

## 14 AIR QUALITY

### 14.1 INTRODUCTION

- 14.1.1 This chapter considers the potential effects of the Proposed Development on air quality, arising from both the construction and operation phases.
- 14.1.2 The assessment focuses on the air pollutants nitrogen dioxide (NO<sub>2</sub>) and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), which are associated with road vehicles. In addition, dust is relevant to the construction phase of the Proposed Development.
- 14.1.3 It is considered that there is the potential for an effect on air quality to arise during both the construction and operational phases of the Proposed Development. During the construction phase, dust and particulate matter emissions may be generated during on-site construction activities which could affect nearby sensitive receptors, likewise increases in emissions and concentrations of air pollutants may occur due to construction vehicles and plant. Once complete, there may be changes in emissions from traffic using nearby roads in the vicinity of the Application Site. In addition, it is important to ensure that future residents of the Proposed Development are not exposed to unacceptable levels of air pollution.

### 14.2 ASSESSMENT APPROACH

#### Methodology

##### Baseline Conditions

- 14.2.1 A review of the existing baseline air quality conditions in the vicinity of the Proposed Development has been obtained from the following sources:
- Boundaries of Air Quality Management Areas (AQMA)<sup>1</sup>;
  - Coventry City Council and other local authority local air quality management reports;
  - Air quality background concentrations and published monitoring network data from DEFRA's Air Information Resource (UK-AIR)<sup>2</sup>;
  - OS mapping to identify sensitive receptor locations for human health; and
  - Designated ecological site information from Natural England's online mapping portal, Magic<sup>3</sup>.

##### Construction

##### Construction Dust Risk Assessment

- 14.2.2 The Institute of Air Quality Management (IAQM) Dust Guidance<sup>4</sup> provides a framework for a risk-based approach to the assessment of dust emissions from demolition and construction. The assessment of dust emissions during construction of the Proposed Development has been considered in the context of the overall scale and nature of the development being proposed and the potential sensitivity of neighbouring land uses. The quantity and distribution of dust emissions varies according to type, duration and location of activity, weather conditions and the effectiveness of suppression (mitigation) measures. Good practice control measures that are "**highly recommended**" or "**desirable**" for dust control for the appropriate dust risk category are recommended.

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<sup>1</sup> <https://uk-air.defra.gov.uk/>

<sup>2</sup> <https://uk-air.defra.gov.uk/>

<sup>3</sup> <http://www.natureonthemap.naturalengland.org.uk/>

<sup>4</sup> Institute of Air Quality Management (IAQM) (2014). Guidance on the assessment of dust from demolition and construction.

**Air Quality**

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- 14.2.3 There are four key steps in the assessment process:
- Step 1 – Screening;
  - Step 2 – Assessment of the risk of dust affecting amenity and/or health and/or ecological receptors arising from each of four categories (demolition, earthworks, construction and trackout<sup>5</sup>);
  - Step 3 – Identification of site specific mitigation in terms of the identified risks;
  - Step 4 – Assessment of the significance of the residual dust risk, after the application of the site specific mitigation.

14.2.4 Tables 6 to 9 of the IAQM Dust Guidance are used to define the risk based on the dust emission magnitude and sensitivity of area. These are reproduced in **Table 14.1** to **Table 14.3** below.

**Table 14.1: Risk from Demolition**

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
<b>High</b>	High Risk	Medium Risk	Medium Risk
<b>Medium</b>	High Risk	Medium Risk	Low Risk
<b>Low</b>	Medium Risk	Low Risk	Negligible

**Table 14.2: Risk from Earthworks and Construction**

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
<b>High</b>	High Risk	Medium Risk	Low Risk
<b>Medium</b>	Medium Risk	Medium Risk	Low Risk
<b>Low</b>	Low Risk	Low Risk	Negligible

**Table 14.3: Risk from Trackout**

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
<b>High</b>	High Risk	Medium Risk	Low Risk
<b>Medium</b>	Medium Risk	Medium Risk	Negligible
<b>Low</b>	Low Risk	Low Risk	Negligible

14.2.5 In accordance with IAQM Dust Guidance, the determination of significance requires professional judgement, and is based on the likely residual dust risk following the correct application of mitigation methods. In the majority of cases, the conclusion will be not significant, as dust control measures are proven to be effective.

Construction Traffic Assessment

14.2.6 The Environmental Protection UK (EPUK)/IAQM Planning Guidance<sup>6</sup> advises that an air quality assessment would be required where a development causes a change in

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<sup>5</sup> Dust and dirt deposited on the road from road vehicles leaving a construction site  
<sup>6</sup> Environmental Protection UK and Institute of Air Quality Management (2017), 'Land-Use Planning & Development Control: Planning for Air Quality', <http://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> (accessed October 2018)

heavy duty vehicle (HDV)<sup>7</sup> flows on local roads of more than 25 per day within an AQMA or more than 100 per day outside an AQMA.

- 14.2.7 The average number of construction vehicles per day was estimated to be less than 10 so further assessment of the potential effect on receptors near roads during construction is not required and it can be concluded there would be no significant effect of emissions.

#### Operation

- 14.2.8 The effects on local air quality from changes in road traffic flows with the Proposed Development in the appropriate opening year have been assessed with reference to published guidance and using air quality assessment tools from DEFRA's Technical Guidance LAQM.TG(16)<sup>8</sup> and assessment criteria in the EPUK/IAQM Planning Guidance<sup>6</sup>.

- 14.2.9 The relevant traffic change criteria are:

- a change of light duty vehicles (LDV) of more than 100 per day; or
- a change of HDV of more than 25 per day.

#### Assessment Scenarios

- 14.2.10 The Proposed Development is expected to be fully operational in 2030, however the Coventry Strategic Traffic Model (CSTM) has an output year of 2026 and includes the impacts from this full development in 2026. As emission factors are higher in 2026 than in 2030 the air quality assessment has used 2026 as the fully operational year as a conservative assumption.

- 14.2.11 Traffic data for the following scenarios were considered:

- Quantify the threshold criteria;
- Base Year (2017) to allow comparison with air quality monitoring data;
- Opening Year (2026) without the Proposed Development (Do-Minimum (DM));
- Opening Year (2026) with the Proposed Development (Do-Something 1 (DS1)); and
- Opening Year (2026) with the Proposed Development and the planned and approved elements of the Keresley Sustainable Urban Extension including Keresley Link Road (DS2) for the Cumulative Assessment.

- 14.2.12 Traffic data used in the assessment are presented in **Appendix 14.1**. The locations of the traffic links are also presented in **Figure 14.4**.

#### Emission Factors

- 14.2.13 Vehicle exhaust emissions of NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> for each road link in each modelled scenario were calculated using DEFRA's Emissions Factors Toolkit (EFT, version 8.0.1, December 2017) for the base and opening year (without the Proposed Development and with the Proposed Development) scenarios.

#### Background Concentrations

- 14.2.14 The output from the dispersion model providing the contribution from road traffic emissions to annual mean concentrations of NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> at discrete receptor points was combined with estimates of background concentrations, to account for other sources of air pollution, to derive total annual mean concentrations. Background concentrations were taken from DEFRA's background maps and are detailed in the Baseline Conditions section.

<sup>7</sup> HDV comprises goods vehicles and buses >3.5 tonnes gross vehicle weight

<sup>8</sup> <https://laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf> (accessed October 2018)

**Air Quality**

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*Receptors*

- 14.2.15 Sensitive human health receptors for the purposes of air quality assessment include residential properties, locations of susceptible populations e.g. schools, hospitals and care homes for the elderly, or any other location where a member of the public may be exposed to an air pollutant for the relevant regulated time period.
- 14.2.16 Existing sensitive receptors with relevant exposure nearest to the Application Site include residential properties on Bennetts Road North, Howat Road, The Crescent, Exhall Road and Thompsons Road.
- 14.2.17 Changes in air quality as a result of the Proposed Development were estimated at 22 locations representative of sensitive human health receptors. **Table 14.4** shows information on the selected receptors and their locations, including six locations within the Applicant Site boundary representative of potential new sensitive receptors within the Proposed Development (R17 – R22). The selected receptors are also shown in **Figure 14.4**.

**Table 14.4: Selected Receptors**

Receptor ID	X	Y	Description
R1	431967	282115	8 Keresley Green Road
R2	431871	282134	9 Tamworth Road
R3	431925	281946	35 Stennels Close
R4	431910	282926	89 Bennetts Road South
R5	431935	283148	103A Bennetts Road South
R6	432224	283633	113 Watery Lane
R7	431818	283858	2 Fivefield Road
R8	431760	283924	The Limes, Fivefield Road
R9	431842	284033	Newlands Cottage, Bennetts Road
R10	431640	284781	5 Thompsons Road
R11	431645	284812	Park Leys Medical Practice
R12	432112	284683	76 Woods Piece
R13	431770	284789	Coopers Meadow
R14	431524	285071	The Hollies, Bennetts Road North
R15	431493	285154	52 Bennetts Road North
R16	431460	285190	Miners Lane
R17*	431356	284975	Transect into site from Bennetts Road North_200m
R18*	431466	285127	Transect into site from Bennetts Road North_20m
R19*	431462	285117	Transect into site from Bennetts Road North_30m
R20*	431453	285097	Transect into site from Bennetts Road North_50m
R21*	431426	285052	Transect into site from Bennetts Road North_100m
R22*	431391	285012	Transect into site from Bennetts Road North_150m

\*Transect from site boundary next to Bennetts Road North, north westerly across the site representing potential proposed receptors.

*Comparison with Air Quality Criteria*

- 14.2.18 To derive total NO<sub>2</sub> concentrations from the modelled road NO<sub>x</sub> concentrations, and hence to allow a comparison with the annual mean criterion, the method described in DEFRA’s Technical Guidance LAQM.TG(16) was used. The total annual mean NO<sub>2</sub> is calculated from the modelled road NO<sub>x</sub> and background NO<sub>2</sub>. The conversion was carried out using the ‘NO<sub>x</sub> to NO<sub>2</sub> conversion spreadsheet’ (Version 6.1), available from the DEFRA website. In addition to the modelled road NO<sub>x</sub> and background NO<sub>2</sub> data, the NO<sub>x</sub> to NO<sub>2</sub> conversion spreadsheet requires a local authority area to be specified to determine regional oxidant concentrations, and a traffic mix to determine the proportion of primary NO<sub>2</sub>.

- 14.2.19 DEFRA's Technical Guidance LAQM.TG(16) suggests that if annual mean concentrations of NO<sub>2</sub> do not exceed 60 µg/m<sup>3</sup> then it is unlikely that hourly mean concentrations would exceed the criterion set for the hourly mean.
- 14.2.20 To determine total annual mean concentrations of PM<sub>10</sub> and PM<sub>2.5</sub>, the modelled road contribution is simply added to the background concentration to give the total concentration. Annual mean PM<sub>10</sub> concentrations are then used to derive the number of exceedances of the 24-hour mean PM<sub>10</sub> criterion, of which 35 are allowed. The method described in DEFRA's Technical Guidance LAQM.TG(16) was applied, which is based on the relationship between the number of 24-hour exceedances of 50 µg/m<sup>3</sup> and the annual mean concentration. This relationship is described in Equation 14.1 below:

**Equation 14.1 – Calculation of PM<sub>10</sub> 24-Hour Mean Exceedances**

$$\text{Number of exceedances of 24-hour mean of } 50 \mu\text{g/m}^3 = -18.5 + 0.00145 * a^3 + (206/a)$$

where 'a' = total annual mean PM<sub>10</sub> concentration

**Model verification**

- 14.2.21 Model verification is the process of determining the local area performance of the base year model in comparison with measured data. The verification step involves comparison of modelled pollutant concentrations at suitable monitoring sites with monitored values that are representative of the base year (in this case 2017). Verification is undertaken in accordance with DEFRA's Technical Guidance LAQM.TG(16).
- 14.2.22 Where there is a disparity between modelled and measured concentrations, and where further improvements to input data are not possible, then if required, an appropriate adjustment factor can be determined to correct systematic bias. This adjustment is applied to the base year and future year model output. The adjustment factor was applied to the road contribution to modelled concentrations for NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. Model verification results are presented in **Appendix 14.2**.

**Sensitivity Test**

- 14.2.23 In some cases, where trends in ambient NO<sub>2</sub> concentrations are not declining at the rates anticipated by DEFRA, future year NO<sub>x</sub> emission factors and background emission rates may be too low. The use of the latest emission factors and background concentrations published by DEFRA in 2017 should now address these issues, however it is good practice to undertake a sensitivity test where there is no clear downward trend in NO<sub>2</sub> concentrations.
- 14.2.24 Analysis on trends in annual mean NO<sub>2</sub> has been undertaken using the Finnish Meteorological Institute MAKESENS (v1) spreadsheet using the annual mean time series data for urban background and rural monitoring sites in Coventry, as well as neighbouring boroughs of Nuneaton and Bedworth Borough Council (NBBC) and North Warwickshire Borough Council (NWBC). All sites show a decline in concentrations, one out of four was assessed to be statistically significant. There is no evidence for increasing concentrations in the wider area. As such, a sensitivity test for the local air quality assessment has not been carried out. Trends analysis results are presented in **Appendix 14.3**.

**Air Quality**

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*Damage costs method*

- 14.2.25 The method for determining the pollution emission damage cost calculation is detailed in Coventry City Council's Air Quality Supplementary Planning Document<sup>9</sup> (SPD) and provides a basis for estimating a financial commitment to offset increased emissions. The SPD states that the damage costs assist the Council in assessing the impacts on air quality of a major development and that the value calculated may be used when considering appropriate mitigation.
- 14.2.26 The traffic data provided is for the strategic traffic modelling year of 2026, however the Proposed Development is expected to be completely operational in 2030, therefore 2030 was used as the opening year for the damage costs calculation over the proceeding five years.
- 14.2.27 The change in traffic on the approach road to the development was estimated and represents the additional trip rate resulting from the Proposed Development. The annual emissions from these additional vehicles were calculated based on an average 10 kilometre trip and the damage costs per tonne of NO<sub>2</sub> and PM<sub>2.5</sub> are calculated for each of the first 5 years of operation.
- 14.2.28 The updated central damage costs were obtained from "Air Quality damage cost update 2019- AQ0650" prepared for Defra by Ricardo Energy & Environment and published in January 2019<sup>10</sup>. These were adjusted for values in 2030 – 2034 as advised in the report.

"For analysis of future year impacts, the approach continues to assume a proxy for income growth is the long-run rate of economic growth of 2% per annum. Further, impacts in years after the year of emissions change are discounted using the Green Book discount rate of 3.5% (HMT, 2011)".

- 14.2.29 Damage cost calculations are presented in **Appendix 14.4**.

*Cumulative Effects*

- 14.2.30 Planned and committed developments within the Sustainable Urban Extension (SUE) are included in the DM and DS1 scenarios. An additional proposed development of 950 homes is included in the cumulative assessment along with the Keresley Link Road. The estimated changes in concentrations as a result of this additional development and the significance of those changes are discussed in the "Cumulative and In-Combination Effects" section.

*Description of Impact Magnitude*

- 14.2.31 The EPUK/IAQM Planning Guidance<sup>6</sup> provides a matrix of descriptors for the effect at individual receptors. The descriptors are expressed as the magnitude of incremental change as a proportion of the relevant air quality assessment level (AQAL), which in this case is the annual average objective for each pollutant. The Table 6.3 in EPUK/IAQM Planning Guidance is reproduced in **Table 14.5** below, although the terminology has been changed for consistency with the wider ES.

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<sup>9</sup> Coventry City Council -Air Quality Supplementary Planning Document-Draft, August 2018, [http://www.coventry.gov.uk/downloads/download/5199/air\\_quality\\_draft\\_supplementary\\_planning\\_document\\_spd](http://www.coventry.gov.uk/downloads/download/5199/air_quality_draft_supplementary_planning_document_spd) (accessed October 2018)

<sup>10</sup>Available at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/770576/air-quality-damage-cost-guidance.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770576/air-quality-damage-cost-guidance.pdf)

**Table 14.5: IAQM Descriptors For the Magnitude of Impact at Receptors**

Long Term Average Concentration at Receptor	Percentage Change in Concentration Relative to AQAL*			
	1	2 – 5	6 – 10	>10
75% or less of AQAL	Negligible	Negligible	Minor+	Moderate
76 – 94% of AQAL	Negligible	Minor+	Moderate	Moderate
95 – 102% of AQAL	Minor+	Moderate	Moderate	Major^
103 – 109% of AQAL	Moderate	Moderate	Major^	Major^
110% or more of AQAL	Moderate	Major^	Major^	Major^

\*AQAL = Air Quality Assessment Level, which in this instance is the relevant air quality objective. The change in percentage pollutant concentration is rounded to whole numbers. Changes of 0%, i.e. less than 0.5%, will be described as Negligible  
 + The EPUK/IAQM Planning Guidance uses the term 'Slight'. For consistency with the wider Environmental Statement, this has been replaced with the term 'Minor'.  
 ^ The EPUK/IAQM Planning Guidance uses the term 'Substantial'. For consistency with the wider Environmental Statement, this has been replaced with the term 'Major'.

Assessment of Significance

14.2.32 The significance of the effects of traffic emissions on sensitive receptors was assessed in line with EPUK/IAQM Planning Guidance. In accordance with the guidance, the significance of air quality effects uses professional judgement of a suitably qualified person, who should take account of such factors as: the existing and future air quality in the absence of the development; the extent of current and future population exposure to the effects; and the influence and validity of any assumptions adopted when undertaking the prediction of effects. Typically it is likely that 'moderate' or 'major' descriptors of impact magnitude could give rise to a significant effects, and 'negligible' or 'minor' descriptors of impact magnitude would not have a significant effect.

**Legislative and Policy Framework**

Air Quality Legislation

14.2.33 There are two types of air quality regulations that apply in England:

- Regulations implementing mandatory European Union Directive limit values: The Air Quality Standards Regulations 2010 (Statutory Instrument (SI) 2010 No. 1001); and
- Regulations implementing national air quality objectives: Air Quality (England) Regulations 2000 (SI 2000 No. 928) and Air Quality (England) (Amendment) Regulations 2002 (SI 2002 No. 3043).

EU Limit Values

14.2.34 In April 2008, the European Commission adopted the Directive on ambient air quality and cleaner air for Europe (2008/50/EC). This Directive merged the previous Air Quality Framework Directive and the first three daughter directives and introduced new objectives for PM<sub>2.5</sub>. UK regulations (SI 2010 No. 1001) implement the EU Directive.

**Air Quality**

National Air Quality Objectives

- 14.2.35 The 2007 Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland<sup>11</sup> (UK AQS) set out the national air quality standards and objectives for a number of local air pollutants. The standards define the level of pollution below which health effects are expected to be minimum or low risk even for the most sensitive members of the population. The objectives are targets for air pollution levels to be achieved by a specified timescale.
- 14.2.36 Local authorities have a responsibility (under Part IV of the Environment Act 1995<sup>12</sup>, see below) to review and assess local pollution levels against these objectives. These criteria are defined in Regulations SI 2000 No. 928 and SI 2002 No. 3043. It should be noted that the UK AQS objectives only apply in locations likely to have 'relevant exposure' i.e. where members of the public are exposed for periods equal to or exceeding the averaging periods set for the standards. For this assessment, locations of relevant exposure include building façades of residential premises, schools, public buildings and medical facilities; places of work (other than certain community facilities) are excluded.
- 14.2.37 Relevant air quality criteria are provided in **Table 14.6**.

**Table 14.6: Air Quality Criteria**

Pollutant	Objective
NO2	Hourly mean concentration should not exceed 200 µg/m <sup>3</sup> more than 18 times a year Annual mean concentration should not exceed 40 µg/m <sup>3</sup>
PM10	24-hour mean concentration should not exceed 50 µg/m <sup>3</sup> more than 35 times a year Annual mean concentration should not exceed 40 µg/m <sup>3</sup>
PM2.5	UK (Except Scotland) annual mean concentration should not exceed 25 µg/m <sup>3</sup> † Exposure reduction <sup>^</sup> (UK urban areas): target of 15% reduction in concentrations at urban background between 2010 and 2020*

† AQS objective is 25 µg/m<sup>3</sup> to be met by 2020. EU limit value is 25 µg/m<sup>3</sup> to be met by 2015, with a requirement in urban areas to bring exposure down to below 20 µg/m<sup>3</sup> by 2020.  
<sup>^</sup> EU limit value exposure reduction target of 20% reduction between 2010 and 2020  
 \* 25 µg/m<sup>3</sup> is a cap to be seen in conjunction with 15% reduction.

Dust Deposition

- 14.2.38 There are no national standards or guidelines for dust deposition currently set in the UK, or by any international organisation. This is mainly due to the difficulty that any standard set would need to relate to dust being a perceptual problem related to amenity, rather than being specifically related to health effects. A guideline dust deposition threshold of 200 mg/m<sup>2</sup>/day is however recommended as a level for action by the IAQM<sup>13</sup>.

National Planning Policy

- 14.2.39 The National Planning Policy Framework (NPPF)<sup>14</sup> and associated Planning Practice Guidance (PPG)<sup>15</sup> provide the overarching guidance on planning decisions and air quality. The type of development and its location need to be taken into account, and

<sup>11</sup> Department for Environment, Food and Rural Affairs (Defra), 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. <http://archive.Defra.gov.uk/environment/quality/air/airquality/strategy/documents/air-qualitystrategy-vol1.pdf>

<sup>12</sup> Part IV of the Environment Act 1995 <http://www.legislation.gov.uk/ukpga/1995/25/part/IV>

<sup>13</sup> IAQM, Air Quality Monitoring in the Vicinity of Demolition and Construction Sites, October 2018, [http://iaqm.co.uk/text/guidance/guidance\\_monitoring\\_dust\\_2018.pdf](http://iaqm.co.uk/text/guidance/guidance_monitoring_dust_2018.pdf)

<sup>14</sup> [DCLG \(2019\) National Planning Policy Framework. Retrieved February-19, from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/779764/NPPF\\_Feb\\_2019\\_web.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf)

<sup>15</sup> <https://www.gov.uk/guidance/air-quality--3>



where there are concerns over its potential impact on air quality, an appropriate level of assessment should be undertaken.

Local Planning Policy

Coventry Local Plan

- 14.2.40 Coventry Local Plan was adopted in December 2017 and includes reference to air quality within the policies H3 Provision of New Housing and AC2 Road Network. A specific policy relating to air quality, Policy EM7 states:

**“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.**

**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.**

**A Supplementary Planning Document will be developed to support this”**

Coventry City Council – Air Quality Supplementary Planning Document

- 14.2.41 Since the adoption of the Local Plan in December 2017, the City Council published their draft Air Quality Supplementary Planning Document<sup>9</sup> (SPD) for public consultation, which closed in September 2018. This document advises on how matters of air quality will be considered as part of the planning process, focusing on mitigating impacts from development at the design stage and provides technical guidance and support to Policy EM7 of the Coventry Local Plan. The guidance details how to classify each development and the level of air quality assessment and mitigation required for each development classification.

Local Air Quality Action Plan

- 14.2.42 In response to the UK Government plan for tackling roadside NO<sub>2</sub> concentrations, Coventry City Council and its partners will set out how they will achieve reductions in NO<sub>2</sub> concentrations in a Local Air Quality Action Plan (LAQAP) for Coventry.
- 14.2.43 Air quality monitoring has identified a number of locations across the city where NO<sub>2</sub> concentrations need to be reduced to meet the thresholds set by Government and the European Union. The LAQAP will identify a range of measures to be implemented by the City Council and its partners to achieve compliance with the NO<sub>2</sub> threshold in

**Air Quality**

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the shortest possible time. This is due to be submitted to Government by the end of 2018 following consultation, and finalised in early 2019.

- 14.2.44 A comprehensive traffic data collection programme has been undertaken to provide evidence of the current volume and composition of traffic in the city, including the age of vehicles and the type of fuels used.

**Non-statutory Guidance**

- 14.2.45 Guidance concerning local air quality management is given in DEFRA's technical guidance LAQM.TG(16)<sup>8</sup>. The guidance provides relevant methods concerning treatment and interpretation of data for local authorities in relation to the LAQM regime but is frequently applied when undertaking assessments for planning applications. The guidance is supported by a set of assessment tools available online.
- 14.2.46 The EPUK/IAQM Planning Guidance<sup>6</sup> provides advice to ensure that air quality is adequately considered in the land-use planning and development control processes.
- 14.2.47 The IAQM Dust Guidance<sup>4</sup> provides a framework for a risk-based approach to the assessment of dust emissions from demolition and construction land development schemes and outlines options for mitigation depending on the level of 'dust risk' identified for a site through the assessment process.

**Scoping Criteria**

- 14.2.48 The proposed methodology in the scoping report was agreed with the Coventry City Council Environmental Health Officer. It was agreed that a detailed modelling assessment of traffic emissions during operation should be undertaken using ADMS-Roads. A model specific verification factor was requested, acknowledging the limited monitoring data available representing the traffic network provided.
- 14.2.49 The Proposed Development is classed as a 'major' development by Coventry City Council SPD guidance<sup>Error! Bookmark not defined.</sup> as it comprises over 50 residential units and is located within or adjacent to an AQMA with the provision of more than 100 parking spaces. The level of assessment required for a 'major' development is set out in detail in the CCC SPD. Accordingly, the assessment considers the following scope:
- Baseline - A summary of baseline conditions, examining information on existing pollutant sources and measured ambient concentrations in the vicinity of the Application Site, and identification of any potential constraints to the Proposed Development;
  - Construction Phase - Qualitative assessment of demolition and construction activities, which could potentially affect nearby existing and proposed new sensitive receptors.
  - Operational Phase - Quantitative assessment of ambient local air pollutant concentrations and potential effects on local air quality associated with changes in traffic flows and road alignments during the operational phase of the Proposed Development;
  - Operational Phase - Estimation of damage costs for additional vehicle trips associated with the Proposed Development.

**Extent of Study Area**

- 14.2.50 The study area for the construction dust assessment comprises the area within 350 metres of the Application Site boundary and the area within 50 metres of the route used by construction vehicles on the public highway, up to 500 metres from the site entrance.

- 14.2.51 The study area for the local air quality assessment of vehicle emissions during operation comprises the area within 200 metres of the roads with traffic flow changes which meet the IAQM screening criteria for assessment.

#### **Limitations to the Assessment**

- 14.2.52 Any dispersion modelling assessment has inherent areas of uncertainty. Uncertainty associated with traffic data has been minimised by using a validated traffic model. Modelled speeds were however not provided so speed limits were used in the assessment instead.
- 14.2.53 Uncertainties associated with emissions data have been minimised by using the most up to date emission factors available.
- 14.2.54 Another uncertainty is with using historical meteorological data to estimate future concentrations. The key limiting assumption is that conditions in the future will be the same as in the past; however, in reality no two years are the same. In line with accepted best practice, the base year meteorology (as used in the model verification and adjustment process) has been used in future year modelling to allow any adjustments to be applied in future cases.
- 14.2.55 In the Damage Costs calculation it was assumed that the change in traffic on the roads accessing the site in 2026 is representative of the trip rate in 2030 when the Proposed Development will be fully operational.

### **14.3 BASELINE CONDITIONS**

#### **Site Description and Context**

- 14.3.1 The Proposed Development is within the administrative boundary of Coventry City, within the city-wide AQMA declared for exceeding the annual mean NO<sub>2</sub> objective. The Application Site, currently farmland, is bordered to the north and west by farmland and playing fields and to the east and south by housing along Bennetts Road North and Thompsons Road. The proposed new roundabout access is located at the access to Keresley Newlands Primary Academy.
- 14.3.2 The area is shown in **Figure 14.1** which also includes potential constraints to development such as ecological sites, sensitive properties and monitoring locations

#### **Local Air Quality Monitoring Data**

##### Continuous Monitoring

- 14.3.3 Coventry City Council no longer undertakes any continuous monitoring within its administrative region. Results from the DEFRA automatic urban and rural network (AURN) monitoring sites, which include Coventry Allesley (representative of urban background) and Coventry Binley Road (representative of urban traffic), are published on the DEFRA UK-AIR website<sup>1</sup>. The two AURN continuous monitoring sites (CMS) measure NO<sub>2</sub> and PM<sub>2.5</sub> and are located approximately 6 and 7 kilometres to the south of the Proposed Development respectively.
- 14.3.4 The Coventry Binley Road monitoring site is located to the east of the city centre within 10 metres of Binley road and is representative of busy roads in the Coventry urban area. As such, it is not considered representative of air quality in the vicinity of the Proposed Development.
- 14.3.5 The Coventry Allesley monitoring site is located in mainly open land 6 kilometres south of the Proposed Development. The nearest major road is the A45, which lies approximately 75 metres to the west. Although the Proposed Development is in a rural area and 700 metres from the M6 motorway, Coventry Allesley is the only urban background monitoring undertaken in the Coventry area and is therefore used to

**Air Quality**

represent existing pollutant concentrations in the study area. Concentrations are provided in **Table 14.7** and **Table 14.8**.

**Table 14.7: Measured NO<sub>2</sub> concentrations, µg/m<sup>3</sup>, at Coventry Allesley CMS**

Monitoring Site	Air Quality Criteria	Annual Mean		
		2015	2016	2017
Coventry Allesley	Annual Mean	22.8	22.6	21.9
	No. of 1-hour means > 200 µg/m <sup>3</sup>	2	0	0

**Table 14.8: Measured PM<sub>2.5</sub> concentrations, µg/m<sup>3</sup>, at Coventry Allesley CMS**

Monitoring Site	Air Quality Criteria	Annual Mean		
		2015	2016	2017
Coventry Allesley	Annual Mean	10.9	10.4	11.4

14.3.6 Annual mean NO<sub>2</sub> and PM<sub>2.5</sub> concentrations have been below relevant AQS objectives at this urban background location over the last three years, since monitoring at this location commenced in 2015.

Passive Monitoring Data

14.3.7 Annual mean NO<sub>2</sub> concentrations are measured by Coventry City Council using diffusion tubes. There are three sites approximately 3 kilometres to the southeast of the Proposed Development, within the Coventry City-wide AQMA. Annual mean NO<sub>2</sub> concentrations measured at these sites are presented in **Table 14.9** and their location is shown in **Figure 14.1**.

14.3.8 At sites BS1 and KG1 monitoring commenced in May 2018 however ratified data for 2018 are not yet available. The 2018 monitoring data between May and September was therefore compared with two urban background sites to derive an annualised concentration representative of monitoring reported in 2017, for comparison with the base year. Details of the annualisation calculation are presented in **Appendix 14.5**.

14.3.9 Annual mean NO<sub>2</sub> concentrations at site BA1c have been below the national air quality objective of 40 µg/m<sup>3</sup> at this façade location within 10 metres of the road since monitoring commenced at the site in 2015. Annualised mean concentrations at BS1 and KG1 indicate that they are below the AQS objective. Conditions at KG1 are just below the annual mean NO<sub>2</sub> objective, the tube is mounted within 10 metres of the road near to a busy junction and does not represent receptor conditions. As the Proposed Development is located in an open, rural environment which is three kilometres northwest of the suburban area where BA1c is located, it is expected that typical concentrations of NO<sub>2</sub> at similar locations will be lower than those recorded at BA1c and BS1.

**Table 14.9: Measured annual mean NO<sub>2</sub> concentrations, µg/m<sup>3</sup>, at relevant sites in Coventry City**

Monitoring Site	X,Y co-ordinates	Location Type	Annual Mean			
			2015	2016	2017	2018*
BA1c (299 Beake Avenue)	432544, 282005	Façade	33.9	30.3	29.2'	N/A
BS1 (162 Bennetts Road South)	431940, 282916	Façade	N/A	N/A	25.0^	N/A
KG1 (Outside No.6)	431956, 282113	Roadside	N/A	N/A	39.5^	N/A

'2017 Annual mean presented for this site is based on monitoring data reported between January and November 2017 and annualised to 2017 concentrations using monitoring data recorded at Coventry Allesley and Birmingham Acock Green Automatic National Urban Network sites. Details provided in **Appendix 14.5**.

\* Monitoring data is not available for 2018 as data has not yet been ratified for the period Oct 2018 – Dec 2018

^ Annual means presented for these sites are based on monitoring data reported between May and September 2018 and annualised to 2017 concentrations using monitoring data recorded at Coventry Allesley and Birmingham Acock Green Automatic National Urban Network sites. Details provided in **Appendix 14.5**

**DEFRA Mapped Background Concentrations**

- 14.3.10 Estimates of current and future year background pollutant concentrations in the UK are available on the DEFRA UK-AIR website. The background estimates, which are a combination of measured and modelled data, are available for each one-kilometre grid square throughout the UK for a base year of 2015 and future year estimates up to 2030. These background estimates include contributions from all source sectors, e.g. road transport, industry and domestic and commercial heating systems.
- 14.3.11 Estimated annual mean background concentrations for the one kilometre grid squares that include the Proposed Development for the base year (2017) and the opening year for this assessment (2026) are presented below in **Table 14.10** for the pollutants NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. The mapped concentrations of these pollutants indicate that background concentrations at the Application Site are expected to be well below relevant AQS objectives.

**Table 14.10: DEFRA mapped background concentrations, µg/m<sup>3</sup>**

Grid Square	2017			2026		
	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
431500,284500	12.3	13.5	9.1	8.6	12.9	8.6
431500,285500	18.0	16.0	10.5	11.4	15.3	9.8

**Air Quality**

**14.4 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS**

**Construction**

14.4.1 An initial screening assessment was carried out using Ordnance Survey<sup>16</sup> base mapping and MAGIC website in order to determine the location and number of sensitive receptors within 350 metres of the construction site. Approximately 650 human health receptors are located within a buffer of 350 metres of the Application Site, whilst one area of Ancient Woodland, Bunson’s Wood located south of Thompsons Road, was identified within 50 metres of the Application Site. **Figures 14.2** and **14.3** illustrate the construction, earthwork and trackout distance buffers and demolition distance buffers respectively.

14.4.2 The number of construction vehicle movements expected during the construction period is less than 10 HGVs per day, the ground is potentially dusty as there are clay soils present in the area and the Application Site is large with the potential for unfinished haul roads of more than 100 metres in length during initial construction period, so the dust emission magnitude for trackout activities has been assumed to be “large”. Earthworks and construction activities were both classed as “large”, considering that the Application Site area is over 10,000 m<sup>2</sup> and proposed construction work for 500 houses is greater than 100,000m<sup>3</sup>. Demolition of Thompsons Cottage will involve a total building volume less than 20,000m<sup>3</sup>, therefore the dust emission magnitude associated with this activity is considered to be “medium”. **Table 14.11** shows the dust emission magnitude for each activity.

**Table 14.11: Dust Emission Magnitude**

Activity	Dust Emission Magnitude
Demolition	Medium
Earthworks	Large
Construction	Large
Trackout	Large

14.4.3 The human receptors have been classed as ‘high’ sensitivity to both dust soiling and health effects, as they are largely residential properties. The sensitivity of the surrounding area to dust soiling from earthworks and construction has been classed as ‘high’ as there are approximately 60 high sensitivity residential receptors within 20 metres of the Application Site boundary. The sensitivity of the surrounding area to dust soiling from trackout has also been classed as ‘high’ as there are 85 high sensitivity residential receptors within 20 metres of anticipated construction traffic routes.

14.4.4 The sensitivity of the surrounding area to human health effects from earthworks, construction and trackout has been classed as ‘low’ as there are less than 100 high sensitivity receptors within 20 m of the Application Site boundary and background annual mean PM<sub>10</sub> concentrations are well below 24 µg/m<sup>3</sup>. The sensitivity of the ecological receptor has been classed as ‘low’ as the site is not designated internationally or nationally but may have dust sensitive features. The sensitivity of the surrounding area to dust soiling, human health, and ecological effects are summarised in

14.4.5 **Table 14.12** and the summary of dust risks are presented in **Table 14.13**. Taking the highest rating for potential risk, mitigation measures for a ‘high’ risk construction site are deemed appropriate to manage potential dust effects on the surrounding area.

<sup>16</sup> <https://www.ordnancesurvey.co.uk/opendatadownload/products.html>

**Table 14.12: Summary of Sensitivity of the Surrounding Area**

Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	High	High	High
Human Health	Low	Low	Low	Low
Ecological	N/A	Low	Low	N/A

**Table 14.13: Summary of Dust Risk**

Potential Impact	Summary of Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	High Risk	High Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological	N/A	Low Risk	Low Risk	N/A

14.4.6 With appropriate mitigation measures in place, any potential adverse impacts from dust soiling during construction would be minimised so that residual impacts would not have a significant effect on adjacent human receptors. Suitable mitigation measures for High Risk sites are detailed in **Appendix 14.6**.

**Operation**

14.4.7 **Figure 14.4** identifies the selected Receptors and road links considered in the assessment.

14.4.8 Annual mean concentrations of NO<sub>2</sub> are estimated to be below the AQS objective of 40 µg/m<sup>3</sup> at all selected receptors in both the Do-Minimum and Do-Something scenarios.

14.4.9 The highest concentration is estimated to occur at R1 (residential property on Keresley Green Road) with an annual mean NO<sub>2</sub> concentration of 17.2 µg/m<sup>3</sup> with the Proposed Development. The greatest change at any receptor is estimated to be 1.7 µg/m<sup>3</sup> at R11 (Park Leys Medical Practice) as this receptor is the closest building to Bennetts Road North between Howat Road and Exhall Road; it is expected to attract the largest increase in traffic with the Proposed Development. The magnitude of change in annual mean NO<sub>2</sub> concentrations as a result of the Proposed Development is expected to be negligible at all receptor locations considered. As the estimated annual mean NO<sub>2</sub> concentrations do not exceed 60 µg/m<sup>3</sup> it is unlikely that hourly mean concentrations would exceed the 1-hour mean AQS objective.

14.4.10 Total annual mean NO<sub>2</sub> concentrations and changes in concentrations of NO<sub>2</sub> for the selected receptors are presented in **Table 14.14**. Overall, the effect of these changes in NO<sub>2</sub> is considered not to be significant.

**Table 14.14: Annual Mean NO<sub>2</sub> Concentrations (µg/m<sup>3</sup>)**

Receptor ID	2026 Do-Minimum	2026 Do-Something 1	Change	Magnitude of Change Descriptor
R1	17.0	17.2	+0.2	Negligible
R2	12.1	12.1	<0.1	Negligible
R3	14.0	14.0	<0.1	Negligible
R4	12.4	12.5	+0.1	Negligible
R5	11.1	11.4	+0.3	Negligible
R6	10.5	10.6	+0.1	Negligible
R7	11.6	12.3	+0.7	Negligible
R8	11.4	11.8	+0.4	Negligible
R9	12.4	13.8	+1.4	Negligible
R10	10.8	11.4	+0.6	Negligible
R11	14.6	16.3	+1.7	Negligible
R12	12.6	12.8	+0.2	Negligible
R13	11.2	11.7	+0.5	Negligible
R14	12.5	13.3	+0.8	Negligible
R15	12.8	14.1	+1.3	Negligible
R16	12.7	13.3	+0.6	Negligible
R17	8.8	8.9	+0.1	Negligible
R18	11.9	12.5	+0.6	Negligible
R19	11.8	12.2	+0.4	Negligible
R20	11.7	11.9	+0.2	Negligible
R21	11.7	11.7	<0.1	Negligible
R22	11.6	11.7	+0.1	Negligible

14.4.11 Annual mean concentrations of PM<sub>10</sub> are estimated to be well within the AQS objective of 40 µg/m<sup>3</sup> at all selected receptors in both the Do-Minimum and Do-Something scenarios. Annual mean PM<sub>10</sub> concentrations at the proposed receptors are also not expected to exceed the annual mean AQS objective. The Proposed Development is expected to result in negligible changes in annual mean PM<sub>10</sub> concentrations at all receptors considered. The total annual mean PM<sub>10</sub> concentrations and changes in concentrations of PM<sub>10</sub> for the specific receptors are presented in **Table 14.15**. Overall, the effect of these changes in PM<sub>10</sub> is considered not to be significant.

**Table 14.15: Annual Mean PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>)**

Receptor ID	2026 Do-Minimum	2026 Do-Something 1	Change	Magnitude of Change Descriptor
R1	14.8	14.9	+0.1	Negligible
R2	12.6	12.6	<0.1	Negligible
R3	12.9	12.9	<0.1	Negligible
R4	12.6	12.6	<0.1	Negligible
R5	12.4	12.4	<0.1	Negligible
R6	12.6	12.6	<0.1	Negligible
R7	12.5	12.6	+0.1	Negligible
R8	12.5	12.6	+0.1	Negligible
R9	13.3	13.5	+0.2	Negligible
R10	13.1	13.2	+0.1	Negligible
R11	13.6	13.8	+0.2	Negligible
R12	13.9	14.0	+0.1	Negligible
R13	13.2	13.2	<0.1	Negligible
R14	15.4	15.5	+0.1	Negligible
R15	15.5	15.6	+0.1	Negligible
R16	15.5	15.6	+0.1	Negligible
R17	12.9	12.9	<0.1	Negligible
R18	15.4	15.4	<0.1	Negligible
R19	15.4	15.4	<0.1	Negligible
R20	15.4	15.4	<0.1	Negligible



Receptor ID	2026 Do-Minimum	2026 Do-Something 1	Change	Magnitude of Change Descriptor
R21	15.3	15.4	+0.1	Negligible
R22	15.3	15.3	<0.1	Negligible

14.4.12 Annual mean concentrations of PM<sub>2.5</sub> are estimated to be well below the AQS objective of 25 µg/m<sup>3</sup> at all selected receptors in both the Do-Minimum and Do-Something scenarios. Annual mean PM<sub>2.5</sub> concentrations at the proposed receptors are also not expected to exceed the annual mean AQS objective.

14.4.13 Furthermore, the changes in PM<sub>2.5</sub> at receptors due to the operation of the Proposed Development are expected to be negligible at all receptor locations. The total annual mean PM<sub>2.5</sub> concentrations and changes in concentrations of PM<sub>2.5</sub> for the specific receptors are presented in **Table 14.16**. Overall, the effect of changes in PM<sub>2.5</sub> is considered not to be significant.

**Table 14.16: Annual Mean PM<sub>2.5</sub> Concentrations (µg/m<sup>3</sup>)**

Receptor ID	2026 Do-Minimum	2026 Do-Something 1	Change	Magnitude of Change Descriptor
R1	9.6	9.6	<0.1	Negligible
R2	8.7	8.7	<0.1	Negligible
R3	9.0	9.0	<0.1	Negligible
R4	8.7	8.7	<0.1	Negligible
R5	8.5	8.6	+0.1	Negligible
R6	8.5	8.6	+0.1	Negligible
R7	8.8	8.9	+0.1	Negligible
R8	8.8	8.9	+0.1	Negligible
R9	9.3	9.5	+0.2	Negligible
R10	9.0	9.1	+0.1	Negligible
R11	9.7	10.0	+0.3	Negligible
R12	9.5	9.5	<0.1	Negligible
R13	9.1	9.1	<0.1	Negligible
R14	10.0	10.2	+0.2	Negligible
R15	10.1	10.3	+0.2	Negligible
R16	10.1	10.2	+0.1	Negligible
R17	8.6	8.6	<0.1	Negligible
R18	9.9	10.0	+0.1	Negligible
R19	9.9	10.0	+0.1	Negligible
R20	9.9	9.9	<0.1	Negligible
R21	9.9	9.9	<0.1	Negligible
R22	9.9	9.9	<0.1	Negligible

Assessment of Significance

14.4.14 The results of the local air quality assessment indicate that concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are unlikely to exceed AQS objectives at any receptor location in both the Do-Minimum and Do-Something scenarios, including at proposed receptor locations. Furthermore, the changes in pollutant concentrations at receptors are expected to be negligible at all receptors considered. On this basis, and as these receptors represent the locations likely to be most affected by any changes in pollutant concentrations with the additional traffic generated by the Proposed Development, it is therefore concluded that the effect of the Proposed Development on local air quality is not significant.

Pollution Emission Damage Cost Calculations

14.4.15 The calculations are presented in **Table 14.17** and **Table 14.18** below. The conclusions of the damage cost calculations indicate that the Proposed Development, when fully operational in the 2030 opening year, would result in a cost associated with transportation emissions of £214,024 over five years. The cost calculated is the

**Air Quality**

basis for discussions not necessarily the final figure required, indeed the SPD states that the figure **may be** used in considering mitigation.

14.4.16 A discussion of the suitability of this figure of £214,024 and how it should be used, regarding emissions offsetting and mitigation measures, given the measures already committed to by the Client but not included in this assessment, should be agreed in consultation with Coventry City Council.

**Table 14.17: Emission Factor Toolkit Emission Calculations for 5 years**

	Projected yearly emissions (Defra Emissions Factor Toolkit v8)*				
	2030	2031	2032	2033	2034
Trip generation resulting from development at land north of Thompsons Farm is calculated using traffic data provided.					
Total NOx (kg)	1433	1433	1433	1433	1433
Total PM <sub>2.5</sub> (kg)	187	187	187	187	187

\*No increase in traffic beyond the output of the CSTM traffic model in 2026 is assumed. Emission factors are not available for years beyond 2030, for this calculation the traffic year and emissions in 2026 are substituted for emissions in 2030 which is a conservative assumption as emission factors in 2030 would be slightly lower.

**Table 14.18: Calculation of Pollution Emission Cost for 5 Years**

	Damage Costs				
	2030 (year 1)	2031	2032	2033	2034 (year 5)
NOx	£12,680	£12,496	£12,315	£12,137	£11,961
PM <sub>2.5</sub>	£31,383	£30,928	£30,480	£30,038	£29,603
Total	<b>£44,064</b>	<b>£43,425</b>	<b>£42,796</b>	<b>£42,175</b>	<b>£41,564</b>
				TOTAL	<b>£214,024</b>

**14.5 MITIGATION, ENHANCEMENT AND RESIDUAL EFFECTS**

**Mitigation by Design**

14.5.1 As the Proposed Development is not expected to result in any new exceedances of AQS objectives or significant worsening of existing conditions as a result of the additional development traffic, no air quality mitigation for the operational phase of the Proposed Development is considered to be required.

**Additional Mitigation**

14.5.2 During the construction phase, standard mitigation measures for high risk sites should be applied. Suitable mitigation measures for high risk sites are detailed in **Appendix 14.6** and include measures such as:

- 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;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Ensure all vehicles switch off engines when stationary – no idling vehicles;
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable;

- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- Use water-assisted dust sweepers on the access and local roads, to remove any material tracked out of the site;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Access gates to be located at least 10 metres from receptors where possible.

14.5.3 With appropriate mitigation measures in place, any potential adverse impacts during construction would be minimised so that residual impacts would not have a significant effect on adjacent human receptors.

**Table 14.19: Mitigation**

Ref	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measure would be secured		
		By Design	By S.106	By Condition
1	Appropriate dust management measures would be included in a management plan and agreed with the local authority			X

14.5.4 The cost of pollutant emissions associated with operation of the Proposed Development, in terms of additional traffic movements generated, have been calculated in line with CCC’s SPD. The damage costs may be used by CCC when considering the appropriate scale and kind of additional mitigation required for the Proposed Development. A discussion regarding damage costs and suitable mitigation measures, given the measures already committed to by the Client but not included in this assessment, should be agreed in consultation with Coventry City Council.

**Enhancements**

14.5.5 No mitigation measures can be considered as enhancements.

**Residual Effects**

14.5.6 With appropriate mitigation measures in place, any potential adverse effects during construction would be minimised so that there would not be a residual significant effect.

14.5.7 As the Proposed Development is not expected to result in a significant effect on local air quality and no mitigation for the operational phase is proposed, the residual effect of the Proposed Development is therefore also not significant.

**14.6 CUMULATIVE AND IN-COMBINATION EFFECTS**

14.6.1 During the construction phase there is the potential for an increase in dust emissions affecting receptors near to the Application Site. These receptors may also be affected by other factors such as noise during construction. However, as the effect from any

**Air Quality**

increase in dust emissions was unlikely to be significant once mitigation measures had been applied, any intra-project effects are also unlikely to be significant at any of the identified receptors.

14.6.2 As the findings from the air quality assessment showed that the Proposed Development was unlikely to have a significant effect on receptors, there are unlikely to be any intra-project cumulative effects during operation.

14.6.3 There are additional developments including a 950 home residential development scheme within the SUE, and a planned relief road – Keresley Link Road- a new distributor link road connecting Long Lane and Winding House Lane, which is to be fully operational prior to the full completion of the SUE, which are not yet planned and permitted but which may result in a cumulative impact when considered in addition to the Proposed Development.

14.6.4 Annual mean concentrations of NO<sub>2</sub> are estimated to be well below the AQS objective of 40 µg/m<sup>3</sup> at all selected receptors in both the Do-Minimum and Do-Something 2 scenarios.

14.6.5 The highest concentration is estimated to occur at R1 (residential property on Keresley Green Road) north of Scothill roundabout with an annual mean NO<sub>2</sub> concentration of 17.3 µg/m<sup>3</sup> with the Proposed Development. The greatest change at any receptor is estimated to be 4.0 µg/m<sup>3</sup>, at R9 (residential property Newlands Cottage, Bennetts Road) as the largest increases in AADT and HGV numbers are on Bennetts Road between Thompson Road and Fivefield Road, Watery Lane and proposed new link road. At R6 (Watery Lane), R7 (Fivefield Road), R9 (Newlands Cottage, Bennetts Road) and R11 (Park Leys Medical Practice) the effect can be described as minor adverse. R4 (Bennetts Road South) is the only receptor where there is a negligible decrease in annual mean NO<sub>2</sub> concentration with Do-Something 2 scenario, as Bennetts Road South is expected to decrease in flow south of Penny Park Lane with the introduction of the Keresley Link Road. The changes in annual mean NO<sub>2</sub> concentrations as a result of the Proposed Development are expected to be negligible at the other receptor locations considered. As the estimated annual mean NO<sub>2</sub> concentrations do not exceed 60 µg/m<sup>3</sup> it is unlikely that hourly mean concentrations would exceed the 1-hour mean AQS objective.

14.6.6 Total annual mean NO<sub>2</sub> concentrations and changes in concentrations of NO<sub>2</sub> for the selected receptors are presented in

14.6.7

14.6.8 Table 14.14.20. Overall, effects are not significant.

**Table 14.20: Annual Mean NO<sub>2</sub> Concentrations (µg/m<sup>3</sup>)**

Receptor ID	2026 Do-Minimum	2026 Do-Something 2	Change	Magnitude of Change Descriptor
R1	17.0	17.3	+0.3	Negligible
R2	12.1	12.1	<0.1	Negligible
R3	14.0	14.2	+0.2	Negligible
R4	12.4	11.8	-0.6	Negligible
R5	11.1	11.4	+0.3	Negligible
R6	10.5	13.2	+2.7	Minor
R7	11.6	14.5	+2.9	Minor
R8	11.4	13.0	+1.6	Negligible
R9	12.4	16.4	+4.0	Minor

Receptor ID	2026 Minimum Do-	2026 Something 2 Do-	Change	Magnitude of Change Descriptor
R10	10.8	12.0	+1.2	Negligible
R11	14.6	16.9	+2.3	Minor
R12	12.6	13.2	+0.6	Negligible
R13	11.2	12.1	+0.9	Negligible
R14	12.5	13.4	+0.9	Negligible
R15	12.8	14.1	+1.3	Negligible
R16	12.7	13.4	+0.7	Negligible
R17	8.8	9.0	+0.2	Negligible
R18	11.9	12.6	+0.7	Negligible
R19	11.8	12.3	+0.5	Negligible
R20	11.7	12.0	+0.3	Negligible
R21	11.7	11.8	+0.1	Negligible
R22	11.6	11.8	+0.2	Negligible

14.6.9 Annual mean concentrations of PM<sub>10</sub> are estimated to be well below the AQS objective of 40 µg/m<sup>3</sup> at all selected receptors in both the Do-Minimum and Do-Something2 scenarios. Annual mean PM<sub>10</sub> concentrations at the proposed receptors are also not expected to exceed the annual mean AQS objective. Overall, effects are not significant.

14.6.10 The Proposed Development included in DS2 is estimated to result in negligible changes in annual mean PM<sub>10</sub> concentrations at all receptors considered. The total annual mean PM<sub>10</sub> concentrations and changes in concentrations of PM<sub>10</sub> for the specific receptors are presented in **Table 14.21**.

**Table 14.21: Annual Mean PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>)**

Receptor ID	2026 Minimum Do-	2026 Something2 Do-	Change	Magnitude of Change Descriptor
R1	14.8	14.9	+0.1	Negligible
R2	12.6	12.6	<0.1	Negligible
R3	12.9	12.9	<0.1	Negligible
R4	12.6	12.5	<0.1	Negligible
R5	12.4	12.4	<0.1	Negligible
R6	12.6	13.0	+0.4	Negligible
R7	12.5	12.9	+0.4	Negligible
R8	12.5	12.7	+0.2	Negligible
R9	13.3	13.8	+0.5	Negligible
R10	13.1	13.3	+0.2	Negligible
R11	13.6	13.8	+0.2	Negligible
R12	13.9	14.0	+0.1	Negligible
R13	13.2	13.3	+0.1	Negligible
R14	15.4	15.5	+0.1	Negligible
R15	15.5	15.6	+0.1	Negligible
R16	15.5	15.6	+0.1	Negligible
R17	12.9	12.9	<0.1	Negligible
R18	15.4	15.4	<0.1	Negligible
R19	15.4	15.4	<0.1	Negligible
R20	15.4	15.4	<0.1	Negligible
R21	15.3	15.4	+0.1	Negligible
R22	15.3	15.4	+0.1	Negligible

14.6.11 Annual mean concentrations of PM<sub>2.5</sub> are estimated to be well below the AQS objective of 25 µg/m<sup>3</sup> at all selected receptors in both the DM and DS2 scenarios. Annual mean PM<sub>2.5</sub> concentrations at the proposed receptors are also not expected to exceed the annual mean AQS objective.

14.6.12 Furthermore, changes in annual mean PM<sub>2.5</sub> concentrations due to the operation of the Proposed Development in DS2 are estimated to be negligible at all receptor locations. The total annual mean PM<sub>2.5</sub> concentrations and changes in concentrations

**Air Quality**

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of PM<sub>2.5</sub> for the specific receptors are presented in **Table 14.22**. Overall, effects are not significant.

**Table 14.22: Annual Mean PM<sub>2.5</sub> Concentrations (µg/m<sup>3</sup>)**

Receptor ID	2026 Do- Minimum	2026 Do- Something2	Change	Descriptor of Magnitude of Change
R1	9.6	9.7	+0.1	Negligible
R2	8.7	8.7	<0.1	Negligible
R3	9.0	9.0	<0.1	Negligible
R4	8.7	8.6	-0.1	Negligible
R5	8.5	8.6	+0.1	Negligible
R6	8.5	9.1	+0.6	Negligible
R7	8.8	9.3	+0.5	Negligible
R8	8.8	9.1	+0.3	Negligible
R9	9.3	10.1	+0.8	Negligible
R10	9.0	9.2	+0.2	Negligible
R11	9.7	10.1	+0.4	Negligible
R12	9.5	9.6	+0.1	Negligible
R13	9.1	9.2	+0.1	Negligible
R14	10.0	10.2	+0.2	Negligible
R15	10.1	10.3	+0.2	Negligible
R16	10.1	10.2	+0.1	Negligible
R17	8.6	8.6	<0.1	Negligible
R18	9.9	10.0	+0.1	Negligible
R19	9.9	10.0	+0.1	Negligible
R20	9.9	9.9	<0.1	Negligible
R21	9.9	9.9	<0.1	Negligible
R22	9.9	9.9	<0.1	Negligible

**Assessment of Significance**

- 14.6.13 The results of the local air quality assessment described above indicate that concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are unlikely to exceed AQS objectives at any receptor location in both the DM and DS2 scenarios. Furthermore, the changes in annual mean concentrations were estimated to be negligible at most receptors considered, although minor increases were estimated at R6, R7, R9 and R11. On this basis, and as these receptors represent worse-case locations, it is therefore concluded that the effect of the Proposed Development on local air quality is not significant.

**14.7 SUMMARY****Introduction**

- 14.7.1 The air quality assessment examined the existing baseline conditions in the vicinity of the Proposed Development, and the expected effects during both the construction and operational phases of the Proposed Development.

**Baseline Conditions**

- 14.7.2 Although the Application Site is located within Coventry's city-wide Air Quality Management Area designated for exceeding the nitrogen dioxide national air quality objective, local air quality monitoring data and Defra national background mapping indicates that air quality in the vicinity of the Proposed Development is likely to be relatively good, meeting national air quality objectives.

**Likely Significant Effects**

- 14.7.3 The construction dust assessment identified that mitigation measures appropriate for a high risk site should be employed during construction. Where the appropriate measures are employed, any potential adverse effects arising from dust emissions would be minimised such that there is unlikely to be a residual significant effect on

### Air Quality

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adjacent human receptors. Any effect from additional traffic during construction would be negligible.

- 14.7.4 The local air quality assessment identified that there would be negligible changes in the concentrations of air pollutants NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> as a result of changes in traffic resulting from the Proposed Development. The effects of these changes on human health would not be significant.

#### **Mitigation and Enhancement**

- 14.7.5 Mitigation measures, such as water spraying, are recommended during construction work to minimise dust emissions so that significant residual effects on sensitive receptors are unlikely.
- 14.7.6 The effects of the changes in air quality from the operational phase were found not to be significant, with all changes described as negligible or minor magnitude in accordance with best practice guidance.
- 14.7.7 The cost of pollutant emissions associated with the Proposed Development have been calculated to be £214,024, in line with CCC's SPD. The damage costs may be used by CCC when considering the appropriate scale and kind of mitigation required for the Proposed Development.

#### **Conclusion**

- 14.7.8 The air quality assessment has concluded that the Proposed Development at the Application Site would be acceptable with no significant adverse effects once it is operational. During construction, with the application of appropriate mitigation measures, any adverse air quality effect would be suitably minimised such that there is unlikely to be a significant residual effect.
- 14.7.9 **Table 14.23** provides a Summary of Effects, Mitigation and Residual Effects.



**ENVIRONMENTAL STATEMENT**

**Air Quality**

**Table 14.23: Summary of Effects, Mitigation and Residual Effects.**

<b>Receptor / Receiving Environment</b>	<b>Description of Impact</b>	<b>Nature of Impact</b>	<b>Sensitivity Value</b>	<b>Magnitude of Change</b>	<b>Geographical Importance</b>	<b>Significance of Effects</b>	<b>Mitigation / Enhancement Measures</b>	<b>Residual Effects</b>
<b>Construction</b>								
Properties surrounding the Application Site and access routes	Potential short term adverse effect from dust soiling and from increases in emissions of particulate matter from dust emissions from construction, earthworks and trackout and demolition	Temporary/ Direct	High	Not applicable	Local	Not applicable	Mitigation measures suitable for High Risk construction sites, including planning site layout, installation of screening barriers, use of water for dust suppression and covering vehicle loads.	Not significant
<b>Operation</b>								
Properties near roads affected by changes in traffic as a result of the Proposed Development	Negligible change in air quality	Permanent/ Indirect	High	Negligible	Local	Not Significant	None required	Negligible - not significant
<b>Cumulative and In-combination</b>								
Properties near roads affected by changes in traffic as a result of the Proposed Development and other committed developments	Negligible change in air quality	Permanent/ Indirect	High	Minor Adverse / Negligible	Local	Not significant	None required for this development	Minor Adverse/ negligible - not significant