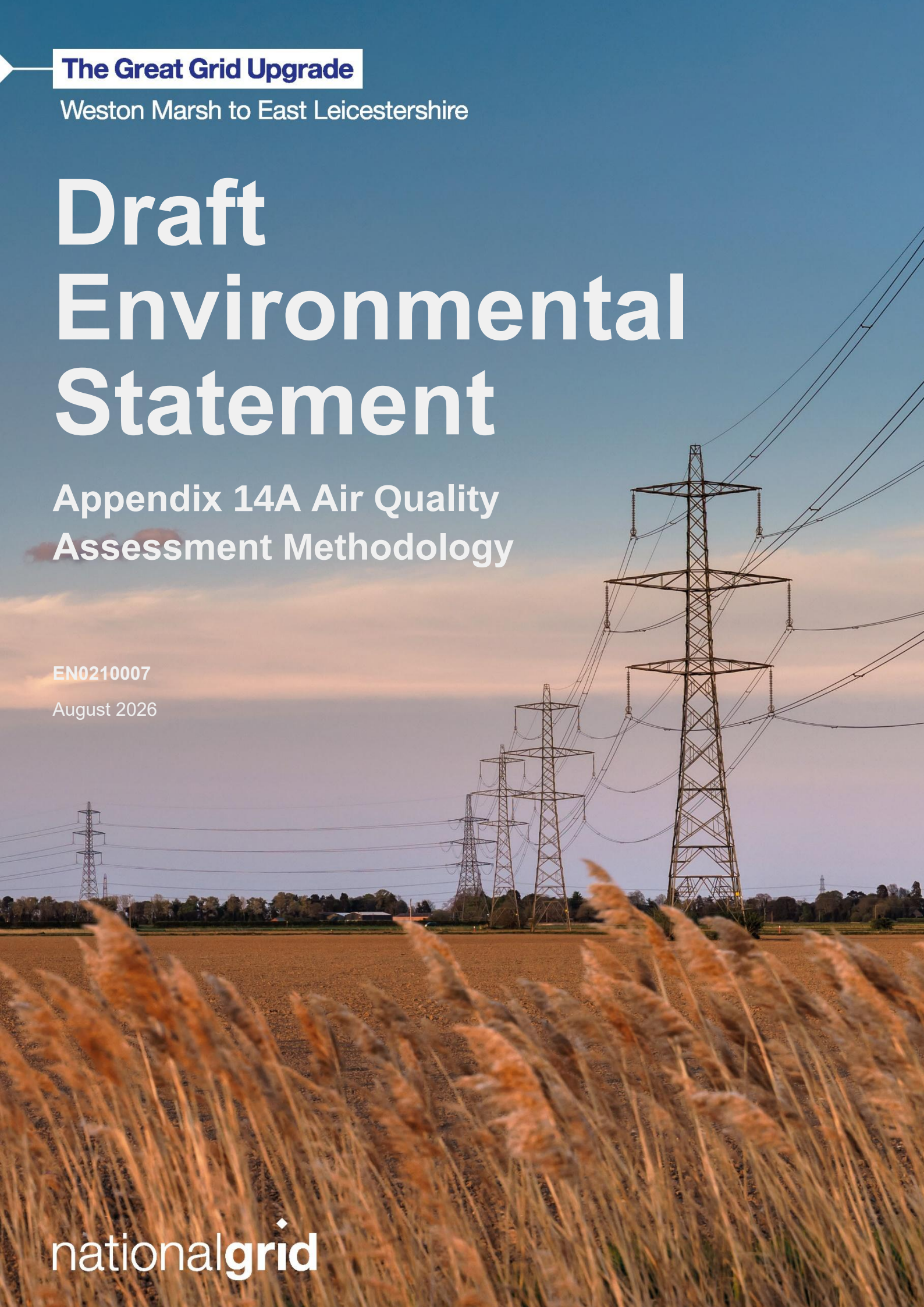




The Great Grid Upgrade

Weston Marsh to East Leicestershire

Draft Environmental Statement

Appendix 14A Air Quality
Assessment Methodology

EN0210007

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nationalgrid

Contents

14.A	Air Quality Assessment Methodology	14A-1
14A.1	Introduction	14A-1
14A.2	Construction Dust Assessment	14A-1
14A.3	Construction Traffic	14A-8
	Table 14A.1 Dust emission magnitude	14A-3
	Table 14A.2 Sensitivity of the area to dust soiling effects	14A-4
	Table 14A.3 Sensitivity of the area to human health impacts	14A-4
	Table 14A.4 Risk of dust impacts	14A-5
	Table 14A.5 Details of human receptors	14A-8
	Table 14A.6 Details of ecological receptors	14A-9
	Image A14.1 IAQM dust assessment methodology	14A-7
	References	14A-11

14.A.Air Quality Assessment Methodology

14.A Air Quality Assessment Methodology

14A.1 Introduction

- 14A.1.1 This appendix supports and should be read in conjunction with **Chapter 14 Air Quality Assessment** of the Draft Environmental Statement (DES) for Weston Marsh to East Leicestershire Project (the 'Project'). This appendix presents the methodology followed for the construction dust assessment and construction traffic assessment undertaken as part of the DES.
- 14A.1.2 The Project has been sub-divided into five geographical sections for reader accessibility, based largely on Local Planning Authority boundaries. These are shown on **Figure 1.2 Draft Order Limits** and comprise:
- Section 1: South Holland District Council;
 - Section 2: South Kesteven District Council;
 - Section 3: Melton Borough Council;
 - Section 4: Harborough District Council; and
 - Section 5: Northamptonshire (including both North Northamptonshire Council and West Northamptonshire Council)
- 14A.1.3 Receptors are reported with reference to the Project section in which they are located.

14A.2 Construction Dust Assessment

- 14A.2.1 The construction phase effects of the Project have been assessed using the five step, qualitative approach described in the Institute of Air Quality Management (IAQM) guidance (Ref 14A.1). The guidance applies to the assessment of dust from construction/demolition activities.
- 14A.2.2 An 'impact' is described as a change in pollutant concentrations or dust deposition, while an 'effect' is described as the consequence of an impact. The main impacts that may arise during construction activities of the Project are:
- Dust deposition, resulting in the soiling of surfaces;
 - Visible dust plumes;
 - Elevated Particulate Matter (10 micrometers or less in diameter) (PM₁₀) concentrations because of dust generating activities on site; and
 - An increase in Nitrogen Dioxide (NO₂) and PM₁₀ concentrations due to exhaust emissions from non-road mobile machinery and vehicles accessing the site.
- 14A.2.3 The IAQM guidance considers the potential for dust emissions from activities such as demolition of existing structures, earthworks, construction of new structures and track-out. Earthworks refer to the processes of soil stripping, ground levelling, excavation, and land capping, while track-out is the transport of dust and dirt from

the site onto the public road network where it may be deposited and then re-suspended by vehicles using the network. This can occur when vehicles travel over dusty or muddy surfaces within the site before entering the public highway. Dust emissions may also arise from the transportation of loose materials, for example where material is spilled from vehicles or blown from uncovered loads.

- 14A.2.4 For each of these dust-generating activities, the guidance considers three separate effects:
- Annoyance due to dust soiling;
 - Harm to receptors; and
 - The risk of health effects due to a significant increase in PM₁₀ exposure.
- 14A.2.5 The receptors can be human or ecological and are selected based on their sensitivity to dust soiling and PM₁₀ exposure. Sensitive receptors are defined as those properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction of the Project.
- 14A.2.6 The methodology takes into account the scale at which the above effects are likely to be generated (classed as small, medium or large), the levels of background PM₁₀ concentrations and the distance to the closest receptor in order to determine the sensitivity of the area. This is then taken into consideration when deriving the overall risk for the site. Suitable mitigation measures are also proposed to reduce the risk of the potential impacts on local air quality as a result of the construction works. These mitigations can be found in **Chapter 14 Air Quality** or **Appendix 4A Draft Outline Code of Construction Practice (CoCP)**.
- 14A.2.7 The five steps in the assessment process described in the IAQM guidance is summarised in the paragraphs that follow.

Step 1: Need for assessment

- 14A.2.8 The first step is the initial screening for the need for a detailed assessment. According to the IAQM guidance, an assessment is required where there are sensitive receptors within 250 m of a site boundary (for ecological receptors it is 50 m) and/or within 50 m of the route(s) used by the construction vehicles on the public highway and up to 250 m from site entrance(s).

Step 2: Assess the risk of dust impacts

- 14A.2.9 Step 2 is split into three sections as follows:
- 2A. Define the potential dust emission magnitude;
 - 2B. Define the sensitivity of the area; and
 - 2C. Define the risk of impacts.
- 14A.2.10 Each of the dust-generating activities is given a dust emission magnitude depending on the scale and nature of the works (step 2A) based on the criteria shown in **Table 14A.1**.
- 14A.2.11 The sensitivity of the surrounding area is then determined (step 2B) for each dust effect from the above dust-generating activities, based on the proximity and number of receptors, their sensitivity to dust, the local PM₁₀ background concentrations and

any other site-specific factors. **Table 14A.2** and **Table 14A.3** show the criteria for defining the sensitivity of the area to different dust effects.

- 14A.2.12 The overall risk of the impacts for each activity is then determined (step 2C) prior to the application of any mitigation measures (**Table 14A.4**) and an overall risk for the site derived.

Table 14A.1 Dust emission magnitude

Dust Emission Magnitude		
Small	Medium	Large
Demolition		
- Total building volume <12,000 m³ - Construction material with low potential for dust release (e.g., metal cladding or timber) - Demolition activities <6 m above ground, demolition during wetter months	- Total building volume 12,000 m³ to 75,000 m³ - Potentially dusty construction material - Demolition activities 6 to 12 m above ground level	- Total building volume >75,000 m³ - Potentially dusty construction material (e.g., concrete) - On-site crushing and screening, demolition activities >12 m above ground level
Earthworks		
- Total site area <18,000 m², soil type with large grain size (e.g., sand) < five heavy earth moving vehicles active at any one time - Formation of bunds <3 m in height	- Total site area 18,000 m² to 110,000 m², moderately dusty soil type (e.g., silt) - Five to 10 heavy earth moving vehicles active at any one time - Formation of bunds 3 to 6 m in height	- Total site area >110,000 m² potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size) >10 heavy earth moving vehicles active at any one time - Formation of bunds >6 m in height
Construction		
- Total building volume <12,000 m³ - Construction material with low potential for dust release (e.g., metal cladding or timber)	- Total building volume 12,000 m³ to 75,000 m³ - Potentially dusty construction material (e.g., concrete) - On-site concrete batching	- Total building volume >75,000 m³ - On-site concrete batching - Sandblasting
Track out		
<20 Heavy-Duty Vehicle (HDV) (>3.5 t) trips in any one day	20 to 50 HDV (>3.5 t) trips in any one day	>50 HDV (>3.5 t) trips in any one day

Dust Emission Magnitude		
Small	Medium	Large
• Surface material with low potential for dust release • Unpaved road length <50 m	• Moderately dusty surface material (e.g., high clay content) • Unpaved road length 50 m to 100 m	• Potentially dusty surface material (e.g., high clay content) • Unpaved road length >100 m

Table 14A.2 Sensitivity of the area to dust soiling effects

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	<10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 14A.3 Sensitivity of the area to human health impacts

Receptor Sensitivity	Annual Mean PM ₁₀ - Micrograms per cubic meter (µg/m ³)	Number of Receptors	<20	<50	<100	<250
High	>32 µg/m ³	>100	High	High	High	Medium
		10-100		High	Medium	Low
		<10		Medium	Low	
	28-32 µg/m ³	>100	High	High	Medium	Low
		10-100		Medium	Low	
		<10				
	24-28 µg/m ³	>100	High	Medium	Low	Low
		10-100				
		<10		Medium	Low	
	<24 µg/m ³	>100	Medium	Low	Low	Low
		10-100		Low		
		<10				

Receptor Sensitivity	Annual Mean PM ₁₀ - Micrograms per cubic meter (µg/m ³)	Number of Receptors	<20	<50	<100	<250
Medium	>32 µg/m ³	>10	High	Medium	Low	Low
		1-10	Medium	Low		
	28-32 µg/m ³	>10	Medium	Low	Low	Low
		1-10	Low			
	24-28 µg/m ³	>10	Low	Low	Low	Low
		1-10				
	<24 µg/m ³	>10	Low	Low	Low	Low
		1-10				
	-	>1	Low	Low	Low	Low

Table 14A.4 Risk of dust impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High risk site	Medium risk site	Medium risk site
Medium	High risk site	Medium risk site	Low risk site
Low	Medium risk site	Low risk site	Negligible
Earthworks			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Medium risk site	Low risk site
Low	Low risk site	Low risk site	Negligible
Construction			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Medium risk site	Low risk site
Low	Low risk site	Low risk site	Negligible
Track out			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Medium risk site	Low risk site
Low	Low risk site	Low risk site	Negligible

Step 3: Determine the site-specific mitigation

- 14A.2.13 Once each of the activities is assigned a risk rating, appropriate mitigation measures are identified. Where the risk is negligible, no mitigation measures are necessary.

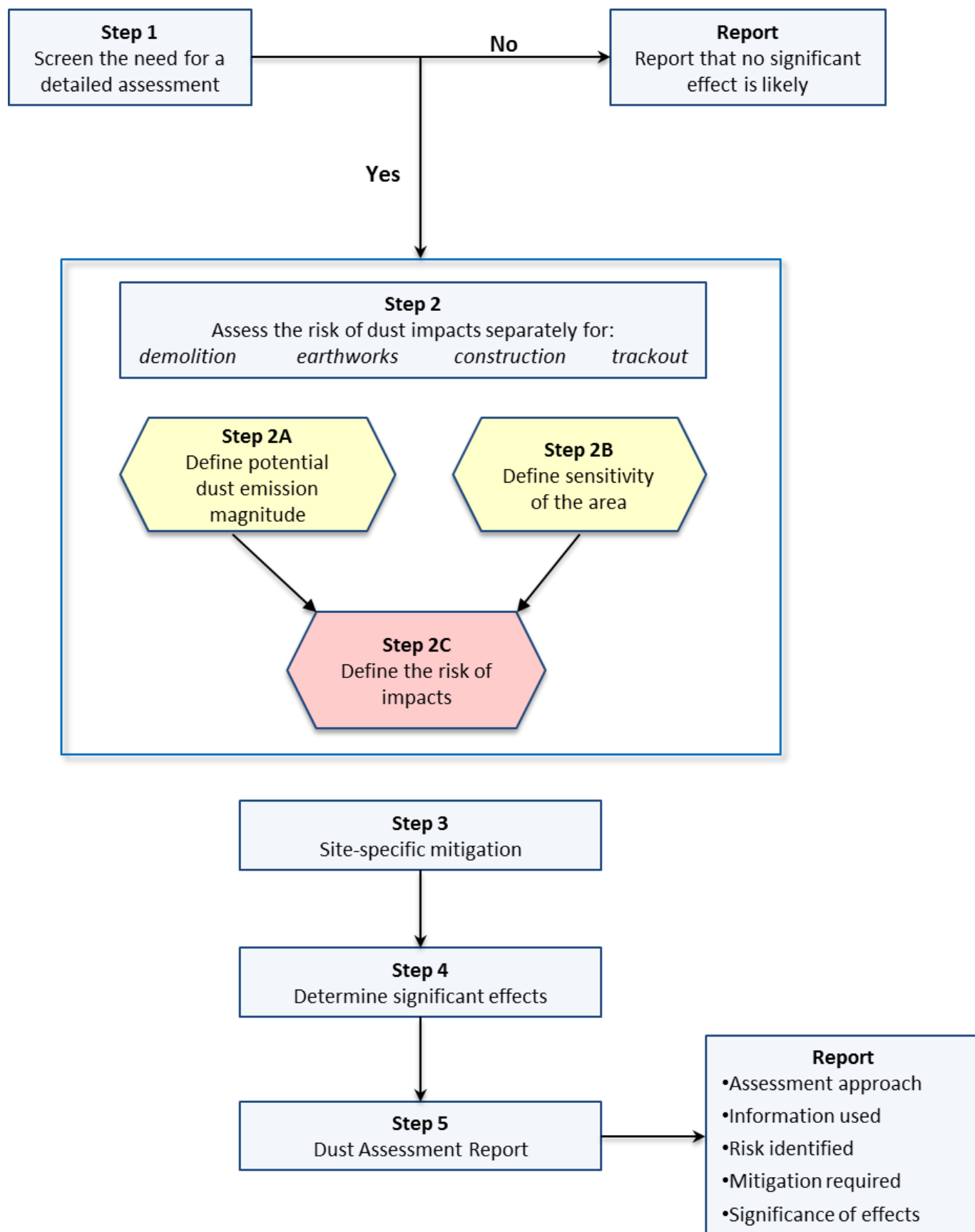
Step 4: Determine any significant residual effects

- 14A.2.14 Once the risk of dust impacts has been determined and the appropriate dust mitigation measures identified, the final step is to determine whether there are any residual significant effects. The IAQM guidance (Ref 14A.1) notes that it is anticipated that with the implementation of effective site-specific mitigation measures, the environmental effect will not be significant in most cases.

Step 5: Prepare a dust assessment report

- 14A.2.15 The last step of the assessment is the preparation of a dust assessment report (**Appendix C14 Air Quality Assessment Results**).
- 14A.2.16 This process is shown in **Image A14.1**.

Image A14.1 IAQM dust assessment methodology



14A.3 Construction Traffic

- 14A.3.1 This section provides the methodology for the assessment of the construction traffic phase.
- 14A.3.2 Preliminary construction traffic data has been reviewed for the DES, and the data is not in a format suitable for air quality screening or modelling. As a result, screening could not be undertaken using the Environmental Protection UK (EPUK) and IAQM planning guidance (Ref 14A.2), and the affected road network (ARN) could not be defined.
- 14A.3.3 In the absence of suitable construction traffic data for screening purposes, a precautionary Study Area for construction traffic has been determined as a 200 m buffer from the draft Order Limits, which includes all construction haul and access routes known during the DES. As such, sensitive receptors within the 200 m buffer from the draft Order Limits have been reviewed and assessed on a risk basis.
- 14A.3.4 The following sections detail the sensitive human and ecological receptors scoped into the assessment as they are located within the 200 m buffer.

Human Receptors

- 14A.3.5 This section details the human receptors selected for inclusion in the assessment. Human receptors included in the assessment are sensitive residential properties, school, nurseries and hospitals within 200 m of the draft Order Limits. The receptor choices are considered to capture the most sensitive receptors, with the information available during the DES. This will be updated in the ES following receipt and review of traffic data.
- 14A.3.6 To identify receptors sensitive to air quality, the building usage was determined using the Ordnance Survey (OS) Address Base Plus dataset (Ref 14A.3), and geographic information system (GIS) software was used to include any sensitive human receptor within a 200 m buffer of the draft Order Limits. A total of 1,516 human receptors (**Table 14A.5**) were identified within the 200 m buffer of the draft Order Limits.
- 14A.3.7 The list of all sensitive receptors includes dwellings and educational establishments, and the locations are shown in **Figure 14.5 Air Quality Construction Traffic Study Area**.

Table 14A.5 Details of human receptors

Project Section(s)	Description	Number of receptors
Section 1: South Holland District Council;	Residential	82
	School	1
Section 2: South Kesteven District Council;	Residential	246
Section 3: Melton Borough Council;	Residential	539
Section 4: Harborough District Council; and	Residential	55

Project Section(s)	Description	Number of receptors
Section 5: Northamptonshire	Residential	592
	School	1

Ecological receptors

14A.3.8 Sensitive ecological receptors are defined as those sites whose features have been designated as sensitive to air pollutants, either directly or indirectly. Ecological receptors within the 200 m buffer of the draft Order Limits include statutory and non-statutory sites. A total of 20 ecological receptors, as shown in **Table 14A.6**, were included in the assessment. In addition, the list of ecological receptors has been prepared to provide early indication of receptors that could be at potential risk due to the increase of construction traffic. As set out in 14.3.5, this will be updated in the ES following receipt and review of traffic data.

Table 14A.6 Details of ecological receptors

Designated Sites	Ecological sites	Description	Project Section(s)
Statutory	Site of Special Scientific Interest (SSSI)	Twenty Acre Piece	Section 3
	SSSI	Upper Nene Valley Gravel Pits	Section 5
	SSSI	Birch Spinney and Mawsley Marsh	Section 5
	SSSI	Dunsby Wood	Section 2
	Special Protection Areas (SPA)	Upper Nene Valley Gravel Pits	Section 5
	Ramsar	Upper Nene Valley Gravel Pits	Section 5
Non-Statutory	Ancient woodland (AW)	Cransley Wood	Section 5
	AW	Beaumont Wood	Section 2
	AW	Breaches Wood	Section 3
	AW	Dodsey Wood	Section 2
	AW	Dunsby Wood	Section 3
	AW	Freeby Wood	Section 3
	AW	Great Osgrove Wood	Section 2
	AW	Herricho Wood	Section 2

Designated Sites	Ecological sites	Description	Project Section(s)
	AW	Little Osgrove Wood	Section 2
	AW	Mickley Wood	Section 2
	AW	Norwood/West Wood	Section 2
	AW	Twyford Forest	Section 2
	AW	Spring Wood	Section 2
	AW	Stonton Wood	Section 4

References

- Ref 14A.1 Institute of Air Quality Management (2024). Guidance on the Assessment of Dust from Demolition and Construction [online]. Available at: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf> [Accessed March 2026].
- Ref 14A.2 Environmental Protection UK and Institute of Air Quality Dust Management (2017). Land Use Planning & Development Control: Planning for Air Quality [online]. Available at: <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [Accessed March 2026].
- Ref 14A.3 Address data base (2025) Available at: <https://www.ordnancesurvey.co.uk/products/addressbase>. [Accessed March 2026].

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