Springwell Solar Farm

Environmental Statement
Appendix 6.2: Air Quality Assessment

Volume 3

APFP Regulation 5(2)(a)

Planning Act 2008

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

EN010149/APP/6.3
November 2024
Springwell Energyfarm Ltd

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1. The Proposed Development

1.1. Introduction

1.1.1. This assessment presents the likely significant effects arising from the construction, operation (including maintenance) and decommissioning of the Springwell Solar Farm (herein the Proposed Development) upon air quality. An air quality Environmental Statement (ES) chapter (**ES Volume 1, Chapter 6: Air Quality [EN010149/APP/6.1]**) has been prepared based on this assessment. The full description of the Proposed Development is provided within **ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1]**.

2. The Order Limits and surroundings

2.1.1. The area of land required for the construction, operation and maintenance, and decommissioning of the Proposed Development is shown on **ES Volume 2, Figure 1.2: Order Limits [EN010149/APP/6.2]**. This includes land required for temporary and permanent uses.

2.1.2. The Order Limits shown on **ES Volume 2, Figure 1.2: Order Limits [EN010149/APP/6.2]** comprises 1,280 hectares (ha) of land. The Proposed Development is located within the administrative areas of North Kesteven District Council and Lincolnshire County Council (hereafter referred to as the 'Site').

2.1.3. The Proposed Development is described in Schedule 1 of the **Draft Development Consent Order (DCO) [EN010149/APP/3.1]** where the "authorised development" is divided into works packages. The works numbers for those packages are identified below and referred to throughout this assessment. Note that there is overlap of Work Areas in some locations and so the sum of the Order Limits is not the total of these areas:

- Work No. 1: Ground-mounted Solar PV Generating Station;
- Work No. 2: Springwell Substation Compound;
- Work No. 3: Satellite Collector Compounds;
- Work No. 4: Battery Energy Storage System (BESS) Compound;
- Work No. 5: Grid Connection Infrastructure;
- Work No. 6: Cables;
- Work No. 7: Temporary Construction Compounds;
- Work No. 8: Highways Works (Facilitate access); and
- Work No. 9: Green Infrastructure.

2.1.4. The **Draft DCO [EN010149/APP/3.1]** also allows for the following works to occur within all the works areas referred to above. This has been taken into account in the assessments undertaken in the ES:

- fencing, gates, boundary treatment and other means of enclosure;
- bunds, embankments, trenching and swales;
- works to the existing irrigation system and works to alter the position and extent of such irrigation system;
- surface water drainage systems, storm water attenuation systems including storage basins, oil water separators, including channelling and culverting and works to existing drainage networks;

- electrical, gas, water, foul water drainage and telecommunications infrastructure connections, diversions and works to, and works to alter the position of, such services and utilities connections;
- works to alter the course of, or otherwise interfere with, non-navigable rivers, streams or watercourses;
- works for the provision of security and monitoring measures such as CCTV columns, security cabins, lighting columns and lighting, cameras, lightning protection masts and weather stations;
- improvement, maintenance, repair and use of existing streets, private tracks and access roads;
- laying down, maintenance and repair of new internal access tracks, ramps, means of access, footpaths, permissive paths, cycle routes and roads, crossings of drainage ditches and watercourses, including signage and information boards;
- temporary footpath diversions and closures;
- landscaping and biodiversity mitigation and enhancement measures including planting;
- tunnelling, boring and drilling works;
- earthworks, site establishments and preparation works including site clearance (including vegetation removal, demolition of existing buildings and structures); earthworks (including soil stripping and storage and site levelling) and excavations; the alteration of the position of services and utilities; and works for the protection of buildings and land; and
- other works to mitigate any adverse effects of the construction, maintenance, operation or decommissioning of the authorised development.

3. Legislation framework, planning policy and guidance

3.1. Legislation

Air quality strategy

3.1.1. United Kingdom (UK) air quality policy is published under the umbrella of the Environment Act 1995 **[Ref. 1]**, Part IV and specifically Section 80, the National Air Quality Strategy. The latest *Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working Together for Clean Air*, published in July 2007 **[Ref. 2, 3]** sets air quality standards and objectives for ten key air pollutants to be achieved between 2003 and 2020.

3.1.2. The Clean Air Strategy 2019 **[Ref. 4]** supersedes the policies outlined in the 2007 strategy and aims to have a more joined-up approach, outlining actions the Government plans to take to reduce emissions from transport, homes, agriculture and industry. However the air quality objectives remain as previously detailed within the 2007 strategy.

Air quality standards

3.1.3. The Air Quality Standards in the UK are derived from European Commission directives and are adopted into English law via the Air Quality (England) Regulations 2000 **[Ref. 5]** and Air Quality (England) Amendment Regulations 2002 **[Ref. 6]**. The Air Quality Limit Values Regulations 2003 **[Ref. 7]** and subsequent amendments implement the Air Quality Framework Directive into English Law. Directive 2008/50/EC **[Ref. 8]** was translated into UK law in 2010 via the Air Quality Standards Regulations 2010 **[Ref. 9]**. The Air Quality Standards Regulations 2016 **[Ref. 10]** amend the Air Quality Standards Regulations 2010 **[Ref. 9]** in 2016.

3.1.4. The relevant air quality standards to England and Wales to protect human health are summarised in **Table 3.1**.

Table 3.1 Air quality standards relevant to the Proposed Development

Substance	Averaging period	Exceedances allowed per year	Ground level concentration limit (µg/m^3)
Nitrogen dioxide (NO_2)	1 calendar year	-	40
	1 hour	18	200
Fine particles (PM_{10})	1 calendar year	-	40
	24 hours	35	50
Fine particles ($PM_{2.5}$)	1 calendar year	-	20

The Environment Act 1995

3.1.5. These objectives are to be used in the review and assessment of air quality by local authorities under Section 82 of the Environment Act 1995 **[Ref. 1]**. If exceedances are measured or predicted through the review and assessment process, the local authority must declare an Air Quality Management Area under Section 83 of the Act and must produce an Air Quality Action Plan to outline how air quality is to be improved.

The Environment Act 2021

3.1.6. The Environment Act 2021 **[Ref. 11]** amends the Environment Act 1995 **[Ref.1]** to establish the use of local air quality management frameworks in order to encourage cooperation at the local level and broaden the range of organisations that play a role in improving local air quality. Part 1 of The Environment Act requires targets to be set for fine particulate matter $PM_{2.5}$, and these were introduced in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 **[Ref. 12]**, as follows:

- $PM_{2.5}$ concentration interim target, annual mean of 12µg/m^3 by 2028;
- $PM_{2.5}$ exposure reduction interim target of 22% reduction compared to 2018 by 2028;
- $PM_{2.5}$ concentration binding target of annual mean of 10µg/m^3 by 2040;
- $PM_{2.5}$ exposure reduction binding target of 35% reduction compared to 2018 by 2040.

3.2. Planning Policy

3.2.1. The land use planning process is a key means of improving air quality, particularly in the long term, through the strategic location and design of new developments. Any air quality concern that relates to land use and its development can, depending on the details of the Proposed Development, be a material consideration in the determination of planning applications.

Overarching National Policy Statement for Energy (NPS EN-1)

3.2.2. Section 5.2 of the NPS EN-1 **[Ref. 13]** details the planning policy for air quality, including guidance on undertaking the Environmental Impact Assessment (EIA).

3.2.3. Paragraph 5.2.8 states that: '*Where the project is likely to have adverse effects on air quality the applicant should undertake an assessment of the impacts of the proposed project as part of the ES.*'

3.2.4. Paragraph 5.2.9 states that: '*The ES should describe:*

- *existing air quality concentrations and the relative change in air quality from existing levels;*

- *any significant air quality effects, mitigation action taken and any residual effects, distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;*
- *the predicted absolute emissions, concentration change and absolute concentrations as a result of the proposed project, after mitigation methods have been applied; and*
- *any potential eutrophication impacts.'*

3.2.5. Paragraph 5.2.10 states that: "*In addition, applicants should consider the Environment Targets (Fine Particulate Matter) (England) Regulations 2022 and associated Defra guidance.*"

3.2.6. Paragraph 5.2.11 states that: "*Defra publishes future national projections of air quality based on estimates of future levels of emissions, traffic, and vehicle fleet. Projections are updated as the evidence base changes and the applicant should ensure these are current at the point of an application. The applicant's assessment should be consistent with this but may include more detailed modelling and evaluation to demonstrate local and national impacts. If an applicant believes they have robust additional supporting evidence, to the extent they could affect the conclusions of the assessment, they should include this in their representations to the Examining Authority along with the source.*"

3.2.7. Paragraph 5.2.12 states that: "*Where a proposed development is likely to lead to a breach of any relevant statutory air quality limits, objectives or targets, or affect the ability of a noncompliant area to achieve compliance within the timescales set out in the most recent relevant air quality plan/strategy at the time of the decision, the applicant should work with the relevant authorities to secure appropriate mitigation measures to ensure that those statutory limits, objectives or targets are not breached.*"

3.2.8. Paragraph 5.2.13 states that: "*The Secretary of State should consider whether mitigation measures are needed both for operational and construction emissions over and above any which may form part of the project application. A construction management plan may help codify mitigation at this stage. In doing so the Secretary of State should have regard to the Air Quality Strategy in England, or the Clean Air Plan for Wales in Wales, or any successors to these and should consider relevant advice within Local Air Quality Management guidance and $PM_{2.5}$ targets guidance.*"

3.2.9. Paragraph 5.2.14 states that: "*The mitigations identified in Section 5.14 on traffic and transport impacts will help mitigate the effects of air emissions from transport.*"

3.2.10. Paragraph 5.2.15 states that: "*Many activities involving air emissions are subject to pollution control. The considerations set out in Section 4.12 on the interface between planning and pollution control therefore apply. The Secretary of State must also consider duties under other legislation including duties under*

the Environment Act 2021 in relation to environmental targets and have regard to policies set out in the Government's Environmental Improvement Plan 2023."

3.2.11. Paragraph 5.2.16 states that: "*The Secretary of State should give air quality considerations substantial weight where a project would lead to a deterioration in air quality. This could for example include where an area breaches any national air quality limits or statutory air quality objectives. However, air quality considerations will also be important where substantial changes in air quality levels are expected, even if this does not lead to any breaches of statutory limits, objectives or targets.*"

3.2.12. Paragraph 5.2.17 states that: "*The Secretary of State should give air quality considerations substantial weight where a project is proposed near a sensitive receptor site, such as an education or healthcare facility, residential use or a sensitive or protected habitat.*"

3.2.13. Paragraph 5.2.18 states that: "*Where a project is proposed near to a sensitive receptor site for air quality, if the applicant cannot provide justification for this location, and a suitable mitigation plan, the Secretary of State should refuse consent.*"

3.2.14. Paragraph 5.2.19 states that: "*In all cases, the Secretary of State must take account of any relevant statutory air quality limits, objectives and targets. If a project will lead to non-compliance with a statutory limit, objective or target the Secretary of State should refuse consent.*"

3.2.15. Section 5.7 of the NPS EN-1 **[Ref. 13]** details the planning policy for dust.

3.2.16. Paragraph 5.7.5 states that: "*The applicant should assess the potential for insect infestation and emissions of odour, dust, steam, smoke, and artificial light to have a detrimental impact on amenity, as part of the ES.*"

3.2.17. Paragraph 5.7.6 states that: "*In particular, the assessment provided by the applicant should describe:*

- *the type, quantity and timing of emissions*
- *aspects of the development which may give rise to emissions*
- *premises or locations that may be affected by the emissions*
- *effects of the emission on identified premises or locations*
- *measures to be employed in preventing or mitigating the emissions.*"

3.2.18. Paragraph 5.7.7 states that: "*The applicant is advised to consult the relevant local planning authority and, where appropriate, the EA about the scope and methodology of the assessment.*"

3.2.19. Paragraph 5.7.8 states that: "*Mitigation measures may include one or more of the following:*

- *engineering: prevention of a specific emission at the point of generation; control, containment and abatement of emissions if generated*
- *lay-out: adequate distance between source and sensitive receptors; reduced transport or handling of material*
- *administrative: limiting operating times; restricting activities allowed on the site; implementing management plans.*"

3.2.20. Paragraph 5.7.9 states that: "*Construction should be undertaken in a way that reduces emissions, for example the use of low emission mobile plant during the construction, and demolition phases as appropriate, and consideration should be given to making these mandatory in Development Consent Order requirements.*"

3.2.21. Paragraph 5.7.10 states that: "*Demolition considerations should be embedded into designs at the outset to enable demolition techniques to be adopted that remove the need for explosive demolition.*"

3.2.22. Paragraph 5.7.12 states that: "*The Secretary of State should satisfy itself that:*

- *an assessment of the potential for artificial light, dust, odour, smoke, steam and insect infestation to have a detrimental impact on amenity has been carried out*
- *that all reasonable steps have been taken, and will be taken, to minimise any such detrimental impacts.*"

National Planning Policy Framework

3.2.23. In December 2023, the revised National Planning Policy Framework **[Ref. 14]** was published, superseding the previous September 2023 National Planning Policy Framework with immediate effect. The National Planning Policy Framework includes a presumption in favour of sustainable development.

3.2.24. Section 15 of the National Planning Policy Framework deals with Conserving and Enhancing the Natural Environment, and states that the intention is that the planning system should prevent '*development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability*' and goes on to state that '*new development **[**should be**]** appropriate for its location*' and '*the effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account.*'

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

Central Lincolnshire Local Plan (adopted April 2023)

3.2.26. North Kesteven District Council policies for managing developments are laid out in the Central Lincolnshire Local Plan **[Ref. 15]** which include North Kesteven District Council policies relating to air quality. Policy S14 Renewable Energy states the following:

'*The Central Lincolnshire Joint Strategic Planning Committee is committed to supporting the transition to a net zero carbon future and will seek to maximise appropriately located renewable energy generated in Central Lincolnshire (such energy likely being wind and solar based).*

Proposals for renewable energy schemes, including ancillary development, will be supported where the direct, indirect, individual and cumulative impacts on the following considerations are, or will be made, acceptable. To determine whether it is acceptable, the following tests will have to be met:

……

iii. The impacts are acceptable on the amenity of sensitive neighbouring uses (including local residents) by virtue of matters such as noise, dust, odour, shadow flicker, air quality and traffic;

……'

3.2.27. In addition, Policy S53 Design and Amenity states the following:

'*All development, including extensions and alterations to existing buildings, must achieve high quality sustainable design that contributes positively to local character, landscape and townscape, and supports diversity, equality and access for all.*

……

All development proposals will be assessed against, and will be expected to meet the following relevant design and amenity criteria. All development proposals will:

……

7. Uses

……

c) Not result in adverse noise and vibration taking into account surrounding uses nor result in adverse impacts upon air quality from odour, fumes, smoke, dust and other sources.'

3.3. Guidance

Local Air Quality Management Technical Guidance

3.3.1. The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their air quality review and assessment work. This guidance, referred to in this document as the Local Air Quality Management Technical Guidance ('Local Air Quality Management Technical Guidance 22') **[Ref. 16]**.

Land-Use Planning & Development Control: Planning for Air Quality

3.3.2. Environmental Protection UK and the Institute of Air Quality Management (IAQM) jointly published a revised version of the guidance note 'Land-Use Planning & Development Control: Planning for Air Quality' in 2017 (herein the 'Environmental Protection UK-IAQM 2017 guidance') **[Ref. 17]** to facilitate consideration of air quality within local development control processes. It provides a framework for air quality considerations, promoting a consistent approach to the treatment of air quality issues within development control decisions.

3.3.3. The guidance includes methods for undertaking an air quality assessment and an approach for assessing the significance of effects. The guidance note is widely accepted as an appropriate reference method for this purpose.

Guidance on the Assessment of Dust from Demolition and Construction

3.3.4. The IAQM published a guidance document on the assessment of construction phase impacts (herein the 'IAQM 2024 construction dust guidance') **[Ref. 18]**. The guidance was produced to provide advice to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM_{10} impacts on

public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.

Non-Road Mobile Machinery Practical Guide V.6

3.3.5. The Greater London Authority published a revised version of the guidance 'Non-Road Mobile Machinery Practical Guide V.6' **[Ref. 19]** in 2024 which provides guidance on the London non-road mobile machinery Low Emissions Zone, including the processes and procedures that must be in place on all development sites to comply with the policy.

Design Manual for Roads and Bridges LA 105 Air Quality

3.3.6. Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 20]** was published by National Highways in November 2019 and sets out the requirements for assessing and reporting the effects of highway projects on air quality.

4. Assessment Scope

4.1. Overall approach

4.1.1. The approach taken for assessing the potential air quality impacts of the Proposed Development may be summarised as follows:

- baseline characterisation of local air quality;
- qualitative assessment of the construction and decommissioning phase of the Proposed Development;
- qualitative assessment of the operational phase of the Proposed Development;
- cumulative impact assessment; and
- recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised.

4.2. Baseline characterisation

4.2.1. Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air. These substances are emitted by various sources, including road traffic, industrial, domestic, agricultural and natural sources.

4.2.2. A desk-based study has been undertaken including a review of monitoring data available from Northern Kesteven District Council and estimated background data from the Local Air Quality Management Support website maintained by Defra. Consideration has also been given to potential sources of air pollution and the presence of air quality management areas.

4.3. Construction and decommissioning phases assessment methodology

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

4.3.1. Construction and decommissioning works for the Proposed Development have the potential to lead to the release of fugitive dust and particulate matter. An assessment of the likely significant effects of construction and decommissioning phases dust and particulate matter at sensitive receptors has therefore been undertaken following the IAQM 2024 construction dust guidance **[Ref. 18]**.

4.3.2. Three separate dust impacts were considered:

- annoyance due to dust soiling;
- the risk of health effects due to an increase in exposure to PM_{10}; and
- harm to ecological receptors.

4.3.3. In order to assess the potential impacts of construction and decommissioning, activities are divided into four types:

- demolition;
- earthworks;
- construction; and
- trackout (defined as the transport of dust and dirt from the construction/demolition sites onto public road network, where it may be deposited and then re-suspended by vehicles using the network).

4.3.4. The risk of dust and PM_{10} arising to cause disamenity and/or health or ecological impacts was based on an assessment of likely emissions magnitude and the sensitivity of the surrounding environment. The risk category may be different for each of the four construction activities.

4.3.5. **Appendix 1: Construction Dust Assessment Methodology** of this report sets out the construction dust assessment methodology in detail as per the IAQM 2024 construction dust guidance **[Ref. 18]**. Once the level of risk has been determined, then site-specific mitigation proportionate to the level of risk can be identified (as detailed in **Section 7** of this assessment).

4.3.6. The Magic Map application available online by Defra **[Ref. 21]** was used to identify designated sites near the Site.

4.3.7. In the absence of any recommended guidance on the assessment of construction plant, the Non-Road Mobile Machinery Practical Guide **[Ref. 19]** has been adopted, which sets out the type of plant which is likely to have effects on air quality based on the size of plant. Whilst this guidance is used in London, taking account of the stricter emission limits set out by the Greater London Authority, it is considered robust for use for this assessment. The construction and decommissioning plant were then considered assessed against the IAQM 2024 construction dust guidance **[Ref. 18]** methodology which states "consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur".

Road traffic exhaust emissions during construction and decommissioning phases

4.3.8. Exhaust emissions from construction and decommissioning phase vehicles may have an impact on local air quality adjacent to the routes used by these vehicles to access the Site and in the vicinity of the Site itself. A qualitative screening level assessment against the Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]** screening criteria has been undertaken to assess the impacts on air quality due to construction and decommissioning phase traffic. **Table 4.1** below presents the Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]** screening criteria.

Table 4.1 Indicative criteria for requiring an air quality assessment (from Environmental Protection UK-IAQM 2017 Guidance)

The development will:	Indicative criteria to proceed to an air quality assessment
Cause a significant change in Light Duty Vehicle traffic slows on local roads with relevant receptors	A change of Light Duty Vehicle flows of: -more than 100 Annual Average Daily Traffic within or adjacent to an Air Quality Management Area more than 500 Annual Average Daily Traffic elsewhere.
Cause a significant change in Heavy Duty Vehicle flows on local roads with relevant receptors	A Change of Heavy Duty Vehicle flows of: -more than 25 Annual Average Daily Traffic within or adjacent to an AQMA -more than 100 Annual Average Daily Traffic elsewhere.

4.3.9. The Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 20]** sets out the requirements for assessing and reporting the effects of highway projects on air quality. The guidance states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the air quality assessment:

- daily traffic flow changes of 1,000 Annual Average Daily Traffic or more; or
- Heavy Duty Vehicle flow changes of 200 Annual Average Daily Traffic or more.

4.3.10. Internationally, nationally and locally designated sites of ecological conservation importance on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity (known as designated habitats[1]) within 200m of the affected road network shall be included in the air quality assessment.

4.3.11. A qualitative assessment against the Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 20]** screening criteria above has been undertaken to assess the impacts of the Proposed Development on Local Wildlife Sites (LWSs) due to construction and decommissioning phases traffic.

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

4.4. Operational phase assessment methodology

Dust and particulate matter emissions during operational phase (including the operation of the Proposed Development and maintenance activities)

4.4.1. Given the nature of the Proposed Development, no site activities resulting in significant emissions to air quality are anticipated during operation. Therefore this assessment has not considered dust and particulate matter emissions from the operation of the Proposed Development any further.

4.4.2. No significant combustion sources such as combined heat and power plant or biomass boilers are proposed as part of the scheme. Therefore this assessment has not considered emission related to combustion plant any further.

Road traffic exhaust emissions during operational phase (including maintenance)

4.4.3. The Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]** and Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 20]** provide indicative criteria for when an air quality assessment is likely to be required. If none of the criteria are exceeded, it is considered unlikely that there will be any significant impacts on air quality during the operational phase.

4.4.4. Given the nature of the Proposed Development, there will only be limited movement of vehicles to the site for maintenance. A screening level assessment against the Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]** and Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 20]** screening criteria has been undertaken in this assessment.

5. Baseline air quality characterisation

5.1. Emissions sources and key air pollutants

5.1.1. The Site is located in close proximity to the settlements of Blankney, Scopwick, Kirkby Green, and Ashby de la Launde. The settlements of Metheringham, Ruskington, Navenby, and Digby are also located within 3km of the Order Limits as its nearest point. The Royal Air Force Digby Station is located adjacent to the Order Limits, to the north of Springwell West.

5.1.2. The main source of air pollution is likely to be road traffic emissions. The principal pollutants relevant to this assessment are considered to be NO_2, PM_{10} and $PM_{2.5}$, generally regarded as the most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions.

5.2. Presence of Air Quality Management Areas

5.2.1. North Kesteven District Council has not declared any Air Quality Management Area. Therefore, the Proposed Development is not located within an Air Quality Management Area.

5.3. Local authority air quality monitoring data

5.3.1. According to the North Kesteven District Council 2023 air quality annual status report **[Ref. 22]** , North Kesteven District Council undertook non-automatic NO_2 diffusion tube monitoring at 22 locations during 2022. There was no automatic air quality monitoring station within North Kesteven District Council area in 2022, and therefore PM_{10} and $PM_{2.5}$ monitoring data are not available.

5.3.2. The nearest monitoring location to the study area is a roadside NO_2 diffusion tube location (North Kesteven District Council reference: Ruskington) situated approximately 4.3 km away from the Proposed Development. The measured annual average NO_2 concentrations at this diffusion tube site, for years 2018 - 2022, ranged between 10.4 µg/m^3 and 14.7 µg/m^3, well below the annual mean NO_2 Air Quality Objective of 40µg/m^3.

5.4. Local Air Quality Management background data

5.4.1. Estimated background air quality data available from the Local Air Quality Management website operated by Defra **[Ref. 23]**, may also be used to establish likely background air quality conditions at the Site.

5.4.2. This website provides estimated annual average background concentrations of NO_2, PM_{10} and $PM_{2.5}$ on a 1 km^2 grid basis. **Table 5.1** reproduces estimated annual average background concentrations for the Local Air Quality

Management background map grid square containing the Proposed Development for years 2022, 2024-2030.

5.4.3. No exceedances of the NO_2, PM_{10} or $PM_{2.5}$ Air Quality Standards are predicted. Background concentrations are in general predicted to fall with time, because of the reduction in emissions to air resulting from new vehicle technology (for example, improved engine performance, electric vehicles and improvement in fuel quality). Therefore, background concentrations in future years are not expected to exceed their respective annual mean standards.

Table 5.1 Defra Local Air Quality Management estimated background annual average NO_2, PM_{10}, $PM_{2.5}$ concentrations at the Site (from 2018 base map)

Assessment year	**Estimated annual average pollutant concentrations derived from the Local Air Quality Management support website**		
	Annual average NO_2 ($\mu g/m^3$)	**Annual average PM_{10} ($\mu g/m^3$)**	**Annual average $PM_{2.5}$ ($\mu g/m^3$)**
2022	6.86	15.40	8.27
2024 (current year)	6.45	15.11	8.04
2025	6.25	14.97	7.92
2026	6.18	14.95	7.91
2027 (proposed construction commencement)	6.10	14.94	7.90
2028	6.03	14.92	7.89
2029	5.97	14.91	7.88
2030	5.90	14.89	7.87
Air Quality Standard (applies only to the current periods)	40	40	20

Note: Presented concentrations for 1 km^2 grid centred on 506500, 356500; approximate centre of the Site is 506382, 356551. Defra Local Air Quality Management background map only covers the years 2018-2030.

6. Assessment of impacts

6.1. Construction and decommissioning phases assessment

6.1.1. Atmospheric emissions from construction and decommissioning activities will depend on a combination of the potential for emissions (the type of activity and prevailing conditions) and the effectiveness of control measures. In general terms, there are two sources of emissions that will need to be controlled to minimise the potential for adverse environmental effects:

- dust emissions from site activities; and
- exhaust emissions from site plant, equipment and vehicles.

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

Dust emissions from Site activities

6.2.1. Dust emissions arising from construction and decommissioning activities are likely to be variable in nature and will depend upon the type and extent of the activity, soil type and moisture content, road surface conditions and weather conditions. Periods of dry weather combined with higher than average wind speeds have the potential to generate more dust.

6.2.2. The construction and decommissioning activities anticipated as part of the Proposed Development that are often the most significant potential sources of fugitive dust emissions are:

- demolition;
- earthworks comprising of levelling, construction of foundations, haulage, tipping, stockpiling, landscaping and tree removal;
- construction of Proposed Development and hard landscaped areas; and
- trackout, involving the movement of vehicles over surfaces where muddy materials have been transferred off-site (for example, on to public highways).

Dust emission magnitude

6.2.3. With reference to the IAQM 2024 construction dust guidance **[Ref. 18]** criteria outlined in **Appendix 1: Construction Dust Assessment Methodology** of this assessment, the dust emissions magnitude for demolition, earthworks, construction and trackout activities are summarised in **Table 6.1**.

Table 6.1 Summary of dust emission magnitudes (before mitigation)

Activity	Evaluation of the effects	Dust emission magnitude
Demolition (during decommissioning phase)	- The total building volume to be demolished is assumed to be 12,000 m^2-75,000 m^2. - Assume on-site crushing and screening will take place. - The height of demolition activities above ground is estimated to be >12 m. - Demolition materials are potentially dusty. - Demolition is anticipated to take place all year around.	Medium
Demolition (during construction phase	- The total building volume to be demolished is assumed to be <12,000 m^2.	Small
Earthworks	- Total site area is >110,000 m^2. - The soil type of the site is generally sandy clay. - The number of heavy earthmoving vehicles active at any one time is expected to be >10. - The height of stockpiled materials is assumed to be >6 m.	Large
Construction	- Total building volume is estimated to be 12,000 m^3 -75,000 m^3. - No on-site concrete batching and sandblasting is proposed. - Construction materials are considered to be potentially dusty.	Medium
Trackout	- The number of Heavy Duty Vehicle outward movements in any one day is estimated to be >50. - The surface soil type of the site is generally sandy clay. - The extent as to which vehicles are to travel on unpaved roads is assumed to be >100 m.	Large

Sensitivity of the area

6.2.4. As per the IAQM 2024 construction dust guidance **[Ref. 18]**, the sensitivity of the area takes into account a number of factors, comprising:

- the specific sensitivities of receptors in the area;

- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentration; and
- site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

6.2.5. Consideration is given to human receptors and designated sites, distances are calculated from the Order Limits and the trackout route proposed.

6.2.6. **ES Volume 2, Figures 6.1, 6.2 and 6.3 [EN010149/APP/6.2]** show maps indicating the demolition (during decommissioning phase)/earthworks/construction buffer map, demolition (during construction phase) buffer map and trackout buffer map, respectively, for identifying the sensitivity of the area. **Table 6.2** presents the determined sensitivity of the area. Construction activities are relevant up to 250 m from the Order Limits whereas trackout activities are only considered relevant up to 50 m from the edge of the road, as per the IAQM 2024 construction dust guidance **[Ref. 18]**. Only 20 m and 50 m buffers have been included for trackout for this reason.

6.2.7. Human receptors have been identified within 250 m of the Order Limits, comprising:

- settlements of Blankney;
- settlements of Scopwick;
- settlements of Kirkby Green; and
- settlements of Ashby de la Launde.

6.2.8. **ES Volume 2, Figure 6.4 [EN010149/APP/6.2]** shows the location of sensitive air quality receptors.

6.2.9. Seven designated sites, being Local Wildlife Sites (LWSs) have been identified within or adjacent to the Order Limits, comprising:

- Blankney Brick Pit LWS;
- Temple Road Verges, Welbourn to Brauncewell 2 LWS;
- A15, Slate House Farm to Dunsby Pit Plantation 1 LWS;
- A15, Green Man Road to Cuckoo Lane 2 LWS;
- Bloxholm Wood LWS/Lincolnshire Wildlife Trust reserve;
- Gorse Lane LWS; and
- Navenby Heath Road Verges LWS.

6.2.10. Location of the LWSs is presented in **ES Volume 2, Figure 6.4: Location of Sensitive Air Quality Receptors [EN010149/APP/6.2]**.

Table 6.2 Sensitivity of the area

Potential impact		Sensitivity of the area				
		Demolition (during decommissioning phase)	Demolition (during construction phase)	Earthworks	Construction	Trackout
Dust soiling	Receptor sensitivity	High	Low	High	High	Low
	Number of receptors	10-100	>1	10-100	10-100	>1
	Distance from the source	<20 m	<20 m	<20 m	<20 m	<20 m
	Sensitivity of the area	High	Low	High	High	Low
Human health	Receptor sensitivity	High	Low	High	High	Low
	Annual mean PM_{10} concentration	<24 $\mu g/m^3$	-	<24 $\mu g/m^3$	<24 $\mu g/m^3$	-
	Number of receptors	10-100	≥1	10-100	10-100	≥1
	Distance from the source	<20 m	<20 m	<20 m	<20 m	<20 m
	Sensitivity of the area	Low	Low	Low	Low	Low
Ecological	Receptor sensitivity*	Low	Low	Low	Low	Low
	Distance from the source	<50 m	>50 m	<50 m	<50 m	>50 m
	Sensitivity of the area	Low	Low	Low	Low	Low

**LWSs listed in Section 6.2.9 are considered to have a low sensitivity to dust deposition.*

Risk of dust impacts

6.2.11. The dust emission magnitude (refer to **Table 6.1**) is combined with the sensitivity of the area (refer to **Table 6.2**) to determine the risk of impacts of construction activities before mitigation; these are evaluated based on risk categories of each activity in **Appendix 1: Construction Dust Assessment Methodology** of this assessment. The risk of dust impacts from construction and decommissioning activities is identified in **Table 6.3**. Site specific mitigation measures to reduce construction and decommissioning phase impacts are defined based on this assessment in **Section 7**.

Table 6.3 Summary of the dust risk from construction activities

Potential impact	Dust risk impact				
	Demolition (during decommissioning phase)	Demolition (during construction phase)	Earthworks	Construction	Trackout
Dust soiling	Medium risk	Negligible	High risk	Medium risk	Low risk
Human health	Low risk	Negligible	Low risk	Low risk	Low risk
Ecological	Low risk	Negligible	Low risk	Low risk	Low risk

Exhaust emissions from construction and decommissioning plant

6.2.12. As set out in the Non-Road Mobile Machinery Practical Guide **[Ref. 19]**, only construction and decommissioning plant with a rated power output between 37-560 kW are likely to give rise to air quality effects. Plant sized between 37-560 kW which is likely to be used during the construction and decommissioning of the Proposed Development is likely to comprise:

- Articulated dump truck;
- Bulldozer;
- Compressor;
- Dozer;
- Dump truck (tipping fill);
- Dumper;
- Excavator;
- Grader;
- Lorry;

- Lorry with lifting boom;
- Lorry, being loaded from silo;
- Mobile telescopic crane;
- Road sweeper;
- Roller;
- Roller (rolling fill);
- Telehandler;
- Telescopic handler;
- Tipper truck;
- Tracked drilling rig with hydraulic drifter;
- Tracked excavator;
- Tractor (towing equipment);
- Vibratory roller;
- Wheeled loader; and
- Wheeled mobile crane.

6.2.13. The above plant will be used intermittently during the four-year construction programme, depending on the construction activities to be undertaken and will move across the Site as the Proposed Development is built out. Construction working hours will be from 7 a.m. to 7 p.m. Monday to Friday and from 7 a.m. to 12 p.m. Saturday. There will be no working on Sundays or Bank Holidays.

6.2.14. As detailed in **ES Volume 1, Chapter 3: Proposed Development Description[EN010149/APP/6.1]** and **ES Volume 3, Appendix 3.1: Design Parameters [EN010149/APP/6.3]**, setback distances from residential properties (a minimum 250 m), locally designated wildlife sites (a minimum 20 m) and existing woodlands (a minimum 15 m) are included within the Design Commitments which form part of the **Design Approach Document [EN010149/APP/7.3]** and will be secured as part of the DCO. These distances, as well as the temporary nature of the plant to be used, and the low levels of air pollution at the Site (refer to **Section 5.3** and **5.4**) means it is unlikely there will be a risk of emissions (either in isolation or combination) that could result in an exceedance of the Air Quality Standards. Furthermore, construction and decommissioning plant will be managed in a way which minimises the potential air quality impacts at sensitive receptor locations through measures included within the **Outline Construction Environmental Management Plan** (**oCEMP**) **[EN010149/APP/7.7]** and **Outline Decommissioning Environmental Management Plan** (**oDEMP**) **[EN010149/APP/7.13]**. Therefore, there is likely to be no significant air quality effects as a result of the construction and decommissioning plant.

6.3. Road traffic exhaust emissions during construction and decommissioning phases

6.3.1. The operation of vehicles powered by internal combustion engines results in the emission of exhaust gases containing the pollutants NO_x, PM_{10}, volatile organic compounds and carbon monoxide. The quantities emitted depend on factors such as engine type, service history, pattern of usage and fuel composition.

6.3.2. Construction and decommissioning traffic will comprise haulage/construction/decommissioning vehicles and vehicles used for workers' trips to and from the Site. The greatest impact on air quality due to emission from construction and decommissioning phase vehicles will be in areas adjacent to the application site access and nearby road network.

Construction phase traffic

6.3.3. Construction phase Annual Average Daily Traffic data (two-way trips) assumes that year of 2028 is the anticipated construction traffic peak. Construction phase traffic data is provided in **Table 6.4**.

Table 6.4 Construction phase traffic data

Link	2028 construction traffic associated with the Proposed Development	
	Light Duty Vehicles (Annual Average Daily Traffic)	Heavy Duty Vehicles (Annual Average Daily Traffic)
A15 (north of B1191)	379	130
A15 (south of B1191)	340	130
B1191 (between RAF Digby and Ashby de la Launde)	168	80
B1191 (between Scopwick and RAF Digby)	168	80
B1188 (north of Scopwick)	200	80
B1188 (south of Digby)	40	0
A15 (south of Metheringham Heath Lane)	610	130
A15 (north of Leasingham)	307	130
B1188 (south of Scopwick)	40	0
B1202	78	0
Navenby Lane	71	0
Gorse Hill Lane	637	80
Temple Road	5	30

6.3.4. The predicted construction phase Light Duty Vehicles generation slightly exceeds the Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]** screening criteria (i.e. a change of Light Duty Vehicle flows of more than 500 Annual Average Daily Traffic) on A15 (south of Metheringham Heath Lane) and Gorse Hill Lane. The predicted construction phase Heavy Duty Vehicles generation slightly exceeds the Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]** screening criteria (i.e. a change of Heavy Duty Vehicle flows of more than 100 Annual Average Daily Traffic) on A15 (north of B1191), A15 (south of B1191), A15 (south of Metheringham Heath Lane) and A15 (north of Leasingham). However, as per the review of baseline conditions in **Section 5**, the annual mean NO_2 and PM_{10} concentrations at the Site are expected to be well below the Air Quality Standards. Furthermore, there is minimal number of high sensitive receptors located close to these affected roads. The traffic effects during construction will be limited to a relatively short period at each section/phase of the Proposed Development and will be along traffic routes employed by haulage/construction vehicles and workers. It should be also noted that the Proposed Development is not predicted to cause an increase of more than 500 Annual Average Daily Traffic of Light Duty Vehicles or 100 Annual Average Daily Traffic of Heavy duty Vehicles, on any other roads. Therefore, it is considered unlikely that the additional construction phase traffic emissions as a result of the Proposed Development will cause a significant adverse effect on local air quality.

6.3.5. The Proposed Development is not predicted to generate construction traffic exceeding the Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 20]** screening criteria (i.e. Light Duty Vehicle flow changes of 1,000 Annual Average Daily Traffic or more or Heavy Duty Vehicle flow changes of 200 Annual Average Daily Traffic or more) on any construction traffic routes within 200m of the LWSs. Therefore, it is considered unlikely that the additional construction phase traffic emissions as a result of the Proposed Development will cause a significant adverse effect on the nearby LWSs.

Decommissioning phase traffic

6.3.6. Early decommissioning (20 years from opening) and decommissioning phases Annual Average Daily Traffic data (two-way trips) have been considered within this assessment (at the request of North Kesteven District Council – refer to **ES Volume 1**, **Chapter 6: Air Quality, Table 6.1 [EN010149/APP/6.1]**). Decommissioning year is assumed to be 40 years from commissioning (i.e. 2072), however, due to limitations of the Trip End Model Presentation Program, forecast dataset is only available up to 2060. Therefore, 2060 traffic data has been used in this assessment. Early decommissioning and decommissioning phases traffic data is provided in **Table 6.5**.

Table 6.5 Early decommissioning and decommissioning phases traffic data

Link	Early decommissioning (year 2050)		Decommissioning (year 2060)	
	Light Duty Vehicles (Annual Average Daily Traffic)	Heavy Duty Vehicles (Annual Average Daily Traffic)	Light Duty Vehicles (Annual Average Daily Traffic)	Heavy Duty Vehicles (Annual Average Daily Traffic)
A15 (north of B1191)	379	130	379	130
A15 (south of B1191)	340	130	340	130
B1191 (between RAF Digby and Ashby de la Launde)	168	80	168	80
B1191 (between Scopwick and RAF Digby)	168	80	168	80
B1188 (north of Scopwick)	200	80	200	80
B1188 (south of Digby)	40	0	40	0
A15 (south of Metheringham Heath Lane)	610	130	610	130
A15 (north of Leasingham)	307	130	307	130
B1188 (south of Scopwick)	40	0	40	0
B1202	78	0	78	0
Navenby Lane	71	0	71	0
Gorse Hill Lane	637	80	637	80
Temple Road	5	30	5	30

6.3.7. The predicted early decommissioning and decommissioning phases Light Duty Vehicles generation slightly exceeds the Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]** screening criteria (i.e. a change of Light Duty Vehicle flows of more than 500 Annual Average Daily Traffic) on A15 (south of Metheringham Heath Lane) and Gorse Hill Lane. The predicted early decommissioning and decommissioning phases Heavy Duty Vehicles generation slightly exceeds the Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]** screening criteria (i.e. a change of Heavy Duty Vehicle flows of more than 100 Annual Average Daily Traffic) on A15 (north of B1191), A15 (south of B1191), A15 (south of Metheringham Heath Lane) and A15 (north of Leasingham).

6.3.8. Whilst the increase in Light Duty Vehicle and Heavy Duty Vehicle slightly exceed the Environmental Protection UK-IAQM criteria, based on the review of baseline conditions in **Section 5**, background concentrations in future years are not expected to exceed their respective annual mean standards. There are minimal highly sensitive receptors located close to these affected roads and the traffic effects during early decommissioning and decommissioning will be limited to a relatively short period at each section/phase of the Proposed Development and will be along traffic routes employed by haulage/decommissioning vehicles and workers. Furthermore, the Proposed Development is not predicted to cause an increase of more than 500 Annual Average Daily Traffic of Light Duty Vehicles or 100 Annual Average Dilay Traffic of Heavy Duty Vehicles, on any other roads. Therefore it is considered unlikely that the additional early decommissioning or decommissioning phases traffic emissions as a result of the Proposed Development during will cause a significant adverse effect on local air quality.

6.3.9. The Proposed Development is not predicted to generate traffic exceeding the Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 20]** screening criteria (i.e. Light Duty Vehicle flow changes of 1,000 Annual Average Daily Traffic or more or Heavy Duty Vehicle flow changes of 200 Annual Average Daily Traffic or more) on any decommissioning traffic routes within 200 m of the LWSs during early decommissioning and decommissioning phases. Therefore, it is considered unlikely that the additional early decommissioning or decommissioning phases traffic emissions as a result of the Proposed Development will cause a significant adverse effect on the nearby LWSs.

6.4. Operational phase assessment

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

6.5. Road traffic exhaust emissions during operational phase (including maintenance)

6.5.1. Operational (including maintenance) phase Annual Average Daily Traffic data (two-way trips) is provided in **Table 6.6**.

Table 6.6 Operational phase traffic data

Link	Operational traffic associated with the Proposed Development	
	Light Duty Vehicles (Annual Average Daily Traffic)	Heavy Duty Vehicles (Annual Average Daily Traffic)
A15 (north of B1191)	10	0
A15 (south of B1191)	10	0
B1191 (between RAF Digby and Ashby de la Launde)	10	0
B1191 (between Scopwick and RAF Digby)	10	0
B1188 (north of Scopwick)	10	0
B1188 (south of Digby)	10	0
A15 (south of Metheringham Heath Lane)	10	0
A15 (north of Leasingham)	10	0
B1188 (south of Scopwick)	10	0
B1202	10	0
Navenby Lane	10	0
Gorse Hill Lane	10	0
Temple Road	10	0

6.5.2. The Proposed Development is not expected to generate traffic exceeding the Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]** and Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 20]** screening criteria once operational and therefore, it is considered that further assessment of the operational (including maintenance) phase traffic emissions is not required. The increased road traffic emissions resulting from the Proposed Development are expected to have an negligible impact on air quality and nearby LWSs during the operational (including maintenance) phase. The effect of road traffic exhaust emissions during operational phase without mitigation measures is considered to be not significant.

7. Mitigation measures

7.1. Construction and decommissioning phases

Dust emissions from Site activities

7.1.1. The dust emitting activities outlined in **Section 6.2** can be effectively controlled by appropriate dust control measures (described in **Table 7.1** below) and any adverse effects can be greatly reduced or eliminated. The mitigation measures described in **Table 7.1** will be used to control potential dust and particulate matter emissions during the construction and decommissioning phases. Mitigation measures are documented within and will be secured by the **oCEMP [EN010149/APP/7.7]** and the **oDEMP [EN010149/APP/7.13]**.

7.1.2. The dust risk categories identified have been used to define appropriate, site-specific mitigation measures for the Proposed Development, which are divided into general measures and measures specific to demolition, earthworks, construction and trackout. Depending on the level of risk, different mitigation measures are assigned, in accordance with the IAQM 2024 construction dust guidance **[Ref. 18]**. For general mitigation measures, the highest risk assessed has been applied.

Table 7.1 Dust emissions mitigation measures

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on Site.
- Display the name and contact details of people accountable for air quality and dust issues with respect to the Proposed Development.
- Implement a CEMP, which includes measures to control all emissions, to be approved by North Kesteven District Council and Lincolnshire County Council.

Site management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Arrangements will be made for information to be shared with North Kesteven District Council and Lincolnshire County Council, if requested.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site and the action taken to resolve the situation in the logbook.

Monitoring

- Undertake regular on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to North Kesteven District Council and Lincolnshire County Council when asked. Monitoring should, where possible, include regular dust soiling checks of surfaces

such as street furniture, cars and window sills within 100 m of the Order Limits in agreement with the relevant homeowners/landowners.

- Carry out regular site inspections to monitor compliance with the Dust Management Plan, record inspection results, and make an inspection log available to North Kesteven District Council and Lincolnshire County Council when asked.
- Increase the frequency of Site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- During the construction and decommissioning phases, agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with North Kesteven District Council and Lincolnshire County Council. Where possible commence baseline monitoring at least three months before work commences on site.

Preparing and maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Suitable dust suppression or containment is used around sites or specific operations.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating vehicle/machinery and sustainable travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Impose and signpost a maximum speed limit of 15 miles per hour on surfaced and 10 miles per hour on unsurfaced haul roads and work areas.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel plan that supports and encourages sustainable travel.

Construction operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.

- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on Site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste management

- **Avoid bonfires or burning of waste material.**

Measures specific to demolition (during decommissioning phase)

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

Measures specific to demolition (during construction phase)

- Negligible impact is anticipated, no mitigation measure is required.

Measures specific to earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Measures specific to construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures specific to trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Site.
- Avoid any dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Record all inspections of haul routes and any subsequent action in a site logbook.
- Implement a wheel washing system.

Exhaust emissions from construction and decommissioning plant

7.1.3. Any emissions from Non-Road Mobile Machinery can be reduced by ensuring that any plant used on-site comply with the NO_x, particulate matter and carbon monoxide emissions standards specified in the Regulation (EU) 2016/1628 of the European Parliament and of the Council (as amended) **[Ref. 24]** as a minimum, where they have net power of between 37kW and 560kW. The emissions standards vary depending on the net power the engine produces. The emissions controls are outlined and secured within the **oCEMP [EN010149/APP/7.7]** and the **oDEMP [EN010149/APP/7.13]** which have been prepared and are submitted in the support of the DCO Application.

Road traffic exhaust emissions during construction and decommissioning phases

7.1.4. Any effects on air quality from traffic during construction and decommissioning of the Proposed Development will be temporary (i.e. during the construction/decommissioning period only) and can be suitably controlled by the employment of mitigation measures (described in **Table 7.1** above and documented within the **Outline Construction Traffic Management Plan** (**oCTMP**)) **[EN010149/APP/7.8]** which has been prepared and is submitted in support of the DCO Application.

7.2. Operational phase

Road traffic exhaust emissions during operational phase (including maintenance)

7.2.1. No specific operational phase mitigation measures are required. Nevertheless, best practice mitigation measures can be considered to further reduce any residual effects on air quality. An **Outline Operational Environmental Management Plan** (**oOEMP**) **[EN010149/APP/7.10]** has been prepared and is submitted in support of the DCO Application.

8. Residual effects

8.1. Construction and decommissioning phases

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

8.1.1. Construction and decommissioning effects are not significant provided that appropriate dust control and construction and decommissioning phases mitigation measures are applied as listed in the mitigation measures section (refer to **paragraph 7.1.1 to 7.1.3**). Residual effect is therefore **not significant.**

Road traffic exhaust emissions during construction and decommissioning phases

8.1.2. Any effects on air quality from traffic during construction and decommissioning of the Proposed Development will be temporary (i.e. during the construction/decommissioning period only) and can be suitably controlled by the employment of mitigation measures (refer to **paragraph 7.1.4**). Residual effect is therefore **not significant.**

8.2. Operational phase

Road traffic exhaust emissions during operational phase (including maintenance)

8.2.1. The Proposed Development is not anticipated to have a significant effect on local air quality. Nevertheless, best practice mitigation measures documented within the **oOEMP [EN010149/APP/7.10]** can be considered to further reduce any residual effects on air quality. Residual effect of the Proposed Development on air quality whilst it is in operation is considered to be **not significant.**

9. Cumulative effects

9.1. Construction and decommissioning phases

9.1.1. The phasing/commencement of any other committed (i.e. permitted and proposed) developments in the locality could potentially result in a scenario where a number of other construction sites are in operation at the same time as the Proposed Development, and concurrently generating emissions to air.

9.1.2. The IAQM 2024 construction dust guidance **[Ref. 18]** states that beyond 250 m from a site boundary, the risk of impact from activities carried out on-site during the construction phase can be considered to be negligible. There are no committed developments and planned, permitted or operational solar farms within 250 m of the Order Limits apart from the National Grid Navenby Substation, Heath Road, Scopwick residential development (23/1283/FUL) and RAF Digby proposed office and training building development (24/0377/EIAS). All permitted developments are expected to agree and follow site-specific CEMP and CTMP that will adequately control dust emissions, construction plant exhaust emissions and road traffic exhaust emissions from construction. Therefore, with appropriate mitigation measures in place, the construction phase cumulative effect is considered to be **not significant.**

9.1.3. As per construction phase impacts, all permitted developments are expected to agree and follow site specific DEMP during decommissioning phase, that will adequately control dust emissions, decommissioning plant exhaust emissions and road traffic exhaust emission from decommissioning. Therefore, with appropriate mitigation measures in place, the decommissioning phase cumulative effect is considered to be **not significant.**

9.2. Operational phase

9.2.1. The Proposed Development and other existing development and/or approved developments are not predicted to generate traffic exceeding the relevant screening criteria (i.e. Environmental Protection UK-IAQM 2017 guidance **[Ref. 17]**, and Design Manual for Roads and Bridges LA 105 Air Quality **[Ref. 20]** screening criteria) once operational. All permitted developments are expected to follow best practice mitigation measures to minimise emissions to air. Therefore, exceedance of the relevant Air Quality Standards is considered unlikely and cumulative operational phase effects are considered **not significant.**

10. References

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Appendix 1: Construction dust assessment methodology

Construction dust assessment methodology

10.1.1. This appendix contains the construction dust assessment methodology used in the assessment.

10.1.2. To assess the potential impacts, construction activities are divided into demolition, earthworks, construction and trackout. The descriptors included in this section are based upon the IAQM 2024 construction dust guidance **[Ref. 19]**. The assessment follows the steps recommended in the guidance.

Step 1: Screen the requirement for assessment

10.1.3. The first step is to screen out the requirement for a construction dust assessment, this is usually a somewhat conservative level of screening. An assessment is usually required where there is:

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

Step 2A: Defining the Potential Dust Emission Magnitude

Demolition

10.1.4. The dust emission magnitude category for demolition is varied for each site in terms of timing, building type, duration and scale. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total building volume >75,000 m^3, potentially dusty construction material, on-site crushing and screening, demolition activities >12 m above ground level;
- **Medium**: Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6 m – 12 m above ground level; and
- **Small**: Total building volume <12,000 m^3, construction material with low potential for dust release, demolition activities <6 m above ground, demolition during wetter months.

Earthworks

10.1.5. The dust emission magnitude category for earthworks is varied for each site in terms of timing, geology, topography and duration. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total site area >110,000 m^2, potentially dusty soil type (e.g. clay), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height;
- **Medium**: Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 3 m – 6 m in height; and
- **Small**: Total site area < 18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height.

Construction

10.1.6. The dust emission magnitude category for construction is varied for each site in terms of timing, building type, duration, and scale. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: Total building volume >75,000 m^3, on site concrete batching, sandblasting;
- **Medium**: Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- **Small**: Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout

10.1.7. Factors which determine the dust emission magnitude class of trackout activities are vehicle size, vehicle speed, vehicle number, geology and duration. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: >50 Heavy Duty Vehicle (>3.5 t) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m;
- **Medium**: 20 – 50 Heavy Duty Vehicle (>3.5 t) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100 m; and
- **Small**: <20 Heavy Duty Vehicle (>3.5 t) trips in any one day, surface material with low potential for dust release, unpaved road length <50 m.

Step 2B: Defining the Sensitivity of the Area

10.1.8. The sensitivity of the area is defined for dust soiling, human health and ecosystems. The sensitivity of the area takes into account the following factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and
- Site-specific factors, such as whether here are natural shelters such as trees, to reduce the risk of wind-blown dust.

10.1.9. **Table 1** has been used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

Table 1 Scale of receptors sensitivity

Sensitivity of receptor	Dust soiling	Humen receptors	Ecological receptors
High	Users can reasonably expect an enjoyment of a high level of amenity. The appearance, aesthetics or value of their property would be diminished by soiling. The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.	Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Examples include residential properties, hospitals, schools and residential care homes should also be considered as having equal sensitivity to	Locations with an international or national designation and the designated features may be affected by dust soiling. Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain published by Joint Nature Conservation Committee **[Ref. 25]**. Examples include a Special Area of Conservation designated for acid heathlands or a local site designated for

Sensitivity of receptor	Dust soiling	Humen receptors	Ecological receptors
	Examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.	residential areas for the purposes of this assessment.	lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home. The appearance, aesthetics or value of their property could be diminished by soiling. The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Examples include parks and places of work.	Locations where the people exposed are workers and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. Locations with a national designation where the features may be affected by dust deposition. Example is a Site of Special Scientific Interest with dust sensitive features.

Sensitivity of receptor	Dust soiling	Humen receptors	Ecological receptors
Low	The enjoyment of amenity would not reasonably be expected. Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.	Locations where human exposure is transient. Examples include public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition. Example is a Local Nature Reserve with dust sensitive features.

10.1.10. Based on the sensitivities assigned of the different types of receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification for the area can be defined for each. **Tables 2** to **4** indicate the method used to determine the sensitivity of the area for dust soiling, human health and ecological impacts, respectively.

10.1.11. For trackout, as per the IAQM 2024 construction dust guidance **[Ref. 19]**, it is only considered necessary to consider trackout impacts up to 50m from the edge of the road.

Table 2 Sensitivity of the area to dust soiling effects on people and property

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

Table 3 Sensitivity of the area to human health impacts

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

Table 4 Sensitivity of the area to ecological impacts

Receptor sensitivity	Distances from the source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Step 2C: Defining the Risk of Impacts

10.1.12. The final step is to use both the dust emission magnitude classification with the sensitivity of the area, to determine a potential risk of impacts for each construction activity, before the application of mitigation. **Tables 5** to **8** indicate the method used to assign the level of risk for each construction activity.

Table 5 Risk of dust impacts from demolition

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 6 Risk of dust impacts from earthworks

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 7 Risk of dust impacts from construction

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 8: Risk of dust impacts from trackout

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

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