. North West Leicestershire Local Plan.

8.3.36. The draft Local Plan includes a second relevant policy, Draft Policy AP5 – Health and Wellbeing (Strategic Policy), which references air quality at point f):

> *"(1) Development that maintains and improves the health and wellbeing of our residents, encouraging healthy lifestyles by tackling the causes of ill health and inequalities will be supported. Health considerations will be embedded in decision making and the Council will support the creation of a high quality, accessible and inclusive environment.*
>
> *[…]*
>
> *To achieve this, the Council will:*
>
> *[…]*
>
> *Prevent negative impacts on residential amenity and wider public safety from noise, ground instability, ground and water contamination, vibration and air quality."*
>
> *[…]"*

## Guidance

### National

***Local Air Quality Management Review and Assessment Technical Guidance (LAQM.TG22) (2022)*** [38]

8.3.37. Defra has published technical guidance for use by local authorities in their review and assessment work. This guidance also provides technical guidelines on carrying out modelling and monitoring of air quality. This guidance, referred to in this document as TG22, has been used where appropriate in the assessment.

***Guidance on the Assessment of Dust from Demolition and Construction (2024)*** [39]

8.3.38. The IAQM have published this guidance. The guidance provides a methodology to undertake a qualitative assessment of the potential dust / emission risks during the construction phase of a Scheme. The assessment consists of a five step processes to assess the potential level of risks, (Large, Medium, Small or Negligible), regarding the four main phases of development, (demolition, earthworks, construction, and trackout). The assessment includes consideration of pre-mitigation, and post-mitigation impacts, based upon the scale and nature of the development.

***Land-Use Planning & Development Control: Planning for Air Quality (2017)*** [40]

8.3.39. The EPUK and IAQM have published guidance that offers comprehensive advice on when an air quality assessment may be required, what should be included in an assessment, how to

[38] Defra (2022), Local Air Quality Management – Technical Guidance (22) [online]. Available at:LAQM-TG22-August22-v1.0.pdf (defra.gov.uk). (Last accessed December 2024).
[39] Institute of Air Quality Management (IAQM), 2024. Guidance on the Assessment of Dust from Demolition and Construction (v2.2).
[40] Environmental Protection UK (EPUK) and IAQM, 2017. Land-use Planning & Development Control: Planning for Air Quality.

determine the significance of any air quality impacts associated with a development, and the possible mitigation measures that may be implemented to minimise these impacts.

***A Guide to The Assessment of Air Quality Impacts on Designated Nature Conservation Sites (2020)[41].***

8.3.40. The IAQM have published this guidance. The guidance has been provided to assist its members in the assessment of the air quality impacts of development on designated nature conservation sites.

***Design Manual for Roads and Bridges (DMRB) LA105. Air Quality (2019)[42]***

8.3.41. The DMRB guidance has been provided by Highways England, and has published guidance upon when an impact assessment should be undertaken to quantify the potential impacts of nitrogen deposition upon any identified ecological designated sites.

***$PM_{2.5}$ Targets: Interim Planning Guidance[43]***

8.3.42. The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 set two new targets for fine particulate matter ($PM_{2.5}$). These targets are central government targets primarily focussed on tackling emissions, rather than requiring local authorities to assess concentrations against these new $PM_{2.5}$ targets. In March 2023, the Department for Levelling-Up, Housing and Communities (DLUHC) wrote to all Chief Planning Officers[44] in England advising that guidance was progressing on how these new targets should be integrated into the planning system. At the time of writing, interim guidance has been produced by DEFRA[45] which states:

> *"The purpose of the targets is to improve air quality by reducing levels of $PM_{2.5}$ across the country, therefore improving public health. While achievement of the targets will be assessed at relevant monitoring sites, the targets apply to ambient (outdoor) air throughout England. Applicants and Local Planning Authorities should therefore consider the impact of developments on air quality in all ambient air, whether a monitor is present or not.*
>
> *These targets require a different approach to that used by applicants and Local Authorities in response to existing air quality legislation.*
>
> *The new approach moves away from a requirement to assess solely whether a scheme is likely to lead to an exceedance of a legal limit and instead ensures that appropriate mitigation measures are implemented from the design stage, streamlining the process for planning and ensuring the minimum amount of pollution is emitted and that exposure is minimised.*

[41] Institute of Air Quality Management, 2020. *A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites*
[42] Highways Agency (2024). *Design Manual for Roads and Bridges (DMRB), LA 105. Air Quality (vertical barriers).*
[43] Highways Agency (2024). *Design Manual for Roads and Bridges (DMRB), LA 105. Air Quality (vertical barriers).*
[44] Department for Levelling Up, Housing & Communities, 2023. *Planning Newsletter – 3rd March 2023*.
[45] Department for Environment Food & Rural Affairs (2024) *$PM_{2.5}$ Targets: Interim Planning Guidance*, available at: https://uk-air.defra.gov.uk/pm25targets/planning
Levelling Up, Housing & Communities, 2023. *Planning Newsletter – 3rd March 2023*.

*Pending publication of the new guidance, applicants are advised to provide evidence in their planning applications that they have identified key sources of air pollution within their schemes and taken appropriate action to minimise emissions of $PM_{2.5}$ and its precursors as far as is reasonably practicable. If quantitative evidence is not available, a qualitative approach can be taken. This applies to all developments which would normally require an air quality assessment. More detailed assessments are expected for developments which are closer to populations, and those which are likely to have higher emissions. This guidance is separate to how $PM_{2.5}$ should be considered within environmental permitting."*

8.3.43. While planning reforms are discussed in the Air Quality Strategy[46] (2023), it is still unclear how the $PM_{2.5}$ targets will be implemented at a local level in the future. Therefore, this ES Chapter has only considered the Defra (2024) interim guidance.

8.3.44. To note, the Defra (2024) interim guidance also provides considerations applicants have to make in terms of impacts and exposure (which also aligns with the mitigation hierarchy set out within the Institute of Air Quality Management (IAQM) (2018) Mitigation of Development Air Quality Impacts[47] Statement).

**Local**

***North West Leicestershire Air Quality Supplementary Planning Document[48]***

8.3.45. The document sets out guidelines for new development and aids in the application of the NWL Local Plan.

8.3.46. The NWL SPD details a two-step process for classifying developments. Step 1 determines the scale / type of development while Step 2 determines potential for receptors to be introduced into an area of poor air quality.

*Step 1*

8.3.47. Figure 2 and Figure 3 in the NWLDC SPD details whether a development would be classed as 'Major' or 'Major+'. The criteria are set out below.

8.3.48. A development is 'Major' if:

- For residential development, the number of dwellings is 10 or more; or where the number of dwellings is unknown, the site is 0.5ha or more
- For all other uses, the floorspace is 1000 $m^2$ or more; or where the floorspace is unknown, the site area is 1 ha or more.

AND it has either of the following:

- More than 10 parking spaces;
- A centralised combustion process.

[46] Department for Environment, Food & Rural Affairs, 2023. *Air Quality Strategy for England*.
[47] Institute of Air Quality Management, 2018. *Mitigation of Development Air Quality Impacts (v1.1).'*
[48] Department for Environment Food & Rural Affairs (2024) *$PM_{2.5}$ Targets: Interim Planning Guidance*, available at: https://uk-air.defra.gov.uk/pm25targets/planning

8.3.49. Since the development contains over 1,000 $m^2$ and has plans for over 10 parking spaces, the development meets the 'Major' thresholds and therefore should be screened against the 'Major+' criteria.

8.3.50. A development is 'Major+' if one or more of these criteria are met:

- requires an EIA (Environmental Impact Assessment)
- increases Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA, or more than 500 AADT elsewhere
- increases Heavy Duty Vehicles (HDV) flows of more than 25 AADT within or adjacent to an AQMA, or more than 100 AADT elsewhere
- realigns a road by 5 m or more if the road is within an AQMA (i.e. changes the proximity of receptors to traffic lanes)
- introduces a new junction or removes an existing junction near to relevant receptors
- introduces or changes a bus station (increase bus movements by more than 25 AADT within or adjacent to an AQMA, or more than 100 AADT elsewhere)
- has an underground car park with extraction system (within 20m of a relevant receptor and with more than 100 movements per day, in and out)
- has one or more substantial combustion processes, where there is a risk of impacts at relevant receptors (this includes combustion plant associated with standby emergency generators (typically associated with centralised combustion process)).
- it includes a regulated process under the Environmental Permitting (Amendment) Regulations 2018 with emissions to air.

8.3.51. Since it is anticipated the **Scheme** will increases LDV flows by > 500 AADT and HDV flows by > 100 AADT, the development can be classified as 'Major+'.

*Step 2*

8.3.52. Figure 4 within the NWL SPD ascertains whether a development is in a location which exceeds the air quality objectives and where receptors could be subject to environmental nuisance. To note, the criteria in Figure 4 are not met.

*Conclusion*

8.3.53. Therefore, since the **Scheme** is 'Major+' and is not located in an area of potential poor air quality, an air quality assessment is required, however this assessment does not need to incorporate an Air Quality Site Suitability Assessment. Table 1 of the NWL SPD outlines that the air quality assessment should include:

- A construction dust risk assessment;
- An air quality impact assessment; and
- Mitigation measures which should be determined subsequent to identifying any potential significant effects.

## 8.4. Baseline Conditions

### Measured Concentrations

#### Local Air Quality Management

8.4.1. Under the Air Quality Strategy there is a duty on all Local Authorities to consider the air quality within their boundaries and to report annually to DEFRA. Local Air Quality Management in the North West Leicestershire area has been assessed by NWL, through the national Review and Assessment process and, in fulfilment of Part IV of the Environment Act 1995.

8.4.2. NWL have two AQMAs within the jurisdiction, both declared for exceedances of the $NO_2$ annual mean objective. To note, NWL previously had five AQMAs, however, three of these have since been revoked. It should be noted that the **Scheme** is not located within either of the AQMAs.

8.4.3. NWL carried out automatic monitoring at four locations in 2023, measuring concentrations of $NO_2$, $O_3$ and particulate matter ($PM_{10}$, $PM_{2.5}$ and $PM_1$). To note, this monitoring was undertaken using Zephyr monitors, which only have MCERTs classification (the Environment Agency's Monitoring Certification Scheme, used to approve air quality monitoring instruments) for particulate matter.

8.4.4. NWL also have a number of non-automatic $NO_2$ diffusion tube monitoring locations across the district. The local monitored data is set out in **Table 8.7**.

**Table 8.7: Monitored Annual Mean $NO_2$ Concentrations**

| ID | Type | Annual Mean (µg/m³) | | | | |
|---|---|---|---|---|---|---|
| | | 2019 | 2020 | 2021 | 2022 | 2023 |
| **Castle Donnington** | | | | | | |
| 12N | O | 18.86 | 13.4 | 13.0 | 24.0 | 13.9 |
| 14N | R | 20.68 | 16.1 | 14.8 | 16.7 | 13.7 |
| 16N | R | 31.51 | 21.5 | 22.8 | 29.5 | 21.9 |
| 17N | R | 30.88 | 20.7 | 21.3 | 17.5 | 24.1 |
| 18N | R | **42.05** | 29.8 | 34.2 | 15.3 | 34.1 |
| 19N | R | 27.29 | 19.7 | 19.4 | 23.8 | 19.1 |
| 40N | R | 22.94 | 14.8 | 15.3 | 20.4 | 15.2 |
| 41N | R | 36.16 | 24.1 | 24.1 | 20.5 | 24.1 |
| 54N | R | 23.29 | 18.1 | 18.0 | 22.4 | 16.8 |
| **Kegworth** | | | | | | |
| 23N | R | 20.49 | 16.0 | 15.2 | 25.3 | 13.1 |
| 47N | R | 24.5 | 18.5 | 17.6 | 15.7 | 16.8 |
| 48N | R | 26.29 | 18.0 | 17.5 | 13.4 | 17.6 |
| 51N | R | 22.4 | 18.3 | 18.3 | 14.8 | 17.1 |
| 53N | R | 19.79 | 16.1 | 15.6 | 27.3 | 13.4 |

| Notes:<br>*R – Roadside*<br>*O - Other* |
|---|

8.4.5. The air quality monitoring carried out closest to the site shows a compliance of the $NO_2$ annual mean objective in 2023, the most recent representative year.

8.4.6. Notably, several monitoring locations in 2022 showed results that were drastically different from other monitoring years at the same site, possibly due to poor data capture. Therefore, these sites will be treated with caution when forming the evidence base.

#### Diffusion Tube Monitoring Survey

8.4.7. An on-going 6-month diffusion tube survey is being undertaken to assist with the model verification. The location of the monitoring is set out in **Table 8.8**.

**Table 8.8: Vanguardia $NO_2$ Diffusion Tube Monitoring Survey**

| ID | Location | Grid References | | |
|---|---|---|---|---|
| | | X | Y | Z |
| EMG1 | A453 Grimes Gate Junction | 445246 | 325286 | 2.2 |
| EMG2 | A453 Viscount Road Junction | 445567 | 325394 | 2.2 |
| EMG3 | A453 Beverley Road Junction | 446409 | 325434 | 2.2 |
| EMG4 | A453 Donnington Park Services Roundabout | 446855 | 325442 | 2.2 |
| EMG5 | Grimes Gate – Outside Diseworth C of E Primary School | 445317 | 324691 | 2.2 |

8.4.8. Annualisation of the $NO_2$ diffusion tube monitoring data collected will be undertaken in accordance with TG22.

### Background Concentrations

#### Mapped Background Concentrations

8.4.9. Calibrated background pollutant concentrations for each identified receptor modelling location will be derived once the traffic data is available.

## 8.5. Potential Impacts

### Construction Phase

#### Scheme Construction Dust Risk

8.5.1. The main air quality impacts associated with construction activities relate to the potential release of particulate matter of both PM size fractions. There is also the potential for the evolution of other air quality pollutants (known as secondary pollutants). The sources of potential construction impacts specifically associated with the **Scheme** are set out below:

- Potential for generation of airborne dusts from exposure and movement of soils and construction materials;
- Generation of fumes on-site by construction plant and tools throughout the construction phase;
- Increase in vehicle emissions (smoke/fumes) from vehicles (and potentially as a result of slow-moving traffic, should local congestion ensue); and
- Re-suspension of dust as a result of vehicle tyres travelling over dusty surfaces.

8.5.2. A construction dust assessment has been undertaken in line with the IAQM (2024) guidance methodology as set out in **Appendix 8a** and a summary of the process is provided below.

***Potential Dust Emission Magnitude***

*Demolition*

8.5.3. A review of the **Scheme** indicates that there are no existing structures that will require demolition. Therefore, on this basis demolition can be scoped out of this assessment as it is not applicable.

*Earthworks*

8.5.4. The total area where earthworks will occur is greater than 110,000m$^2$ and topsoil resource comprises a mixture of sandy loams and clay loams[49]. Therefore, in accordance with the criteria outlined in **Table 8a.1** in **Appendix 8a**, the magnitude of potential dust emissions from earthworks activities is classified as Large.

*Construction*

8.5.5. The total building volume to be constructed is predicted to be greater than 75,000m$^3$. Construction materials are likely to have low potential for dust release as it will comprise of mainly steel framed construction. Therefore, in accordance with the criteria outlined in **Table 8a.1** in **Appendix 8a**, the magnitude of potential dust emissions from construction activities is classified as Large, largely down to the size of the development.

*Trackout*

8.5.6. The average number of one-way daily HDV vehicles movements which may track out dust and dirt is expected to be greater than 50. Therefore, in accordance with the criteria outlined in **Table 8a.1** in **Appendix 8a**, the magnitude of potential dust emissions from trackout activities is classified as Large.

*Summary*

8.5.7. **Table 8.9** summarises the dust emission magnitude for the **Scheme**.

[49] Land Research Associates (2023) Soils and Agricultural Quality of Land at Diseworth Derbyshire

**Table 8.9: Emission Magnitude and $PM_{10}$ Risk for Construction, based on the IAQM (2024) Dust Guidance**

| Source | Dust Emission Magnitude |
|---|---|
| Demolition | Scoped Out |
| Earthworks | Large |
| Construction | Large |
| Trackout | Large |

***Sensitivity of Area***

8.5.8. Step 2B (as set out on **Appendix 8a**) combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the **Scheme**. It also considers additional site-specific factors such as topography and screening and in the case of sensitivity to human health effects, the baseline $PM_{10}$ concentrations. Buffer zones are set out in **Figure 8a** and **Figure 8b** to illustrate the number of receptors in proximity to the **Scheme** that could be impacted by dust as a result of the demolition and construction activities.

***Effects of Dust Soiling***

8.5.9. The presence of between 1 – 10 'High' sensitive human receptors (Residential) within approximately 20 m of the site boundary indicates that the area for construction activities would be of a 'Medium' sensitivity (based upon **Table 8a.3** in **Appendix 8a**).

8.5.10. The routing of construction vehicles is anticipated to be along the A453 towards the M1. Therefore, receptors have been considered along this road with consideration that the impact declines with distance from the site, in line with the prior IAQM Guidance on the Assessment of Dust from Demolition and Construction (2016)[50] which suggested that trackout may occur along the public highway up to 500 m from large sites. There is a presence of more than 1 'Medium' sensitive human receptors (Office) within 20 m of highway (up to 500 m of the site access). This indicates that the area for construction activities would be of a 'Medium' sensitivity, (based upon **Table 8a.3** in **Appendix 8a**).

***Effects of Human Health***

8.5.11. The presence of between 1 - 10 'High' sensitive human receptors (Residential) within approximately 20 m of the site boundary and considering the background $PM_{10}$ concentrations are below 24 µg/$m^3$, it would indicate that the area around the construction site has a 'Low' sensitivity, (Based upon **Table 8a.4** in **Appendix 8a**), to impacts upon human health for the construction activities.

8.5.12. The routing of construction vehicles is anticipated to be along the A453 towards the M1. There is a presence of more than 1 'Medium' sensitive human receptors (Office) within 20 m of highway (up to 500 m of the Site access). When considered in conjunction with the background $PM_{10}$ concentrations being below 24 µg/$m^3$, it indicates that the area for the trackout activities would be of a 'Low' sensitivity, (based upon **Table 8a.4** in **Appendix 8a**).

[50] Institute of Air Quality Management, 2016. *Guidance on the Assessment of Dust from Demolition and Construction.'*

***Effects of Ecological Sites***

8.5.13. As stated earlier in this section, the ecological sites element of the construction dust assessment has been scoped out of this dust risk assessment for demolition, and construction activities.

***Risk and Significance***

8.5.14. The dust emission magnitude described above is combined with the sensitivity of the area and compared with the assessment matrix set out in **Table 8a.6** of **Appendix 8a**. The resulting risk categories for the demolition and construction activities, without mitigation, are set out in **Table 8.10**.

**Table 8.10: Summary of Dust Risk to Define Site-Specific Mitigation**

| Activity | Demolition | Earthworks | Construction | Trackout |
|---|---|---|---|---|
| **Dust Soiling** | Negligible | Medium Risk | Medium Risk | Low Risk |
| **Human Health** | Negligible | Low Risk | Low Risk | Low Risk |

8.5.15. The IAQM (2024) guidance does not provide a method for assessing the significance of effects before mitigation and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, (as set out in this ES Chapter and further general mitigation measures in **Appendix 8b**), the IAQM (2024) guidance is clear that the residual effect will normally be 'not significant'.

**Scheme Construction Traffic Impact Assessment on Human Receptors**

8.5.16. [This section to be completed on receipt of traffic data.]

**Scheme Construction Traffic Impact Assessment on Ecological Receptors**

8.5.17. [This section to be completed on receipt of traffic data.]

## Operational Phase

**Scheme Operational Traffic Impact Assessment on Human Receptors**

8.5.18. [This section to be completed on receipt of traffic data.]

**Scheme Operational Traffic Impact Assessment on Ecological Receptors**

8.5.19. [This section to be completed on receipt of traffic data.]

**Scheme Operational Impact Assessment on of East Midlands Airport on Future Receptors**

8.5.20. The **Scheme** is within 1 km of East Midlands Airport, but a review of the national statistics indicates the airport total equivalent passenger throughput is fewer than 10 million passengers per annum and based upon the background $NO_x$ concentrations, as set in **Table 8.6** indicates levels below 25µg/$m^3$.

8.5.21. Based upon the above, emissions associated with East Midlands Airport at not deemed to be of concern and any impacts would be considered 'Not Significant.'

**Scheme Operational Impact Assessment of Rail Freight Movements**

8.5.22. A review of the proposed **Scheme** indicates that no increases in rail freight movements above and beyond what has already been consented.

8.5.23. On this basis this as been screened out of this ES Chapter and any impacts would be deemed 'Not Significant.'

## 8.6. Mitigation Measures

### Construction

**Dust and Human Health**

8.6.1. A construction dust assessment has been undertaken for the **Scheme** and is presented earlier in this ES Chapter. The assessment has been used to identify the need for standard and best practice mitigation measures to be implemented during the construction phase of the **Scheme**. These measures will be controlled and implemented through a CEMP, provided as **Appendix 3[x]** which is anticipated to be secured via a suitably worded DCO Requirement.

8.6.2. A range of measures are suggested and summarised below, which would typically be utilised during the construction phases, further detail is provided in the CEMP.

8.6.3. The following potential mitigation measures are anticipated (but are not limited to):

- Cutting, grinding and sawing will not be conducted on-site and pre-fabricated material and modules will be brought in where possible;
- Where cutting, grinding and sawing takes place, water suppression will be used to reduce the amount of dust generated;
- Skips, chutes and conveyors will be completely covered and, if necessary enclosed to ensure that dust does not escape;
- No burning of any materials will be permitted on site;
- Any excess material will be reused or recycled on-site where practicable in accordance with appropriate legislation;
- The Principal Contractor will produce a waste or recycling plan;
- Following earthworks, exposed areas and soil stockpiles will be re-vegetated to stabilise surfaces, or otherwise covered with hessian or mulches;
- Stockpiles will be stored in enclosed or bunded containers or silos and kept damp where necessary;
- Hard surfaces will be used for haul routes where possible;
- Haul routes will be swept/washed regularly;
- Vehicle wheels will be washed on leaving the Site;

- All vehicles carrying dusty materials will be securely covered; and
- Delivery areas, stockpiles and particularly dusty items of construction plant will be kept as far away from neighbouring properties as possible.

#### Construction Traffic

8.6.4. As detailed traffic data was not available at the time of writing this draft chapter, the construction phase road traffic emissions assessment was not undertaken. This will be undertaken in due course and included in the next iteration of this draft chapter and the significance of any impacts determined in accordance with relevant guidance.

### Operational

8.6.5. As detailed traffic data was not available at the time of writing this draft chapter, the operational phase road traffic emissions assessment was not undertaken. This will be undertaken in due course and included in the next iteration of this draft chapter and the significance of any impacts determined in accordance with relevant guidance.

## 8.7. Residual Effects

### Construction

#### Construction Dust

8.7.1. With the CEMP in place the residual effects are 'not significant' for all receptors.

#### Construction Traffic

8.7.2. The residual effects associated with construction phase road traffic emissions will be considered in due course and included in the next iteration of this draft chapter once detailed road traffic data is available.

### Operational

8.7.3. The residual effects associated with operational phase road traffic emissions will be considered in due course and included in the next iteration of this draft chapter once detailed road traffic data is available.

## 8.8. Cumulative Effects

8.8.1. [section to be completed]

## 8.9. Summary of Effects and Conclusions

### Construction

#### Construction Dust

8.9.1. A construction dust assessment has been undertaken for the construction phase associated with the **Scheme** and in accordance with IAQM (2024) guidance.

8.9.2. Following the successful implementation of the suggested inherent mitigation measures, the impacts of the **Scheme** construction dust and emissions from construction activities upon the local area and sensitive receptors although adverse, the impacts will be temporary, and 'not significant'.

#### Construction Traffic

8.9.3. At this stage, information needed for the construction phase traffic is not available. Conclusions from this assessment will be available in this ES Chapter when finalised.

### Operational

#### Operational Traffic

8.9.4. At this stage, information needed for the operational phase traffic is not available. Conclusions from this assessment will be available in this ES Chapter when finalised.

#### Rail Emissions

8.9.5. A screening assessment of the potential effects of rail emissions has been undertaken in this ES Chapter and the impacts are deemed as 'Not Significant.'