



1rO10165r1

REPORT FOR

ODOUR ASSESSMENT

AT

6-12 FOUNTAIN STREET, MANCHESTER, M2 2AA

PREPARED FOR

**YASIR BEG
REXEL GROUP**

PREPARED BY

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QUALITY ASSURANCE

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EXECUTIVE SUMMARY

The following Odour Assessment has been undertaken and produced by Planning and Environmental Consultants (PEC) Ltd on behalf of Rexel Group, in support of the proposed redevelopment of 6-12 Fountain Street, Manchester, M2 2AA.

Following submission of planning application 140775/FO/2024, comments have been issued by the planning department at Manchester City Council detailing the additional information required to progress the planning application. As such, an Odour Risk Assessment has been undertaken in order to consider the potential impacts and set out the required abatement measures.

Based on the results of the assessment and the proposed implementation of kitchen exhaust filters, alongside good dispersion and associated plant maintenance design, it is considered that the proposed kitchen exhaust is acceptable without the requirement for additional abatement. It is therefore considered that the odour emissions from the kitchen are unlikely to cause loss of amenity to nearby sensitive receptors.

1 INTRODUCTION

1.1 BACKGROUND

Planning and Environmental Consultants (PEC) Ltd have been commissioned by Rexel Group, hereafter referred to as “the Client” to undertake an Odour Impact Assessment in support of a planning application at 12 Fountain Street, Manchester, M2 2AA, herein after referred to as the “Proposed Development”.

1.2 SITE LOCATION AND CONTEXT

The Proposed Development is located at 12 Fountain Street, Manchester, M2 2AA at approximate National Grid Reference (NGR) 384170, 398370. Reference should be made to Figure 1 within Appendix B for a location plan

As part of the redevelopment of the building, the kitchen is to be relocated to the ground floor and food preparation area will be relocated to the basement level. Alongside the redesign of the kitchen, a new kitchen extract system is to be installed to ensure odours associated with the ground floor kitchen do not result in impacts at nearby residential receptors including at the proposed residential units located on the upper two floors of the site.

An Odour Risk Assessment was therefore required in order to assess the risk of odour impacts from the site and, if necessary, detail odour controls and abatement measures.

1.3 LIMITATIONS

This report has been produced in accordance with PEC Ltd standard terms of engagement. This report is solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from PEC Ltd at which point a charge may be levied against such approval.

2 LEGISLATION, GUIDANCE AND POLICY

The following legislation, guidance and policy will be considered and adhered to during the preparation of the Odour Risk Assessment:

- Odour Guidance for Local Authorities, Department for Environment, Food and Rural Affairs, 2010¹.
- The National Planning Policy Framework (NPPF), updated on 19th February 2019);
- The National Planning Practice Guidance (NPPG), relevant chapters produced on 1st November 2019;
- 2018 EMAQ document 'Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems'²

2.1 ODOUR DEFINITION

The DEFRA guidance¹ defines odour as:

"An odour is the organoleptic attribute perceptible by the olfactory organ on sniffing certain volatile substances. It is a property of odorous substances that make them perceptible to our sense of smell. The term odour refers to the stimuli from a chemical compound that is volatilised in air. Odour is our perception of that sensation and we interpret what the odour means. Odours may be perceived as pleasant or unpleasant. The main concern with odour is its ability to cause a response in individuals that is considered to be objectionable or offensive.

Odours have the potential to trigger strong reactions for good reason. Pleasant odours can provide enjoyment and prompt responses such as those associated with appetite. Equally, unpleasant odours can be useful indicators to protect us from harm such as the ingestion of rotten food. These protective mechanisms are learnt throughout our lives. Whilst there is often agreement about what constitutes pleasant and unpleasant odours, there is a wide variation between individuals as to what is deemed unacceptable and what affects our quality of life."

Odours that are universally considered as offensive such as decaying animal matter are more likely to cause annoyance than odours of a less offensive character. Odours from coffee roasters are generally considered as on the non-offensive scale of hedonic tones. However it is noted that any odour has the potential to cause loss of amenity if a sensitive receptor considers the odour as 'unwanted'.

2.2 ODOUR IMPACT

The magnitude of odour impact depends on a number of factors and the potential for complaints varies due to the subjective nature of odour perception. The **FIDOR** acronym is a useful reminder of the factors that will determine the degree of odour pollution:

- **Frequency of detection** – frequent odour incidents are more likely to result in complaints
- **Intensity as perceived** – intense odour incidents are more likely to result in complaints;
- **Duration of exposure** – prolonged exposure is more likely to result in complaints;
- **Offensiveness** – more offensive odours have a higher risk of resulting in complaints; and
- **Receptor sensitivity** – sensitive areas are more likely to have a lower odour tolerance.

It is important to note that even infrequent emissions may cause loss of amenity if odours are perceived to be particularly intense or offensive.

The **FIDOR** factors can be further considered to provide the following issues in regards to the potential for an odour emission to cause a nuisance:

- The duration and frequency of emissions;
- The time of the day that this emission occurs;

¹ Odour Guidance for Local Authorities, Department for Environment, Food and Rural Affairs, 2010

² Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ, 2018. Update to the 2004 report.

- The prevailing meteorology;
- The sensitivity of receptors to the emission i.e. whether the odorous compound is more likely to cause nuisance, such as the sick or elderly, who may be more sensitive;
- The odour detection capacity of individuals to the various compound(s); and
- The individual perception of the odour (i.e. whether the odour is regarded as unpleasant). This is greatly subjective, and may vary significantly from individual to individual. For example, some individuals may consider some odours as pleasant, such as petrol, paint and creosote.

2.3 HEDONIC TONE

The hedonic tone of an odour is a measure of its relative offensiveness or pleasantness. It can be determined under laboratory conditions and typically ranges from +4 for very pleasant odours (bakeries) to -4 for foul ones (rotting flesh). Neutral odours score 0. This score refers to the type of smell, irrespective of its strength (intensity) and can help to decide how offensive an odour may be.

2.4 STATUTORY NUISANCE

A statutory nuisance can occur when the activity of an individual or business on their own premises unreasonably detracts from another's enjoyment of their property or causes a risk to public health; and action can be taken by local authorities or individuals under the EPA 1990.

Section 79 of the EPA lists 11 categories of statutory nuisance:

- a) any premises in such a state as to be prejudicial to health or a nuisance;
- b) smoke emitted from premises so as to be prejudicial to health or a nuisance;
- c) fumes or gases emitted from premises so as to be prejudicial to health or a nuisance;
- d) any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance;
- e) any accumulation or deposit which is prejudicial to health or a nuisance;
- f) any animal kept in such a place or manner as to be prejudicial to health or a nuisance;
- (fa) any insects emanating from relevant industrial, trade or business premises and being prejudicial to health or a nuisance;
- (fb) artificial light emitted from premises so as to be prejudicial to health or a nuisance;
- g) noise emitted from premises so as to be prejudicial to health or a nuisance;
- (ga) noise that is prejudicial to health or a nuisance and is emitted from or caused by a vehicle, machinery or equipment in a street or in Scotland, road; and
- h) any other matter declared by any enactment to be a statutory nuisance;

2.5 INSTITUTE OF AIR QUALITY MANAGEMENT GUIDANCE

The IAQM published the 'Guidance on the Assessment of Odour for Planning' document in July 2018. This guidance specifically deals with assessing odour impacts for planning purposes, namely potential effects on amenity. The assessment methodology outlined in the guidance has been utilised in this report where relevant.

3 METHODOLOGY

The exhaust outlet that serves the kitchen has the potential to cause odour emissions. An odour risk assessment was undertaken based on Annex C of the 2018 EMAQ document 'Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems' prepared for the Department for Environment, Food and Rural Affairs².

This utilises the criteria shown in Table 1 to assess the potential for adverse odour impacts at sensitive receptors in the vicinity of the site.

Table 1: Odour Risk Significance Score

Criteria	Score	Score	Details
Dispersion	Very Poor	20	Low Level Discharge, discharge into courtyard or restriction on stack.
	Poor	15	Not below level but below eaves, or discharge at below 10 m/s.
	Moderate	10	Discharging 1m above eaves at 10 - 15 m/s.
	Good	5	Discharging 1m above ridge at 15 m/s.
Proximity of receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge.
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge.
	Far	1	Closest sensitive receptor more than 100m from kitchen discharge.
Size of Kitchen	Large	5	More than 100 covers or large sized take away.
	Medium	3	Between 30 and 100 covers or medium sized take away.
	Small	1	Less than 30 covers or small take away.
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish & chips. Turkish, Middle Eastern or any premises cooking with solid fuel
	High	7	Vietnamese, Thai, Indian, Japanese, Chinese, steakhouse
	Medium	4	Cantonese, Italian, French, Pizza (gas fired)
	Low	1	Most pubs (no fried food, mainly reheating and sandwiches etc), Tea rooms

The score calculated in Table 1 can then be used to inform the indicative level of odour or grease control required as shown in Table 2.

Table 2: Odour Control Requirement

Impact Risk	Odour Control Requirement	Significance Score
Low to Medium	Low Level Odour Control	Less than 20
High	High Level Odour Control	20 to 35
Very High	Very High Level Odour Control	More than 35

4 ASSESSMENT

4.1 PREVAILING METEOROLOGICAL CONDITIONS

The potential for odour to impact adversely at sensitive locations depends significantly on the meteorology, particularly wind direction, during emission releases. In order to consider prevailing conditions at the site, a review of meteorological data was undertaken.

In order to represent conditions at the development site, data was taken from Manchester Airport meteorological station over a 5-year period (1st January 2015 to 31st December 2019). The Manchester Airport meteorological station is located at NGR: 381745, 383960, which is approximately 14.5km south west of the development site. It is considered that conditions are likely to be reasonably similar and the information is a suitable source of data for an assessment of this nature.

The frequency of wind from the eight sectors, which best describe the directions are shown in Table 3.

Table 3: Wind Frequency Data

Wind Direction (from)	Wind Direction (°)	Total Frequency of Wind (%)	Frequency of Winds <3m/s (%)
North	337.5 - 22.5	3.48	3.30
North-east	22.5 - 67.5	6.74	2.17
East	67.5 - 112.5	9.52	5.21
South-east	112.5 - 157.5	8.51	5.51
South	157.5 - 202.5	26.59	12.94
South-west	202.5 - 247.5	15.16	5.00
West	247.5 - 292.5	18.72	5.40
North-west	292.5 - 337.5	7.95	2.82
Sub total		96.67	42.35
Calms		1.93	
Missing/Incomplete		1.40	
Total		100.00	

All meteorological data used in the assessment was provided by ADM Ltd, which is an established distributor of meteorological data within the UK..

As shown in Table 3, the prevailing wind direction at the development site are from the south, southwest and west. Winds from the north, north west, northeast, east and south east are relatively infrequent, which is indicative of conditions throughout the UK.

Importantly, odour episodes generically tend to occur during stable atmospheric conditions with low wind speed ($\leq 3\text{m/s}$), which gives poor dispersion and dilution; receptors close to the source in all directions can be affected under these conditions.

The IAQM guidance states that when conditions are not calm, it will be the downwind receptors that are affected. Therefore, receptors that are downwind with respect to the prevailing wind direction tend to be at higher risk of odour impact.

Analysis of the 5-years of meteorological data from Manchester Airport meteorological station indicated wind speeds of $\leq 3\text{m/s}$ occur on average for approximately 42.35% of the year. Critically, winds with a speed of $\leq 3\text{m/s}$,

which would lead to odours from the Proposed Development being dispersed toward the approximate location of nearby existing sensitive receptors, only occur for a maximum of 12.94% of the time in any one given direction.

The closest climate station to the site is at Rochdale Climate Station. A review of the 30-years (1991-2020) Climate Averages obtained from the Met Office³ indicated that the average annual rainfall is 1197.22mm with an average of 170.75 (46.78% of the year) days per year with at least 1mm of rainfall. As such, the potential for entrainment of odour into the air is limited by both wind speed and rainfall.

It is therefore considered that noticeable odours dispersed across the development site to any given individual receptor will be relatively infrequent.

4.2 EMAQ ODOUR RISK ASSESSMENT

The score for the proposed kitchen using the EMAQ Guidance Criteria given in Table 1 is calculated in Table 4.

The kitchen is situated on the ground floor of the building and is approximately 132sqm. The kitchens serves over 100 people per day, primarily serving burgers and chips. The kitchen is understood to be operational most of the day and into evening, in which the extraction fan is expected to be used throughout this period.

Table 4: Odour Risk Significance Score

Criteria	Proposed System		
	Score		Details
Dispersion	Good	5	Discharging 1m above ridge at 15 m/s.
Proximity of Receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge.
Size of Kitchen (Facility)	Large	5	More than 100 covers or large-sized takeaway
Cooking Type	Very High	10	fried chicken, burgers & chips
Total	30		High Impact Risk - High Level Odour Controls

This score is taken without consideration of any filters installed and is used to inform the required level of controls.

4.3 DISCUSSION

The EMAQ risk assessment indicated, based on the initial information provided, that the odour risk assessed as in the High Impact Category. Therefore according to the guidance, High Level Odour Controls would normally be required to render odour impacts as not significant.

4.3.1. KITCHEN EXHAUST DISPERSION

Reference should be made to documents appendix F for full specification of the proposed extract system.

To minimise the risk of odour at nearby sensitive receptors the proposed design follows the best practice recommended in the EMAQ Guidance and is the main component of the odour control in the proposed kitchen exhaust as the discharge stack shall discharge the extracted air not less than 1 m above the roof ridge of any building within 15 of the vent serving the commercial kitchen.

4.3.2. RECOMMENDED ODOUR CONTROLS AND ABATEMENT

In addition to flue dispersion, odour abatement technologies are proposed to be installed within the extract system, further reducing the risk of odour impacts. Grease particles are a major source of the entrainment of

³ <http://www.metoffice.gov.uk/public/weather/climate/gctcfvrj6>

odours in exhaust flues. The proposed exhaust system includes the provision of a baffle filter with Ecofleece filters, providing a good level of grease removal as well as providing the required fire protection.

ESP filtration is also proposed to be implemented to remove grease and smoke particulate, followed by UV ozone system to remove the gaseous odours.

Based on the above assessment, the installation of the new exhaust vent at roof level, with a good dispersion rate will aid the dispersion of odours away from sensitive receptors and would offer suitable abatement to reduce the impact on the surrounding sensitive areas.

4.3.3. SUMMARY

Given the results of the risk assessment and its locality to **highly-sensitive receptors**, it is considered that the odour emissions from the proposed kitchen has the potential to cause loss of amenity to nearby sensitive receptors. Notwithstanding this, the high level dispersion at roof level alongside the integrated odour abatement measures within the proposed extract system are considered appropriate and sufficient for this kitchen extract to minimise the risk of fugitive odour impacts on surrounding sensitive receptor locations.

4.4 ADDITIONAL INFORMATION

4.4.1. EXTERNAL APPEARANCE

Reference should be made to Appendix C for plans detailing the location and appearance of the external equipment for the extraction system.

4.4.2. FLOOR PLANS

Reference should be made to Appendix D for Floor Plans showing the location of the proposed equipment alongside internal ducting.

4.4.3. NOISE

There is potential that the addition of the extract system and odour abatement measures detailed above may result in Noise impacts at the surrounding residential receptors including the proposed residential units directly above the proposed takeaway. A noise impact assessment has been undertaken by RP Acoustics Ltd, the appointed acoustics consultant, that has confirmed that noise impacts as a result of the extract system and abatement measures is unlikely to result in any significant noise impacts as the predicted noise levels of the proposed equipment fall below the monitored background noise levels at the proposed development. As such it is not considered that noise impacts should form a constraint to planning. Reference should be made to appendix E for the full Noise Impact Assessment.

4.4.4. TECHNICAL SPECIFICATIONS

Reference should be made to Appendix F for technical specification for the proposed equipment.

4.4.5. CLEANING AND MAINTENANCE

Cleaning and Maintenance of the proposed extract system should be undertake in line with the recommendations of each manufacturer. If more frequent cleaning is required to comply with relevant food safety standards, this should be adhered to over the manufacturers recommendations. The frequency and type of cleaning and maintenance will depend on the frequency of use and types of cooking undertaken at each station and should be reviewed on a regular basis to ensure the correct procedures are followed. Reference should be made to Appendix G for anticipated cleaning and maintenance schedule for the proposed equipment.

5 CONCLUSION

PEC Ltd were commissioned by Rexel Group, hereafter referred to as “the Client” to undertake an Odour Risk Assessment in relation to the proposed kitchen extraction unit at 6-12 Fountain Street, Manchester, M2 2AA

The EMAQ risk assessment indicated that due to the location and nature of the exhaust vents and cooking type that the risk of odour impacts is ‘high’. Therefore, according to the guidance, a ‘high’ level of odour control is required.

The proposed kitchen exhausts are to discharge at least 1m above roof level with a speed of at least 15m/s. Additionally, the proposed extract system will include several forms of odour abatement including ESP filtration and UV ozone systems.

Given the results of the risk assessment and the low percentage of time any given receptor is likely to be impacted by kitchen odours associated with the proposed development, the use of good dispersion and odour abatement measures is considered acceptable. It is therefore considered that the odour emissions from the proposed kitchen are unlikely to cause loss of amenity to nearby sensitive receptors.

APPENDIX A – ABBREVIATIONS

DEFRA	Department for Environment, Food and Rural Affairs
LAQM	Local Air Quality Management
NGR	National Grid Reference
NPPF	National Planning Policy Framework

APPENDIX B - FIGURES



Legend



Title

Figure 1
Site Location

Project

6-12 Fountain Street, Manchester, M2 2AA

Project Number

O10165

Contains Ordnance Survey Data
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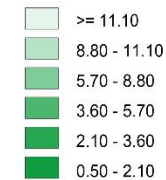


Legend



Site Boundary

WIND SPEED (m/s)



Calms: 1.93%

Title

Figure 2

Wind Rose 2015-2019
Manchester Meteorological Station

Project

6-12 Fountain Street, Manchester, M2 2AA

Project Number

O10165

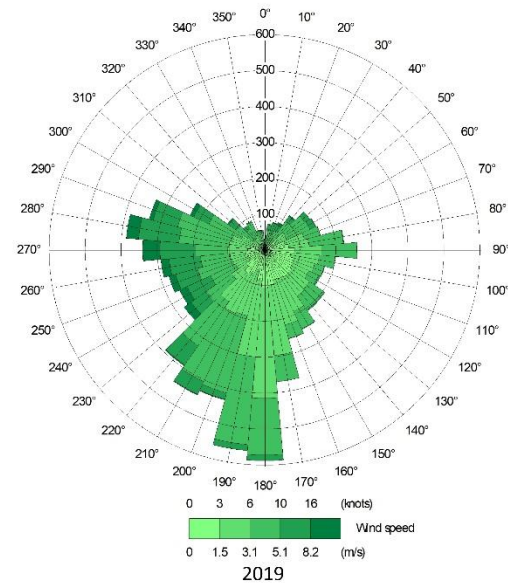
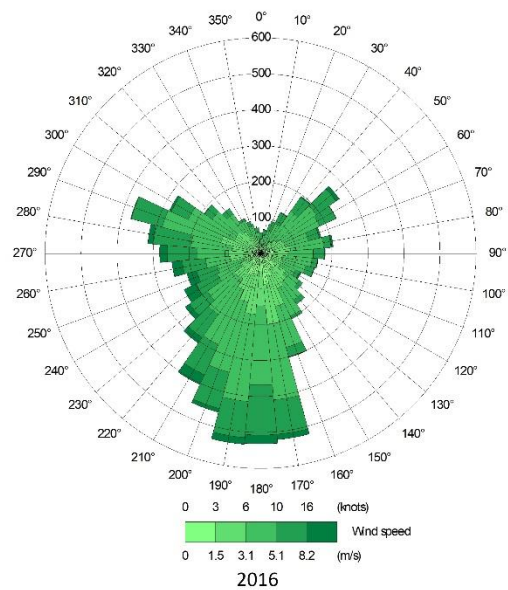
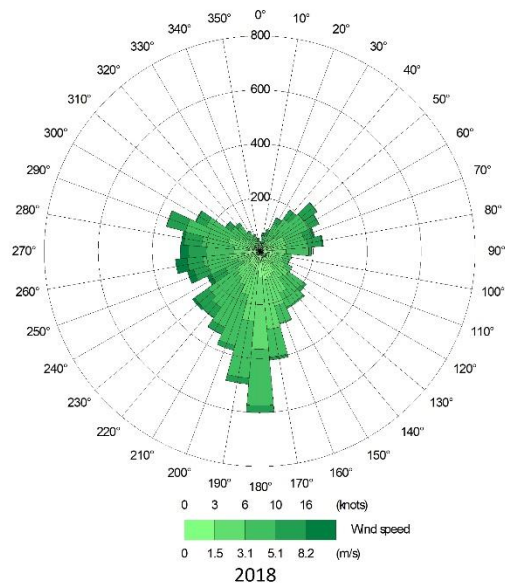
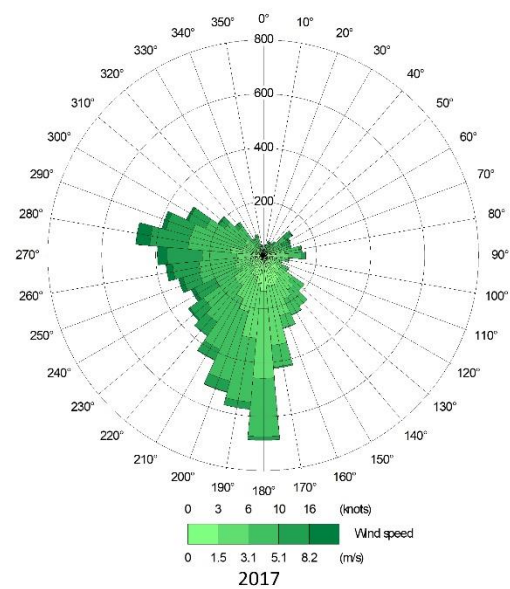
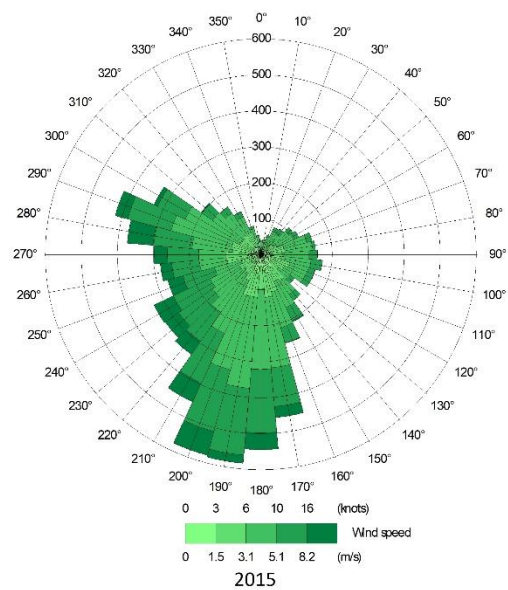
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Legend

Title

Figure 3

Wind Rose 2015-2019
Manchester Meteorological Station

Project

6-12 Fountain Street, Manchester, M2 2AA

Project Number

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APPENDIX C – EXTERNAL APPEARANCE

APPENDIX D – FLOOR PLANS

APPENDIX E – NOISE IMPACT ASSESSMENT

APPENDIX F – TECHNICAL SPECIFICATION

APPENDIX G – CLEANING AND MAINTENANCE

APPENDIX H – ASSESSORS CV

Lewis Ellison

Technical Director

MOcean, AMIEnvSc, MIAQM

KEY EXPERIENCE

Lewis is a Technical Director with specialist experience in the air quality sectors. His key capabilities include:

- Production of Air Quality Assessments to the Department for Environment, Food and Rural Affairs (DEFRA), Environment Agency and Environmental Protection UK (EPUK) methodologies for clients from the residential, retail and commercial sectors.
- Detailed dispersion modelling of road vehicle emissions using ADMS-Roads. Studies have included impact assessment of pollutant concentrations at various floor levels and assessment of suitability of development sites for proposed end-use.
- Assessment of dust impacts from construction sites to the Institute of Air Quality Management (IAQM) methodology.
- Assessment of Odour Impact from commercial and industrial processes in line with Environment Agency (EA) and IAQM methodologies and guidance
- Quantification of Ecological Impacts associated with Nitrogen and Acid Deposition from industrial processes
- Production of air quality mitigation strategies for developments throughout the UK.

SELECT PROJECTS SUMMARY

Permit Application Support

- Elliot Hire Salford
- Elliot Hire Wakefield
- Elliot Hire Scunthorpe

ES Chapters

- Lyle Park West, Newham – residential development in close proximity to an active industrial estate.
- Deansgate, Manchester – residential multistorey development in the centre of Manchester.
- Land West of Stevenage – 1350 residential unit development with the potential to negatively impact local air quality

Air Quality

- Goulton Street Hull – Outline planning permission for 7 industrial units within Hull
- Empire Cinema, Birmingham – Diffusion tube survey and air quality assessment for an assisted living accommodation
- Tirrell's Lane, Tenbury Wells – residential assessment in the village of Tenbury Wells.

Odour Assessments

- Gowanbank, Forfar – Odour survey to support a residential development in close proximity to Gowanbank recycling centre
- Squires Close, Pocklington – Odour risk assessment in support of a residential in close proximity to a sewage treatment works
- Hawthorn Fields, Rufforth - Odour risk assessment in support of a residential in close proximity to a waste water treatment works

Dust Assessment

- Liverpool Docks – Construction dust monitoring survey
- Lyle Park West – Dust impact assessment from adjacent concrete batching plant
- High Street, Burton – Construction dust risk assessment

London Experience

- Gurnell Leisure Centre – mixed use development including residential, sports and commercial land use
- Springfield Village Wandsworth – residential development and extension to the existing hospital building
- Evelyn House, Greenwich – residential apartment block

Monitoring & Surveying Experience

- Liverpool Waters – Frisbee Dust gauge monitoring
- Gownbank, Forfar – Field odour survey “sniff test”
- Empire Cinema Birmingham – Diffusion tube survey

QUALIFICATIONS

- Masters of Geological Oceanography
- Odour Acuity Certified Master of Science