Land at Tollgate Road, Colney Heath

Air Quality Assessment

On behalf of **Vistry Homes Ltd**

Vistry Group

Project Ref: 332510999/3010 | Rev: 002 | Date: June 2022

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Executive Summary

The air quality impacts associated with the proposed development of the land at Tollgate Road, Colney Heath, St Albans have been assessed.

The construction works have the potential to create dust. During construction it is recommended that in accordance with the IAQM guidance a package of mitigation measures is put in place to minimise the risk of elevated PM_{10} concentrations and dust nuisance in the surrounding area. With mitigation in place the construction impacts are judged as not significant.

The increase in road traffic resulting from the Development is below the EPUK / IAQM screening criteria, and therefore, the impacts of operational traffic generated by the development are considered to be 'not significant'.

Mitigation measures to reduce the impacts of the development on air quality concentrations are not required, however additional transport related mitigation measures will be employed to reduce emissions from the development.

The Proposed Development is therefore considered to be in accordance with the requirements of the NPPF, and relevant local and national planning policy and guidance regarding air quality.

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1 Introduction

1.1 Proposed Development

1.1.1 Vistry Homes Ltd (the 'Applicant') has commissioned Stantec to undertake an air quality assessment to support an outline planning application for the demolition of the existing house and stables and the erection of up to 150 dwellings, including affordable and custom-build properties, together with all ancillary works (all matters reserved except access) (the 'Proposed Development') on land at Tollgate Road, Colney Heath, AL4 0PZ (the 'Site'). The Site is located within the administrative boundary of St Albans City and District Council (SACDC).

1.2 Scope of Assessment

1.2.1 This report describes existing air quality within the study area, considers the suitability of the Site for the proposed end-use and assesses the impact of the construction and operation of the Proposed Development on air quality in the study area.

1.2.2 The main air pollutants of concern during the construction period are emissions of dust and fine particulate matter (PM_{10}) associated with on-site demolition and construction activities and off-site trackout. Additionally, there is the potential for emissions of nitrogen dioxide (NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$) from construction related vehicles.

1.2.3 The main air pollutants of concern during the operational period are NO_2, PM_{10} and $PM_{2.5}$ emissions associated with proposed and existing road traffic.

1.2.4 The assessment has been prepared taking into account the requirements of relevant local and national guidance, policy and legislation.

1.3 Consultation

1.3.1 Consultation has been attempted with SACDC in the form of email correspondence to the Environmental Health Department in February and April 2022, to discuss the scope and methodology of the assessment and obtain the results of the latest air quality monitoring undertaken by the Council, at the time of undertaking the assessment no response had been received.

2 Legislation, Policy and Guidance

2.1 Air Quality Regulations

2.1.1 The Air Quality (England) Regulations 2000 (AQR) defined National Air Quality Objectives (NAQOs, a combination of concentration-based thresholds, averaging periods and compliance dates) for a limited range of pollutants. Subsequent amendments were made to the AQR in 2001 and 2002 to incorporate 'limit values' and 'target values' for a wider range of pollutants as defined in European Union (EU) Directives.

2.1.2 These amendments were consolidated by the Air Quality Standards Regulations 2010 (AQSR) (with subsequent amendments most notably in 2016 and for the devolved administrations), which transposed the EU's Directive on ambient air quality and cleaner air for Europe (2008/50/EC).

2.1.3 Following the Transition Period after the UK's departure from the EU in January 2020, the Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (and subsequent amendments for the devolved administrations) have amended the AQ Standards Regulations 2010 to reflect the fact that the UK has left the EU, but do not change the pollutants assessed or the numerical thresholds.

2.1.4 The relevant AQOs for this assessment are shown in **Table 2-1**.

Table 2-1 Relevant Air Quality Objectives / Limit Values

Pollutant	Time Period	Objectives	Source
NO_2	1-hour mean	200 µg/m^3 not to be exceeded more than 18 times a year	NAQO and AQSR limit value
	Annual mean	40 µg/m^3	NAQO and AQSR limit value
PM_{10}	24-hour mean	50 µg/m^3 not to be exceeded more than 35 times a year	NAQO and AQSR limit value
	Annual mean	40 µg/m^3	NAQO and AQSR limit value
$PM_{2.5}$	Annual mean	20 µg/m^3	AQSR limit value

2.1.5 The NAQO's for NO_2 and PM_{10} were to have been achieved by 2005 and 2004 respectively, but also continue to apply in all future years thereafter.

2.1.6 The 2019 Clean Air Strategy includes a commitment to set a "*new, ambitious, long-term target to reduce people's exposure to $PM_{2.5}$*" which the proposed Environment Bill 2021 commits the Secretary of State to setting.

National Air Pollution Plan for NO_2 in the UK

2.1.7 The national Air Quality Plan for NO_2 (DEFRA, 2018) sets out how the Government plans to deliver reductions in NO_2 throughout the UK, with a focus on reducing concentrations to below the EU Limit Values throughout the UK within the 'shortest possible time'.

2.1.8 The plan requires all Local Authorities (LAs) in England which DEFRA identified as having exceedances of the Limit Values in their areas past 2020 to develop local plans to improve air quality and identify measures to deliver reduced emissions, with the aim of meeting the Limit

Values within their area within "*the shortest time possible*". Potential measures include changing road layouts, encouraging public and private ultra-low emission vehicle (ULEV) uptake, the use of retrofitting technologies and new fuels and encouraging public transport. In cases where these measures are not sufficient to bring about the required change within 'the shortest time possible' then LAs may consider implementing access restrictions on more polluting vehicles (e.g. Clean Air Zones (CAZs)).

2.2 Air Quality Management

The Air Quality Strategy

2.2.1 Part IV of the Environment Act 1995 (Environment Act, 1995) required the Secretary of State to prepare and publish and 'strategy' regarding air quality.

2.2.2 The Air Quality Strategy (2007) establishes the policy framework for ambient air quality management and assessment in the UK (DEFRA, 2007). The primary objective of the Air Quality Strategy is to ensure that everyone can enjoy a level of ambient air quality which poses no significant risk to health or quality of life. The Air Quality Strategy sets out the NAQOs and Government policy on achieving these.

2.2.3 The Clean Air Strategy (2019) aims to lower national emissions of pollutants, thereby reducing background pollution and minimising human exposure to harmful concentrations of pollution. The Strategy aims to create a stronger and more coherent framework for action to tackle air pollution (DEFRA, 2019).

Local Air Quality Management

2.2.4 Part IV of the Environment Act 1995 (Environment Act, 1995) introduced a system of Local Air Quality Management (LAQM) which requires local authorities to regularly and systematically review and assess air quality within their boundary and appraise development and transport plans against these assessments.

2.2.5 Where a NAQO is unlikely to be met, the local authority must designate an Air Quality Management Area (AQMA) and draw up an Air Quality Action Plan (AQAP) setting out the measures it intends to introduce in pursuit of the NAQO's within its AQMA.

2.2.6 The Local Air Quality Management Technical Guidance 2016 (LAQM.TG(16); DEFRA, 2021), issued by the Department for Environment, Food and Rural Affairs (DEFRA) for Local Authorities provides advice on where the NAQOs apply. These include outdoor locations where members of the public are likely to be regularly present for the averaging period of the objective (which vary from 15 minutes to a year) as summarised in **Table 2-2**.

Table 2-2 Relevant Public Exposure

Averaging Period	NAQOs should apply at:	NAQOs don't apply at:
Annual mean	All locations where members of the public might be regularly exposed For example: Building façades of residential properties, schools, hospitals, care homes etc	Façades of offices or other places of work where members of the public do not have regular access Hotels, unless people live there as their permanent residence Gardens of residences Kerbside sites

		Any other location where public exposure is expected to be short term
24-hour mean and 8-hour mean	All locations where the annual mean NAQO would apply, together with hotels and gardens of residences	Kerbside sites Any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour mean NAQOs apply as well as: Kerbside sites Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside locations where the public would not be expected to have regular access
15-minute mean	All locations where members of the public might reasonably be regularly exposed for a period of 15 minutes or longer.	

2.3 Planning Policy

National Planning Policy

2.3.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how they are expected to be applied (Ministry of Housing, Communities & Local Government, 2021). The following paragraphs are considered relevant from and air quality perspective.

2.3.2 Paragraph 104 on promoting sustainable transport states:

"Transport issues should be considered from the earliest stages of plan-making and development proposals, so that: …

d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; …"

2.3.3 Paragraph 105 goes on to state:

"Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health."

2.3.4 Paragraph 174 on conserving and enhancing the natural environment states:

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

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land stability. Development should, wherever possible, help to improve local environmental

conditions such as air and water quality, taking into account relevant information such as river basin management plans, and…"

2.3.5 Paragraph 185 within ground conditions and pollution states:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."

2.3.6 Paragraph 186 states that:

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

2.3.7 Paragraph 187 states that:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed".

National Planning Practice Guidance

2.3.8 Paragraph 005, Reference 32-005-20191101 (revision date 01.11.2019), of the PPG provides guidance on how considerations regarding air quality can be relevant to the development management process as follows:

"Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity.

- *Where air quality is a relevant consideration the local planning authority may need to establish:*
- *The 'baseline' local air quality, including what would happen to air quality in the absence of the development;*
- *Whether the proposed development could significantly change air quality during the construction and operational phases (and the consequences of this for public health and biodiversity); and*

- *Whether occupiers or users of the development could experience poor living conditions or health due to poor air quality."*

2.3.9 Paragraph 006, Reference 32-006-20191101 (revision date 01.11.2019), of the PPG identifies what specific air quality issues need to be considered in determining a planning application:

"Considerations that may be relevant to determining a planning application include whether the development would:

- *Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield. This could be through the provision of electric vehicle charging infrastructure; altering the level of traffic congestion; significantly changing traffic volumes, vehicle speeds or both; and significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; could add to turnover in a large car park; or involve construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;*

- *Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; biomass boilers or biomass-fuelled Combined Heat and Power plant; centralised boilers or plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area; or extraction systems (including chimneys) which require approval or permits under pollution control legislation;*

- *Expose people to harmful concentrations of air pollutants, including dust. This could be by building new homes, schools, workplaces or other development in places with poor air quality;*

- *Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations; and*

- *Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value."*

2.3.10 Paragraph 007, Reference 32-007-20191101 (revision date 01.11.2019), of the PPG provides guidance on how detailed an assessment needs to be:

"Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific".

and

"The following could form part of assessments:

A description of baseline conditions and any air quality concerns affecting the area, and how these could change both with and without the proposed development;

- *Sensitive habitats (including designated sites of importance for biodiversity);*

- *The assessment methods to be adopted and any requirements for the verification of modelling air quality;*

- *The basis for assessing impacts and determining the significance of an impact;*

- *Where relevant, the cumulative or in-combination effects arising from several developments;*

- *Construction phase impacts;*
- *Acceptable mitigation measures to reduce or remove adverse effects; and*
- *Measures that could deliver improved air quality even when legally binding limits for concentrations of major air pollutants are not being breached."*

2.3.11 Paragraph 008, Reference 32-008-20140306 (revision date 01.11.2019), of the PPG provides guidance on how an impact on air quality can be mitigated:

"Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented. Planning conditions and obligations can be used to secure mitigation where the relevant tests are met.

Examples of mitigation include:

- *Maintaining adequate separation distances between sources of air pollution and receptors;*
- *Using green infrastructure, trees, where this can create a barrier or maintain separation between sources of pollution and receptors;*
- *Appropriate means of filtration and ventilation;*
- *Including infrastructure to promote modes of transport with a low impact on air quality (such as electric vehicle charging points);*
- *Controlling dust and emissions from construction, operation and demolition; and*
- *Contributing funding to measures, including those identified in air quality action plans and low emission strategies, designed to offset the impact on air quality arising from new development."*

Local Planning Policy

District Local Plan Review 1994 – Saved and Deleted Policies Version

2.3.12 The current adopted Local Plan is The District Local Plan Review 1994 (SACDC, 2020a). There are no policies within the Local Plan that relate to air quality.

2.4 Assessment Guidance

2.4.1 The primary guidance documents used in undertaking this assessment are detailed in the section below.

Relevant Local Guidance

DEFRA 'Local Air Quality Management Technical Guidance (LAQM.TG(16))'

2.4.2 DEFRA LAQM.TG(16) was published for use by local authorities in their LAQM review and assessment work (DEFRA, 2021). The document provides key guidance on aspects of air quality assessment, including screening, use of monitoring data, and use of background data that are applicable to all air quality assessments.

EPUK / IAQM 'Land-Use Planning & Development Control: Planning for Air Quality'

2.4.3 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have together published guidance to help ensure that air quality is properly accounted for in the development control process (EPUK / IAQM 2017). It clarifies when an air quality assessment should be undertaken, what it should contain, and how impacts should be described and assessed including guidelines for assessing the significance of impacts.

IAQM 'Guidance on the Assessment of Dust from Demolition and Construction'

2.4.4 Guidance on the assessment of dust from demolition and construction has been published by the IAQM (IAQM, 2014). The guidance provides a series of matrices to determine the risk magnitude of potential dust sources associated with construction activities in order to identify appropriate mitigation measures that are defined within further IAQM guidance.

3 Methodology

3.1.1 The assessment methodology detailed in the following sections has been applied to ascertain the potential impacts of emissions to air in order to identify their significance and compliance with policy and regulatory requirements (outlined in **Section 2** of this report), and whether or not additional mitigation is required.

3.1.2 This assessment first outlines the existing air quality within the study area, then considers the suitability of the site for the proposed end-use. It also assesses the impact of construction and operational activities on air quality and sensitive receptors in the study area.

3.2 Baseline Air Quality

3.2.1 Any exceedances of the EU Limit Values along roads within the study area have been identified using the 2021 NO_2 and PM Projections Data published by DEFRA (DEFRA, 2020a). Information on baseline air quality in the study area has been obtained by collating the results of monitoring carried out by SACDC and their LAQM reports to identify potential AQMAs. Background concentrations for the study area have been defined using the national pollution maps published by DEFRA which cover the whole country on a 1x1 km grid (DEFRA, 2020b).

3.3 Construction Dust Impacts

3.3.1 During demolition and construction, dust from on-site activities and off-site track out by construction vehicles has the potential to impact on sensitive human receptors within the study area; the main potential impacts are loss of amenity (as a result of dust soiling) and deterioration of human health (as a result of concentrations of PM_{10}).

3.3.2 The suspension of particles in the air is dependent on surface characteristics, weather conditions and on-site activities. Impacts have the potential to occur when dust generating activities coincide with dry, windy conditions, and where sensitive receptors are located downwind of the dust source(s).

3.3.3 Separation distance is also an important factor. Large dust particles (greater than 30µm), can be potentially responsible for most dust annoyance, will largely deposit within 100 m of sources. Intermediate particles (10-30 µm) can travel 200-500 m. Consequently, significant dust annoyance is usually limited to within a few hundred metres of its source. Smaller particles (less than 10 µm), which are the predominant fraction that can be potentially responsible for human health impacts largely remain airborne. However, the impact on the short-term concentrations of PM_{10} occurs over a shorter distance due to the rapid decrease in concentrations with distance from the source due to dispersion.

3.3.4 The assessment of the risk of potential construction dust impacts has been undertaken with reference to relevant guidance (IAQM, 2014).

Screening Assessment

3.3.5 The first stage of the assessment involves screening to determine if there are sensitive receptors within threshold distances of the activities associated with the construction phase of the scheme; defined as the Study Area. No further assessment is required if there are no receptors within the Study Area.

3.3.6 The IAQM guidance outlines that an assessment is only required in cases where:

- A ‘human receptor’ is located within:
  - 350 m of the boundary of the Site; OR

- 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the Site entrance(s).

- An 'ecological receptor' is located within:
  - 50 m of the boundary of the Site; OR
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the Site entrance(s).

Further Assessment

3.3.7 The risk of impacts associated with dust soiling and PM_{10} caused by the Proposed Development has been determined (following the IAQM guidance (IAQM, 2014)) based on the dust emission class (or magnitude) for each activity arising from four activities in the absence of mitigation (demolition, earthworks, construction and trackout), the sensitivity of nearby receptors and the overall sensitivity of the area. The dust emission class, receptor sensitivity and the overall sensitivity of the area are determined using the criteria outlined in **Table B-1**, **Table B-2**, **Table B-3**, **Table B-4** and **Table B-5** of **Appendix B** (based on the IAQM guidance), indicative thresholds and professional judgement. The risk of dust impacts arising is a product of the relationship between the dust emission magnitude and the area sensitivity and is based on the criteria outlined in **Table B-6** (based on the IAQM guidance). The risk of impact is then used to determine the mitigation requirements.

3.3.8 The IAQM guidance recommends that no assessment of the significance of effects is made without mitigation in place, as mitigation is assumed to be secured by planning conditions, legal requirements or required by regulations.

3.3.9 With appropriate mitigation in place, the IAQM guidance indicates that the residual effect dust emissions associated with the demolition and construction can be classified as being 'not significant'.

3.4 Demolition and Construction Road Traffic Impacts

3.4.1 The potential for a significant overall effect on existing sensitive receptors within the Study Area as a result of emissions from demolition and construction traffic generated by the Proposed Development has been determined qualitatively, taking into consideration the screening criteria outlined in the EPUK / IAQM guidance (EPUK / IAQM, 2017) (see **Appendix C**), the anticipated routing of the generated traffic and the anticipated duration of impacts associated with the generated traffic.

3.5 Operational Road Traffic Emission Impacts

Screening Assessment

Impacts of Development-Generated Traffic on Existing Sensitive Human Receptors

3.5.1 The potential for significant impacts on existing sensitive receptors within the study area as a result of emissions from traffic generated by the Proposed Development is determined based on the screening criteria outlined in the EPUK / IAQM Guidance (EPUK / IAQM 2017) (see **Appendix C** which includes consideration of the volume and composition of traffic generated by the Proposed Development and existing local air quality conditions (i.e. the presence of any declared AQMAs). It should be noted that if traffic from a development exceeds these levels, then it does not necessarily mean that a modelling assessment is necessary, only that the air quality impacts of traffic require more detailed consideration.

3.5.2 Information on the Proposed Development's trip generation has been provided by the Project's transport consultants, RPS.

Site Suitability

3.5.3 A qualitative assessment to determine whether there is a potential for exceedances of the relevant NAQOs at sensitive locations within the Proposed Development has been undertaken, taking into account future baseline air quality conditions within and in close proximity to the Site, and the proximity of sensitive locations within the development to nearby sources of emissions.

4 Baseline Environment

4.1 Site Context

4.1.1 The site is located approximately 1 km south east from the village of Colney Heath, Hertfordshire. The site is bound by the wooded course of the River Colne to the south west with Coursers Road situated behind; a paddock to the north west; Tollgate Road and residential dwellings to the north east and further paddocks to the south.

4.2 Study Area

4.2.1 The study area adopted for this assessment is as follows:

- for the construction dust risk assessment the study area (based on IAQM, 2014 guidance) is defined as compromising the area up to 350 m from the Site boundary and 50 m from the route used by construction vehicles (up to 500 m from the Site entrance(s));
- for the construction phase road traffic emission assessment the study area (based on the EPUK / IAQM, 2017 guidance) includes all roads (and adjacent properties) predicted to exceed the screening criteria outlined in **Appendix C** .
- for the operational phase road traffic emissions assessment the study area (based on EPUK / IAQM, 2017 guidance) includes the Site, all roads (and adjacent properties) within 250 m of the Site boundary and any other roads (and adjacent properties) predicted to exceed the screening criteria outlined in **Appendix C**.

4.3 Ambient Air Quality

LAQM

4.3.1 SACDC has investigated air quality within its area as part of its responsibilities under the LAQM regime. To date, three AQMAs have been declared due to exceedances of the annual mean NO_2 NAQO. The development site is located approximately 6 km from the nearest AQMA, which encompasses a number of domestic properties in Frogmore and Colney Street in the vicinity of the M25.

Local Monitoring Data

NO_2

4.3.2 SACDC carried out monitoring at 43 locations using NO_2 diffusion tubes in 2019. Monitoring results for the most representative and closest monitoring locations to the Site are shown in **Table 4-1** and their locations are presented in **Figure 1**.

Table 4-1 Measured Annual Mean NO_2 Concentrations 2015 – 2019

Site ID	Site Type	Within AQMA	Annual Mean (µg/m³)				
			2015	2016	2017	2018	2019
SA117 – Five Acres, London Colney	Kerbside	No	-	-	23.0	25.5	26.3
SA120 – Sleapcross Gardens, Smallford	Kerbside	No	31.5	30.3	30.3	29.3	29.8
SA151 – Thamesdale, London Colney	Roadside	No	-	-	-	36.8	34.2
SA152 – Shenley Lane/Kings Road, London Colney	Roadside	No	-	-	-	29.1	27.0
NAQO			**40**				

2015 – 2019 data taken from the SACDC Air Quality Annual Status Report for 2020 (SACDC, 2020b).

4.3.3 Measured concentrations at the monitoring locations have been well below the annual mean objective between 2015 and 2019. Furthermore, measured concentrations at all sites are below 60 µg/m³, indicating that it is unlikely that any exceedances of the 1-hour mean objective have occurred.

PM_{10}

4.3.4 SACDC has not undertaken PM_{10} or $PM_{2.5}$ monitoring within the study area.

4.4 Predicted Background Concentrations

4.4.1 Estimated background concentrations for the Site have been obtained from the latest 2018-based national maps provided by DEFRA (DEFRA, 2020b). The DEFRA background concentrations for the study area are provided in **Table 4-2**.

4.4.2 The background concentrations are all well below the relevant NAQOs and limit value.

Table 4-2 Estimated Annual Mean Background Concentrations

Year	Location	Annual Mean (µg/m³)		
		NO_2	PM_{10}	$PM_{2.5}$
2019	520_205 [a]	13.8	15.4	10.1
NAQOs/Limit value		**40**	**40**	**25**

[a] Development Site.
Note: Projections in the 2018 reference year background maps and associated tools are based on assumptions which were current before the Covid-19 outbreak in the UK. In consequence these tools do not reflect short- or longer-term impacts on emissions in 2020 and beyond resulting from behavioural change during the national or local lockdowns.

5 Predicted Impacts

5.1 Construction Dust Impacts

Screening Assessment

5.1.1 There are a number of existing sensitive human receptors (including residential properties) located within 350 m of the Site boundary and within 50 m of the routes that will be used by construction vehicles. As such, further assessment of the risk of dust soiling and PM_{10} emissions is required.

5.1.2 There are no sensitive ecological receptors located within either 250 m of the Site boundary or within 50 m of the routes used by construction vehicles on the public highway. The closest designated ecological site to the Site is located >4 km from the Site boundary. As such, the potential for ecological impacts as a result of dust soiling can be screened out as being 'not significant'.

Further Assessment

Dust Emission Magnitude

5.1.3 The dust emissions magnitude of earthworks and construction activities and as a result of trackout have been determined based the criteria shown in **Table B-1, Appendix B**

- The Site is predominately horse grazing and paddock land. However, the proposals include the demolition of 42 Tollgate Road. Based on this, the dust emission magnitude of demolition activities is judged to be 'small'.
- The Site is approximately 78,200 m^2 in area. Based on this, the dust emission magnitude of earthworks activities is judged to be 'large'.
- Construction activities comprise the construction of 150 homes. Based on this, the dust emission magnitude of construction activities is judged to be 'large'.
- The number of HDVs that will exit the Site on a daily basis is unknown, however, given the large size of the Site it is anticipated to range between 10 - 50 HDVs per day. Based on this, the dust emission magnitude of trackout is judged to be 'medium'.

Area Sensitivity

5.1.4 The area sensitivity to dust soiling and human health impacts has been determined based on the criteria shown in **Table B-3, Table B-4, Table B-5, Appendix B**

5.1.1 Residential properties are classed as being 'high sensitivity' receptors to dust soiling, based on the IAQM guidance (IAQM, 2014) (see **Table B-3**, **Appendix B**). There are >10 residential properties located within 20 m of the Site boundary; as such, the sensitivity of the area surrounding the Site to dust soiling is judged to be 'high'.

5.1.2 The IAQM guidance states that trackout may occur for distance of up to 200 m from medium sites. As the construction traffic routing is currently unknown, the worst-case assumption has been made that all main roads may potentially be used by HDVs leaving the Site entrance(s). There are >10 residential properties located within 20 m of roads extending up to 200 m of the Site; as such, the sensitivity to dust soiling of the area surrounding roads along which material may be tracked is judged to be 'high'.

5.1.3 The IAQM also defines residential properties as being 'high sensitivity' receptors to human health impacts (see **Table B-4**, **Appendix B**). PM_{10} concentrations at existing residential properties within the study area are anticipated to be similar to the DEFRA 2019 PM_{10} concentrations (i.e. 15.4 µg/m^3). Based on the predicted existing PM_{10} concentrations and the number of sensitive receptors within 20 m of the Site boundary and roads along which material may be tracked, the sensitivity to human health impacts of the areas surrounding the Site and the area surrounding roads along which material may be tracked are judged to be 'low'.

Risk of Impacts

5.1.4 The risk of construction dust impacts, without mitigation, have been defined based on the criteria shown in **Table B-6, Appendix B** and are presented in **Table 5-1**.

Table 5-1 Risk of Construction Dust Impacts without Mitigation

Potential Impact	Risk			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Soiling	Medium Risk	High Risk	High Risk	Medium Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk

5.2 Construction Traffic Impacts

5.2.1 During the construction period, the increase in heavy duty vehicles (HDVs) movements on the road network will be below the threshold of 100 movements per day outside an AQMA for an assessment to be necessary according to Environmental Protection UK (EPUK) and IAQM guidance. The construction traffic impacts on human health receptors in the area are considered to be insignificant, and have therefore been scoped out of this assessment.

5.3 Road Traffic Emission Impacts

5.3.1 Projected traffic generation has been provided by the Project's Transport Consultants, RPS. The Proposed Development will generate approximately 648 AADT during the operational phase. Out of these 648 daily movements, 68% (441) will travel north towards A414 North Orbital Road and 32% (207) will travel south towards Dixon Hill Road. As such, traffic generated by the Proposed Development falls below the EPUK / IAQM screening criteria (see **Appendix C**) and, therefore, the impacts of operational traffic generated by the development on existing sensitive receptors within the study area can be screened out and considered to be 'not significant' and no additional mitigation is therefore required.

5.4 Site Suitability

5.4.1 The NO_2 concentrations at the local monitoring sites were below the objective at all locations in 2019. As NO_2 concentrations measured at the roadside monitoring locations are below the annual mean, it is unlikely that the annual mean NO_2 objective will be exceeded within the site (which is located over 60m back from the road). Measured concentrations at the local monitoring sites are well below 60 µg/m^3, indicating that the one-hour mean NO_2 objective is unlikely to be exceeded within the site. PM_{10} and $PM_{2.5}$ are also expected to be well below the objective. Background concentrations of NO_2, PM_{10} and $PM_{2.5}$ are well below the annual mean of NAQO.

5.4.2 The site is considered suitable for the proposed residential use without the need for site-specific mitigation associated with air quality.

6 Mitigation

6.1 Construction

6.1.1 The following standard mitigation measures from the IAQM guidance (IAQM, 2014) are recommended, taking into account the outcomes of the construction dust risk assessment (presented in **Table 5-1**).

Communication

- Develop and implement a stakeholder communications plan.
- Display the name and contact details of persons accountable on the Site boundary.
- Display the head or regional office information on the Site boundary.

Management

- Develop and implement a dust management plan.
- Record all dust and air quality complaints, identify causes and take measures to reduce emissions.
- Record exceptional incidents and action taken to resolve the situation.
- Carry out regular site inspections to monitor compliance with the dust management plan and record results.
- Increase site inspection frequency during prolonged dry or windy conditions and when activities with high dust potential are being undertaken.
- Agree dust monitoring locations with the local authority and instigate monitoring 3 months in advance of works commencing in the area.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
- Erect solid screens or barriers around dusty activities or the site boundary at least as high as any stockpile 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.
- Avoid site run off of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove potentially dusty materials from Site as soon as possible.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Ensure all vehicles switch off engines when stationary.
- Avoid the use of diesel or petrol powered generators where possible.
- Produce a Construction Logistics Plan to manage the delivery of goods and materials.

- Only use cutting, grinding and sawing equipment with dust suppression equipment.
- Ensure an adequate supply of water on-site for dust suppressant.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use water sprays on such equipment where appropriate.
- Ensure equipment is readily available on-site to clean up spillages of dry materials.
- No on-site bonfires and burning of waste materials on-site.

Demolition

- Ensure water suppression is used during demolition operation.
- Avoid explosive blasting, using appropriate manual and 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.
- Only remove the cover in small areas during work and not all at once.

Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless required for a particular process.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored silos with suitable emissions control systems.

Trackout

- Use water assisted dust sweepers on the Site access and local roads.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving the Site are covered to prevent escape of materials.
- Record inspection of on-site haul routes and any subsequent action, repairing as soon as reasonably practicable.
- Install hard surfaced haul routes which are regularly damped down.
- Install a wheel wash with a hard-surfaced road to the Site exit where site layout permits.
- The Site access gate to be located at least 10m from receptors where possible.

6.2 Operation

6.2.1 Pollutant concentrations at the site are well below relevant objectives and the effects of development traffic on local air quality are judged to be not significant. However additional

transport related mitigation measures will be employed to reduce emissions from the development these include:

- Welcome pack provided to each dwelling promoting sustainable modes of travel;
- Travel Plan measures to promote bus and rail travel including: Travel Plan Coordinator (TPC) will contact the public transport officer at Hertfordshire County Council to request copies of any appropriate bus / rail route maps and any other information available to promote bus / rail usage; and The TPC will contact the relevant bus / rail companies to discuss the possibility of sending discount leaflets and potentially providing free taster tickets for travel. This will be undertaken within 1 month of occupation by the TPC.
- Travel Plan measures to facilitate cycling including: Provision of secure cycle parking facilities in accordance with Hertfordshire County Councils cycle parking standards; Form a residents Bicycle Users Group (BUG) to encourage cycling and organise promotional events; Negotiate discounts for residents on bikes and equipment with local cycle outlets; Voucher provided for the purchase of a bicycle and associated safety equipment; Provide free cycle training for children and adults; and The TPC will review marketing campaigns and participation in cycling events such as national cycle to workday, to help raise the general profile of cycling.

7 Summary and Conclusions

7.1.1 The air quality impacts associated with the proposed development of the land at Tollgate Road, Colney Heath, St Albans have been assessed.

7.1.2 To date SACDC has declared three AQMAs due to exceedances of the annual mean NO_2 objective. The proposed Site is not located within an AQMA. The development site is located approximately 6 km from the nearest AQMA, which encompasses a number of domestic properties in Frogmore and Colney Street in the vicinity of the M25.

7.1.3 The construction works have the potential to create dust. During construction it is recommended that in accordance with the IAQM guidance a package of mitigation measures is put in place to minimise the risk of elevated PM_{10} concentrations and dust nuisance in the surrounding area. With mitigation in place the construction impacts are judged as not significant.

7.1.4 The increase in road traffic resulting from the Development is below the EPUK / IAQM screening criteria, and therefore, the impacts of operational traffic generated by the development are considered to be 'not significant' and no additional mitigation is therefore required.

7.1.5 Mitigation measures to reduce the impacts of the development on air quality concentrations are not required, however additional transport related mitigation measures will be employed to reduce emissions from the development.

7.1.6 The Proposed Development is therefore considered to be in accordance with the requirements of the NPPF, and relevant local and national planning policy and guidance regarding air quality.

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Appendix A Glossary

Abbreviations	Meaning
AADT	Annual Average Daily Traffic
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
CEMP	Construction Environmental Management Plan
DEFRA	Department for Environment, Food and Rural Affairs
Diffusion Tube	A passive sampler used for collecting NO_2 in the air
EPUK	Environmental Protection UK
HDV	Heavy Duty Vehicle; a vehicle with a gross vehicle weight greater than 3.5 tonnes. Includes Heavy Goods Vehicles and buses
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
NAQO	National Air Quality Objective as set out in the Air Quality Strategy and the Air Quality Regulations
NO_2	Nitrogen Dioxide
NOx	Oxides of nitrogen generally considered to be nitric oxide and NO_2. Its main source is from combustion of fossil fuels, including petrol and diesel used in road vehicles
NPPF	National Planning Policy Framework
$PM_{10}/PM_{2.5}$	Small airborne particles less than 10/2.5 µm in diameter
PPG	Planning Practice Guidance
Receptor	A location where the effects of pollution may occur
SACDC	St Albans City District Council

Appendix B IAQM Dust Guidance (2014) Approach

Table B-1 Dust Emission Magnitude Classification

Activity	Dust Emission Magnitude		
	Large	**Medium**	**Small**
Demolition	Total building volume of >50,000 m^3, potentially dusty construction material, on-site crushing and screening, demolition activities >20 m above ground	Total building volume of 20,000 – 50,000 m^3, potentially dusty construction material, demolition activities 10 – 20 m above ground level	Total building volume of <20,000 m^3, construction material with low potential for dust release, demolition activities <10 m above ground, demolition during wetter months
Earthworks	Total site area of >10,000 m^2, potentially dusty soil type, >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes	Total site area of 2,500 - 10,000 m^2, moderately dusty soil type, 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 4 - 8 m in height, total material moved 20,000 - 100,000 tonnes	Total site area of <2,500 m^2, soil type with large grain size, <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes. Earthworks during wetter months
Construction	Total building volume >100,000 m^2, on-site concrete batching, sandblasting	Total building volume 25,000 - 100,000 m^2, potentially dusty construction material, on-site concrete batching	Total building volume <25,000 m^2, construction material with low potential for dust release
Trackout	>50 HDV outwards movements in any one day, potentially dusty surface material, unpaved road length >100 m	10 - 50 HDV outwards movements in any one day, moderately dusty surface material, unpaved road length 50 - 100 m	<10 HDV outwards movements in any one day, surface material with low potential for dust release, unpaved road length <50 m

Table B-2 Receptor Sensitivity

Receptor Sensitivity	Impact		
	High	**Medium**	**Low**
High	An area where: • Users can reasonably expect enjoyment of a high level of amenity; • The appearance, aesthetics of value of their property would be diminished by soiling; • The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Examples include dwellings, museums and other culturally important collections, medium and long-term car showrooms.	Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objective, a relevant location would be one where individuals may be exposed for eight hours or more per day. Examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	Locations with an international or national designation *and* the designated features may be affected by dust soiling; OR Locations where there is a community of particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain. Indicative examples include a SAC designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	An area where: • Users would expect to enjoy of a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; • The appearance, aesthetics of value of their property could be diminished by soiling; • The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods, as part of the normal pattern of use of the land. Examples include parks and places of work.	Locations where people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objective, a relevant location would be one where individuals may be exposed for eight hours or more per day. Examples include office and shop workers, but will generally not include workers occupationally exposed to for PM_{10}, as protection is covered by Health and Safety at Work legislation.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; OR Locations with a national designation where the features may be affected by dust deposition. Indicative example is a SSSI with dust sensitive features.

Low	An area where: • The enjoyment of amenity would not reasonably be expected; • Property would not reasonably be expected to be diminished I appearance, aesthetics or value by soiling; • There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short-term car parks and roads.	Locations where human exposure is transient. Examples include public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition. Indicative example is a LNR with dust sensitive features.

Table B-3 Sensitivity of an Area to Dust Soiling Effects

Receptor Sensitivity	**Number of Receptors**	**Distance from 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 B-4 Sensitivity of an Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m³	>100	High	High	High	Medium	Low
		10 – 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32 µg/m³	>100	High	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28 µg/m³	>100	High	Medium	Low	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	<24 µg/m³	>100	Medium	Low	Low	Low	Low
		10 – 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	>32 µg/m³	>10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	28 - 32 µg/m³	>10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28 µg/m³	>10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	<24 µg/m³	>10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

Table B-5 Sensitivity of an Area to Ecological Impacts

Receptor Sensitivity	Distance from Source (m)	
	<20	<50
High	High Risk	Medium Risk
Medium	Medium Risk	Low Risk
Low	Low Risk	Low Risk

Table B-6 Risk of Dust Impacts Calculation Matrix

Sensitivity of Area		Dust Emission Magnitude		
		Large	**Medium**	**Small**
Demolition	High	High Risk	Medium Risk	Medium Risk
	Medium	High Risk	Medium Risk	Low Risk
	Low	Medium Risk	Low Risk	Negligible Risk
Earthworks	High	High Risk	Medium Risk	Low Risk
	Medium	Medium Risk	Medium Risk	Low Risk
	Low	Low Risk	Low Risk	Negligible Risk
Construction	High	High Risk	Medium Risk	Low Risk
	Medium	Medium Risk	Medium Risk	Low Risk
	Low	Low Risk	Low Risk	Negligible Risk
Trackout	High	High Risk	Medium Risk	Low Risk
	Medium	Medium Risk	Low Risk	Negligible Risk
	Low	Low Risk	Low Risk	Negligible Risk

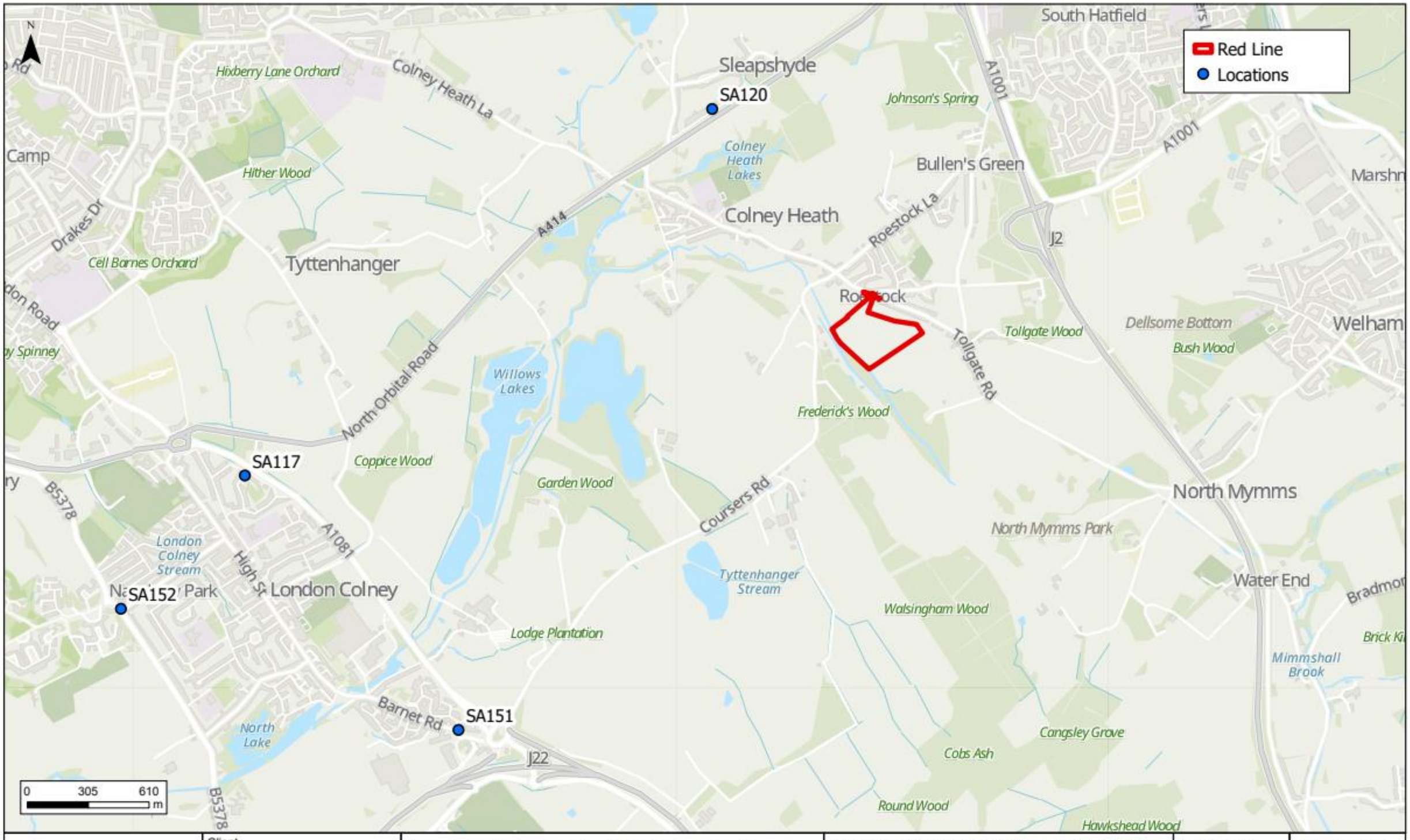
Appendix C EPUK IAQM Guidance (2017) Screening Criteria

The Development Will:	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a significant change in LDV traffic flows on local roads with relevant receptors.	A change of LDV flow of: • >100 AADT within or adjacent to an AQMA; and • >500 AADT elsewhere.
Cause a significant change in HDV flows on local roads with relevant receptors.	A change of HDV flow of: • >25 AADT within or adjacent to an AQMA; and • >100 AADT elsewhere.
Realign roads i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5 m or more and the road is within an AQMA.
Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle acceleration / deceleration, e.g. traffic lights, or roundabouts.
Introduce or change a bus station.	A change of bus flows of: • >25 AADT within or adjacent to an AQMA; and • >100 AADT elsewhere.
Have an underground car park with extraction system.	The ventilation extract for the car park will be located within 20 m of a relevant receptor; and The car park will have >100 movements per day (total in and out).

The screening criteria presented is amended from Table 6.2 of the EPUK / IAQM guidance (EPUK / IAQM, 2017). Only the screening criteria relevant to changes in transport (including both traffic and the transport network) are outlined.

Appendix D Figures

Figure 1: Monitoring locations



Stantec	Client: Vistry Group	**Land at Tollgate Road, Colney Heath** Figure 1 Monitoring Locations	GB Topographic: Contains OS data © Crown Copyright and database right 2020 Contains data from OS Zoomstack	1:24,285 @ A4	Date: 27/06/2022
				Drawn: cbrownlie	Checked: KH
				Figure 1	Rev A