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**WILLIS CONSTRUCTION LIMITED**

**AIR QUALITY ASSESSMENT**

**OPEN HEARTH PUB, HENDRE FARM DRIVE, RINGLAND,  
NEWPORT NP19 9LH**

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Client: Willis Construction Limited

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**REPORT VERSION CONTROL:**

Document Reference	Date	Prepared by	Checked by	Authorised by
P5171-R2-V1	01/02/2023	Patrick Nolan BSc (Hons) AMIEnvSc	M W Pounder BSc (Hons) PGDip CEnv MIAQM MIEnvSc	M W Pounder BSc (Hons) PGDip CEnv MIAQM MIEnvSc
				

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## 1 INTRODUCTION

1.1.1 By instruction from Willis Construction Limited, NoiseAir Limited was commissioned to undertake an Air Quality Assessment (AQA) in support of a planning application to redevelop the site of the former Open Hearth Pub, Hendre Farm Drive, Ringland, Newport NP19 9LH, in order to accommodate 32 new residential dwellings, herein referred to as 'the Site'.

1.1.2 Limitations of this report are outlined in **Appendix A**.

### 1.2 Site Location and Context

1.2.1 The Site is located between Station Place, Seven Sisters Road and Stroud Green Road, Finsbury Park, London, at approximate National Grid Reference (NGR): 531435, 186775.

**Figure 1** details the location of the Proposed Development Site.

1.2.2 The Site is located in an area where air quality is mainly influenced by road traffic emissions along the local road network, as such elevated pollutant concentrations may be experienced at and around this location. Subsequently, the Proposed Development may lead to adverse impacts at nearby sensitive receptors, as a result of fugitive dust emissions during construction and road vehicle exhaust emissions during operation. As such, an AQA is required to determine potential impacts associated with the Proposed Development in accordance with the requirements of Planning Policy Wales (PPW). The AQA will therefore consider ambient pollutant concentrations namely nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub>) around the Site.

1.2.3 The main potential sources of air pollution were identified as emissions from road transport using the local road network, namely the A48, Southern Distributor Road. There are no substantial combustion sources identified within the immediate vicinity of the Site that will influence local air quality.

1.2.4 The Proposed Development Site is located within the administrative area of the Newport City Council (NCC), in a predominantly residential area. The Site is located on the southern side of Hendre Farm Drive, on land formerly occupied by the Open Hearth Pub. To the south of the Site is the A48, Southern Distributor Road. The Site is bounded by trees to the west, with residential properties beyond these. To the north and east is Hendre Farm Drive, with further residential properties beyond. Vehicular access to the Site is assumed to be from Hendre Farm Drive.

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- 1.2.5 The proposal comprises redeveloping the Site to make way for 32 new residential dwellings, in a mix of 5, 4, 3 and 2 bed arrangements. The former pub that stood on the site previously has already been demolished after fire damage so it is assumed that no more demolition works are necessary to be carried out in preparing the Site.
- 1.2.6 The report presents the findings of an assessment of the potential air quality impacts of the Proposed Development during the construction and operational phases. For both phases, the source type and significance of potential impacts are identified, and measures that should be employed to minimise these are described.

## 2 LEGISLATION AND POLICY

### 2.1 Air Quality Legislation and Policy

2.1.1 A summary of the relevant air quality legislation and policy is provided below.

#### *UK Air Quality Strategy*

2.1.2 The government's policy on air quality within the UK is set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS)<sup>1</sup>. The AQS provides a framework for reducing air pollution in the UK with the aim of meeting the requirements of European Union Legislation.

2.1.3 The AQS also sets standards and objectives for nine key pollutants to protect health, vegetation and ecosystems. These are benzene (C<sub>6</sub>H<sub>6</sub>), 1,3 butadiene (C<sub>4</sub>H<sub>6</sub>), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), sulphur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), and polycyclic aromatic hydrocarbons (PAHs).

2.1.4 The air quality standards are levels recommended by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organization (WHO) with regards to current scientific knowledge and the effects of each pollutant on health and the environment.

2.1.5 The Air Quality Objectives (AQOs) are medium-term policy-based targets set by the Government, which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to EPAQS recommended standards or WHO guideline limits, whereas other involve a margin of tolerance, i.e. a limited number of permitted exceedances of standards over a given period.

2.1.6 Table 1 presents the AQOs for pollutants considered within this assessment.

<b>Table 1: National Air Quality Objectives and European Directive Limit Values for the Protection of Human Health</b>			
<b>Pollutant</b>	<b>Applies to</b>	<b>Objective</b>	<b>Measured As</b>
NO <sub>2</sub>	UK	40µg/m <sup>3</sup>	Annual mean
	UK	200µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean

<sup>1</sup> Department for Environment, Food and Rural Affairs (Defra) and the Devolved Administrations (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2).

<b>Table 1: National Air Quality Objectives and European Directive Limit Values for the Protection of Human Health</b>			
<b>Pollutant</b>	<b>Applies to</b>	<b>Objective</b>	<b>Measured As</b>
PM <sub>10</sub>	UK (except Scotland)	40µg/m <sup>3</sup>	Annual mean
	UK (except Scotland)	50µg/m <sup>3</sup> not to be exceeded more than 35 times a year	24-hour mean

2.1.7 For the pollutants considered in this assessment, there are both long-term (annual mean) and short-term standards. In the case of NO<sub>2</sub>, the short-term standard is for a 1-hour averaging period, whereas for PM<sub>10</sub> it is a 24-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants, for example temporary exposure on the pavement adjacent to a busy road compared with the exposure of residential properties adjacent to a road.

#### ***Air Quality Standards (Wales) Regulations 2010***

2.1.8 The Air Quality Standards (Wales) Regulations 2010<sup>2</sup> brings into law the limits set out in the European Union Daughter Directive on Air Quality. This also requires the Welsh Government to divide Wales into air quality zones. It is through the Environment Act (1995) that all local authorities in Wales are required to review and assess air quality within their local authority area. This review and assessment process forms the cornerstone of Local Air Quality Management which helps authorities work towards achieving their Air Quality objectives.

2.1.9 The Air Quality Standards (Wales) (Amendment) Regulations 2019<sup>3</sup> amends the Air Quality Standards Regulations 2010 that transpose the European Union Ambient Air Quality Directive (2008/50/EC) into law in England. This Directive sets legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health such as PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>2</sub>. The limit values for NO<sub>2</sub> and PM<sub>10</sub> are the same concentration levels as the relevant AQS objectives and the limit value for PM<sub>2.5</sub> is a concentration of 25µg/m<sup>3</sup>.

#### ***Environmental Protection Act 1990 – Control of Dust and Particles Associated with Construction***

2.1.10 Section 79 of the Environmental Protection Act 1990<sup>4</sup> gives the following definitions of statutory nuisance relevant to dust and particles:

<sup>2</sup> The Air Quality Standards (Wales) Regulations 2010 – Wales Statutory Instruments 2010 No. 1433 (W. 126)

<sup>3</sup> The Air Quality Standards (Wales) (Amendment) (EU Exit) Regulations 2019 - Statutory Instrument 2019 No. 1184.

<sup>4</sup> Environmental Protection Act. London 1990. HMSO

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*'Any dust, steam, smell or other effluvia arising from industrial, trade or business premises or smoke, fumes or gases emitted from premises so as to be prejudicial to health or a nuisance'; and*

*'Any accumulation or deposit which is prejudicial to health or a nuisance'.*

2.1.11 Following this, Section 80 says that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

2.1.12 There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist. Nuisance is a subjective concept, and its perception is highly dependent upon the existing conditions and the change which has occurred.

#### ***Environment Act 1995***

2.1.13 Under Part IV of the Environment Act 1995<sup>5</sup>, local authorities must review and document local air quality within their area by way of staged appraisals and respond accordingly, with the aim of meeting the air quality objectives defined in the Regulations. Where the objectives are not likely to be achieved, an authority is required to designate an Air Quality Management Area (AQMA). For each AQMA the local authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality and show how it intends to work towards achieving air quality standards in the future.

#### ***Environment (Wales) Act (2016)***

2.1.14 This Environment (Wales) Act (2016)<sup>6</sup> sets out the approach for the sustainable management of natural resources in Wales, which will help to mitigate for and adapt to the impacts of climate change. An outcome of the sustainable management of natural resources will mean that benefits are provided for local communities equally, by encouraging decision makers to consider the economic, social and environmental impacts of decisions on current and future generations. The intention is to create a resilient natural environment, so that natural resources will continue to provide, for example, good air quality.

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<sup>5</sup> Environment Act 1995. London HMSO

<sup>6</sup> Environment (Wales) Act (2016). 2016. Welsh Government.

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### ***Clean Air Strategy (2019)***

- 2.1.15 In 2019, the UK government released its Clean Air Strategy 2019<sup>7</sup>, part of its 25 Year Environment Plan<sup>8</sup>. The Strategy sets out the comprehensive action that is considered to be required from across all parts of government and society.
- 2.1.16 The primary focus of air quality management has primarily related to NO<sub>2</sub>, and its principal source in the UK, road traffic. The 2019 Strategy aims to broaden the focus to other areas, including actions on clean growth, and emissions from domestic wood burning stoves, industry and agriculture.

## **2.2 Planning Policy**

- 2.2.1 A summary of the national and local planning policy relevant to the Proposed Development and air quality is provided below.

### ***Planning Policy Wales (2021)***

- 2.2.2 The Welsh Government's overall planning policies for Wales are described in the Planning Policy Wales (PPW) 2021<sup>9</sup>. The PPW is underpinned by a series of Technical Advice Notes, Welsh Government Circulars and policy clarification letters, which together form the national planning policy framework for Wales.
- 2.2.3 The primary aim of the PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act (2015)<sup>10</sup>, the Well-being of Future Generations (Wales) Act (2015)<sup>11</sup> and other key legislation.

### ***Planning (Wales) Act (2015)***

- 2.2.4 The Planning (Wales) Act (2015) enables the creation of an efficient planning process that ensures the right development is located in the right place. This is done through adherence with the Well-being of Future Generations (Wales) Act (2015) and Environment (Wales) Act (2016) to ensure that resources are managed in an engaged and sustainable way. There is

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<sup>7</sup> Department for Environment, Food and Rural Affairs (2019) Clean Air Strategy 2019.

<sup>8</sup> Department for Environment Food and Rural Affairs (Defra) (2018) A Green Future: Our 25 Year Plan to Improve the Environment.

<sup>9</sup> Planning Policy Wales (2021) Welsh Government.

<sup>10</sup> Planning (Wales) Act (2015) Welsh Government.

<sup>11</sup> Well-being of Future Generations (Wales) Act (2015) Welsh Government.

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greater emphasis on development engagement at the preapplication stage. This approach will help ensure issues such as air quality are considered at the earliest stage.

### ***Well-being of Future Generations (Wales) Act 2015***

- 2.2.5 The Well-being of Future Generations (Wales) Act 2015 is centred on improving the social, economic and cultural well-being of Wales, to tackle the future challenges such as climate change, poverty and health inequalities. This Act makes the public bodies listed think more about the long-term impacts of decision making and ensures a joined up approach to create a more resilient Wales.
- 2.2.6 The Act ensures that local authorities deliver sustainable development by considering long term effects as well as encouraging a more joined up approach. Both of these principles are key when considering air quality. Two out of the seven well-being goals are particularly relevant to this document. The need for a healthier Wales and the need for a resilient Wales where there are healthy ecosystems which support social, economic and ecological resilience and there is a society in which choices are made which benefit our future health are understood. Clearly air quality management can help to achieve both of these well-being goals.

### ***The Clean Air Plan for Wales (2020)***

- 2.2.7 The Clean Air Plan for Wales (2020)<sup>12</sup> aims to improve air quality and reduce the impacts of air pollution on human health, biodiversity, the natural environment and the economy. The Plan supports the delivery of wider legislative commitments and explains how air quality policy aligns with other Welsh Government policy and the priorities and principles that will be applied in delivering this Plan.
- 2.2.8 These were reviewed and the relevant guidance considered as necessary throughout the undertaking of the assessment.

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<sup>12</sup> The Clean Air Plan for Wales. (2020). Welsh Government.

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## **Local Planning Policy**

### **Newport Local Development Plan (2015)**

2.2.9 Newport City Council's (NCC) Newport Local Development Plan (NLDP)<sup>13</sup> provides land use policies and proposals to shape the future growth of the City up until 2026.

2.2.10 An overview of the Plan determined the following policies of relevance to air quality:

#### **"GP2 General Development Principles – General Amenity**

*Development will be permitted where, as applicable:*

- i) *There will not be a significant effect on local amenity, including in terms of noise disturbance, privacy, overbearing, light, odours and air quality;*

[...]

#### **"GP7: General Development Principles – Environmental Protection and Public Health**

*Development will not be permitted which would cause or result in unacceptable harm to health because of land contamination, dust, instability or subsidence, air, heat, noise or light pollution, or any other identified risk to environment, local amenity or public health and safety."*

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<sup>13</sup> Newport Local Development Plan 2011-2026 (2015), Available online at <https://www.newport.gov.uk/en/Planning-Housing/Planning/Planning-policy/Local-Development-Plan/Local-Development-Plan.aspx> [Accessed on 14/01/2022]

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### **“SP14 Transport Proposals**

*Transport proposals will be supported where they:*

*[...]*

*ix) Result in other environmental improvements, including air quality, noise reduction, sustainable drainage and enhanced biodiversity.”*

### **Sustainable Travel Strategy (2019)**

2.2.11 This Travel Strategy<sup>14</sup> is designed to outline the various actions NCC will take to reduce the level of pollution from road traffic. The Sustainable Travel Strategy has been designed to provide a framework to develop localised plans targeting the Air Quality Management Areas (AQMAs).

2.2.12 It also outlines how NCC will encourage less air pollution from transport in the support of Wales’s long-term commitment to decarbonise, changing to more sustainable modes of transport and a much-needed reduction in green houses gases.

## **2.3 Guidance**

2.3.1 A summary of the publications referred to in undertaking this assessment is provided below.

### **Local Air Quality Management Review and Assessment Technical Guidance (2022)**

2.3.2 The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their review and assessment work<sup>15</sup>. The guidance was updated in August 2022, following the enactment of measures in the Environment Act 2021 which aim to enhance the LAQM framework to enable greater localised action on air pollution. Referred to herein as LAQM.TG22, the updated guidance has been used where appropriate in the following assessment.

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<sup>14</sup> Newport City Council Sustainable Travel Strategy (Air, Noise & Sustainability Action Plan) (2019) Available online at <https://www.newport.gov.uk/en/Transport-Streets/Sustainable-travel.aspx> [Accessed 14/01/2023]

<sup>15</sup> Department for Environment, Food and Rural Affairs (Defra) (2021) Part IV The Environment Act 1995 as amended by the Environment Act 2021 Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management Technical Guidance LAQM.TG22

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

- 2.3.3 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance<sup>16</sup> that offers comprehensive advice on: when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures that may be implemented to minimise these impacts.

***Guidance on the Assessment of Dust from Demolition and Construction (2016)***

- 2.3.4 This document<sup>17</sup> published by the IAQM was produced to provide guidance 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<sub>10</sub> impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.

***Supplementary Planning Guidance NCC (2018)***

- 2.3.5 NCC's SPG<sup>18</sup> sets out the circumstances when an assessment for air quality purposes is required and clarifies the appropriate minimum amount of information required for the air quality assessment. Mitigation measures and offsetting of impacts through compensation are also provided. This SPG is focussed on the impact to human health.

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<sup>16</sup> Environmental Protection UK and Institute of Air Quality Management (Version 1.2 Updated January 2017) Land Use Planning & Development Control: Planning for Air Quality.

<sup>17</sup> Institute of Air Quality Management (Version 1.1 Updated June 2016) Guidance on the Assessment of Dust from Demolition and Construction.

<sup>18</sup> Newport City Council, Development Management Air Quality Supplementary Planning Guidance (2018), Available online at <https://www.newport.gov.uk/documents/Planning-Documents/LDP-2011-2026/Adopted-Air-Quality-SPG-February-2018.pdf> [Accessed 14/01/2023]

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### 3 SCOPE AND METHODOLOGY

#### 3.1 Scope

3.1.1 The scope of the assessment has been determined in the following way:

- A review of the Masterplan of the Proposed Development;
- Desktop study to confirm the locations of nearby existing receptors that may be sensitive to changes in local air quality; and
- Review of NCC's latest available Air Quality Annual Status Report<sup>19</sup> (ASR) and air quality data surrounding the Site including data from Defra<sup>20</sup> and the Environment Agency (EA)<sup>21</sup>;

3.1.2 The scope of the assessment includes consideration of the potential impact on local air quality resulting from:

- Dust and particle matter generated by on-site activities during the construction phase;
- Increases in pollutant concentrations as a result of exhaust emissions arising from construction traffic and plant; and
- Increases in pollutant concentrations as a result of exhaust emissions arising from traffic generated by the Proposed Development once operational.

#### 3.2 Construction Phase Assessment

3.2.1 Dust comprises particles typically in the size range of 1-75 micrometres ( $\mu\text{m}$ ) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Dust therefore is unlikely to cause long term or wide-spread changes to air quality; however, it's deposition on property and cars can cause 'soiling' and discolouration. This may result in complaints of nuisance through amenity loss or perceived damage caused, which is usually temporary.

3.2.2 The smaller particles of dust, known as particulate matter (PM), with less than 10  $\mu\text{m}$  in aerodynamic diameter ( $\text{PM}_{10}$ ) representing only a small proportion of total dust released; this includes a finer fraction, known as  $\text{PM}_{2.5}$  (with an aerodynamic diameter less than 2.5 $\mu\text{m}$ ). As

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<sup>19</sup> Newport City Council Air Quality Annual Status Report 2021. Available at <https://www.newport.gov.uk/documents/Transport-and-Streets/Pollution-and-Noise-Control/2021-Air-Quality-Progress-report.pdf> [Accessed 18/1/2023]

<sup>20</sup> Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management (LAQM) Support Pages [Online] Available at <https://laqm.defra.gov.uk/> [Accessed 18/1/2023]

<sup>21</sup> Department for Environment, Food and Rural Affairs (Defra, 2022) Pollution Inventory [Accessed 18/1/2023]

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these particles are at the smaller end of the size range of dust particles they remain suspended in the atmosphere for a longer period of time than the larger dust particles, they can therefore be transported by wind over a wider area. PM<sub>2.5</sub> are small enough to be drawn into the lungs during breathing, which in sensitive members of the public could have a potential impact on health. However, it is worth noting that, according to the IAQM guidance, the majority of fugitive particulate emissions arising from construction sites are expected to relate to the coarser fractions (i.e. PM<sub>2.5-10</sub>) with just 10-15% expected to comprise PM<sub>2.5</sub>. The IAQM guidance therefore focusses on PM<sub>10</sub> for the purposes of assessment.

- 3.2.3 An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and PM<sub>10</sub> during the construction phase has been undertaken using: the relevant assessment methodology published by the IAQM; the available information for this phase of the Proposed Development provided by the Client and/or Project Team; and, the professional judgement of the NoiseAir team.
- 3.2.4 The IAQM methodology assesses the risk of potential dust and PM<sub>10</sub> impacts from the following four sources: demolition, earthworks, construction and trackout. It takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in PM<sub>10</sub> levels to assign a level of risk. Risks are described in terms of there being a low, medium or high risk of dust impacts. Once the level of risk has been identified, and the significance of residual effects determined. A summary of the IAQM assessment methodology is provided in **Appendix C**.
- 3.2.5 In addition to the impacts on local air quality due to on-site construction activities, exhaust emissions from construction vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the application Site and in the vicinity of the application Site itself. As information on the number of vehicles and plant associated with the construction phase was not available at the time of writing, a qualitative assessment of their impact on local air quality has been undertaken using professional judgement and considering the following:
- The number and type of construction traffic and plant likely to be generated by this phase of the Proposed Development;
  - The number and proximity of sensitive receptors to the application Site and along the likely routes to be used by construction vehicles; and
  - The likely duration of the construction phase and the nature of the construction activities undertaken.

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### 3.3 Operational Phase Assessment

3.3.1 The Proposed Development has the potential to expose existing and future residents to any existing air quality issues.

3.3.2 The EPUK & IAQM guidance sets out two stages for determining when an assessment of potential impacts on the local area is likely to be necessary. The Stage 1 criteria for an air quality assessment is presented below:

A. If any of the following apply:

- 10 or more residential units or a site area of more than 0.5ha; or
- More than 1,000 m<sup>2</sup> of floor space for all other uses or a site area greater than 1ha.

B. Coupled with any of the following:

- The development has more than 10 parking spaces; or,
- The development will have a centralised energy facility or other centralised combustion process.

3.3.3 Should these criteria not be met, then the EPUK and IAQM guidance considers air quality impacts associated with a scheme to be negligible and no further assessment is required. Should the criteria be met or exceeded, proceed to Stage 2. Stage 2 of the EPUK & IAQM guidance document states the following criteria to help establish when an air quality assessment is likely to be considered necessary:

- Proposals that will cause a change in Light Duty Vehicle (LDV) flows of more than 100 AADT within or adjacent to an AQMA or more than 500 elsewhere;
- Proposals that will cause a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 elsewhere;
- Proposals that would realign roads within an AQMA by more than 5m;
- Proposals that will introduce new junctions or remove existing junctions near relevant receptors; and
- Proposals that will introduce or change a bus station or change flows of buses by more than 25 AADT within an AQMA or more than 100 AADT elsewhere;
- Proposals which will include an underground car park with extraction system which will be within 20m of a relevant receptor and have more than 100 movements per day;
- Proposals which include either a centralised plant using biofuel, a combustion plant with single or thermal input >300KWh or a standby emergency generator associated with a centralised energy centre; and

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- Proposals which include combustion processes of any size.

3.3.4 Should these criteria not be met, then the EPUK and IAQM guidance documents consider air quality impacts associated with a scheme to be not significant and no further assessment is required.

3.3.5 Should screening of the above indicate that any of the criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the predicted change in pollutant concentrations as a result of the proposed development.

3.3.6 The significance of predicted impacts can then be determined in accordance with the methodology outlined in the EPUK and IAQM guidance.

### **3.4 Significance Criteria**

#### ***Construction Phase***

3.4.1 The IAQM assessment methodology recommends that significance criteria is only assigned to the identified risk of dust impacts occurring from a construction activity with appropriate mitigation measures in place. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.

3.4.2 For the assessment of the impact of exhaust emissions from plant used on-site and construction vehicles accessing and leaving the Site on local concentrations of NO<sub>2</sub> and particulate matter; the significance of residual effects has been determined using professional judgement and the principles outlined in the IAQM guidance, which are described below.

#### ***Operational Phase***

3.4.3 The approach provided in the EPUK & IAQM guidance has been used within this assessment to assist in describing the air quality effects of additional emissions from traffic generated by the Proposed Development once operational.

#### ***Future Exposure***

3.4.4 The Site falls outside of an AQMA, but is near a locally busy 'A' road and so could have the potential to expose future sensitive users of the Site to poor air quality.

## 4 BASELINE

### 4.1 Introduction

4.1.1 Existing air quality conditions in the vicinity of the 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), NCC undertake annual review and assessment of air quality within their area of jurisdiction. In 2020, NCC undertook automatic monitoring across two locations. NO<sub>2</sub> was also monitored through a network of 77 non-automatic monitoring locations.

4.2.2 There are 11 AQMA's across the jurisdiction of NCC, with 4 situated on sections of the M4, which runs along the north of the City. All 11 AQMAs have been declared due to measured exceedances of the NO<sub>2</sub> annual mean objective with the earliest declared in 2004. The Site is not located within an AQMA.

### 4.3 Air Quality Monitoring

4.3.1 Monitoring of pollutant concentrations is undertaken by NCC throughout their area of jurisdiction. There is only one monitoring site within 2km of the Site, NCC31, Buckland Cottage, which is situated close to the M4. Recent monitoring from NCC31 is shown in **Table 2**. Exceedances of the relevant AQO are shown in **bold**.

Monitoring Site ID	Site Type	Distance to Kerb of Nearest Road (m)	Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )				
			2016	2017	2018	2019	2020
NCC31	Buckland Cottage	9.3	<b>44.3</b>	36.8	36.7	35.6	29.9

4.3.2 As shown in **Table 2** the annual mean AQO for NO<sub>2</sub> was only exceeded at NCC31 in 2016, in the last five years. Since 2016, concentrations have gradually declined. This is a location approximately 20m from the M4, a very busy motorway, and as such it is likely that NCC31 is exposed to higher pollutant concentrations than the Site, as it is not near the M4. As NCC31 was below the annual mean NO<sub>2</sub> objective in 2019, it can be assumed that NO<sub>2</sub> concentrations across the site were below the respective AQO. For our assessment

purposes 2019 is considered to be the last year for which 'normal' monitoring data is available before the impacts of the Covid-19 pandemic on travel behaviours.

#### 4.4 Background Pollutant Concentrations

4.4.1 Predictions of background pollutant concentrations on a 1 km-by-1 km basis have been produced by DEFRA for the entire of the UK to assist local authorities in their review and assessment of air quality. The Site is located in grid square 335500, 188500. Data for this location was downloaded from the DEFRA website<sup>22</sup> and is summarised in **Table** .

Table 3: Predicted Background Pollutant Concentrations				
OS Grid Reference (X, Y; m)	Predicted Background Pollutant Concentration ( $\mu\text{g}/\text{m}^3$ )			
	2019		2023	
	NO <sub>2</sub>	PM <sub>10</sub>	NO <sub>2</sub>	PM <sub>10</sub>
335500, 188500	12.7	10.3	10.3	12.7
Rounded to 1 d.p.				

4.4.2 As shown in **Table** predicted background NO<sub>2</sub> and PM<sub>10</sub> concentrations are well below the relevant AQOs across the assessment extents.

<sup>22</sup> Department for Environment, Food and Rural Affairs (Defra) (2022) Background Concentrations [Online] Available at <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018> [Accessed on 19/01/2023].

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## 5 ASSESSMENT

### 5.1 Introduction

5.1.1 There is the potential for air quality impacts as a result of the construction and operation of the Proposed Development. These are assessed in the following sections.

### 5.2 Construction Phase Assessment

5.2.1 Construction activities have the potential to generate and/ or re- suspend dust and PM<sub>10</sub> sources include:

- Site clearance and preparation including demolition activities;
- Preparation of temporary access/ egress to the Site and haulage routes;
- Earthworks;
- Materials handling, storage, stockpiling, spillage and disposal;
- Movement of vehicles and construction traffic within the Site (including excavators and dumper trucks);
- Use of crushing and screening equipment/ plant;
- Exhaust emissions from plant, especially when used at the extremes of their capacity and during mechanical breakdown;
- Construction of buildings, roads and areas of hard standing alongside fabrication processes;
- Internal and external finishing and refurbishment;
- Trackout, whereby earth is carried from the Site on vehicle tyres, deposited on roads and may later become suspended in the air as a result of vehicle movements; and
- Site landscaping after completion.

5.2.2 The majority of the releases are likely to occur during the 'working week'. However, for some potential release sources (e.g., exposed soil produced from significant earthworks activities) in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day over the period during which such activities are to take place.

#### ***Assessment of Potential Dust Emission Magnitude***

5.2.3 The IAQM methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM<sub>10</sub> sources:

- 
- Demolition;
  - Earthworks;
  - Construction; and
  - Trackout.

5.2.4 The findings of the assessment are presented below.

#### Demolition

5.2.5 It is understood that the former Open Hearth Pub building has already been demolished following a fire. As it is assumed that no further demolition works are required, the dust emissions associated with the demolition stage can be considered **negligible** and will not be assessed further in this report.

#### Earthworks

5.2.6 The Site has existing areas of hardstanding and areas of green space, and so earthworks will be required to prepare the ground for the Proposed Development. The Site is between 2,500m<sup>2</sup> – 10,000m<sup>2</sup> and for a Site of this size the IAQM recommends that the dust emission magnitude associated with the earthworks stage should be considered **medium**.

#### Construction

5.2.7 The total volume of buildings to be constructed on the Site is estimated to be between 25,000m<sup>3</sup> – 100,000m<sup>3</sup>, with potentially dusty construction materials utilised. Therefore, the dust emission magnitude is considered to be **medium** in terms of construction activities.

#### Trackout

5.2.8 Information on the number of HDVs associated with this phase of the Proposed Development is not available and therefore professional judgement has been used. It has been assumed that given the size and the location of the development area there are likely to be less than 10 HDV outward movements in any one day. In addition, there will be little to no unpaved area on Site due to the close proximity to Hendre Farm Drive. Resultantly, it can be considered that the potential dust emission magnitude is **small** for trackout.

5.2.9 **Table 3** provides a summary of the potential dust emission magnitude determined for each construction activity considered.

Table 3: Potential Dust Emission Magnitude	
Activity	Dust Emission Magnitude
Demolition	-
Earthworks	Medium
Construction Activities	Medium
Trackout	Small

**Assessment of Sensitivity of the Study Area**

- 5.2.10 The prevailing wind direction is predominantly from the south-west. Therefore, receptors located to the north-east of the Site on Fred Edwards Drive and Hendre Farm Drive are more likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase.
- 5.2.11 Under lower wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. Receptors north-east of the Site are expected to be affected the most as a result of the prevailing wind direction.
- 5.2.12 There are no ecological receptors within 50 m of the development boundary or access route, or within 50 m of the Site entrance as identified using Multi Agency Geographic Information for the Countryside (MAGIC) website<sup>23</sup>. As such, ecological impacts have not been assessed further within this report.
- 5.2.13 Taking the above into account and following the IAQM assessment methodology, the sensitivity of the area to changes in dust and PM<sub>10</sub> has been derived for each of the construction activities considered. The results are shown below, in **Table 4**.

Table 4: Sensitivity of the Study Area				
Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	-	High	High	High
Human Health	-	Low	Low	Medium

**Risk of Impacts**

- 5.2.14 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation.

<sup>23</sup> Department for Environment, Food and Rural Affairs (Defra) (2022) Multi-Agency Geographic Information for the Countryside (MAGIC) [Online] <https://magic.defra.gov.uk/> [Accessed on 19/01/2023]

**Table 5** below provides a summary of the risk of just impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

<b>Table 5: Summary Dust Risk Table Defining Site Specific Mitigation</b>				
<b>Potential Impact</b>	<b>Risk</b>			
	<b>Demolition</b>	<b>Earthworks</b>	<b>Construction</b>	<b>Trackout</b>
Dust Soiling	-	Medium	Medium	Low
Human Health	-	Low	Low	Low

**Construction Vehicles and Plant**

- 5.2.15 The greatest impact on air quality is emissions from vehicles and plant associated with the construction phase will be in the areas immediately adjacent to the Site access road. Construction traffic will access the Site via the local road network. Due to the size of the Site, it is considered likely that the construction traffic will be low in comparison to the existing traffic flows on these roads.
- 5.2.16 Final details of the exact plant and equipment likely to be used on-site will be determined by the appointed contractor, it is considered likely to comprise dump trucks, tracked excavators, diesel generators, asphalt sweaters, rollers, compressors and trucks. The number of plant and their location within the Site are likely to be variable over the construction.
- 5.2.17 Based on the current local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles, And the likely numbers of construction vehicles and plant that will be used comment the impacts are therefore considered to being **negligible** according to the assessment significance criteria.

**5.3 OPERATIONAL PHASE ASSESSMENT**

- 5.3.1 Vehicle movements associated with the operation of the Proposed Development will generate exhaust emissions on the local and regional road networks.
- 5.3.2 A screening assessment has been conducted based on Stage 1 of the EPUK & IAQM criteria. As the Proposed Development includes more than 10 residential units and more than 10 parking spaces, the Proposed Development does meet the Stage 1 criteria.
- 5.3.3 However, due to the size of the Proposed Development and it's relative distance from the nearest AQMA, it is not considered likely that the Site will increase LDV flows by more than 100 AADT within or adjacent to an AQMA, or 500 AADT elsewhere and the Proposals do not

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include any plans that would trigger any of the other Stage 2 criteria. As such it can be considered that air quality impacts associated with the scheme are likely to be **negligible** and no further assessment is required, in accordance with the EPUK & IAQM guidance.

#### ***Potential Future Exposure***

- 5.3.4 The Proposed Development includes land use sensitive to long term and short-term pollutant concentrations. Monitoring Site NCC31 is situated 20m away from the M4 and in recent years has recorded no exceedances of the annual mean NO<sub>2</sub> limit. As the Site is not close to the M4, monitor NCC31 can be assumed to experience higher concentrations of pollutants associated with road traffic and as this monitor has not recorded any exceedances since 2016, it is considered unlikely that NO<sub>2</sub> limits will be met across the assessment extents.

#### ***Summary***

- 5.3.5 Based on the extent of predicted population exposure to the impacts on pollutant concentrations and the guidance provided by the EPUK and IAQM, the overall effect of the Proposed Development is considered to be **not significant**.

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## 6 MITIGATION AND RESIDUAL EFFECTS

### 6.1 Construction Phase

- 6.1.1 Based on the construction phase assessment results showing the Site poses a maximum of 'Medium risk' for potential dust emissions, mitigation will be required for this phase. Mitigation measures recommended by the IAQM for 'Medium risk' sites are presented below:

#### Communications:

- 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, which may include measures to control other emissions, 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 logbook.

#### Monitoring

- 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.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water or mud.

- 
- Keep site fencing, barriers and scaffolding clean using wet methods.
  - Remove materials that have the potential to produce dust from site as soon as possible.
  - 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.
- Avoid the use of diesel- or petrol-powered generators where possible 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 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

- 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 tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove secure covers in small areas during work and not all at once.

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### 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.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos.

### Trackout

- Use water-assisted dust sweepers on the access and local roads (if required).
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving the site are covered to prevent escape of materials during transport.
- Implement a wheel washing system, if required.

6.1.2 Detailed mitigation measures to control construction traffic should be discussed with the Local Authority to establish the most suitable access and haul routes for the site traffic. The most effective mitigation will be achieved by ensuring that construction traffic does not pass along sensitive roads (i.e., congested roads, residential roads, or unsuitable junctions for large vehicles) where possible. Construction vehicles should be kept clean through the use of wheel washers and sheeted when on public highways. Timing of large-scale vehicle movements to avoid peak hours on the local road network would also be of benefit.

## **6.2 Residual Effects**

6.2.1 The residual effects of dust and PM<sub>10</sub> generated by construction activities following the application of the mitigation measures described above and good Site practise is considered to be **not significant**.

6.2.2 The residual effects of emissions to air from construction vehicles and plant on local air quality is considered to be **not significant**.

## **6.3 Operational Phase**

### ***Mitigation***

6.3.1 The changes in pollution concentrations attributable to traffic emissions associated with the operational phase of the Proposed Development (i.e., impacts on local air quality) are **negligible** and therefore, in accordance with the assessment criteria, mitigation is not required. Additionally, pollutant concentrations at the Site are predicted to be below the

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relevant AQOs and as such additional mitigation is not required at choosing the operational phase.

### ***Residual Effects***

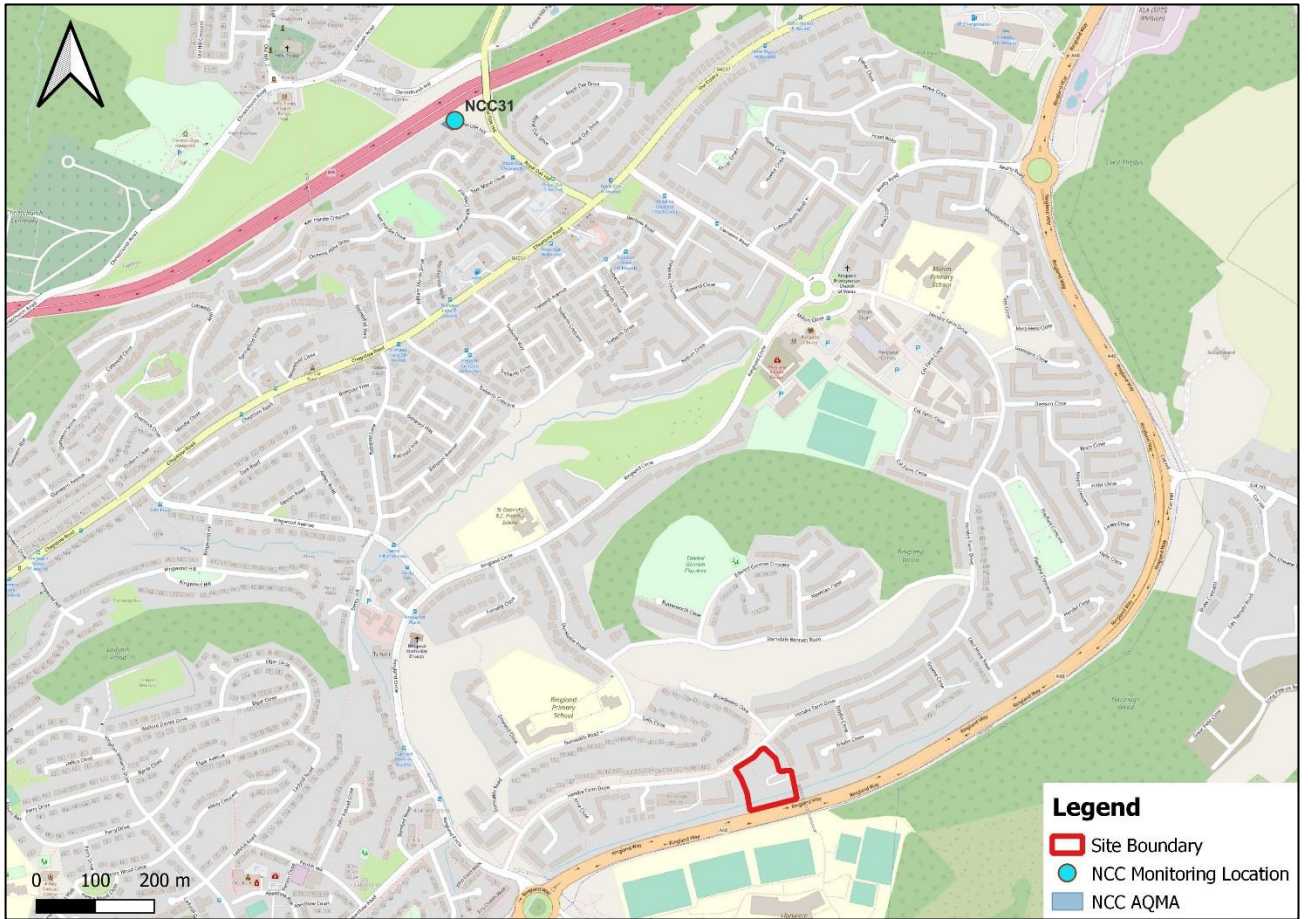
- 6.3.2 Based on the extent of predicted population exposure to the impacts on pollutant concentrations and the guidance provided by the IAQM, the Proposed Development is expected to result in an overall **negligible** impact associated with the operational phase traffic on nearby sensitive receptors, with the overall effect considered to be **not significant**.
- 6.3.3 The residual effects of the Proposed Development on air quality are **not significant** for both NO<sub>2</sub> and PM<sub>10</sub> according to the EPUK & IAQM assessment criteria.
- 6.3.4 The residual effect of air quality on future occupiers of the Proposed Development is also judged to be **not significant**.

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## 7 SUMMARY AND CONCLUSIONS

- 7.1.1 NoiseAir limited was commissioned to undertake this AQA in support of a planning application to erect 32 residential dwellings on the Site of the former Open Hearth Pub, Hendre Farm Drive, Ringland, Newport, NP19 9LH.
- 7.1.2 A qualitative assessment of the potential impacts on local air quality from construction activities has been carried out for this phase of the Proposed Development using the IAQM methodology. This identified that there is a **Low to Medium risk** of dust soiling impacts and a **Low risk** of increases in particulate matter concentrations due to unmitigated construction activities. However, through good site practice and the implementation of suitable mitigation measures, the effect of dust and particulate matter releases would be significantly reduced. The residual effects of dust and particulate matter generated by construction activities on air quality are therefore considered to be **not significant**. The residual effects of emissions to air from construction vehicles and plant on local air quality is considered to be **not significant**.
- 7.1.3 Based on the extent of predicted population exposure to the impacts on pollutant concentrations and the guidance provided by EPUK & IAQM, the Proposed Development is expected to result in a **negligible** impact associated with the operational phase traffic on nearby receptors and the residual effects are considered to be **not significant**.
- 7.1.4 The Site is not in an AQMA or in an area of existing poor air quality conditions, and nearby monitoring data and Defra background concentrations show that pollutant concentrations across the assessment extents are below their relevant limits. Based on this, the Site has been deemed suitable for the proposed use.
- 7.1.5 Based on the assessment significance criteria, the residual effect of the Proposed Development is considered to be **negligible** for all pollutants considered.
- 7.1.6 Furthermore, it is considered that the Proposed Development complies with all relevant national and local policy for air quality.
- 7.1.7 Based on the assessment results, air quality issues are not considered a constraint to planning consent for this proposal.

## FIGURES



**Figure 1 Site Location**

## **APPENDIX A - REPORT LIMITATIONS**

This Report is presented to Willis Construction Limited and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this report.

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## **APPENDIX B – GLOSSARY**

<b>AADT Annual Average Daily Traffic</b>	A daily total traffic flow (24hrs), expressed as mean daily floor across all 365 days of the year.
<b>Adjustment</b>	Application of a correction factor to modelled results to account for uncertainties in the model.
<b>Accuracy</b>	A measure of how well a set of data fits the true value.
<b>Air quality objective</b>	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with the permitted number of exceedances within a specific time scale (see also air quality standard).
<b>Ambient air</b>	Outdoor air in the troposphere, excluding workplace air.
<b>Annual mean</b>	the average (mean) of the concentrations measured for each pollutant for one year.
<b>AQMA</b>	Air Quality Management Area.
<b>AQO</b>	Air Quality Objective.
<b>AURN</b>	Automatic Urban And Rural (air quality) Network, managed by contractors on behalf of Defra.
<b>Conservative</b>	Trending to over predict the impact rather than under predict.
<b>Data Capture</b>	The percentage of all the possible measurements forgiven periods that were validly measured.
<b>Defra</b>	Department for Environment, Food and Rural Affairs.
<b>DfT</b>	Department for Transport
<b>EFT</b>	Emission Factor Toolkit
<b>Emission rate</b>	The quantity of a pollutant released from a source over a given period of time.
<b>EPUK</b>	Environmental Protection (UK)
<b>Exceedance</b>	A period of time where the concentration of a pollutant is greater than the appropriate air quality standard.

<b>HDV/HGV</b>	Heavy Duty Vehicle/Heavy Goods Vehicle.
<b>IAQM</b>	Institute of Air Quality Management.
<b>LAQM</b>	Local Air Quality Management.
<b>Model adjustment</b>	Following model verification, the process by which modelled results are amended. This corrects for systematic error.
<b>NO<sub>2</sub></b>	Nitrogen dioxide.
<b>NO<sub>x</sub></b>	Nitrogen oxides.
<b>PM<sub>10</sub></b>	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
<b>Road link</b>	A length of road which is considered to have the same flow of traffic along it. Usually, a link is the road from one junction to the next
<b>µg/m<sup>3</sup> micrograms per cubic metre</b>	A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m <sup>3</sup> means that one cubic metre of air contains one microgram (millionth of a gram) of a pollutant.

## **APPENDIX C – IAQM CONSTRUCTION DUST ASSESSMENT METHODOLOGY**

## IAQM CONSTRUCTION DUST ASSESSMENT METHODOLOGY

### Step 1 – Screening the Need for a Detailed Assessment

An assessment will normally be required where there are:

- ‘human receptors’ within 50m of the site boundary; all within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/ or
- ‘ecological receptors’ within 50m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway up to 500m from the site entrance(s)

Where the need for more detail assessment is screened out, it can be concluded that the level of risk is ‘negligible’.

### Step 2a – Define the Potential Dust Emission Magnitude

The following are examples of how the potential dust emission magnitude for different activities can be defined. Note that not all criteria need to be met for a particular class. Other criteria can be justified within the assessment.

Table C1: Construction Dust - Magnitude of Emission		
Magnitude	Activity	Criteria
Large	Demolition	<ul style="list-style-type: none"> <li>- Total volume of building to be demolished greater than 50,000 m<sup>3</sup>.</li> <li>- Potentially dusty material (e.g., concrete).</li> <li>- On-site crushing and screening.</li> <li>- Demolition activities more than 20m about ground level.</li> </ul>
	Earthworks	<ul style="list-style-type: none"> <li>- Total site area greater than 10,000m<sup>2</sup>.</li> <li>- Potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size).</li> <li>- More than 10 heavy earth moving vehicles active at any one time.</li> <li>- Formation of bunds greater than 8m in height.</li> <li>- More than 100,000 tonnes of material moved.</li> </ul>
	Construction	<ul style="list-style-type: none"> <li>- Total building volume greater than 100,000 m<sup>3</sup>.</li> <li>- On site concrete batching.</li> <li>- Sandblasting.</li> </ul>
	Trackout	<ul style="list-style-type: none"> <li>- More than 50 Heavy Duty Vehicle (HDV) trips per day.</li> <li>- Potentially dusty surface material (e.g., high clay content).</li> </ul>

Table C1: Construction Dust - Magnitude of Emission		
Magnitude	Activity	Criteria
		- Unpaved road length greater than 100m.
Medium	Demolition	- Total volume of building to be demolished between 20,000 m <sup>3</sup> and 50,000 m <sup>3</sup> . - Potentially dusty construction material. - Demolition activities 10m to 20m above ground level.
	Earthworks	- Total site area 2,500m <sup>2</sup> to 10,000 m <sup>2</sup> . - Moderately dusty soil type (e.g., silt). - 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 25,000m <sup>3</sup> to 100,000m <sup>3</sup> . - 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 100 m.
Small	Demolition	- Total volume of building to be demolished less than 20,000 m <sup>3</sup> . - Construction material with low potential for dust release (e.g., metal cladding or timber). - Demolition activities less than 10m above ground and during wetter months.
	Earthworks	- Total site area less than 2,500 m <sup>2</sup> . - 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 25,000 m <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 50 m.

### Step 2b – Define the Sensitivity of the Area

The tables below present the IAQM assessment methodology to determine the sensitivity of the area to soiling, human health and ecological impacts respectively. The IAQM guidance

provides guidance to allow sensitivity of individual receptors 2 to soiling and health effects to assist in the assessment of the overall sensitivity of the study area.

Table C2: Sensitivity of the Area to Dust Soiling Effects					
Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
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 C3: Sensitivity of the Area to Human Health Impacts							
Receptor Sensitivity	Annual Mean PM <sub>10</sub> Concentrations (µg/m <sup>3</sup> )	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	1-10	Low	Low	Low	Low	Low

Table C4: Sensitivity of the Area to Ecological Impacts		
Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low

**Table C4: Sensitivity of the Area to Ecological Impacts**

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
Low	Low	Low

**Step 2c – Define the Risk of Impacts**

The dust emissions magnitude determined in Step 2A should be combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts without mitigation applied. For those cases where the risk category is ‘negligible’ no mitigation measures beyond those required by legislation will be required.

<b>Table C5: Risk of Dust Impacts</b>			
<b>Sensitivity of Surrounding</b>	<b>Dust Emission Magnitude</b>		
	<b>Large</b>	<b>Medium</b>	<b>Small</b>
<b>Demolition</b>			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
<b>Earthworks and Construction</b>			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
<b>Trackout</b>			
High	High Risk	Medium Risk	Low Risk
Medium	High Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

### **Step 3 – Site Specific Mitigation**

Having determined the risk categories for each of the four activities it is possible to determine the site- specific measures to be adopted. These measures will be related to whether the site is considered to be a low, medium or high risk Site. The IAQM guidance details the mitigation measures required for low, medium and high risk sites as determined in Step 2C.

### **Step 4 – Determine Significant Effects**

Once the risk of dust impacts has been determined in Step 2C under the appropriate dust mitigation measures identified in Step 3, the final step is to determine whether there are significant effects arising from the construction phase. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors. If there are residual effects they will normally be negligible.

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[WWW.NOISEAIR.CO.UK](http://WWW.NOISEAIR.CO.UK)