Kairus Ltd

Air Quality Statement

Robin Hood Road
Elsenham

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Author	SH
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Client:

Rosconn Strategic Land
Oak House
Binley Business Park
Harry Weston Road
Binley
Coventry
Warwickshire
CV3 2UB

Prepared by:

Jo Kirk
Kairus Ltd
Higher Metcombe
Devon
EX11 1SL

T: 01404 811572
www.kairus.co.uk

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1 Introduction

1.1 Overview

Kairus Ltd is commissioned by Rosconn Strategic Land to carry out an air quality assessment statement for a proposed residential development on land off Robin Hood Road, Elsenham (the 'Site').

Due to exceedences of the national air quality objective for nitrogen dioxide (NO_2), Uttlesford District Council (UDC) has declared one Air Quality Management Area (AQMA) in Saffron Walden Town Centre. The proposed development site does not fall within the AQMA, however, an air quality assessment statement is required to accompany the planning application to support the application.

This report addresses the impact of the proposed development on local air quality. Potential sources of emissions are identified and assessed in the context of existing air quality and emission sources and the nature and location of receptors.

A glossary of common air quality terminology is provided in Appendix A.

1.2 Scope of Assessment

The scheme would provide up to 40 new residential units and would generate approximately 200 additional light duty vehicles (LDV) on the adjacent road network. Air quality planning guidance published by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)[1], indicates that significant impacts on local air quality are unlikely to occur where a development results in a change in light duty vehicles (LGV) of less than 500 per day and heavy duty vehicles (HDV) by less than 100 per day in locations outside of an AQMA. The number of vehicles generated by the proposed development would be significantly below these criteria therefore impacts on local air quality as a result of road traffic emissions is considered to be negligible and has been scoped out of this assessment.

The proposed development also lies adjacent to a railway line, where moving locomotives can contribute to elevated short-term NO_2 and SO_2 concentrations close to the track. Based on current guidance set out within the DEFRA Local Air Quality Management Technical Guidance (LAQM.TG(22)[2], an assessment of exposure, adjacent to a railway line is only required where relevant exposure lies within 30 m of a railway track of concern[3]and where the annual mean NO_2 concentrations are above 25 µg/m³. The plans indicate that the nearest residential property would be just over 20 m from the railway track and local NO_2 background concentrations at the Site are approximately 11-12 µg/m³ (based on data from the DEFRA background maps). Although the nearest residential would be within 30 m of the track, the railway line does not experience a heavy traffic of diesel passenger trains as detailed in Table 7.2 of the guidance. Therefore, an exposure assessment of railway emissions is not required and has been scoped out of this assessment.

The Site is located in a background location in terms of local air quality and pollutant concentrations are unlikely to be above the relevant air quality objectives at the Site. However, a qualitative baseline assessment of air quality has been undertaken to establish its suitability for residential development.

1 EPUK & IAQM (2017) Land-use Planning & Development Control: Planning for Air Quality

2 DEFRA (2022) Local Air Quality Management Technical Guidance LAQM.TG(22)

3 Table 7.2 of LAQM.TG22 provides a list of railway lines of concern

There is a risk of dust emissions generated during the construction phase impacting on nearby receptors. An assessment of air quality impacts associated with the construction of the proposed development has been undertaken in accordance with the IAQM demolition and construction guidance[4].

4 IAQM (2016) Guidance on the assessment of dust from demolition and construction, Version 1.1

2 Site Description

2.1 The Existing Site

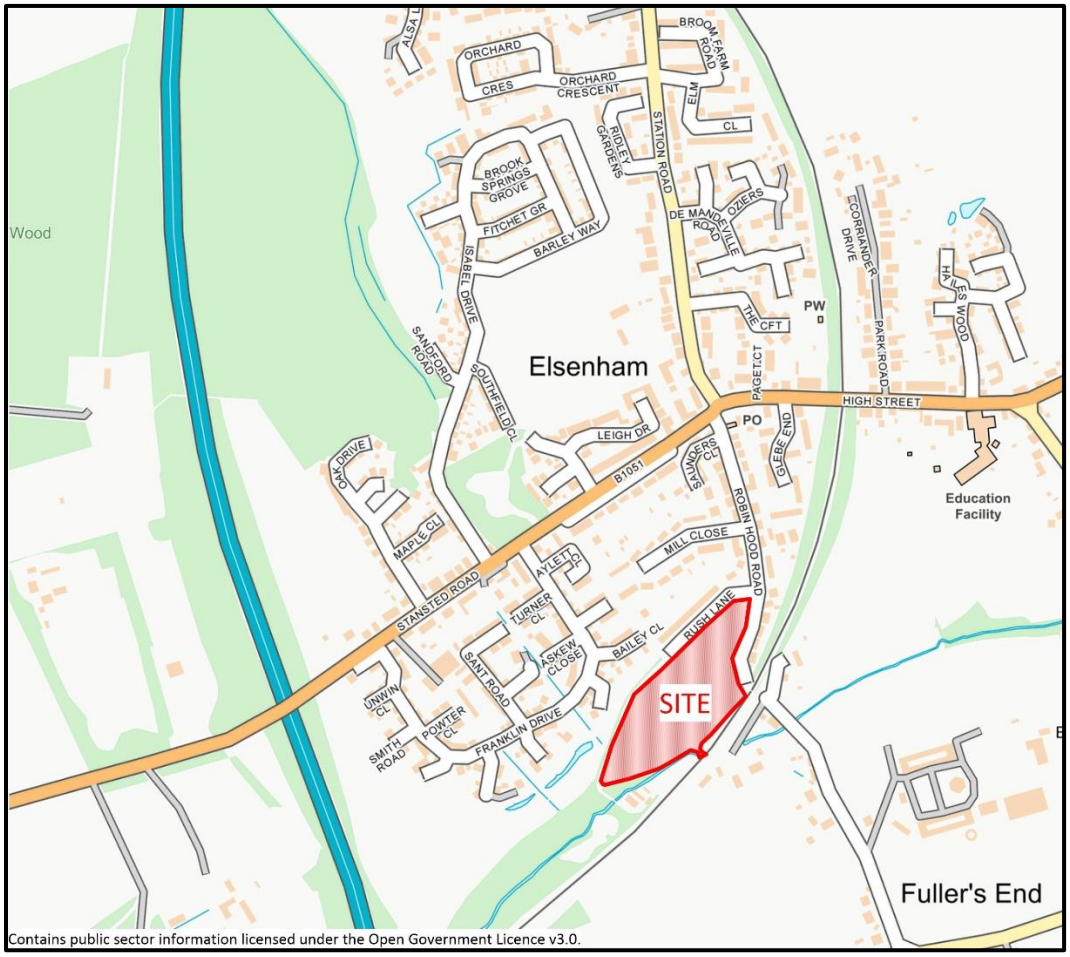
The Site is located on land off Robin Hood Road to the south of the village of Elsenham in Essex. Robin Hood Road runs along the north-eastern boundary of the Site and a railway line lies to the east. Rush Lane borders the site to the north-west.

Surrounding land uses include residential to the north of the Site and a recently built housing development of 165 homes on land to the west. There is a new residential development of five dwellings to the southeast, on the opposite side of the railway line, with open fields further beyond.

The M11 motorway is located approximately 340 m to the west of the Site and the B1051 Stansted Road lies approximately 230 m to the north.

The location of the Site is shown by the area bounded in red below in Figure 2.1.

Figure 2.1: Location of Development Site



2.2 The Proposed Development

The proposals include for the construction of up to 40 residential units with associated infrastructure and landscaping. Access to the Site would be via a new junction and access road off Robin Hood Road. The proposed layout is shown in Figure 2.2.

Figure 2.2: Indicative Layout of Development

3 Policy Context

3.1 National Air Quality Policy

3.1.1 Air Quality Regulations

The Air Quality Standards Regulations 2010[5] and Air Quality EU Exit Regulations 2019[6] sets out a series of limit values for the protection of human health and critical levels for the protection of vegetation. The UK is currently exceeding the objective limits for NO_2 and PM_{10} within London and a number of other air quality zones within the UK.

3.1.2 The UK Air Quality Strategy

The Government's policy on air quality within the UK is set out in the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland (AQS) published in July 2007[7] , pursuant to the requirements of Part IV of the Environment Act 1995. The AQS sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK. The AQS is designed to be an evolving process that is monitored and regularly reviewed.

The AQS sets standards and national air quality objectives (NAQO) for ten main air pollutants to protect health, vegetation and ecosystems. These are benzene (C_6H_6), 1,3-butadiene (C4H6), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), oxides of nitrogen (NO_x), particulate matter (PM_{10}, $PM_{2.5}$), sulphur dioxide (SO_2), ozone (O_3) and polycyclic aromatic hydrocarbons (PAHs).

The air quality standards are long-term benchmarks for ambient pollutant concentrations which represent negligible or zero risk to health, based on medical and scientific evidence reviewed by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO). These are general concentration limits, above which sensitive members of the public (e.g. children, the elderly and the unwell) might experience adverse health effects.

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

For some pollutants, there is both a long-term (annual mean) standard and a short-term standard. In the case of NO_2, the short-term standard is for a 1-hour averaging period, whereas for PM_{10} it is for a 24-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants (e.g. temporary exposure on the pavement adjacent to a busy road, compared with the exposure of residential properties adjacent to a road).

Of the pollutants included in the AQS, NO_2 and PM_{10} would be particularly relevant to this project as these are the primary pollutants associated with road traffic. The current statutory standards and objectives for NO_2 and PM_{10} in relation to human health are set out in Table 3.1.

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.

5 Air Quality Regulations 2010 – Statutory Instrument 2010 No. 1001

6 Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 – Statutory Instrument 2019 No. 74

7 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland – July 2007

In relation to $PM_{2.5}$ the 2019 Clean Air Strategy[8] includes a commitment to set 'new, ambitious, long-term targets to reduce people's exposure to $PM_{2.5}$' which the proposed Environment Bill 2019-2021 commits the Secretary of State to setting. New legal targets are set out in the recently published Environmental Improvement Plan (EIP) 2023[9], and recently published Statutory Instrument 'The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[10]. These have yet to be set in legislation. For the purposes of this assessment the limit value for $PM_{2.5}$ (as provided in Table 3.1) is considered to be appropriate to apply for this assessment. However, the new targets set out in the EIP are also provided in Table 3.1 and given consideration within the report.

Table 3.1: Relevant Objectives set out in the Air Quality Strategy

Pollutant	Concentrations	Measured As	Date to be Achieved By
Nitrogen Dioxide (NO_2)	200 μgm^{-3} not to be exceeded more than 18 times per year	1 hour mean	31 December 2005
	40 μgm^{-3}	Annual mean	31 December 2005
Particulate Matter (PM_{10})	50 μgm^{-3} not to be exceeded more than 35 times per year	24 hour mean	31 December 2004
	40 μgm^{-3}	Annual mean	31 December 2004
Particulate Matter ($PM_{2.5}$)	20 $\mu g/m^3$	Annual Mean	
Particulate Matter ($PM_{2.5}$)	10 $\mu g/m^3$ (Long-term Target)	Annual mean	31 December 2040
	12 $\mu g/m^3$ (Interim Target)	Annual mean	31 January 2028

The statutory standards and objectives apply to external air where there is relevant exposure to the public over the associated averaging periods within each objective. Guidance is provided within Local Air Quality Management Technical Guidance 2016 (LAQM.TG(22))[11] issued by DEFRA for Local Authorities on where the objectives apply, as detailed in Table 3.2. The objectives do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (i.e. centre of roadways).

3.1.3 Local Air Quality Management

Local authorities are seen to play a particularly important role. Section 82 of the Environment Act 1995 requires every local authority to conduct a review of the air quality from time to time within the authority's area. LAQM.TG(16) describes a new streamlined approach to the Local Air Quality Management (LAQM) regime, whereby every authority has to undertake and submit a single Annual Status Report/Annual Progress Report within its area, to identify whether the objectives have been or will be achieved at relevant locations by the applicable date. If the objectives are not being met, the authority must declare an Air Quality Management Area (section 83 of the Act) and prepare an action plan (section 84) which identifies measures that will be introduced in pursuit of the objectives.

8 Defra. (2019). Clean Air Strategy. London: HMSO

9 HM Government, Environmental improvement Plan 2023, First Revision of the 25 Year Environment Plan

10 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 – Statutory Instrument 2023 No.96

11 DEFRA (2016) Local Air Quality Management. Technical Guidance LAQM.TG(16)

Table 3.2: Locations Where Air Quality Objectives Apply		
Averaging Period	**Objectives should apply at:**	**Objectives should generally not apply at:**
Annual Mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care home etc.	Building facades 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 residential properties. Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term.
24 Hour Mean	All locations where the annual mean objective would apply together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1 Hour Mean	All locations where the annual mean and 24-hour mean objectives apply. Kerbside Sites (e.g. pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where the public might reasonably be expected to spend 1-hour or more. Any outdoor locations where the public might reasonably be expected to spend 1-hour or longer.	Kerbside sites where the public would not be expected to have regular access.

3.1.4 National Air Quality Plan for Nitrogen Dioxide (NO_2) in the UK

The National Air Quality Plan[12] was written as a joint venture between the Defra and the Department for Transport (DfT) and aims to tackle roadside concentrations of NO_2 in the UK. It includes a number of measures such as those aimed at investing in Ultra Low Emission Vehicles (ULEVs) charging infrastructure, public transport and grants to help local authorities in improving air quality.

The plan requires all local authorities (LAs) in England with areas expected not to meet the Limit Values by 2020 (known as 'air quality hotspots') to develop plans to bring concentrations within these values in "the shortest time possible". These plans are to be reviewed by the government and suggestions included in the plan include actions such as utilising retrofitting technologies, changing road layout and encouraging public transport and ULEV use. Where these approaches are not considered sufficient, the LA may need to consider implementation of a Clean Air Zone (CAZ) which places restrictions on vehicle access to an area and may include charging certain (or all) vehicles or restrictions on the type of vehicle allowed to access an area.

12 Defra and DfT. (2017). UK plan for tackling roadside nitrogen dioxide concentrations. London: HMSO

3.1.5 Road to Zero Strategy

The 'Road to Zero' strategy[13] sets out the government's plans to encourage zero emissions vehicles. These include the aim that by 2040 all new cars and vans will have zero tailpipe emissions and by 2050 almost every car will have zero emissions. Measures within the Strategy are aimed at encouraging the uptake of the cleanest vehicles and supporting electric charging infrastructure.

3.1.6 Clean Air Strategy

The Clean Air Strategy sets out policies to lower national emissions of pollutants in order to reduce background pollution and human exposure. It aims to create a strong framework to tackle air pollution and to reduce the number of people living in locations with $PM_{2.5}$ concentrations exceeding 10 µg/m^3 by 50% by 2025.

3.1.7 Control of Dust and particulates Associated with Construction

Section 79 of the Environmental Protection Act (1990)[14] states that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Statutory nuisance is defined as:

- *'any dust or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance', and*
- *'any accumulation or deposit which is prejudicial to health or a nuisance'.*

Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

In the context of the proposed development, the main potential for nuisance of this nature would arise during the construction phase - potential sources being the clearance, earthworks, construction and landscaping processes.

There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist - 'nuisance' is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred. However, research has been undertaken by a number of parties to determine community responses to such impacts and correlate these to dust deposition rates. However, impacts remain subjective and statutory limits have yet to be derived.

3.2 Planning Policy

3.2.1 National Planning Policy

The National Planning Policy Framework (NPPF)[15] sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the NPPF is a presumption in favour of sustainable development. It requires Local Plans to be consistent with the principles and policies set out in the NPPF with the objective of contributing to the achievement of sustainable development.

The NPPF states that the planning system has three overarching objectives in achieving sustainable development including a requirement to *'contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity,*

13 HM Government. (2018). Road to Zero Strategy. London: HMSO

14 Secretary of State, The Environment Act 1990 HMSO

15 Ministry of Housing, Communities and Local Government: National Planning Policy Framework (September 2023)

using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.'

Under Section 15: Conserving and Enhancing the Natural Environment, the NPPF (paragraph 174) requires that *'planning policies and decisions should contribute to and enhance the natural local environment by …preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible help to improve local environmental conditions such as air and water quality*.'

In dealing specifically with air quality the NPPF (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.*'

Paragraph 188 states that *'the focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively'*.

3.3 Local Planning Policy

3.3.1 Uttlesford Local Plan 2026

The Local Plan 2026[16] was adopted in January 2005 and is the main planning policy document for the district, setting out the needs of the district and the polices to guide development.

Policy ENV13 deals specifically with air quality and sets out the following:

'*ENV13 –Exposure to Poor Air Quality: Development that would involve users being exposed on an extended long-term basis to poor air quality outdoors near ground level will not be permitted. A zone of 100 metres on either side of the central reservation of the M11 and a zone 35 metres either side of the centre of the new A120 have been identified on the proposals map as particular areas to which this policy applies.*

UDC are preparing a new local plan under the Local Development Framework.

3.4 Air Quality Guidance

3.4.1 DEFRA Technical Guidance, LAQM.TG(22)

LAQM.TG(22) sets out detailed guidance on how air quality should be assessed and monitored by local authorities. The document provides useful guidance on how air quality from specific sources should be screened and the approaches that should be used to undertake detailed assessment where potentially significant emissions are identified, including details on model verification and consideration of monitoring data for use in assessments.

16 Uttlesford District Council (2005) Uttlesford Local Plan Adopted January 2005

3.4.2 IAQM Land-Use Planning and Development Control: Planning for Air Quality

The EPUK and IAQM have published joint guidance on the assessment of air quality impacts for planning purposes. This includes information on when an air quality assessment is required, what should be included in an assessment and criteria for assessing the significance of any impacts. This guidance has been used to determine the scope of the assessment and assess the significance of any predicted impacts.

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

Guidance produced by the IAQM on assessing impacts from construction and demolition activities[17] includes a methodology for identifying the risk magnitude of potential dust sources associated with demolition, construction, earthworks and trackout. This is then used to identify the level of mitigation necessary in order for the impacts to be not significant. The London SPG 'The Control of Dust and Emissions during Construction and Demolition' is based on this guidance, however, the original document is more detailed and therefore it is used to provide additional information where necessary.

17 IAQM (2014) Guidance on the Assessment of Dust from Demolition and Construction Version 1.1 , February 2014

4 Methodology

4.1 Construction Phase

4.1.1 Construction Traffic

During construction of the proposed development, lorries will require access to the Site to deliver and remove materials; earthmoving plant and other mobile machinery may also work on site including generators and cranes. These machines produce exhaust emissions; of particular concern are emissions of NO_2 and PM_{10}.

Based on the development proposals and size of the scheme it is anticipated that there would be no more than 15-20 additional Heavy-Duty Vehicles (HDV) generated on the adjacent road network on any given day during the construction phase.

The EPUK & IAQM air quality guidance[18] sets out criteria to assist in establishing when an air quality assessment will be required. These criteria indicate that significant impacts on air quality are unlikely to occur where a development results in less than 25 HDV movements per day in locations within or adjacent to an AQMA and less than 100 HDV outside of an AQMA. It is therefore anticipated that construction traffic generated by the proposed development would result in a negligible impact on local NO_2 and PM_{10} concentrations and has not been considered any further in this assessment.

4.1.2 Construction Dust

The main air quality impacts that may arise during construction activities are dust deposition resulting in the soiling of surfaces e.g. cars, window sills; visible dust plumes and elevated PM_{10} concentrations as a result of dust generating activities on the site. These dust emissions can give rise to annoyance at nearby receptors due to the soiling of surfaces by the dust.

Separation distance is also an important factor. Research indicates that particles greater than 30µm, will largely deposit within 100 metres of sources, while intermediate particles (10-30µm) are likely to travel 100 –250m[19] under normal meteorological conditions before returning to the surface. Particles of greater than 30µm are responsible for the majority of dust annoyance. Consequently, significant dust annoyance is usually limited to within a few hundred metres of its source. Smaller particles (<10µm) are deposited slowly and can travel up to 1 km; however, the most significant impacts on short term concentrations of PM_{10} occur within a shorter distance from source. This is due to the rapid decrease in concentrations with increasing distance from the source due to dispersion.

The assessment of construction impacts has followed the methodology set out within guidance produced by the Major of London[20] on assessing impacts from construction activities and also makes reference to the 2014 guidance published by IAQM [21].

In order to assess the potential impacts, the activities on construction sites are divided into four categories. These are:

- demolition (removal of existing structures);
- earthworks (soil-stripping, ground-leveling, excavation and landscaping);

18 EPUK & IAQM (May 2017) Land-Use Planning & Development Control: Planning for Air Quality

19 Arup, The Environmental Effects of Dust at Surface Mineral Workings. (Report to the DETR)

20 Mayor of London (2014) The Control of Dust and Emissions from Construction and Demolition

21 Mayor of London (2014) The Control of Dust and Emissions from Construction and Demolition

- construction (activities involved in the provision of a new structure); and
- trackout (the transport of dust and dirt from the construction site onto the public road network where it may be deposited and then re-suspended by vehicles using the network).

For each activity, the risk of dust annoyance, health and ecological impact is determined using three risk categories: low, medium and high risk. The risk category may be different for each of the four activities. The risk magnitude identified for each of the construction activities is then compared to the number of sensitive receptors in the near vicinity of the site in order to determine the risks posed by the construction activities to these receptors.

Step 1: Screen the Need for an Assessment

The first step is to screen the requirement for a more detailed assessment. An assessment is required where there is:

- a 'human receptor' within 350m of the boundary of the site or 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/or
- an 'ecological receptor' within 50m of the boundary of the site; or 50m of the route(s) used by the construction vehicles on the public highway, up to 500m from the site entrance(s).

Step 2A: Define the Potential Dust Emission Magnitude

This is based on the scale of the anticipated works and the proximity of nearby receptors. The risk is classified as small, medium or large for each of the four categories.

Demolition: The potential dust emission classes for demolition are:

- Large: Total building volume >50,000m^3, potentially dusty construction material (e.g. Concrete), on site crushing and screening, demolition activities >20m above ground level;
- Medium: total building volume 20,000m^3 – 50,000m^3, potentially dusty construction material, demolition activities 10-20 m above ground level; and
- Small: total building volume <20,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.

Earthworks: This involves excavating material, haulage, tipping and stockpiling. The potential dust emission classes for earthworks are:

- Large: Total site area >10,000m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes;
- Medium: Total site area 2,500 m^2 – 10,000m^2, moderately dusty soil (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 4m – 8m in height, total material moved 20,000 tonnes- 100,000 tonnes; and
- Small: Total site area <2,500m^2, soil type with large grain size (e.g. sand), <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: The important issues here when determining the potential dust emission magnitude include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build. The categories are:

- Large: Total building volume >100,000m^3, on site concrete batching, sandblasting;

- Medium: Total building volume 25,000m^3 – 100,000m^3, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- Small: Total building volume <25,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout: The risk of impacts occurring during trackout is predominantly dependent on the number of vehicles accessing the Site on a daily basis. However, vehicle size and speed, the duration of activities and local geology are also factors which are used to determine the emission class of the Site as a result of trackout. The categories are:

- Large: >50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100m;
- Medium: 10-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content, unpaved road length 50-100m; and
- Small: <10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length >50m.

Step 2B: Defining the Sensitivity of the Area

The sensitivity of the area is defined for dust soiling, human health (PM_{10}) and ecological receptors. The sensitivity of the area takes into account the following factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of receptors;
- in the case of PM_{10}, the local background concentration; and
- site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table 4.1 is used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

Based on the sensitivities assigned to the different receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification can be defined for each. Tables 4.2 to 4.4 indicate the criteria used to determine the sensitivity of the area to dust soiling, human health and ecological impacts.

Table 4.1: Examples of Factors Defining Sensitivity of an Area

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	Users can reasonably expect enjoyment of a high level of amenity The appearance, aesthetics or 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.	10 – 100 dwellings within 20 m of site. Local PM_{10} concentrations close to the objective (e.g. annual mean 36 -40 µg/m^3). E.g. residential properties, hospitals, schools and residential care homes.	Locations with an international or national designation and the designated features may be affected by dust soiling. Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red List for Great Britain. E.g. A Special Area of Conservation (SAC).

Table 4.1: Examples of Factors Defining Sensitivity of an Area			
Sensitivity of Area	**Dust Soiling**	**Human Receptors**	**Ecological Receptors**
	E.g. dwellings, museums and other important collections, medium and long term car parks and car showrooms.		
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home. The appearance, aesthetics or 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. E.g. parks and places of work.	Less than 10 receptors within 20 m. Local PM_{10} concentrations below the objective (e.g. annual mean 30-36 µg/m^3). E.g. office and shop workers but will generally not include workers occupationally exposed to PM_{10} as protection is covered by the Health and Safety at Work legislation.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. Locations with a national designation where the features may be affected by dust deposition E.g. A Site of Special Scientific Interest (SSSI) with dust sensitive features.
Low	The enjoyment of amenity would not reasonably be expected. Property would not reasonably be expected to be diminished in 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. E.g. playing fields, farmland unless commercially sensitive horticultural, footpaths, short lived car [parks and roads.	Locations where human exposure is transient. No receptors within 20 m. Local PM_{10} concentrations well below the objectives (less than 75%). E.g. public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition. E.g. Local Nature Reserve with dust sensitive features.

Table 4.2: Sensitivity of the Area to Dust Soiling on People and Property					
Receptor Sensitivity	**Number of Receptors**	**Distance from the Source (m)**			
		<20	**<50**	**<100**	**<350**
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 4.3: Sensitivity of the Area to Human Health Impacts							
Receptor Sensitivity	**Annual Mean PM_{10} Concentration**	**Number of Receptors**	**Distance from Source (m)**				
			<20	**<50**	**<100**	**<200**	**<350**
High	>32 µg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table 4.4: Sensitivity of the Area to Ecological Impacts		
Receptor Sensitivity	**Distance from the Source (m)**	
	<20	**<50**
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Define the Risk of Impacts

The final step is to combine the dust emission magnitude determined in step 2A with the sensitivity of the area determined in step 2B to determine the risk of impacts with no mitigation applied. Tables 4.5 to 4.7 indicate the method used to assign the level of risk for each construction activity. The identified level of risk is then used to determine measures for inclusion within a site-specific Construction Management Plan (CMP) aimed at reducing dust emissions and hence reducing the impact of the construction phase on nearby receptors. The mitigation measures are drawn from detailed mitigation set out within the IAQM guidance document.

Table 4.5: Risk of Dust Impacts from Demolition			
Sensitivity of Area	**Large**	**Medium**	**Small**
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 4.6: Risk of Dust Impacts from Earthworks/ Construction			
Sensitivity of Area	**Large**	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 4.7: Risk of Dust Impacts from Trackout			
Sensitivity of Area	**Large**	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

Significance Criteria

The construction impact significance criteria are based on the SPG. The 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.

With appropriate mitigation in place, the residual effect of construction impacts on air quality is assessed as not significant.

5 Baseline Assessment

5.1 Uttlesford Review and Assessment of Air Quality

UDC has carried out detailed assessments of air quality and as a result has declared one AQMA covering Saffron Walden Town Centre, due to exceedences of the NO_2 annual mean objective.

The AQMA is located approximately 13 km to the north of the Site. The Site does not, therefore, fall within an AQMA and air quality in the vicinity of the Site has not been identified as exceeding the relevant air quality objectives during the review and assessment process.

5.1.1 Nitrogen Dioxide

UDC monitors concentrations of NO_2 across the district using both automatic monitoring sites and passive diffusion tubes. No monitoring of pollution concentrations is carried out in the immediate vicinity of the Site. The closest and most representative monitoring locations are three sites located in Stansted Mountfitchet and one adjacent to the M11, on the outskirts of the village of Burton End.

Details of these monitoring sites and concentrations recorded since 2018 are provided in Table 5.1.

Table 5.1: Diffusion Tube annual average nitrogen dioxide concentrations (µgm^{-3})

Site	Site Type	OS Grid Ref	Distance From Dev. Site (km)	In AQMA ?	Year				
					2018	2019	2020[1]	2021[1]	2022
UT033 – Chapel Hill, Stansted, Mountfitchet.	R	551377, 224913	2.1km SW	No	26.9	23.8	18.7	20.4	20.3
UT009 – Burton End, Burton Bury	R	552403, 223965	2.0km SSW	No	33.6	33.9	26.0	26.6	27.1
SC026 – Forest School Academy	S	551926, 224040	2.2km SW	No	-	-	-	-	12.8
SCO29 – Magna Carta Primary Academy	K	551258, 225077	2.1km SW	No	-	-	-	-	10.8

UB – Urban Background, R – Roadside, S – Suburban

Numbers in **BOLD** represent an exceedance of the objective.

If the data capture period is less than 75% for annual mean concentrations, then the data has been annualised and is provided in brackets.

[2] data for 2020 and 2021 has been included for consistency purposes only. Due to travel restrictions as a result of the COVID -19 pandemic, pollution levels during 2020 and 2021 were significantly suppressed. Data from both years is therefore not considered representative of normal conditions and has not been used to inform the baseline assessment.

Diffusion tubes are a passive form of monitoring, which, due to their relative in-expense, allow for a much greater spatial coverage than with automatic monitoring sites. Diffusion tubes are acknowledged as a less accurate method of monitoring ambient air pollutants than automatic monitors, with diffusion tubes over or under estimating concentrations by as much as 30 %.

To allow the results to be reliably compared with the AQ Objectives, the data should be bias corrected using data collected from tubes co-located with continuous monitoring sites. The data provided below has been adjusted by UDC using nationally derived adjustment factors.

The data presented in Table 5.1 shows annual mean NO_2 concentrations consistently below the objective of 40 µg/m^3 at all the sites presented, including site UT009.

The data shows no consistent trend in concentrations with some years showing an increase and others a decrease.

Short-term NO_2 concentrations cannot be recorded by diffusion tubes, therefore no short-term data is available. However, the LAQM.TG(16) guidance indicates that where the annual mean is below 60 µg/m^3 it can be assumed that exceedences of the 1 hour objective for NO_2 are unlikely to occur. Based on the information provided in Table 5.1, the short-term objective is being met at the all three monitoring locations.

5.1.2 Particulates (PM_{10} and $PM_{2.5}$)

PM_{10} concentrations are only recorded at one site within the district; a roadside mobile unit adjacent to London Road in Saffron Weldon within the AQMA. Annual mean and short-term concentrations recorded at this site are presented in Tale 5.2. The data shows that annual mean concentrations have been less than 80% of the 40 µg/m^3 objective since 2018. The data also shows that altho9ugh the 24-hour limit of 50 µg/m^3 has been exceeded at the site, the objective, which allows for up to 25 exceedances of the limit in any one year, has not been breached.

PM_{10} concentrations are expected to meet the relevant objective limits across the district.

Table 5.2: Annual average Particulate Concentrations Recorded on London Road, Saffron Walden (µgm^{-3})

Pollutant	Parameter	Year				
		2018	2019	2020[1]	2021[1]	2022
PM_{10}	Annual Mean	25.5	24.7	27.1	28.1	30.9
	No. Exceedances of 24 hr Limit of 50 µg/m^3	8	16	8	13	32
$PM_{2.5}$	Annual Mean	-	13.8	15.1	14.4	17.2

Numbers in **BOLD** represent an exceedance of the objective.

If the data capture period is less than 75% for annual mean concentrations, then the data has been annualised and is provided in brackets.

[2] data for 2020 and 2021 has been included for consistency purposes only. Due to travel restrictions as a result of the COVID -19 pandemic, pollution levels during 2020 and 2021 were significantly suppressed. Data from both years is therefore not considered representative of normal conditions and has not been used to inform the baseline assessment.

$PM_{2.5}$ concentrations have also been recorded on London Road since 2019. The annual mean concentrations are presented in Table 5.2. The data shows that annual mean concentrations have been below the 20 µg/m^3 objective limit since 2019. However, both the 2028 interim and 2040 long-term EIP targets have been exceeded at this site since 2019.

Exceedance of the EIP target is common place across the UK and it is anticipated that the UK government will introduce measures to apply across the UK to reduce $PM_{2.5}$ concentrations to meet the long-term target of 10 µg/m^3 by 2040.

5.2 DEFRA Background Maps

Additional information on estimated background pollutant concentrations has been obtained from the DEFRA 2018 based background maps provided on UK-AIR, the Air Quality Information Resource (http://uk-air.defra.gov.uk). Estimated air pollution concentrations for NO_2, PM_{10} and $PM_{2.5}$ have been extracted from the 2023 background pollution maps for the UK and are set out in Table 5.3.

These maps are available in 1km by 1km grid squares and provide an estimate of concentrations between 2018 and 2030. The average concentrations for the grid square representing the Site have been extracted from the 2023 assessment year.

The data indicates that background concentrations in the vicinity of the Site are expected to be less than 75% (well below) the annual mean objectives for NO_2, PM_{10} and $PM_{2.5}$, as set out in Table 3.1. Background $PM_{2.5}$ concentrations at the Site are also expected to be below the 2028 interim and 2040 long-term EIP target values.

Table 5.3: Annual Mean Background Air Pollution Concentrations

Pollutant	2023
NO_2	10.9
PM_{10}	14.9
$PM_{2.5}$	9.2

5.3 Air Quality at the Development Site

As detailed in section 2, the Site is located to the south of Elsenham, on the very outskirts of the village. The Site is adjacent to Robin Hood Road, approximately 340 m from the M11 and approximately 230 m from Stansted Road (B1051).

Data recorded at the Burton End monitoring site, which is within 30 m of the M11, shows that NO_2 concentrations have been well below the annual mean objective limit of 40 µg/m^3 since 2018. The monitoring site is considerably closer to both the M4 and the A419 than the Site. NO_2 concentrations are therefore expected to be lower at the Site than at the Burton End monitoring site and therefore well below the annual mean objective.

Guidance set out in LAQM.TG(22) indicates that where annual mean NO_2 concentrations are less than 60 µg/m^3, the 1-hour objective limit is unlikely to be exceeded. As annual mean concentrations at the site are expected to be well below the annual mean objective (i.e. less than 30 µg/m^3), short-term concentrations are also expected to be meeting the relevant objective.

Monitoring of PM_{10} and $PM_{2.5}$ is very limited within the district, with one location located within the AQMA adjacent to London Road recording concentrations of these two pollutants. The Site is located on the edge of Elsenham village in a background location in terms of air quality. Pollution levels at the Site are therefore expected to be equivalent to background concentrations. Based on data set out in Table 5.3, PM_{10} and $PM_{2.5}$ concentrations are expected to be below the relevant annual mean objective limits and the EIP target levels.

As with NO_2 LAQM.TG(22) recommends that where annual mean PM_{10} concentrations are below 32 µg/m^3 then the short-term objective is likely to be met. On this basis it is considered that short-term PM_{10} concentrations are meeting the 24-hour objective limit at the Site for this pollutant.

The development proposals would not introduce new exposure into a location where pollutant concentrations are exceeding the relevant air quality objectives. The impact of the proposals in terms of new exposure are therefore considered to be negligible.

6 Construction Impacts

6.1 Site and Surroundings

A summary of the proposed development is provided in Section 2 of this report.

The Site covers an area of approximately 2.5 ha (25000 m^2) and there are residential properties located within 20 m of the Site. An assessment of construction related impacts in relation to human receptors has therefore been undertaken.

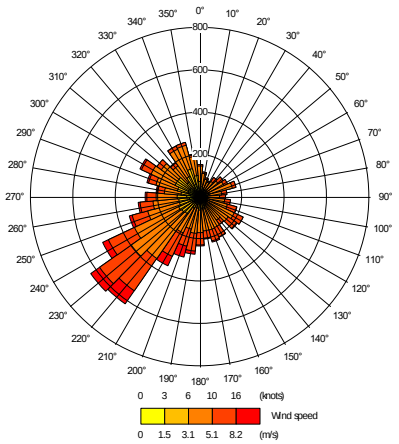
Dust emissions from construction activities are unlikely to result in significant impacts on ecologically sensitive receptors beyond 50 m from the site boundary. A review of data held on the DEFRA MAGIC website[22] shows no sites designated as important for wildlife within 50m of the Site therefore impacts on ecological receptors has not been considered any further within this assessment.

As discussed in Section 5, the PM_{10} concentrations, taken from the DEFRA background maps, in the vicinity of the Site are expected to be below the relevant objective limits (Table 5.3). The data indicates background concentrations in the region of 14-15 µg/m^3. Based on professional judgment, it is anticipated that PM_{10} concentrations at the Site and at adjacent properties are unlikely to be much higher than background, therefore PM_{10} concentrations are expected to be below 24µg/m^3.

The precise behaviour of the dust, its residence time in the atmosphere, and the distance it may travel before being deposited would depend upon a number of factors. These include wind direction and strength, local topography and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

A windrose from the Stansted Meteorological Station is provided in Figure 6.1, which shows that prevailing wind is from the south west. Receptors located to the north-east are therefore most at risk of experiencing impacts. The main land uses to the north-east are residential, therefore, properties adjacent to Robin Hood Road would be most at risk of experiencing significant effects as a result of dust emissions.

Figure 6.1: Windrose from Stansted Meteorological Station (2019)



22 http://magic.defra.gov.uk/

6.2 Risk Assessment of Dust Impacts

6.2.1 Defining the Dust Emission Magnitude

With reference to the criteria detailed in section 4, the dust emission magnitude for each of the categories demolition, earthworks, construction and trackout have been determined. These have been summarised in Table 6.1.

Table 6.1: Dust Emission Magnitudes

Activity	Criteria	Dust Emission Magnitude
Demolition	No demolition required	**n/a**
Earthworks	Building site area approximately 25,000 m^2, potential for more than 10 HDV on site.	**Large**
Construction	Building volume approximately 20-30,000 m^3, main construction material brick and concrete	**Medium**
Trackout	Between 15-20 HDV (>3.5t) movements per day	**Medium**

6.2.2 Sensitivity of Surrounding Area

Using the criteria set out in Tables 4.2 and 4.3, the sensitivity of the surrounding area to impacts from dust emissions has been determined and are set out in Table 6.2.

Dust Soiling

There are currently more than 10 residential properties within 20 m of the Site boundary. The sensitivity of the surrounding area in relation to dust soiling effects is therefore considered to be high.

It is anticipated that there will be between 15-20 HDV (>3.5t) movements per day during the construction phase which are expected to travel to and from the Site along Robin Hood Road. As a general guide, significant impacts from trackout may occur up to 500 m from large sites, 250 m from medium sites and 50 m from small sites, as measured from the site exit. Potentially there could be more than 10 sensitive receptors (residential properties) within 20 m of the roadside within 250 m of the Site access point. The sensitivity of the area to dust soiling effects from trackout is therefore considered to be high.

PM_{10} Effects

As previously discussed, annual mean PM_{10} concentrations in the vicinity of the Site are expected to be below 24 µg/m^3. Based on the proximity of sensitive receptors to the site boundary and the local concentrations of PM_{10} the sensitivity of the surrounding area is considered to be low with regards human health impacts.

Table 6.2: Sensitivity of Receptors		
Potential Impact		**Sensitivity at Site**
Dust Soiling (earthworks and construction)	Receptor Sensitivity	High
	Number of Receptors	>10 within 20m
	Sensitivity of the area	**High**
Dust Soiling (trackout)	Receptor Sensitivity	High
	Number of Receptors	>10 within 20m within 250 m of site access
	Sensitivity of the area	**High**
Human Health (earthworks and construction)	Receptor Sensitivity	High
	Annual Mean PM_{10} Concentration	< 24 µg/m^3
	Number of Receptors	>10 within 20m
	Sensitivity of the area	**Low**
Human Health (trackout)	Receptor Sensitivity	High
	Annual Mean PM_{10} Concentration	< 24 µg/m^3
	Number of Receptors	>10 within 20m within 250 m of site access
	Sensitivity of the area	**Low**

6.3 Defining the Risk of Impacts

The dust emission magnitude, as set out in Table 6.1, is combined with the sensitivity of the area (Table 6.2) to determine the risk of both dust soiling and human health impacts, assuming no mitigation measures applied at site. The risk of impacts associated with each activity is provided in Table 6.3 below and has been used to identify site-specific mitigation measures, which are discussed in Section 8.1.1 and set out in Appendix B.

Table 6.3: Summary of Effects Without Mitigation		
Source	**Dust Soiling**	**PM_{10} Effect**
Demolition	n/a	n/a
Earthworks	High	Low
Construction	Medium	Low
Trackout	Medium	Low

7 Mitigation Measures

7.1 Mitigation Measures

7.1.1 Construction Phase

The control of dust emissions from construction site activities relies upon management provisions and mitigation techniques to reduce emissions of dust and limit dispersion. Where dust emission controls have been used effectively, large-scale operations have been successfully undertaken without impacts to nearby properties.

The proposed development has been identified as a high-risk site for dust soiling effects. For human health, the Site has been identified as a low risk site as set out in Table 6.3.

The developer should therefore implement appropriate dust and pollution control measures as set out within the IAQM guidance. A summary of these measures is set out in Appendix B. The proposed measures should be set out within a CMP and approved by UDC prior to commencement of any work on site.

The LAQM guidance recommends that where there is a high risk of impacts at nearby residential receptors that monitoring of dust or PM_{10} is carried out throughout the construction period. The requirement for monitoring should be discussed and agreed with UDC and if required baseline monitoring should commence at least three months before construction work commences on site.

Following implementation of the measures recommended for inclusion within the CMP the impact of emissions during construction of the proposed development would be negligible.

7.2 Residual Effects

7.2.1 Construction Phase

The greatest potential for dust nuisance problems to occur would generally be within 200m of the construction site perimeter. There may be limited incidences of increased dust deposited on property beyond this distance.

By following the mitigation measures outlined within this appraisal the impact would be substantially minimised and residual impacts are unlikely to be significant.

8 Conclusion

Kairus Ltd was commissioned by Rosconn Strategic Land to carry out an air quality assessment statement for a proposed residential development on land off Robin Hood Road, Elsenham (the 'Site').

It is inevitable that with any development construction activities would cause some disturbance to those nearby and the assessment has predicted a minor to major adverse impact prior to the implementation of any on-site mitigation. However, following the implementation of appropriate mitigation measures, which would be set out within a CMP, impacts associated with the construction of the development are likely to be insignificant.

A baseline assessment of local air quality has concluded that concentrations of NO_2 and PM_{10} are meeting the relevant air quality objective limits at the Site therefore the impact of the scheme in terms of new exposure would be negligible.

Based on the results of this assessment air quality does not pose a constraint to development of the Site for residential purposes.

Appendix A – Air Quality Terminology

Term	Definition
Accuracy	A measure of how well a set of data fits the true value.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedences within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between 2 years, which is useful for pollutants that have higher concentrations during the winter months.
AQMA	Air Quality Management Area.
DEFRA	Department for Environment, Food and Rural Affairs.
Exceedence	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
Fugitive emissions	Emissions arising from the passage of vehicles that do not arise from the exhaust system.
LAQM	Local Air Quality Management.
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO_2	Nitrogen dioxide.
NO_x	Nitrogen oxides.
O_3	Ozone.
Percentile	The percentage of results below a given value.
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
Ratification (Monitoring)	Involves a critical review of all information relating to a data set, in order to amend or reject the data. When the data have been ratified they represent the final data to be used (see also validation).
μgm^{-3} micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of $1ug/m^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.
UKAS	United Kingdom Accreditation Service.
Uncertainty	A measure, associated with the result of a measurement, which characterizes the range of values within which the true value is expected to lie. Uncertainty is usually expressed as the range within which the true value is expected to lie with a 95% probability, where standard statistical and other procedures have been used to evaluate this figure. Uncertainty is more clearly defined than the closely related parameter 'accuracy', and has replaced it on recent European legislation.
USA	Updating and Screening Assessment.
Validation (modelling)	Refers to the general comparison of modelled results against monitoring data carried out by model developers.
Validation (monitoring)	Screening monitoring data by visual examination to check for spurious and unusual measurements (see also ratification).
Verification (modelling)	Comparison of modelled results versus any local monitoring data at relevant locations.

Appendix B– Construction Mitigation Measures

It is recommended that the 'highly recommended' measures set out below are incorporated into a CMP and approved by UDC prior to commencement of any work on site:

- develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- display the name and contact details of the person accountable for air quality and dust issues on the site boundary (i.e. the environment manager/engineer or site manager);
- display the head or regional office contact information on the site boundary;
- record all dust and air quality complaints, identify cause, take appropriate measures to reduce emissions in a timely manner and record the measures taken;
- make the complaints log available to the local authority when asked;
- record any exceptional incidents that cause dust and/or air emissions, either on- or off- site and the action taken to resolve the situation in the log book;
- carry out regular site inspections to monitor compliance with the CMP, record inspection results and make inspection log available to UDC when asked;
- increase frequency of site inspection by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged periods of dry or windy conditions;
- 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;
- fully enclose site or specific operations where there is a high potential for dust production and the activities are being undertaken for an extensive period;
- avoid site runoff of water or mud;
- keep site fencing, barriers and scaffolding clean using wet methods;
- remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If being re-used on site, cover as detailed below;
- cover, seed or fence stockpiles to prevent wind whipping;
- 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;
- produce a construction logistic plan to manage the sustainable delivery of goods and materials;
- only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction e.g. suitable local exhaust ventilation systems;
- ensure an adequate water supply on site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- use enclosed chutes and conveyors and covered skips;
- 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 equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;

- avoid bonfires and burning of waste materials;
- 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;
- use water-assisted dust sweepers on the access and local roads, to remove, as necessary, any material tracked out of the site;
- avoid dry sweeping of large areas;
- ensure vehicles entering and leaving the site are covered to prevent the escape of materials during transport;
- inspect on-site haul routes for integrity and instigate necessary repairs to the surfaces as soon as reasonably practicable;
- record all inspections of haul routes and any subsequent action in a site log book;
- install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud);
- ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit;
- undertake daily on-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided if necessary;
- impose and signpost a maximum speed limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate);
- implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car sharing);
- re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- use Hessian, mulches or traffickers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable;
- only remove the cover in small areas during work and not all at once;
- access gates to be located at least 10 m from receptors where possible.
- undertake daily on-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided if necessary;
- impose and signpost a maximum speed limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate);
- implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car sharing);
- avoid scabbing (roughening of concrete surfaces) if possible;

- 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;
- for smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.