# Air Quality Assessment

# Gladstone Road, Exeter

**Client: Watkin Jones Group**

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## Report Issue

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## Executive Summary

Redmore Environmental Ltd was commissioned by Watkin Jones Group to undertake an Air Quality Assessment in support of a planning application for a proposed co-living development on land off Gladstone Road, Exeter.

The development has the potential to cause air quality impacts at sensitive locations during the construction and operational phases, as well as expose future occupants to existing air quality issues. As such, an Air Quality Assessment was required in order to determine baseline conditions, assess potential impacts as a result of the scheme and consider its suitability for the proposed end use.

Potential construction phase air quality impacts from fugitive dust emissions were assessed as a result of demolition, earthworks, construction and trackout activities. This indicated that impacts are not likely to be significant due to the scale and nature of the development.

During the operational phase of the development there is the potential for air quality impacts as a result of traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed using standard screening criteria. This indicated that impacts are not likely to be significant due to the low number of vehicle movements associated with the scheme.

The potential for exposure of future occupants to poor air quality was assessed based on the results of a desk top study. This indicated that pollutant concentrations are likely to be below the relevant criteria at the development location.

Based on the assessment results, air quality issues are not considered a constraint to planning consent for the proposals.

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# 1.0 INTRODUCTION

## 1.1 Background

1.1.1 Redmore Environmental Ltd was commissioned by Watkin Jones Group to undertake an Air Quality Assessment in support of a planning application for a proposed co-living development on land off Gladstone Road, Exeter.

1.1.2 The development may lead to adverse impacts at sensitive locations during construction and operation, as well as the exposure of future occupants to poor air quality. As such, an Air Quality Assessment was required in order to determine baseline conditions at the site, assess potential impacts associated with the scheme and consider its suitability for the proposed end use.

## 1.2 Site Location and Context

1.2.1 The site is located on land off Gladstone Road, Exeter, at approximate National Grid Reference (NGR): 293070, 92755. Reference should be made to Figure 1 for a map of the site and surrounding area.

1.2.2 The proposals comprise development of a residential co-living scheme with ground level common rooms, entrance reception areas and landscaped amenity.

1.2.3 The development has the potential to cause impacts at sensitive locations. These may include fugitive dust emissions during construction and road traffic exhaust emissions from vehicles travelling to and from the site during operation. Further to this, the proposals may introduce future occupants to any existing air quality issues. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions and consider potential effects as a result of the proposals. This is detailed in the following report.

# 2.0 LEGISLATION AND POLICY

## 2.1 UK Legislation

2.1.1 The Air Quality Standards Regulations (2010) came into force on 11th June 2010 and include Air Quality Limit Values (AQLVs) for the following pollutants.

- Nitrogen dioxide ($NO_2$);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10µm ($PM_{10}$);
- Particulate matter with an aerodynamic diameter of less than 2.5µm;
- Benzene; and,
- Carbon monoxide.

2.1.2 Target Values were also provided for an additional 5 pollutants. These include:

- Ozone;
- Arsenic;
- Cadmium;
- Nickel; and,
- Benzo(a)pyrene.

2.1.3 Part IV of the Environment Act (1995) requires UK government to produce a national Air Quality Strategy (AQS) which contains standards, objectives and measures for improving ambient air quality. The most recent AQS was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published in July 2007[1]. The AQS sets out Air Quality Objectives (AQOs) that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedences over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

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

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

**Table 1 Air Quality Objectives**

| Pollutant | Air Quality Objective | |
|---|---|---|
| | Concentration (µg/m³) | Averaging Period |
| $NO_2$ | 40 | Annual mean |
| | 200 | 1-hour mean, not to be exceeded on more than 18 occasions per annum |
| $PM_{10}$ | 40 | Annual mean |
| | 50 | 24-hour mean, not to be exceeded on more than 35 occasions per annum |

2.1.5 Table 2 summarises the advice provided in DEFRA guidance[2] on where the AQOs for pollutants considered within this report apply.

**Table 2 Examples of Where the Air Quality Objectives Apply**

| Averaging Period | Objective Should Apply At | Objective Should Not Apply At |
|---|---|---|
| Annual mean | All locations where members of the public might be regularly exposed<br>Building façades of residential properties, schools, hospitals, care homes etc. | Building façades of offices or other places of work where members of the public do not have regular access<br>Hotels, unless people live there as their permanent residence<br>Gardens of residential properties<br>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term |
| 24-hour mean | All locations where the annual mean objective would apply, together with hotels<br>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 |

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

| Averaging Period | Objective Should Apply At | Objective Should Not Apply At |
|---|---|---|
| 1-hour mean | All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets)<br>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<br>Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer | Kerbside sites where the public would not be expected to have regular access |

## 2.2 Local Air Quality Management

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

## 2.3 Dust

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

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

2.3.2 Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists,

or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). Enforcement can insist that there be no dust beyond the boundary of the works. The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

## 2.4 National Planning Policy

2.4.1 The revised National Planning Policy Framework[3] (NPPF) was published in February 2019 and sets out the Government's planning policies for England and how these are expected to be applied.

2.4.1 The purpose of the planning system is to contribute to the achievements of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

> "c) - An environmental objective - to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

2.4.2 Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

> "Planning policies and decisions should contribute to and enhance the natural and local environment by:
>
> […]
>
> preventing new and existing development from contributing to, or 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

[3] NPPF, Ministry of Housing, Communities and Local Government, 2019.

possible, help to improve local environmental conditions such as air and water quality […]"

2.4.3 The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

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

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

## 2.5 National Planning Practice Guidance

2.5.1 The National Planning Practice Guidance[4] (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality be relevant to the planning development management process?
6. What specific issues may need to be considered when assessing air quality impacts?

[4] http://planningguidance.planningportal.gov.uk.

7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

2.5.2 These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this assessment.

## 2.6 Local Planning Policy

2.6.1 Exeter City Council (ECC) adopted the Core Strategy[5] on 21st February 2012. The document sets out the policies used to guide future development and change in the city for the period up to 2026. A review of the Core Strategy identified the following policy of relevance to the report:

> "CP11: Development should be located and designed so as to minimise and if necessary, mitigate against environmental impacts. Within the Air Quality Management Area shown on the following map, measures to reduce pollution and meet air quality objectives, that are proposed by the Local Transport Plan and the Air Quality Action Plan, will be brought forward."

2.6.2 The Core Strategy replaced a significant number of policies included in the Local Plan First Review 1995-2011[6]. However, a number of policies from this document have been saved. A review of the Local Plan First Review identified the following policies of relevance to the report:

> "EN1: Development that may be liable to cause pollution, including proposals which allow the use, movement or storage of hazardous substances will only be permitted if:
>
> The health, safety and amenity of users of the site or surrounding land are not put at risk; and
> The quality and enjoyment of the environment would not be damaged or put at risk, development on or in the vicinity of the site that may be liable to cause

[5] Core Strategy, ECC, 2012.

[6] Local Plan First Review 1995-2011, ECC, 2005.

pollution will only be permitted if there is no unacceptable risk to the health and safety of its users."

"EN3: Development that would harm air or quality will not be permitted unless mitigation measures are possible and are incorporated as part of the proposal."

2.6.3 The implications of these policies were taken into consideration throughout the undertaking of the assessment.

# 3.0 METHODOLOGY

## 3.1 Introduction

3.1.1 The proposed development has the potential to cause air quality impacts during the construction and operational phases, as well as expose future occupants to elevated pollution levels. These issues have been assessed in accordance with the following methodology, which was agreed with Alex Bulleid, Senior Environmental Technical Officer at ECC, on 15th July 2019.

## 3.2 Construction Phase Assessment

3.2.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction V1.1'[7].

3.2.2 Activities on the proposed construction site have been divided into four types to reflect their different potential impacts. These are:

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

3.2.3 The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and,
- The risk of health effects due to a significant increase in exposure to $PM_{10}$.

3.2.4 The assessment steps are detailed below.

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

**Step 1**

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

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

**Step 2**

3.2.7 Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and,
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

3.2.8 The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.

3.2.9 Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table 3.

**Table 3 Construction Dust - Magnitude of Emission**

| Magnitude | Activity | Criteria |
|---|---|---|
| Large | Demolition | • Total volume of building to be demolished greater than 50,000m$^3$<br>• Potentially dusty material (e.g. concrete)<br>• On-site crushing and screening<br>• Demolition activities more than 20m above ground level |

| Magnitude | Activity | Criteria |
|---|---|---|
| | Earthworks | • Total site area greater than 10,000m$^2$<br>• Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size)<br>• More than 10 heavy earth moving vehicles active at any one time<br>• Formation of bunds greater than 8m in height<br>• More than 100,000 tonnes of material moved |
| | Construction | • Total building volume greater than 100,000m$^3$<br>• On site concrete batching<br>• Sandblasting |
| | Trackout | • More than 50 Heavy Duty Vehicle (HDV) trips per day<br>• Potentially dusty surface material (e.g. high clay content)<br>• Unpaved road length greater than 100m |
| Medium | Demolition | • Total volume of building to be demolished between 20,000m$^3$ and 50,000m$^3$<br>• Potentially dusty construction material<br>• Demolition activities 10m to 20m above ground level |
| | Earthworks | • Total site area 2,500m$^2$ to 10,000m$^2$<br>• Moderately dusty soil type (e.g. silt)<br>• 5 to 10 heavy earth moving vehicles active at any one time<br>• Formation of bunds 4m to 8m in height<br>• Total material moved 20,000 tonnes to 100,000 tonnes |
| | Construction | • Total building volume 25,000m$^3$ to 100,000m$^3$<br>• Potentially dusty construction material (e.g. concrete)<br>• On site concrete batching |
| | Trackout | • 10 to 50 HDV trips per day<br>• Moderately dusty surface material (e.g. high clay content)<br>• Unpaved road length 50m to 100m |
| Small | Demolition | • Total volume of building to be demolished less than 20,000m$^3$<br>• Construction material with low potential for dust release (e.g. metal cladding or timber)<br>• Demolition activities less than 10m above ground and during wetter months |

| Magnitude | Activity | Criteria |
|---|---|---|
| | Earthworks | • Total site area less than 2,500m$^2$<br>• Soil type with large grain size (e.g. sand)<br>• Less than 5 heavy earth moving vehicles active at any one time<br>• Formation of bunds less than 4m in height<br>• Total material moved less than 20,000 tonnes<br>• Earthworks during wetter months |
| | Construction | • Total building volume less than 25,000m$^3$<br>• Construction material with low potential for dust release (e.g. metal cladding or timber) |
| | Trackout | • Less than 10 HDV trips per day<br>• Surface material with low potential for dust release<br>• Unpaved road length less than 50m |

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

**Table 4 Construction Dust - Examples of Factors Defining Sensitivity of an Area**

| Receptor Sensitivity | Examples | |
|---|---|---|
| | Human Receptors | Ecological Receptors |
| High | • Users expect high levels of amenity<br>• High aesthetic or value property<br>• People expected to be present continuously for extended periods of time<br>• Locations where members of the public are exposed over a time period relevant to the AQO for $PM_{10}$. e.g. residential properties, hospitals, schools and residential care homes | • Internationally or nationally designated site e.g. Special Area of Conservation |
| Medium | • Users would expect to enjoy a reasonable level of amenity<br>• Aesthetics or value of their property could be diminished by soiling<br>• 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 | • Nationally designated site e.g. Sites of Special Scientific Interest |

| Receptor Sensitivity | Examples | |
|---|---|---|
| | Human Receptors | Ecological Receptors |
| Low | • Enjoyment of amenity would not reasonably be expected<br>• Property would not be expected to be diminished in appearance<br>• Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, farmland, short term car parks and roads | • Locally designated site e.g. Local Nature Reserve |

3.2.11 The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and,
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

3.2.12 These factors were considered in the undertaking of this assessment.

3.2.13 The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 5.

**Table 5 Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property**

| Receptor Sensitivity | Number of Receptors | Distance from the Source (m) | | | |
|---|---|---|---|---|---|
| | | Less than 20 | Less than 50 | Less than 100 | Less than 350 |
| High | More than 100 | High | High | Medium | Low |
| | 10 - 100 | High | Medium | Low | Low |

| Receptor Sensitivity | Number of Receptors | Distance from the Source (m) | | | |
|---|---|---|---|---|---|
| | | Less than 20 | Less than 50 | Less than 100 | Less than 350 |
| | 1 - 10 | Medium | Low | Low | Low |
| Medium | More than 1 | Medium | Low | Low | Low |
| Low | More than 1 | Low | Low | Low | Low |

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

**Table 6 Construction Dust - Sensitivity of the Area to Human Health Impacts**

| Receptor Sensitivity | Annual Mean $PM_{10}$ Concentration | Number of Receptors | Distance from the Source (m) | | | | |
|---|---|---|---|---|---|---|---|
| | | | Less than 20 | Less than 50 | Less than 100 | Less than 200 | Less than 350 |
| High | Greater than 32µg/m$^3$ | More than 100 | High | High | High | Medium | Low |
| | | 10 - 100 | High | High | Medium | Low | Low |
| | | 1 - 10 | High | Medium | Low | Low | Low |
| | 28 - 32µg/m$^3$ | More than 100 | High | High | Medium | Low | Low |
| | | 10 - 100 | High | Medium | Low | Low | Low |
| | | 1 - 10 | High | Medium | Low | Low | Low |
| | 24 - 28µg/m$^3$ | More than 100 | High | Medium | Low | Low | Low |
| | | 10 - 100 | High | Medium | Low | Low | Low |
| | | 1 - 10 | Medium | Low | Low | Low | Low |
| | Less than 24µg/m$^3$ | More than 100 | Medium | Low | Low | Low | Low |
| | | 10 - 100 | Low | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low | Low |
| Medium | Greater than 32µg/m$^3$ | More than 10 | High | Medium | Low | Low | Low |
| | | 1 - 10 | Medium | Low | Low | Low | Low |

| Receptor Sensitivity | Annual Mean $PM_{10}$ Concentration | Number of Receptors | Distance from the Source (m) | | | | |
|---|---|---|---|---|---|---|---|
| | | | Less than 20 | Less than 50 | Less than 100 | Less than 200 | Less than 350 |
| | 28 - 32µg/m$^3$ | More than 10 | Medium | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low | Low |
| | 24 - 28µg/m$^3$ | More than 10 | Low | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low | Low |
| | Less than 24µg/m$^3$ | More than 10 | Low | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low | Low |
| Low | - | 1 or more | Low | Low | Low | Low | Low |

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

**Table 7 Construction Dust - Sensitivity of the Area to Ecological Impacts**

| Receptor Sensitivity | Distance from the Source (m) | |
|---|---|---|
| | Less than 20 | Less than 50 |
| High | High | Medium |
| Medium | Medium | Low |
| Low | Low | Low |

3.2.16 Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

3.2.17 Table 8 outlines the risk category from demolition activities.

**Table 8 Construction Dust - Dust Risk Category from Demolition Activities**

| Receptor Sensitivity | Dust Emission Magnitude | | |
|---|---|---|---|
| | Large | Medium | Small |
| High | High | Medium | Medium |
| Medium | High | Medium | Low |
| Low | Low | Low | Negligible |

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

**Table 9 Construction Dust - Dust Risk Category from Earthworks and Construction Activities**

| Receptor Sensitivity | Dust Emission Magnitude | | |
|---|---|---|---|
| | Large | Medium | Small |
| High | High | Medium | Low |
| Medium | Medium | Medium | Low |
| Low | Low | Low | Negligible |

3.2.19 Table 10 outlines the risk category from trackout activities.

**Table 10 Construction Dust - Dust Risk Category from Trackout Activities**

| Receptor Sensitivity | Dust Emission Magnitude | | |
|---|---|---|---|
| | Large | Medium | Small |
| High | High | Medium | Low |
| Medium | Medium | Low | Negligible |
| Low | Low | Low | Negligible |

**Step 3**

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

**Step 4**

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

3.2.22 The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. The IAQM guidance suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix 1.

## 3.3 Operational Phase Assessment

**Potential Development Impacts**

3.3.1 The development has the potential to increase concentrations of $NO_2$ and $PM_{10}$ as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. A screening assessment was therefore undertaken using the criteria contained within the IAQM 'Land-Use Planning & Development Control: Planning for Air Quality'[9] guidance document to determine the potential for trips generated by the development to affect local air quality.

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

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

3.3.2 The IAQM guidance[10] provides the following criteria to help establish when an assessment of potential impacts on the local area is likely to be considered necessary:

- A change of Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA or more than 500 AADT elsewhere;
- A change of HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- Realignment of roads where the change is 5m or more and the road is within an AQMA; or,
- Introduction of a new junction or removal of an existing junction near to relevant receptors.

3.3.3 Should these criteria not be met, then the IAQM guidance[11] considers air quality impacts associated with a scheme to be **negligible** and no further assessment is required.

3.3.4 Should screening of the relevant data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the change in pollutant concentrations as a result of the proposed development. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the IAQM guidance[12].

**Potential Future Exposure**

3.3.5 The proposed development comprises residential units. These are considered locations of relevant exposure for long and short term AQOs in accordance with the criteria provided within DEFRA guidance[13], as summarised in Table 2. Existing air quality conditions at the site were therefore assessed through consideration of the following factors:

- AQMA designations;
- Proximity to significant pollution sources;
- Local monitoring results; and,

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

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

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

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

- Background pollutant concentration predictions.

3.3.6 The findings were subsequently used to determine the potential for AQO exceedences at the development location. Should the assessment indicate significant uncertainty over air quality conditions at the site then further quantitative methods, such as detailed dispersion modelling, could be utilised to refine predictions.

# 4.0 BASELINE

## 4.1 Introduction

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

## 4.2 Local Air Quality Management

4.2.1 As required by the Environment Act (1995), ECC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual and 1-hour mean $NO_2$ concentrations are above the relevant AQOs within the city. As such, one AQMA has been declared, which is described as:

"An area encompassing the radial routes into the city and other major routes."

4.2.2 The development is located approximately 75m north of the AQMA. As such, there is the potential for vehicles travelling to and from the site to increase pollution levels in this sensitive area. This has been considered throughout the assessment.

4.2.3 ECC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

## 4.3 Air Quality Monitoring

4.3.1 Monitoring of pollutant concentrations is undertaken by ECC throughout their area of jurisdiction. Recent $NO_2$ results recorded in the vicinity of the development are shown in Table 11.

**Table 11 Monitoring Results**

| Monitoring Site | | Monitored $NO_2$ Concentration (µg/m³) | | |
|---|---|---|---|---|
| | | 2015 | 2016 | 2017 |
| DT50 | East John Walk | 13.9 | 15.3 | 14.5 |

4.3.2 As shown in Table 11, annual mean $NO_2$ concentrations were below the AQO at the survey location between 2015 and 2017. Reference should be made to Figure 2 for a map of the monitoring position.

4.3.3 ECC do not undertake monitoring of $PM_{10}$ concentrations within the vicinity of the site.

## 4.4 Background Pollutant Concentrations

4.4.1 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is located in grid square NGR: 293500, 92500. Data for this location was downloaded from the DEFRA website[14] for the purpose of the assessment and is summarised in Table 12.

**Table 12 Background Pollutant Concentration Predictions**

| Pollutant | Predicted 2019 Background Pollutant Concentration (µg/m³) |
|---|---|
| $NO_2$ | 9.47 |
| $PM_{10}$ | 12.65 |

4.4.2 As shown in Table 12, predicted background $NO_2$ and $PM_{10}$ concentrations are below the relevant AQOs at the development site.

## 4.5 Sensitive Receptors

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

**Table 13 Demolition, Earthworks and Construction Dust Sensitive Receptors**

| Distance from Site Boundary (m) | Approximate Number of Human Receptors | Approximate Number of Ecological Receptors |
|---|---|---|
| Up to 20 | 10 - 100 | 0 |

[14] http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2017.

| Distance from Site Boundary (m) | Approximate Number of Human Receptors | Approximate Number of Ecological Receptors |
|---|---|---|
| Up to 50 | 10 - 100 | 0 |
| Up to 100 | More than 100 | - |
| Up to 350 | More than 100 | - |

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

**Table 14 Trackout Dust Sensitive Receptors**

| Distance from Site Access Route (m) | Approximate Number of Human Receptors | Approximate Number of Ecological Receptors |
|---|---|---|
| Up to 20 | 10 - 100 | 0 |
| Up to 50 | More than 100 | 0 |

4.5.3 There are no ecological receptors within 50m of the site or trackout boundary. As such, ecological impacts have not been assessed further within this report.

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

**Table 15 Additional Area Sensitivity Factors**

| Guidance | Comment |
|---|---|
| Whether there is any history of dust generating activities in the area | The desk top study did not indicate any dust generating activities in the local area |
| The likelihood of concurrent dust generating activity on nearby sites | A review of the planning portal did not indicate any additional development proposals likely to result in concurrent dust generation in the vicinity of the site |
| Pre-existing screening between the source and the receptors | There is no significant screening around the site boundary |
| Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place | As shown in Figure 3, the predominant wind bearing at the site is from the north-west. As such, receptors to the south-east of the boundary are most likely to be affected by dust releases |

| Guidance | Comment |
|---|---|
| Conclusions drawn from local topography | There are no significant topographical constraints to dust dispersion |
| Duration of the potential impact, as a receptor may become more sensitive over time | Currently it is unclear as to the duration of the construction phase. However, it is possible that it will extend over one year |
| Any known specific receptor sensitivities which go beyond the classifications given in the document | No specific receptor sensitivities identified during the baseline assessment |

4.5.5 Based on the criteria shown in Table 4, the sensitivity of the receiving environment to potential dust impacts was determined as **high**. This was because the identified receptors included residential properties.

4.5.6 The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 3.2, is shown in Table 16.

**Table 16 Sensitivity of the Surrounding Area**

| Potential Impact | Sensitivity of the Surrounding Area | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | High | High | High | High |
| Human Health | Low | Low | Low | Low |

# 5.0 ASSESSMENT

## 5.1 Introduction

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

## 5.2 Construction Phase Assessment

**Step 1**

5.2.1 The undertaking of activities such as demolition, excavation, ground works, cutting, construction and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements on the local road network also have the potential to result in the re-suspension of dust from highway surfaces.

5.2.2 The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.

5.2.3 The desk-study undertaken to inform the baseline identified a number of sensitive receptors within 350m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

**Step 2**

Demolition

5.2.1 Demolition will be undertaken at the start of the construction phase and will involve clearance of existing buildings on site.

5.2.2 It is estimated that the total building volume to be demolished is less than 20,000m$^3$. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from demolition is therefore **small**.

5.2.3 Table 16 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 8, the development is considered to be a **medium** risk site for dust soiling as a result of demolition activities.

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

Earthworks

5.2.5 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The proposed development site covers an area of less than 2,500m$^2$. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from earthworks is therefore **small**.

5.2.6 Table 16 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for dust soiling as a result of earthworks.

5.2.7 Table 16 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 9, the development is considered to be a **negligible** risk site for human health impacts as a result of earthworks.

Construction

5.2.8 Due to the size of the development the total building volume is likely to be less than 25,000m$^3$. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from construction is therefore **small**.

5.2.9 Table 16 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for dust soiling as a result of construction activities.

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

Trackout

5.2.11 Based on the site area and existing hardstanding provision, it is anticipated that the unpaved road length will be less than 50m. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from trackout is therefore **small**.

5.2.12 Table 16 indicates the sensitivity of the area to dust soiling effects to people and property is **high**. In accordance with the criteria outlined in Table 10, the development is considered to be a **low** risk site for dust soiling as a result of trackout activities.

5.2.13 Table 16 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 10, the development is considered to be a **negligible** risk site for human health impacts as a result of trackout activities.

Summary of the Risk of Dust Effects

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

**Table 17 Summary of Potential Unmitigated Dust Risks**

| Potential Impact | Risk | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | Medium | Low | Low | Low |
| Human Health | Negligible | Negligible | Negligible | Negligible |

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

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

**Step 3**

5.2.17 The IAQM guidance[15] provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in Table 18. These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan or similar if required by the LA.

**Table 18 Fugitive Dust Emission Mitigation Measures**

| Issue | Control Measure |
|---|---|
| Communications | • Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager<br>• Display the head or regional office contact information |
| Site management | • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken<br>• Make the complaints log available to the LA upon request<br>• Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book |
| Monitoring | • Carry out regular site inspections, record inspection results, and make an inspection log available to the LA upon request<br>• Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions |
| Site preparation | • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible<br>• Fully enclose site or specific operations where there is a high potential for dust production and they are active for an extensive period<br>• Avoid site runoff of water or mud<br>• Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used |
| Operating vehicle/machinery and sustainable travel | • Ensure all vehicles switch off engines when stationary - no idling vehicles<br>• Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable |

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

| Issue | Control Measure |
|---|---|
| Operations | • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques<br>• Ensure an adequate water supply on the site for effective dust suppression, using non-potable water where possible and appropriate<br>• Use enclosed chutes and conveyors and covered skips<br>• Minimise drop heights and use fine water sprays wherever appropriate<br>• Ensure equipment is available to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods |
| Waste management | • No bonfires or burning of waste materials |
| Demolition | • Ensure effective water suppression is used during demolition operations<br>• Avoid explosive blasting, using appropriate manual or mechanical alternatives<br>• Bag and remove any biological debris or damp down such material before demolition |
| Construction | • Avoid scabbling (roughening of concrete surfaces) if possible<br>• Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out |
| Trackout | • Avoid dry sweeping of large areas<br>• Ensure vehicles entering and leaving site are covered to prevent escape of materials |

**Step 4**

5.2.18 Assuming the relevant mitigation measures outlined in Table 18 are implemented, the residual impact from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance[16].

## 5.3 Operational Phase Assessment

**Potential Development Impacts**

5.3.1 Any vehicle movements associated with the development will generate exhaust emissions on the local and regional road networks. Information provided by ADL Traffic

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

and Highways Engineering Ltd, the Transport Consultants for the project, indicated that approximately 21 daily vehicle movements will be generated.

5.3.2 It should be noted that the development will not provide any parking spaces and is therefore considered to be car free. As such, the above trips are anticipated to be limited to pick-ups and drop offs to the site associated with taxis, refuse collection and postal/courier services.

5.3.3 Based on the above information, it is not anticipated that the proposal will result in an increase of LDV flows of more than 500 AADT on any individual road link, or 100 AADT within the AQMA, include significant highway realignment or the introduction of a junction and there will not be more than 25 HDV movements per day. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **negligible**, in accordance with the IAQM[17] screening criteria shown in Section 3.3.

**Potential Future Exposure**

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

AQMA Designation

5.3.5 The site is located approximately 75m north of the AQMA which has been declared due to exceedences of the annual mean and 1-hour mean AQOs for $NO_2$. The designation does not cover annual mean and 24-hour mean $PM_{10}$ concentrations, indicating exceedences of these AQOs have not been identified within ECC's administrative extents. As such, they have not been considered further in the context of this assessment.

5.3.6 Due to the distance between the site and the AQMA, it is considered unlikely that exceedences of the annual mean and 1-hour mean AQOs for $NO_2$ will occur at the proposed development.

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

Proximity to Significant Pollution Sources

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

**Table 19 Significant Pollution Sources**

| Source | Distance to Site (m) | Comment |
|---|---|---|
| Gladstone Road | Adjacent | Gladstone Road is an unclassified road and traffic counts have not been undertaken. However, similar roads within the area have low traffic levels, with an AADT flow of 1,108 and HDV proportion of fleet of 1.08% during 2008[(a)] (obtained from Salter's Road) |
| B1383 Heavitree Road | 80 | Heavitree Road is classified as a B-road with an AADT flow of 18,135 and HDV proportion of fleet of 6.09% during 2009[(a)] |

Note: (a) Source: https://roadtraffic.dft.gov.uk/.

5.3.8 As shown in Table 19, there are two pollutant sources within the vicinity of the site. Of particular note is Gladstone Road, due to its proximity to the development boundary, although it is noted that the daily vehicle flow is likely to be low. Heavitree Road is distanced from the proposals and is therefore unlikely to contribute significantly to pollution levels above background.

Local Monitoring Results

5.3.9 The closest monitor to the development is DT50 - East John Walk. This is located approximately 48m to the north of the site. As shown in Table 11, recorded annual mean $NO_2$ concentrations were well below the relevant AQO during recent years. It is considered likely that $NO_2$ levels at the proposed development would be of a similar magnitude as both the site and monitor are situated within a suburban location adjacent to Gladstone Road.

5.3.10 It should be noted that in accordance with DEFRA guidance[18], if the annual mean $NO_2$ concentrations are below 60µg/m$^3$ then it is unlikely that the 1-hour AQO will be

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

exceeded. As the monitored annual mean $NO_2$ concentrations at DT50 - East John Walk are well below this value, exceedences are unlikely.

5.3.11 Based on the local monitoring results, exceedences of the annual mean and 1-hour mean AQOs for $NO_2$ is considered unlikely at the development location.

Background Pollutant Concentration Predictions

5.3.12 As shown in Table 12, predicted background pollutant concentrations for the grid square containing the site were well below the annual mean AQO for $NO_2$ during 2019.

5.3.13 Based on the predicted background concentrations, exceedences of the AQO are considered unlikely at the development location.

Summary

5.3.14 It is considered likely that pollutant concentrations are below the relevant AQOs at the proposed development site for the following reasons:

- The site is not located within an AQMA;
- The site is distanced from major pollutant sources, with the closest road link recording low AADT flows;
- Local monitoring results considered to be representative of conditions at the development indicated that annual mean $NO_2$ concentrations were well below the relevant AQO during recent years; and,
- Predicted background concentrations are well below the relevant AQOs.

5.3.15 Based on the assessment results, exposure of future occupants to exceedences of the AQOs is not considered likely. As such, the site is considered suitable for the proposed use from an air quality perspective.

# 6.0 CONCLUSION

6.1.1 Redmore Environmental Ltd was commissioned by Watkin Jones Group to undertake an Air Quality Assessment in support of a proposed co-living development on land off Gladstone Road, Exeter.

6.1.2 The development has the potential to cause air quality impacts at sensitive locations during the construction and operational phases, as well as expose future occupants to existing air quality issues. As such, an Air Quality Assessment was required in order to determine baseline conditions, assess potential impacts as a result of the scheme and consider its suitability for the proposed end use.

6.1.3 During the construction phase of the development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology. Assuming good practice dust control measures are implemented, the residual significance of potential air quality impacts from dust generated by demolition, earthworks, construction and trackout activities was predicted to be **not significant**.

6.1.4 Potential impacts during the operational phase of the proposed development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the screening criteria provided within the IAQM[19] guidance document. Due to the low number of trips anticipated to be produced by the proposals, **negligible** impacts were predicted.

6.1.5 The potential for exposure of future occupants to exceedences of the AQOs was assessed based on the AQMA designation, proximity of pollution sources to the site, local monitoring results and predicted background concentrations. This indicated that concentrations of $NO_2$ and $PM_{10}$ are likely to be below the relevant AQOs at the development location. As such, the site is considered suitable for the proposed use from an air quality perspective.

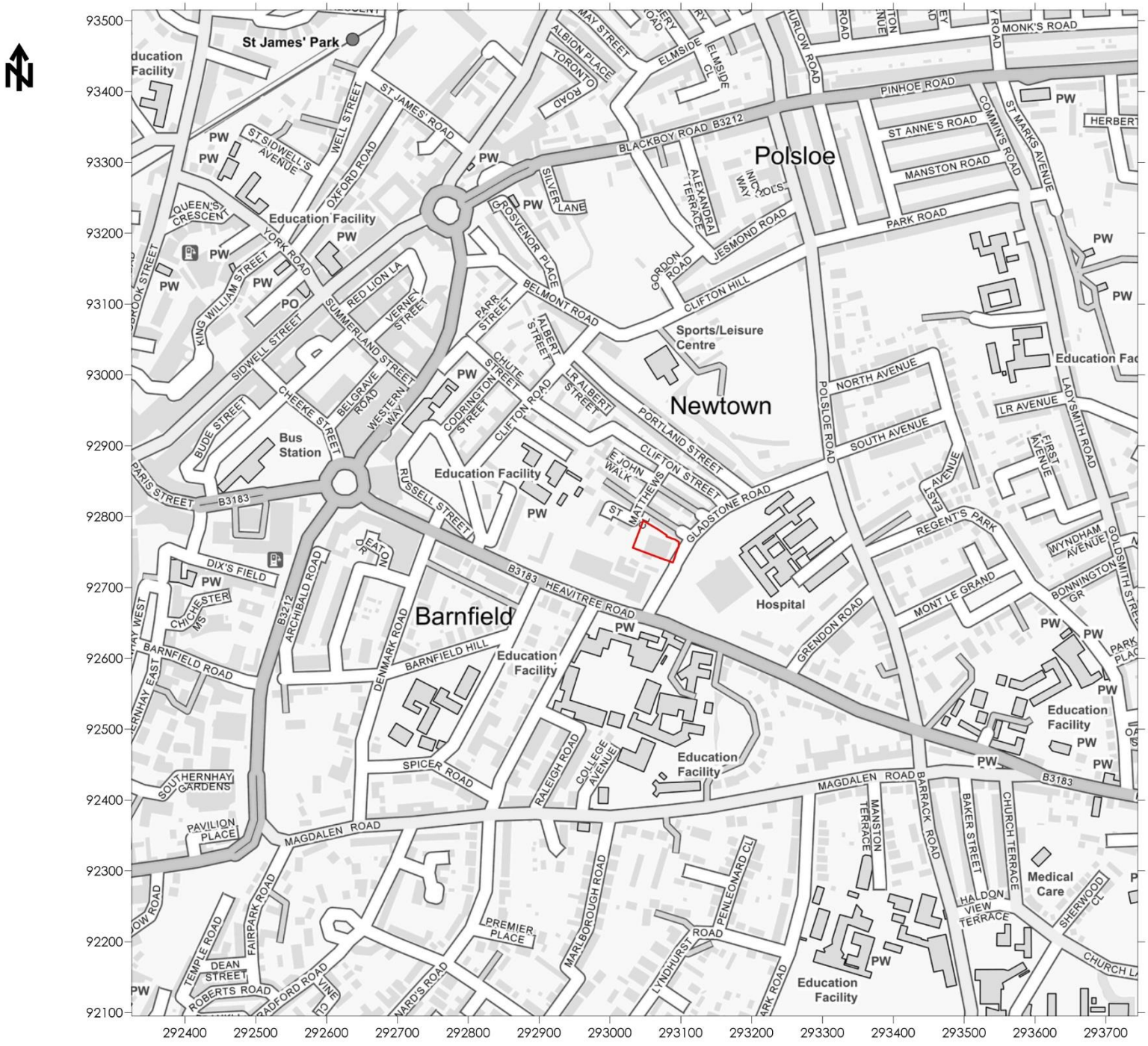
[19] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

6.1.6 Based on the assessment results, air quality issues are not considered a constraint to planning consent for the development and the site is considered suitable for the proposed use from an air quality perspective.

## 7.0 ABBREVIATIONS

| | |
|---|---|
| AADT | Annual Average Daily Traffic |
| AQAP | Air Quality Action Plan |
| AQLV | Air Quality Limit Value |
| AQMA | Air Quality Management Area |
| AQO | Air Quality Objective |
| AQS | Air Quality Strategy |
| DEFRA | Department for Environment, Food and Rural Affairs |
| DfT | Department for Transport |
| ECC | Exeter City Council |
| HDV | Heavy Duty Vehicle |
| IAQM | Institute of Air Quality Management |
| LA | Local Authority |
| LAQM | Local Air Quality Management |
| LDV | Light Duty Vehicles |
| NGR | National Grid Reference |
| $NO_2$ | Nitrogen dioxide |
| $NO_x$ | Oxides of nitrogen |
| NPPF | National Planning Policy Framework |
| NPPG | National Planning Policy Guidance |
| $PM_{10}$ | Particulate Matter with an aerodynamic diameter of less than 10µm |

# Figures




**Legend**

Site Boundary

**Title**
Figure 1 - Site Location Plan

**Project**
Air Quality Assessment
Gladstone Road, Exeter

**Project Reference**
2879

**Client**
Watkin Jones Group



Redmore environmental
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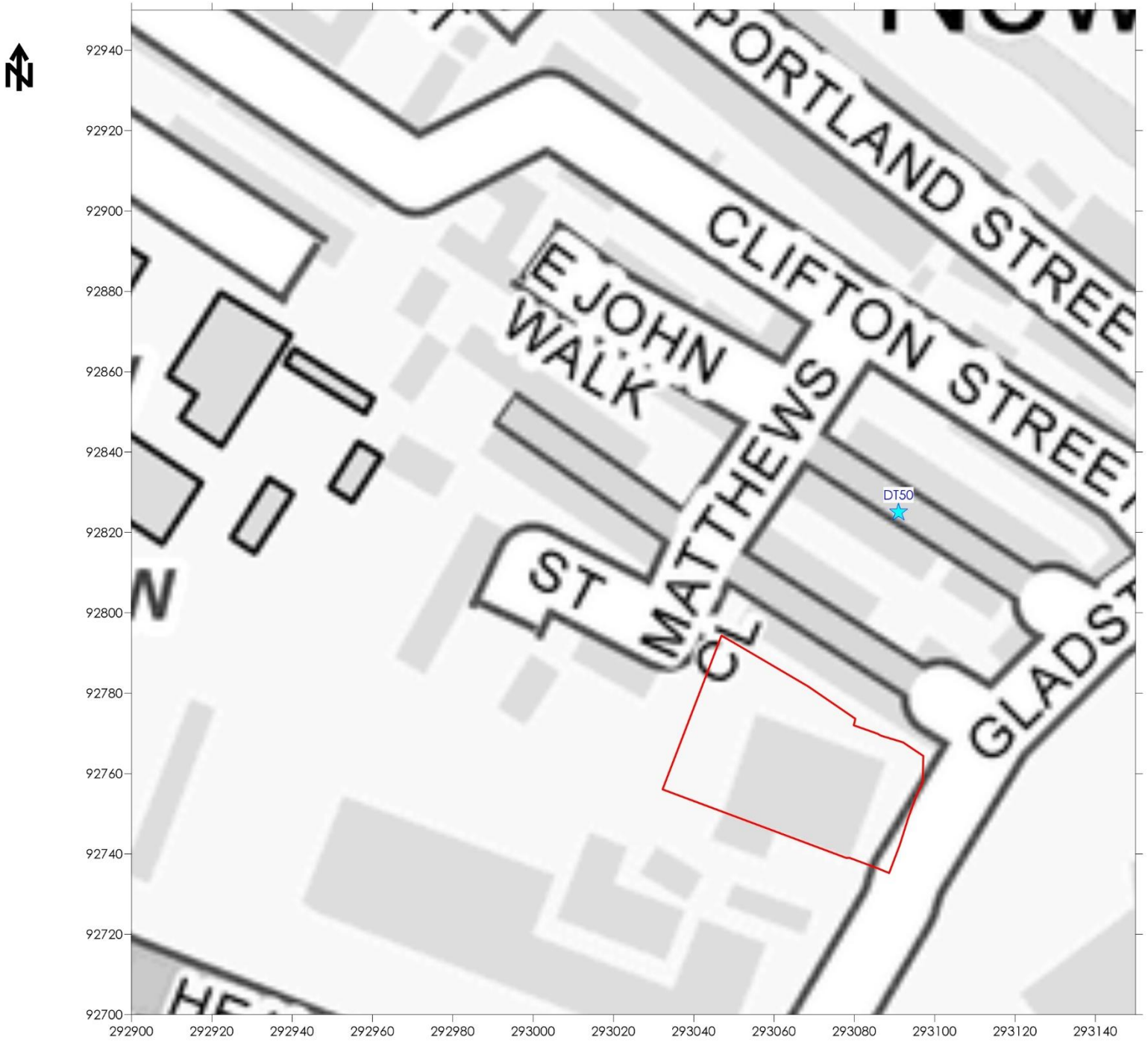


**Legend**

Site Boundary

Monitor

**Title**
Figure 2 - Monitoring Locations

**Project**
Air Quality Assessment
Gladstone Road, Exeter

**Project Reference**
2879

**Client**
Watkin Jones Group



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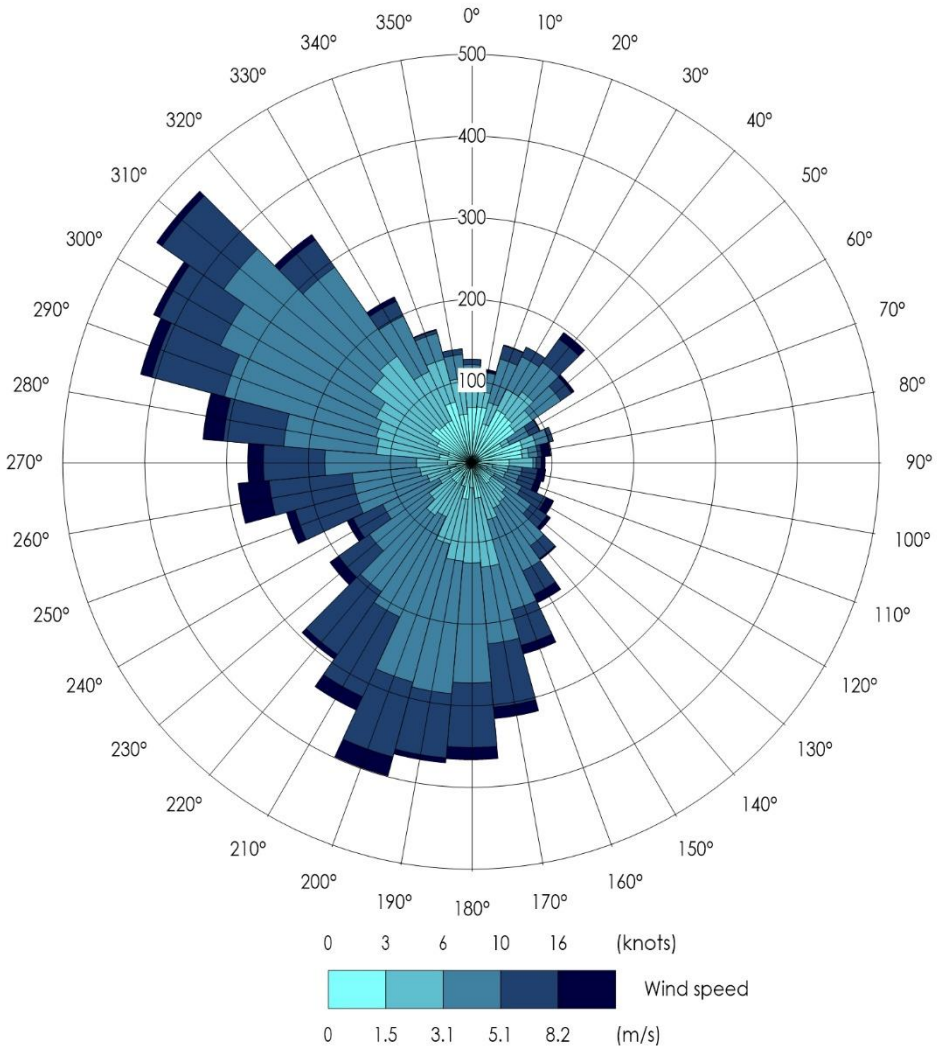


**Legend**

**Title**
Figure 3 - Wind Rose of 2017
Exeter Airport
Meteorological Data

**Project**
Air Quality Assessment
Gladstone Road, Exeter

**Project Reference**
2879

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# Appendix 1 - Curricula Vitae

# ELEN OWEN

## Senior Air Quality Consultant

BSc (Hons), AIEMA

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**KEY EXPERIENCE:**

Elen is an Environmental Consultant with specialist experience in the air quality sector. Her key capabilities include:

- Production of Air Quality Assessments in accordance with Department for Environment, Food and Rural Affairs (DEFRA) methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle exhaust emissions using ADMS-Roads. Studies have included assessment of road traffic exhaust emissions on sensitive receptors and exposure of new residents to poor air quality.
- Advanced Canyon Modelling to evaluate the impact of altered urban topography on air quality in built up areas.
- Assessment of construction dust impacts from a range of development sizes.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Definition of baseline air quality and identification of sensitive areas across the UK.
- ADMS-5 modelling of industrial sources including Anaerobic Digestion (AD) plants to determine impacts of stack emissions on local air quality.
- Odour surveys to assess amenity and suitability of sites for potential future development for residential use.

**SELECT PROJECTS SUMMARY:**

**Potion Redevelopment, Erith**

Air Quality Assessment of a residential development in an Air Quality Management Area (AQMA). Concerns were raised regarding the exposure of future occupants to poor air quality. Detailed dispersion modelling was undertaken using ADMS-roads to assess $PM_{10}$ and $NO_2$ concentrations across the site. Results revealed that pollution levels were below the air quality standards across the development.

**Magdalen Street, Colchester**

Air Quality Assessment in support of a planning application for a cluster of student accommodation buildings. The site was located in a built up area of Colchester and was already occupied by a bus depot. The assessment included a comparison of concentrations at sensitive receptors in areas where the urban topography would be altered as a result of the development. Review of the results revealed that canyon effects would be reduced in the presence of the student accommodation, when compared to the existing land use. A detailed report was produced and the local authority accepted the air quality findings.

**Greenbridge Road, Swindon**

Air Quality Assessment for a mixed-use development in Swindon. The proposals involved demolition of a large building prior to construction. An assessment of fugitive dust emissions was undertaken and revealed that the use of good practice control measures would provide suitable mitigation for the impacts of the scheme.

**Gonerby Moor Anaerobic Digestion Plant**

Air Quality and Odour Assessments in support of an AD plant in Grantham. Combustion products from the combined heat and power unit have the potential to result in air quality impacts. Further to this, storage and transfer of biomass materials can lead to odour emissions from the site. ADMS-5 was used to model both odour and air quality impacts. Results revealed that emissions would not lead to exceedences of the relevant air quality standards across the site, and odour emissions remained below benchmark levels at all identified sensitive locations.

**Coral Mill, Rochdale**

Air Quality Assessment for a residential scheme partially located in an AQMA. Due to the size of the development, it was possible that traffic generation by future occupants travelling to and from the site may cause negative impacts on sensitive receptors nearby. $NO_2$ and $PM_{10}$ concentrations were quantified at specific receptor points to ensure there would be no significant increases in pollutant levels. Results revealed negligible impacts at all locations.

**Stone Street, Kent**

Air Quality Assessment for redevelopment of existing buildings in Gravesend, Kent. Road layout changes had been proposed in the vicinity of the site, which would alter the routes used by road traffic and thereby influence the location of vehicle emissions. Modelling took account of the impact of the new road layout on concentrations at the development. Results revealed pollutant concentrations were below the relevant standards across the site.

# PEARL POULTON

## Senior Air Quality Consultant

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**KEY EXPERIENCE:**

Pearl is an Environmental Consultant with specialist experience in the air quality sector. Her key capabilities include:

- Production of Air Quality Assessments in accordance with Department for Environment, Food and Rural Affairs (DEFRA) methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle exhaust emissions using ADMS-Roads. Studies have included assessment of road traffic exhaust emissions on sensitive receptors and exposure of new residents to poor air quality.
- Assessment of construction dust impacts from a range of development sizes.
- Assessment of fugitive dust impacts from a range of mineral extraction developments.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Definition of baseline air quality and identification of sensitive areas across the UK.
- Odour surveys to assess amenity and suitability of sites for potential future development for residential use.
- Odour monitoring at industrial sites to quantify odour emission rates.

**SELECT PROJECTS SUMMARY:**

**Maid Marian House, Nottingham**

Air Quality Assessment for a change of use from office units to residential use. Concerns were raised regarding the exposure of future occupants to poor air quality due to road traffic emissions from the A6008 Maid Marian Way. Dispersion modelling took place at several different heights reflective of residential units within the development. Predicted concentrations of $NO_2$ were found to exceed air quality criteria at numerous levels of the proposed building. Mechanical ventilation was specified in the appropriate units within the development as a form of mitigation.

**Victoria Quarter, London**

Air Quality Assessment in support of residential development in an AQMA. Dispersion modelling was undertaken to consider the potential impact of development generated vehicles and CHP/Boiler emissions on air quality at sensitive receptor locations within the vicinity of the site. Different heights within the development, reflective of the proposed residential units, were also considered. The assessment identified a range of impacts, as such, a range of mitigation was specified. Mechanical ventilation was also specified in the appropriate units predicted to be exposed to poor levels of air quality.

**Monks Farm, Townsend Grove**

Air Quality EIA in support of residential development comprising 456 dwellings and primary school. $NO_2$ and $PM_{10}$ concentrations were predicted to be below the air quality objectives at the sensitive receptors considered. Air quality effects as a result of the proposals was determined to be not significant.

**Stanton Harcourt, West Oxford**

Odour Assessment for the redevelopment of the former Stanton Harcourt Airfield to residential properties. Due to the location of the site, being adjacent to a recently capped landfill, odour surveys were required to assess the level of odour across the site. A risk assessment was also undertaken in accordance with appropriate odour guidance. Taking into account the results of the odour surveys, recent odour complaint history and odour risk assessment the potential for odour effects across the site was determined to be not significant.

**Hunter Street, Chester**

Air Quality Assessment in support of a development for student accommodation. Concerns were raised regarding the exposure of future occupants to poor air quality due to road traffic emissions from the A5268. Dispersion modelling took place at several different heights of the proposed building. Predicted concentrations of $NO_2$ were found to exceed air quality criteria at ground to first floor level for those apartments facing the A5268. Mechanical ventilation was specified in these units as a form of mitigation.

**Botley Road, West End, Southampton**

Co-ordination and management of a six month diffusion study in support of a proposed residential development. Concerns were raised regarding the exposure of future residents to poor air quality due to road traffic emissions from the M27. The results of the monitoring study identified $NO_2$ concentrations across the site to be below the air quality objective and therefore deemed suitable for residential use.