# **NoiseAir ACOUSTIC CONSULTANCY & SOLUTIONS**

Noise Surveys Sound Insulation Testing

Noise Impact Assessments

Noise at Work

## **COVENTRY CITY COUNCIL**

PROPOSED DEVELOPMENT, WOODFIELD SCHOOL, STONELEIGH ROAD, COVENTRY, **CV4 7AB** 

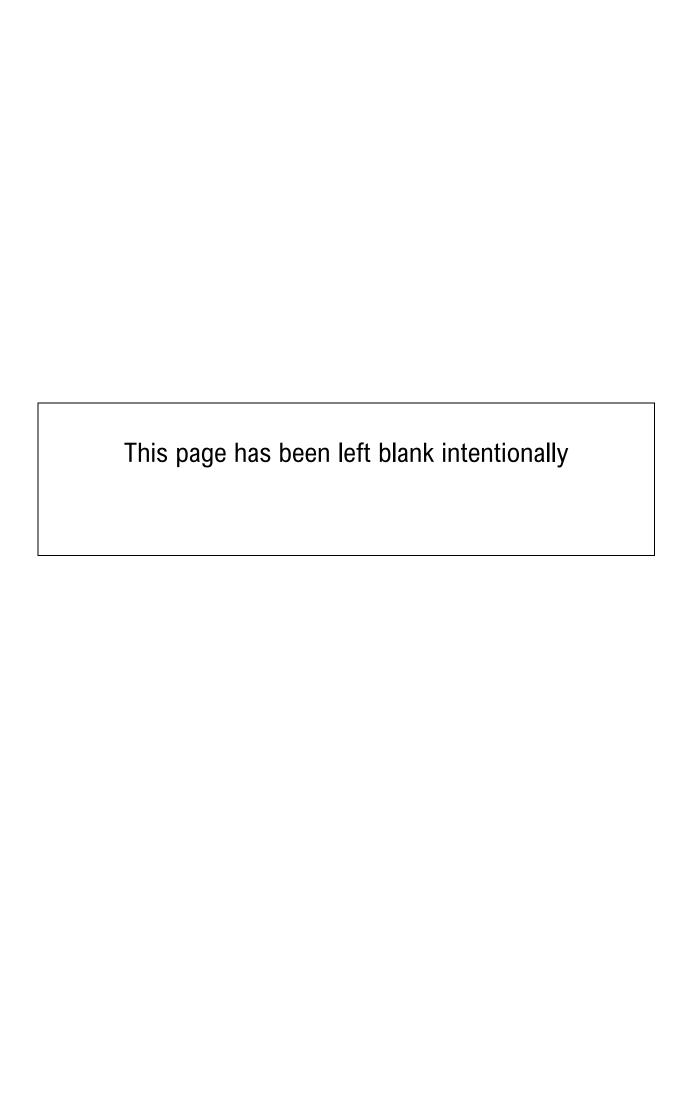
**AIR QUALITY ASSESSMENT** 

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## **COVENTRY CITY COUNCIL**

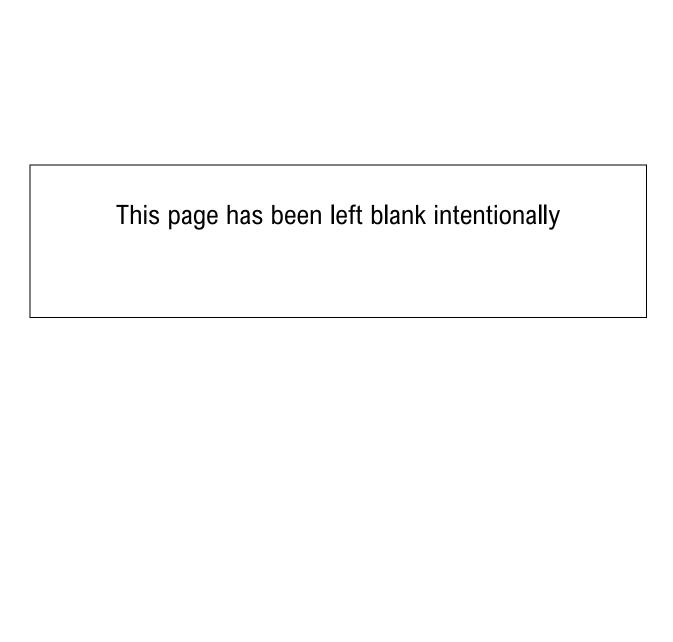
PROPOSED DEVELOPMENT, WOODFIELD SCHOOL, STONELEIGH ROAD, COVENTRY, CV4 7AB

## **AIR QUALITY ASSESSMENT**

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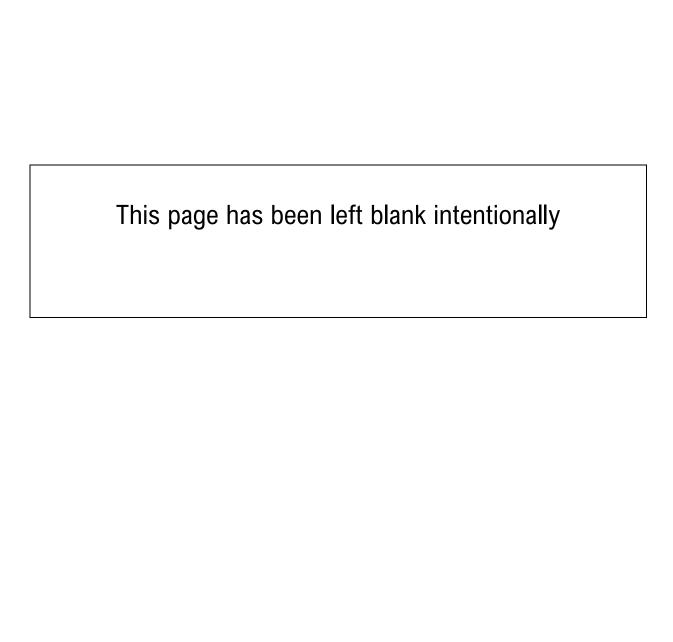
## **CONTENTS**

1	INTRODUCTION	7
2	LEGISLATION AND POLICY	9
3	METHODOLOGY	15
4	BASELINE	24
5	ASSESSMENT	30
6	CONCLUSIONS	38

## **APPENDICES**

**APPENDIX A - REPORT LIMITATIONS** 

**APPENDIX B - GLOSSARY** 



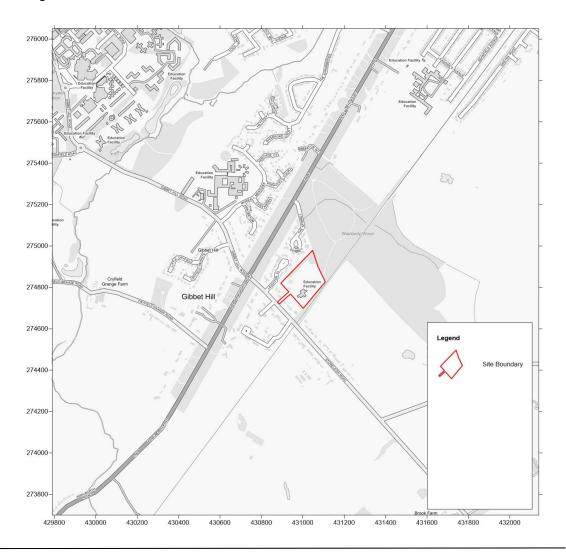


## 1 INTRODUCTION

- 1.1.1 NoiseAir Limited was commissioned to undertake an Air Quality Assessment (AQA) for the proposed residential development on land at Woodfield School, Stoneleigh Road, Coventry, CV4 7AB.
- 1.1.2 The proposed development may result in exposure of future residents to poor air quality, as well as adverse impacts at sensitive locations. As such, an Air Quality Assessment was required in order to determine baseline conditions at the site, consider its suitability for the proposed end-use and assess potential impacts associated with the scheme.

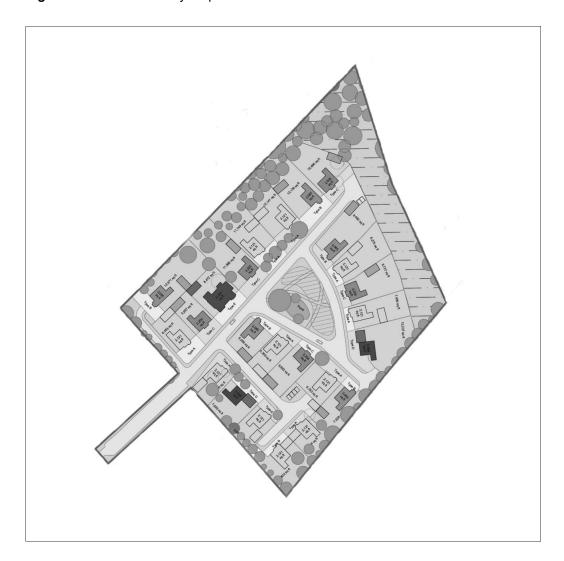
#### 1.2 Site Location and Context

- 1.2.1 The site is located at Woodfield School, Stoneleigh Road, Coventry, CV4 7AB, at approximate National Grid Reference (NGR): 431008, 274823.
- 1.2.2 **Figure 1** details the site location.





- 1.2.3 The proposals comprise the demolition of an existing Primary Special Educational Needs (SEN) School and construction of 24 residential dwellings and associated infrastructure.
- 1.2.4 Figure 2 details the site layout plan.



1.2.5 Coventry City Council (CCC) have declared an Air Quality Management Area (AQMA) across the city due to exceedences of the annual mean Air Quality Objective (AQO) for nitrogen dioxide (NO<sub>2</sub>). The development is located within the AQMA. Subsequently, there are concerns that the proposals will introduce future residents to exceedences of the relevant AQO. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions at the site and consider its suitability for the proposed end-use. Potential impacts associated with the scheme have also been considered using standard screening methodologies.



#### 2 LEGISLATION AND POLICY

## 2.1 Legislation

- 2.1.1 The Air Quality Standards Regulations (2010) came into force on 11<sup>th</sup> June 2010 and include Air Quality Limit Values (AQLVs) for the following pollutants:
  - NO<sub>2</sub>;
  - Sulphur dioxide;
  - Lead
  - Particulate matter with an aerodynamic diameter of less than 10μm (PM<sub>10</sub>);
  - Particulate matter with an aerodynamic diameter of less than 2.5µm;
  - Benzene; and,
  - Carbon monoxide.
- 2.1.2 Target Values were also provided for an additional 5 pollutants. These include:
  - Ozone;
  - Arsenic;
  - Cadmium;
  - Nickel; and,
  - Benzo(a)pyrene.
- 2.1.3 Part IV of the Environment Act (1995) requires UK government to produce a national Air Quality Strategy (AQS) which contains standards, objectives and measures for improving ambient air quality. The most recent AQS was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published in July 2007<sup>1</sup>. The AQS sets out AQOs that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedences over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.
- 2.1.4 **Table 1** presents the AQOs for pollutants considered within this assessment.

Table 1: Air Quality Objectives				
Pollutant	Concentration (µg/m³)	Averaging Period		
	40	Annual mean		
NO <sub>2</sub>	200	1-hour mean, not to be exceeded on more than 18 occasions per annum		

The AQS for England, Scotland, Wales and Northern Ireland, DEFRA, 2007.

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Table 1: Air Quality Objectives				
Pollutant	Concentration (µg/m³)	Averaging Period		
	40	Annual mean		
PM <sub>10</sub>	50	24-hour mean, not to be exceeded on more than 35 occasions per annum		

2.1.5 **Table 2** summarises the advice provided in DEFRA guidance<sup>2</sup> on where the AQOs for pollutants considered within this report apply.

Table 2: Examples of Where the Air Quality Objectives Apply					
Pollutant	Objective Should Apply At	Objective Should Not Apply At			
		Building façades of offices or other places of work where members of the public do not have regular access			
Annual	All locations where members of the public might be regularly exposed	Hotels, unless people live there as their permanent residence			
Mean	Building façades of residential properties, schools, hospitals, care	Gardens of residential properties			
	homes etc.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term			
24-hour Mean	All locations where the annual mean objective would apply, together with hotels	Kerbside site (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term			
1-hour Mean	Gardens of residential properties  All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside site (for example, pavements of busy shopping streets)  Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more  Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside site where the public would not be expected to have regular access			

Local Air Quality Management Technical Guidance (TG16), DEFRA, 2018.



#### 2.2 Local Air Quality Management

2.2.1 Under Section 82 of the Environment Act (1995) (Part IV) Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in **Table** 2, are likely to be exceeded, the LA is required to declare an AQMA. For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

#### **2.3** Dust

2.3.1 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such a construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

"any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."

2.3.2 Enforcement of the Act, in regards to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

## 2.4 National Planning Policy Framework

- 2.4.1 The revised National Planning Policy Framework<sup>3</sup> (NPPF) was published in February 2019 and sets out the Government's planning policies for England and how these are expected to be applied.
- 2.4.2 The purpose of the planning system is to contribute to the achievements of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

NPPF, Ministry of Housing, Communities and Local Government, 2019.



- "c) An environmental objective to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."
- 2.4.3 Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

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

[...]

- e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality [...]"
- 2.4.4 The NPPF specifically recognises air quality as part of delivering sustainable development and 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."

2.4.5 The implications of the NPPF have been considered throughout this assessment.

#### 2.5 Planning Practice Guidance

2.5.1 The National Planning Practice Guidance<sup>4</sup> (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6<sup>th</sup> March 2014 and updated on 1<sup>st</sup>

http://planningguidance.planningportal.gov.uk.



November 2019 to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

- 1. Why should planning be concerned about air quality?
- 2. What is the role of Local Plans with regard to air quality?
- 3. Are air quality concerns relevant to neighbourhood planning?
- 4. What information is available about air quality?
- 5. When could air quality considerations be relevant to the development management process?
- 6. What specific issues may need to be considered when assessing air quality impacts?
- 7. How detailed does an air quality assessment need to be?
- 8. How can an impact on air quality be mitigated?
- 2.5.2 These were reviewed and the relevant guidance considered as necessary throughout the undertaking of the assessment.

#### 2.6 Local Planning Policy

- 2.6.1 The Coventry Local Plan 2017<sup>5</sup> (CLP) was adopted by Coventry City Council (CCC) on 6<sup>th</sup> December 2017 and sets out the vision and strategy for development throughout the city through to 2031.
- 2.6.2 Review of the CLP indicated the following policies of relevance to the assessment:

"Policy H3: Provision of New Housing

[...]

3. A suitable residential environment will include safe and appropriate access, have adequate amenity space and parking provision and be safe from environmental pollutants such as land contamination, excessive noise and air quality issues.

[...]"

"Policy EM7: Air Quality

1. Major development schemes should promote a shift to the use of sustainable low emission transport (electric vehicles and vehicles that use biofuels) to minimise the impact of vehicle emissions on air quality. Development will be located where it is accessible to support the use of public transport, walking and cycling. All major development proposals should be suitably planned to design out any adverse impact on air quality and be in accordance with the West Midlands Transport Emissions Framework and associated policies.

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<sup>&</sup>lt;sup>5</sup> The Coventry Local Plan 2011-2031, CCC, 2017.



- 2. Major Development proposals will require the submission of an air quality assessment, as they may lead to a significant deterioration in local air quality resulting in unacceptable effects on human health, local amenity or the natural environment. The air quality assessment should address:
- a) The existing background levels of air quality;
- b) The cumulative background levels of air quality (related to the cumulative impact of developments in an area);
- c) The feasibility of any measures of mitigation that would prevent the national air quality objectives being exceeded, or would reduce the extent of the air quality deterioration.

[...]."

- 2.6.3 Further to this, CCC have produced a Supplementary Planning Document (SPD) for air quality within the city. The guidance<sup>6</sup> was adopted in August 2019 and aims to expand on the policies within the Local Plan and relevant national guidance.
- 2.6.4 The implications of these policies and guidance were taken into consideration throughout the undertaking of the assessment.

Air Quality SPD, CCC, 2019.



#### 3 METHODOLOGY

#### 3.1 Introduction

3.1.1 The proposed development has the potential to cause air quality impacts during the construction and operational phases, as well as expose future residents to elevated pollution levels. These issues have been assessed in accordance with the following methodology.

#### 3.2 Construction Phase Assessment

- 3.2.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction V1.1'7.
- 3.2.2 Activities on the proposed construction site have been divided into four types to reflect their different potential impacts. These are:
  - Demolition;
  - Earthworks;
  - Construction; and,
  - Trackout
- 3.2.3 The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:
  - Annoyance due to dust soiling;
  - Harm to ecological receptors; and,
  - The risk of health effects due to a significant increase in exposure to PM<sub>10</sub>
- 3.2.4 The assessment steps are detailed below.

#### Step 1

3.2.5 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m from the boundary or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the site or the construction vehicle route up to 500m from the site entrance, then the assessment also proceeds to Step 2.

Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.



3.2.6 Should sensitive receptors not be present within the relevant distances then **negligible** impacts would be expected and further assessment is not necessary.

#### Step 2

- 3.2.7 Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on two factors:
  - The scale and nature of the works, which determines the magnitude of dust arising as:
     small, medium or large (Step 2A); and,
  - The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).
- 3.2.8 The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.
- 3.2.9 Step 2A defines the potential magnitude of dust emission through the construction phase.

  The relevant criteria are summarised in **Table 3**.

Table 3: Magnitude of Emission				
Magnitude	tude Activity Criteria			
	Demolition	Total building volume greater than 50,000m <sup>3</sup> Potentially dusty construction material (e.g. concrete) On-site crushing and screening Demolition activities greater than 20m above ground level		
Large	Earthworks	Total site area greater than 10,000m²  Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size)  More than 10 heavy earth moving vehicles active at any one time  Formation of bunds greater than 8m in height More than 100,000 tonnes of material moved		
	Construction	Total building volume greater than 100,000m³ On site concrete batching Sandblasting		
	Trackout	More than 50 Heavy Duty Vehicle (HDV) trips per day Potentially dusty surface material (e.g. high clay content) Unpaved road length greater than 100m		
	Demolition	Total building volume 20,000m <sup>3</sup> to 50,000m <sup>3</sup> Potentially dusty construction material Demolition activities 10m to 20m above ground level		
Medium	Earthworks	Total site area 2,500m² to 10,000m² Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time Formation of bunds 4m to 8m in height Total material moved 20,000 tonnes to 100,000 tonnes		
	Construction	Total building volume 25,000m³ to 100,000m³		



Table 3: Magnitude of Emission					
Magnitude	gnitude Activity Criteria				
		Potentially dusty construction material (e.g. concrete) On site concrete batching			
	Trackout	10 to 50 HDV trips per day  Moderately dusty surface material (e.g. high clay content)  Unpaved road length 50m to 100m			
	Demolition	Total building volume under 20,000m³ Construction material with low potential for dust release (e.g. metal cladding or timber) Demolition activities less than 10m above ground level			
Low	Earthworks	Total site area less than 2,500m² Soil type with large grain size (e.g. sand) Less than 5 heavy earth moving vehicles active at any one time Formation of bunds less than 4m in height Total material moved less than 20,000 tonnes Earthworks during wetter months			
	Construction	Total building volume less than 25,000m <sup>3</sup> Construction material with low potential for dust release (e.g. metal cladding or timber)			
	Trackout	Less than 10 HDV trips per day Surface material with low potential for dust release Unpaved road length less than 50m			

3.2.10 Step 2B defines the sensitivity of the area around the development to potential dust impacts.The influencing factors are shown in **Table 4**.

Table 4: Examples of Factors Defining Sensitivity of an Area				
Receptor	Examp	les		
Sensitivity	Human Receptors	Ecological Receptors		
High	Users expect high levels of amenity High aesthetic or value property People expected to be present continuously for extended periods of time Locations where members of the public are exposed over a time period relevant to the AQO for PM <sub>10</sub> . e.g. residential properties, hospitals, schools and residential care homes	Internationally or nationally designated site e.g. Special Area of Conservation		
Medium	Users would expect to enjoy a reasonable level of amenity Aesthetics or value of their property could be diminished by soiling 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 e.g. parks	Nationally designated site e.g. Sites of Special Scientific Interest		



Table 4: Examples of Factors Defining Sensitivity of an Area					
Receptor	eptor Examples				
Sensitivity	Human Receptors	Ecological Receptors			
	and places of work				
Low	Enjoyment of amenity would not reasonably be expected Property would not be expected to be diminished in appearance Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, shopping streets, playing fields, farmland, short term car parks and roads	Locally designated site e.g. Local Nature Reserve			

- 3.2.11 The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts:
  - Any history of dust generating activities in the area;
  - The likelihood of concurrent dust generating activity on nearby sites;
  - Any pre-existing screening between the source and receptors;
  - Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
  - Any conclusions drawn from local topography;
  - Duration of the potential impact, as a receptor may become more sensitive over time;
     and,
  - Any known specific receptor sensitivities which go beyond the classifications given in the document.
- 3.2.12 These factors were considered in the undertaking of this assessment.
- 3.2.13 The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in **Table 5**.

Table 5: Sensitivity of the Area to Dust Soiling Effects on People and Property						
Receptor	Number of	Distance from the Source (m)				
Sensitivity	Receptors	Less than 20	Less than 50	Less than 100	Less than 350	
High	More than 100	High	High	Medium	Low	
_	10 - 100	High	Medium	Low	Low	



Table 5: Sensitivity of the Area to Dust Soiling Effects on People and Property Distance from the Source (m) **Number of** Receptor Sensitivity Receptors Less than Less than Less than Less than 20 50 100 350 1 - 10 Medium Low Low Low Medium More than 1 Medium Low Low Low Low More than 1 Low Low Low Low

3.2.14 **Table 6** outlines the criteria for determining the sensitivity of the area to human health impacts.

Table 6: Sensitivity of the Area to Human Health Effects						
December	Background	Novebound	Distance from the Source (m)			
Receptor Sensitivity	Annual Mean PM₁₀ Conc.	Number of Receptors	Less than 20	Less than 50	Less than 100	Less than 350
	Greater than	More than 100	High	High	High	Medium
	32µg/m³	10 - 100	High	High	Medium	Low
		1 - 10	High	Medium	Low	Low
	28 - 32μg/m³	More than 100	High	Medium	Low	Low
High		10 - 100	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	Less than	More than 100	Medium	Low	Low	Low
	24µg/m³	10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	Greater than 32μg/m³	More than 100	High	Medium	Low	Low
Medium		10 - 100	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low
	28 - 32µg/m³	More than	Low	Low	Low	Low



Table 6: Ser	Table 6: Sensitivity of the Area to Human Health Effects						
Bosontor	Background Annual			Distance from the Source (m)			
Receptor Sensitivity	Mean PM <sub>10</sub> Conc.	Number of Receptors	Less than 20	Less than 50	Less than 100	Less than 350	
		100					
		10 - 100	Low	Low	Low	Low	
		1 - 10	Low	Low	Low	Low	
	Less than 24µg/m³	More than 100	Low	Low	Low	Low	
		10 - 100	Low	Low	Low	Low	
		1 - 10	Low	Low	Low	Low	
Low	-	More than 1	High	Medium	Low	Low	

3.2.15 **Table 7** outlines the criteria for determining the sensitivity of the area to ecological impacts.

Table 7: Construction Dust - Sensitivity of the Area to Ecological Impacts				
	Distance from the Source (m)			
Receptor Sensitivity	Less than 20	Less than 50		
High	High	Medium		
Medium	Medium	Low		
Low	Low	Low		

- 3.2.16 Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.
- 3.2.17 **Table 8** outlines the risk category from demolition activities.

Table 8: Dust Risk Category from Demolition Activities					
December Compitivity	Dust Emission Magnitude				
Receptor Sensitivity	Large Medium Small				
High	High	Medium	Medium		
Medium	High Medium Low				



Table 8: Dust Risk Category from Demolition Activities					
December Consistivity	Dust Emission Magnitude  Large Medium Small				
Receptor Sensitivity					
Low	Low Low Negligible				

3.2.18 **Table 9** outlines the risk category from earthworks and construction activities.

Table 9: Dust Risk Category from Earthworks and Construction Activities						
Dust Emission Magnitude			de			
Receptor Sensitivity	Large Medium Small					
High	High	Medium	Low			
Medium	Medium Medium Low					
Low	Low Low Negligible					

3.2.19 **Table 10** outlines the risk category from trackout activities.

Table 10: Dust Risk Category from Trackout Activities						
Dust Emission Magnitude						
Receptor Sensitivity	Large Medium Small					
High	High	Medium	Low			
Medium	Medium Low Negligible					
Low	Low Low Negligible					

Step 3

3.2.20 Step 3 requires the identification of site specific mitigation measures within the IAQM guidance<sup>8</sup> to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with **negligible** risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4

Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016



3.2.21 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be not significant.

#### 3.3 Operational Phase Assessment

#### **Potential Development Impacts**

- 3.3.1 The development has the potential to impact on existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. A screening assessment was therefore undertaken using the criteria contained within the IAQM 'Land-Use Planning & Development Control: Planning for Air Quality'9 guidance to determine the potential for trips generated by the development to affect local air quality.
- 3.3.2 The following criteria are provided to help establish when an assessment of potential impacts on the local area is likely to be considered necessary:
  - A change of Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily
     Traffic (AADT) within or adjacent to an AQMA or more than 500 AADT elsewhere;
  - A change of HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
  - Realignment of roads where the change is 5m or more and the road is within an AQMA; or,
  - Introduction of a new junction or removal of an existing junction near to relevant receptors.
- 3.3.3 Should these criteria not be met, then the IAQM guidance<sup>10</sup> considers air quality impacts associated with a scheme to be **negligible** and no further assessment is required.
- 3.3.4 Should screening of the relevant data indicate that the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the change in pollutant concentrations as a result of the proposed development. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the IAQM guidance<sup>11</sup>.

<sup>9</sup> Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.



## **Potential Future Exposure**

- 3.3.5 The proposed development comprises residential dwellings. This is considered a location of relevant exposure for long and short term AQOs in accordance with the criteria provided within DEFRA guidance<sup>12</sup>, as summarised in **Table 2**. Existing air quality conditions at the site were therefore assessed through consideration of the following factors:
  - AQMA designations;
  - Proximity to significant pollution sources;
  - · Local monitoring results; and,
  - Background pollutant concentration predictions.
- 3.3.6 The findings were subsequently used to determine the potential for AQO exceedences at the development location. Should the assessment indicate significant uncertainty over air quality conditions at the site then further quantitative methods, such as detailed dispersion modelling, could be utilised to refine predictions.

12

Local Air Quality Management Technical Guidance (TG16), DEFRA, 2018.



#### 4 BASELINE

#### 4.1 Introduction

4.1.1 Existing air quality conditions in the vicinity of the development site were identified in order to provide a baseline for assessment. These are detailed in the following Sections.

#### 4.2 Local Air Quality Management

4.2.1 As required by the Environment Act (1995), CCC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO<sub>2</sub> are above the AQO throughout the council's administrative extents. As such, one AQMA has therefore been declared. This is described as follows:

"An area encompassing all land within the administrative boundaries of the city of Coventry."

- 4.2.2 The development is located within the AQMA. As such, there is the potential for the exposure of future residents to poor air quality and any emissions associated with the proposals to cause air quality effects within this sensitive location. These issues have therefore been considered within the assessment.
- 4.2.3 CCC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

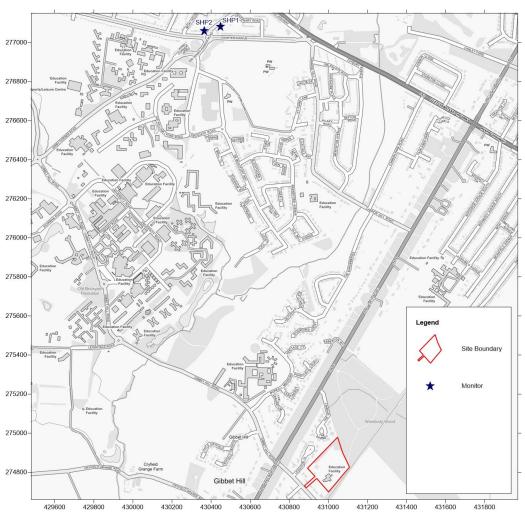
## 4.3 Air Quality Monitoring

4.3.1 Monitoring of pollutant concentrations is undertaken by CCC throughout their area of jurisdiction. Recent NO<sub>2</sub> results recorded in the vicinity of the development are shown in **Table 11**.

Table 11: Monitoring Results - NO₂					
	Monitored NO <sub>2</sub> Concentration (μg/m³)				
	Monitoring Site	2016	2017	2018	
SHP1	257 Sir Henry Parkes Road	-	-	29.5	
SHP2	262 Sir Henry Parkes Road	35.2	28.6	30.7	

- 4.3.2 As shown in **Table 11**, annual mean NO<sub>2</sub> concentrations were below the relevant AQO at the two monitoring locations in recent years.
- 4.3.3 **Figure 3** details the monitoring locations.





## 4.4 Background Pollutant Concentrations

4.4.1 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is located in grid square NGR: 431500, 274500. Data for this location was downloaded from the DEFRA website<sup>13</sup> for the purpose of the assessment and is summarised in **Table 12**.

Table 12: Background Pollutant Concentration Predictions					
Pollutant	Predicted Background Pollutant Concentration (μg/m³)				
- Ondiant	2020 2026				
NO <sub>2</sub>	12.74	10.61			
PM <sub>10</sub>	13.37	12.74			

https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2017.



4.4.2 As shown in **Table 12** predicted background NO<sub>2</sub> and PM<sub>10</sub> concentrations are below the relevant AQOs at the development site.

## 4.5 Sensitive Receptors

4.5.1 A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. Receptors sensitive to potential dust impacts during demolition, earthworks and construction were identified from a desk-top study of the area up to 350m from the development boundary. These are summarised in **Table 13**.

Table 13: Demolition, Earthworks and Construction Dust Sensitive Receptors				
Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors		
Up to 20	10 - 100	1		
Up to 50	10 - 100	1		
Up to 100	More than 100	-		
Up to 350	More than 100	-		

4.5.2 Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50m from the road network within 500m of the site access. These are summarised in **Table 14**.

Table 14: Trackout Dust Sensitive Receptors				
Distance from Site Access Approximate Number of Route (m)  Approximate Number of Ecological Receptors				
Up to 20	More than 100	1		
Up to 50	More than 100	1		

- 4.5.3 The ecological receptor identified in **Table 13** and **Table 14** is the Wainbody Wood & Stivichall Common, Kenilworth Road Spinney LNR which lies adjacent to the northern site boundary and within 20m of the road network within 500m of the site access
- 4.5.4 **Figure 4** details the ecological designation extents.





4.5.5 A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in **Table 15**.

Table 15: Additional Area Sensitivity Factors			
Guidance	Comment		
Whether there is any history of dust generating activities in the area	The desk top study did not indicate any dust generating activities in the local area		
The likelihood of concurrent dust generating activity on nearby sites	A review of the planning portal did not indicate any additional development proposals likely to result in concurrent dust generation within the vicinity of the site		
Pre-existing screening between the source and the receptors	Wainbody Wood & Stivichall Common, Kenilworth Road Spinney LNR lies directly to the north of the site. This would limit the dispersion of dust to receptors in this area. Trees and shrubs are located sporadically along the remaining site boundaries. These may act as a barrier between emission sources and receptors should they be retained during the construction phase		



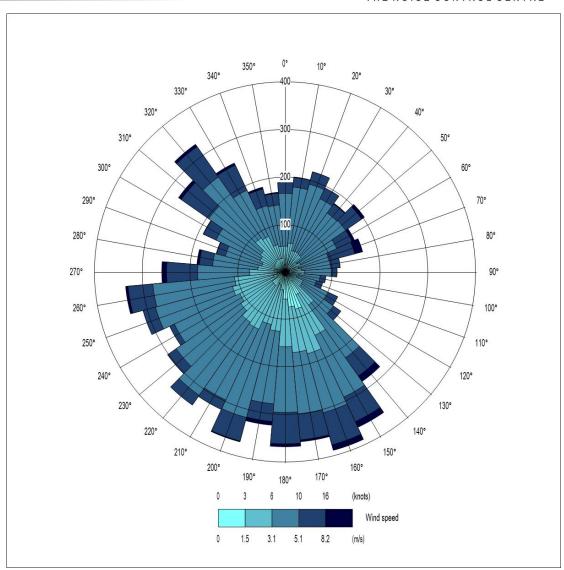
Table 15: Additional Area Sensitivity Factors			
Guidance	Comment		
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	As shown in <b>Figure 5</b> , the predominant wind bearing at the site is from the southwest, with significant frequencies from the north-west. As such, receptors to the north-east and south-east of the boundary are most likely to be affected by dust releases		
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion		
Duration of the potential impact, as a	Currently it is unclear as to the duration of		
receptor may become more sensitive over time	the construction phase. However, it is possible that it will extend over one year		
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities identified during the baseline assessment		

- 4.5.6 Based on the criteria shown in **Table 4**, the sensitivity of the receiving environment to potential dust impacts was determined as **high**. This was because the identified receptors included residential properties.
- 4.5.7 As the identified ecological receptor is a LNR, the sensitivity was classified as **low**.
- 4.5.8 The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 3.2, is shown in **Table 16**.

Table 16: Sensitivity of the Surrounding Area					
Potential	Sensitivity of the Surrounding Area				
Impact	Demolition Earthworks Construction Trackout				
<b>Dust Soiling</b>	High	High	High	High	
Human Health	Low	Low	Low	Medium	
Ecological	Low	Low	Low	Low	

4.5.9 **Figure 5** shows a wind rose of 2018 Birmingham Airport meteorological data.







#### 5 ASSESSMENT

#### 5.1 Introduction

5.2 There is the potential for air quality impacts as a result of the construction and operation of the proposed development, as well as exposure of future residents to existing air quality issues. These issues are assessed in the following Sections.

#### 5.3 Construction Phase Assessment

#### Step 1

- 5.3.1 The undertaking of activities such as demolition, excavation, ground works, cutting, construction and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements on the local road network also have the potential to result in the re-suspension of dust from highway surfaces.
- 5.3.2 The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.
- 5.3.3 The desk-study undertaken to inform the baseline identified a number of sensitive receptors within 350m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

#### Step 2

#### **Demolition**

- 5.3.4 Demolition activities will be undertaken at the start of the construction phase and will involve clearance of the existing Woodfield Primary School.
- 5.3.5 It is estimated that the total building volume to be demolished is less than 20,000m<sup>3</sup>. In accordance with the criteria outlined in **Table 3**, the magnitude of potential dust emissions from demolition is therefore **small**.
- 5.3.6 **Table 16** indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in **Table 8**, the development is considered to be a **medium** risk site for dust soiling as a result of demolition activities.



- 5.3.7 **Table 16** indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in **Table 8**, the development is considered to be a **negligible** risk site for human health impacts as a result of demolition activities.
- 5.3.8 **Table 16** indicates the sensitivity of the area to ecological impacts is **low**. In accordance with the criteria outlined in **Table 8**, the development is considered to be a **negligible** risk site for ecological impacts as a result of demolition activities.

#### **Earthworks**

- 5.3.9 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The proposed development site covers an area greater than 10,000m<sup>2</sup>. In accordance with the criteria outlined in **Table 3** the magnitude of potential dust emissions from earthworks is therefore **large**.
- 5.3.10 **Table 16** indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in **Table 9**, the development is considered to be a **high** risk site for dust soiling as a result of earthworks.
- 5.3.11 **Table 16** indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in **Table 9**, the development is considered to be a **low** risk site for human health impacts as a result of earthworks.
- 5.3.12 **Table 16** indicates the sensitivity of the area to ecological impacts is **low**. In accordance with the criteria outlined in **Table 9**, the development is considered to be a **low** risk site for ecological impacts as a result of earthworks.

## Construction

- 5.3.13 Due to the size of the development the total building volume is likely to be less than 25,000m<sup>3</sup>. In accordance with the criteria outlined in **Table 3**, the magnitude of potential dust emissions from construction is therefore **small**.
- 5.3.14 **Table 16** indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in **Table 9**, the development is considered to be a **low** risk site for dust soiling as a result of construction activities.
- 5.3.15 **Table 16** indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in **Table 9**, the development is considered to be a **negligible** risk site for human health impacts as a result of construction activities.



5.3.16 Table 16 indicates the sensitivity of the area to ecological impacts is low. In accordance with the criteria outlined in Table 9, the development is considered to be a negligible risk site for ecological impacts as a result of construction activities.

#### **Trackout**

- 5.3.17 Based on the site area, it is anticipated that the unpaved road length will be less than 50m. In accordance with the criteria outlined in **Table 3**, the magnitude of potential dust emissions from trackout is therefore **small**.
- 5.3.18 Table 16 indicates the sensitivity of the area to dust soiling effects to people and property is high. In accordance with the criteria outlined in Table 10 the development is considered to be a low risk site for dust soiling as a result of trackout activities.
- 5.3.19 **Table 16** indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in **Table 10**, the development is considered to be a **negligible** risk site for human health impacts as a result of trackout activities.
- 5.3.20 **Table 16** indicates the sensitivity of the area to ecological impacts is **low**. In accordance with the criteria outlined in **Table 10**, the development is considered to be a **negligible** risk site for ecological impacts as a result of trackout activities.

## Summary of the Risk of Dust Effects

5.3.21 A summary of the risk from each dust generating activity is provided in **Table 17**.

Table 17: Summary of Potential Unmitigated Dust Risks					
Potential Impact Demolition Earthworks Construction Trackout					
Dust Soiling	Medium	High	Low	Low	
Human Health	Negligible	Low	Negligible	Negligible	
Ecological	Negligible	Low	Negligible	Negligible	

5.3.22 As indicated in **Table 17**, the potential risk of dust soiling is **high** from earthworks, **medium** from demolition and **low** from construction and trackout. The potential risk of human health effects is **low** from earthworks and **negligible** from demolition, construction and trackout. The potential risk of ecological effects is **low** from earthworks and **negligible** from demolition, construction and trackout.



5.3.23 It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive area. Therefore, actual risk is likely to be lower than that predicted during the majority of the construction phase.

#### Step 3

5.3.24 The IAQM guidance<sup>14</sup> provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in **Table 18**. These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan or similar if required by the LA.

Table 18: Fugitive Dust Emission Mitigation Measures				
Issue	Control Measure			
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site  Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager			
	Display the head or regional office contact information  Develop and implement a Dust Management Plan (DMP), which may  be included within an overarching Construction Environmental  Management Plan, approved by the LA			
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  Make the complaints log available to the LA upon request Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book			
Monitoring	Undertake daily on-site and off-site inspection to monitor dust, record inspection results, and make the log available to the LA upon request  Carry out regular site inspections, record inspection results, and make an inspection log available to the LA upon request  Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions			
Site preparation	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible  Fully enclose site or specific operations where there is a high potential for dust production and they are active for an extensive period  Avoid site runoff of water or mud			

<sup>&</sup>lt;sup>4</sup> Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.



Table 18: Fugitive Dust Emission Mitigation Measures			
Issue	Control Measure		
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used		
Operating vehicle/machiner	Ensure all vehicles switch off engines when stationary - no idling vehicles		
y and sustainable travel	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable		
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques  Ensure an adequate water supply on the site for effective dust suppression, using non-potable water where possible and appropriate		
	Use enclosed chutes and conveyors and covered skips Minimise drop heights and use fine water sprays wherever appropriate		
	Ensure equipment is available to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods		
Waste management	No bonfires or burning of waste materials		
Demolition	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		
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-		
Construction	vegetate or cover with topsoil as soon as practicable  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		
Trackout	Use water-assisted dust sweeper on access and local roads, if required Avoid dry sweeping of large areas Ensure vehicles entering and leaving site are covered to prevent escape of materials Implement a wheel washing system, if required		

## Step 4

5.3.25 Assuming the relevant mitigation measures outlined in **Table 18** are implemented, the residual impact from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance<sup>15</sup>.

## 5.4 Operational Phase Assessment

## **Potential Development Impacts**

Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2017.



- 5.4.1 Any vehicle movements associated with the proposals will generate exhaust emissions on the local and regional road networks. Information provided by Cundalls, the Transport Consultants for the scheme, indicated a maximum net increase of 10 vehicles movements as a result of the redevelopment.
- 5.4.2 Based on the above information, the proposals are not considered likely to result in an increase of LDV flows of more than 100 AADT on any individual road link within the AQMA, include significant highway realignment or the introduction of a junction and there will not be a requirement for more than 25 HDV deliveries per day. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **negligible**, in accordance with the IAQM<sup>16</sup> screening criteria shown in Section 3.3.

#### **Potential Future Exposure**

5.4.3 The proposed development comprises land use sensitive to long and short term pollutant concentrations and as such has the potential to introduce new receptors into an area of poor air quality. Existing conditions at the site are therefore considered in the following Sections.

#### **AQMA** Designation

- 5.4.4 The site is located within the CCC AQMA, which has been declared for NO<sub>2</sub>. Although the designation covers the entire city, it is likely that there are some locations that do not experience exceedences of the AQOs. This is shown in the 2018 monitoring results, as reported in the CCC Annual Status Report<sup>17</sup>, which indicate compliance with the annual mean AQO for NO<sub>2</sub> at 52 out of 61 sites.
- 5.4.5 In summary, although AQO exceedences are considered possible at the site based on the AQMA, they are not certain.

## Proximity to Significant Pollution Sources

5.4.6 A desk-top study was undertaken in order to identify any significant pollution sources within the vicinity of the site. The findings are provided in **Table 19**.

Table 19: Significant Pollution Sources				
Source	Distance to Site (m)	Comment		
Stoneleigh Road	Adjacent	Stoneleigh Road is a moderately trafficked unclassified road with an AADT flow of 17,751 during 2019 <sup>(a)</sup>		

Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

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<sup>&</sup>lt;sup>17</sup> 2018 & 2019 Air Quality Annual Status Report (ASR), CCC, 2019.



Table 19: Significant Pollution Sources				
Source	Distance to Site (m)	Comment		
A429, Kenilworth Road	150	The A429, Kenilworth Road is a busy road with an AADT flow of 85,149 and HDV proportion of fleet of 6.6% <sup>(a)</sup> during 2018.  Moderate levels of congestion are experienced during peak periods of the day <sup>(c)</sup>		

NOTE: (a) Source: Email Correspondence, Peter Conlan, Cundall, 7th April 2020

- (b) Source: Department for Transport, https://roadtraffic.dft.gov.uk/manualcountpoints/930399
- (c) Source: https://www.google.co.uk/maps
- 5.4.7 As shown in **Table 19**, there are two identified road vehicle emission sources within the vicinity of the site. Stoneleigh Road and the A429, Kenilworth Road are both distanced from the proposed residential dwellings as shown in Figure 2. As such, these sources are unlikely to contribute significantly to pollutant levels above background at sensitive locations across the site.
- 5.4.8 Based on the proximity of the proposed development to local pollutant sources, exceedences of the AQOs are considered unlikely at sensitive locations across the site.

#### **Local Monitoring Results**

- 5.4.9 There are two monitoring sites located within the vicinity of the development. The closest of these is the SPH2 diffusion tube, which is approximately 2.2km north-west of the boundary. Due to the position of this monitor, adjacent to a moderately trafficked unclassified road within the CCC AQMA, concentrations recorded at this site are considered to be representative of conditions at the development boundary. As the SPH1 monitor is similarly located in the vicinity of a moderately trafficked unclassified road and distanced from the A45 Fletchamstead Highway within the CCC AQMA, concentrations at this location are also likely to be reasonably representative of conditions at the proposal. As shown in **Table 11**, the recorded annual NO<sub>2</sub> concentrations at the SPH1 and SPH2 monitors were below the AQO in 2018.
- 5.4.10 Based on the local monitoring results, exceedences of the relevant AQOs are considered unlikely at the development location.

## **Background Pollutant Concentration Predictions**

https://roadtraffic.dft.gov.uk/manualcountpoints/930565.



- 5.4.11 As shown in **Table 12**, predicted background pollutant concentrations for the grid square containing the site are well below the annual mean AQOs for NO<sub>2</sub> and PM<sub>10</sub> during 2020.
- 5.4.12 Based on the predicted background concentrations, exceedences of the AQO are considered unlikely at the development location.

#### <u>Summary</u>

- 5.4.13 It is considered likely that pollutant concentrations are below the relevant AQOs at the proposed development site for the following reasons:
  - Although the site is within an AQMA, recent monitoring has indicated compliance with the relevant AQOs at a number of locations within the designation;
  - Proposed residential dwellings are distanced from major pollutant sources;
  - Analysis of local monitoring results in the context of the site location and survey positions has indicated likely compliance with the AQOs for NO<sub>2</sub> at the development; and,
  - Predicted background concentrations are well below the relevant AQOs.
- 5.4.14 Based on the assessment results, exposure of future residents to exceedences of the AQOs is not considered likely. As such, the site is considered suitable for the proposed use from an air quality perspective.



#### 6 CONCLUSIONS

- 6.1.1 NoiseAir Limited has carried out an AQA for the proposed development on land at Woodfield School, Stoneleigh Road, Coventry, CV4 7AB.
- 6.1.2 The proposals have the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation, as well as expose future residents to any existing air quality issues. As such, an Air Quality Assessment was required in order to determine baseline conditions and assess potential effects as a result of the scheme.
- 6.1.3 During the construction phase of the development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology. Assuming good practice dust control measures are implemented, the residual significance of potential air quality impacts from dust generated by demolition, earthworks, construction and trackout activities was predicted to be **not significant**.
- 6.1.4 Potential impacts during the operational phase of the proposed development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the screening criteria provided within the IAQM<sup>19</sup> guidance document. Due to the low anticipated trip generation associated with the proposals, road traffic exhaust impacts were predicted to be **negligible**.
- 6.1.5 The potential for exposure of future residents to exceedences of the AQOs was assessed based on the AQMA designation, proximity of pollution sources to the site, local monitoring results and predicted background concentrations. This indicated that concentrations of NO<sub>2</sub> and PM<sub>10</sub> are likely to be below the relevant AQOs at the development location. As such, the site is considered suitable for the proposed use from an air quality perspective.
- 6.1.6 Based on the assessment results, air quality issues are not considered a constraint to planning consent for the development.

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Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

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# **APPENDIX A - REPORT LIMITATIONS**

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Notwithstanding anything to the contrary contained in the report, NoiseAir Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by Nicola Williams, of Coventry City Council and NoiseAir shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

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The methodology adopted and the sources of information used by NoiseAir Limited in providing its services are outlined in this report. The work described in this report was undertaken during the dates given in Section 1 and Section 2 and is based upon the conditions encountered as detailed in Section 2 and the information available up to the said date. The scope of this report and the services are accordingly factually limited by these circumstances.

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# **APPENDIX B - GLOSSARY**

Air Quality Limit Value	Legally binding parameters defined in European Union air quality legislation that must not be exceeded. Limit values are set for individual pollutants and are a combination of a concentration value, an averaging time over which it is measured, the number of exceedences allowed per year, and a date by which it must be achieved.	
Air Quality Management Area	An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives.	
Air Quality Objective	The name given to the maximum ambient pollutant concentration that is not to be exceeded either without exception or within a permitted number of exceedences over a specified timescale for a pollutant outlined in the national Air Quality Strategy.	
Air Quality Strategy	A national government document which contains standards, objectives and measures for improving ambient air quality.	
Annual Average Daily Traffic	The number of traffic movements on a given road in a 24-hour period as an average across one year.	
Background Concentration	The pollutant concentration assumed to represent baseline concentrations in the atmosphere across the modelled area.	
Heavy Duty Vehicle	Vehicles with a gross weight of greater than 3.5 tonnes.	

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