

Report

Land East of Spitfire Road, Wiltshire

Dust and Odour Assessment

For Robert Hitchins Ltd

6 May 2025

Document Control

Project Title:	Land East of Spitfire Road, Wiltshire
Project Number:	J10/15212A/10
Client:	Robert Hitchins Ltd
Principal Contact:	Kirsty Maguire
Document Title:	Dust and Odour Assessment
Document Number:	J10/15212A/10/2/F2
Prepared By:	Ben Collier and Dr Helen Robinson
Reviewed By:	Martin Peirce

Revision History

01	02/05/2025
02	06/05/2025



Logika Group is a trading name of Air Quality Consultants Limited (Companies House Registration No: 02814570), Noise Consultants Limited (Companies House Registration No: 10853764) and Logika Consultants Limited (Companies House Registration No: 12381912).

This document has been prepared based on the information provided by the client. Air Quality Consultants Ltd, Noise Consultants Ltd or Logika Consultants Ltd do not accept liability for any changes that may be required due to omissions in this information. Unless otherwise agreed, this document and all other Intellectual Property Rights remain the property of Air Quality Consultants Ltd, Noise Consultants Ltd and/or Logika Consultants Ltd. When issued in electronic format, Air Quality Consultants Ltd, Noise Consultants Ltd or Logika Consultants Ltd do not accept any responsibility for any unauthorised changes made by others.

The Logika Group all operate a formal Quality Management System, which is certified to ISO 9001:2015, a formal Environmental Management System, certified to ISO 14001:2015, and an IT system certified to Cyber Essentials Plus.

When printed by any of the three companies, this report will be on Evolve Office, 100% Recycled paper.

Registered Office: 3rd Floor St Augustine's Court, 1 St. Augustine's Place Bristol BS1 4UD Tel: +44(0)117 974 1086

24 Greville Street, Farringdon, London, EC1N 8SS Tel: +44(0)20 3873 4780

First Floor, Patten House, Moulders Lane, Warrington WA1 2BA Tel: +44(0)1925 937 195

8-9 Ship St, Brighton and Hove, Brighton BN1 1AD Tel: +44(0)20 3873 4780

Avenue du Port, 86c Box 204, 1000 Bruxelles Tel: +44(0)20 3873 47840

Contents

1	Introduction	4
2	Policy Context	6
3	Assessment Criteria	9
4	Assessment Approach	12
5	Baseline Conditions	16
6	Impact Assessment	17
7	Summary	22
8	References	23
9	Appendices	25
A1	Professional Experience	26

Tables

Table 3-1: Air Quality Criteria for PM ₁₀ and PM _{2.5}	9
Table 4-1: Source-Pathway-Receptor Risk Ratings	14
Table 4-2: Assessment of Risk of Odour Impact at a Specific Receptor Location	14
Table 4-3: Assessment of Potential Odour Effect at a Specific Receptor Location	14
Table 5-1: Estimated Annual Mean Background Pollutant Concentrations in 2025 (µg/m ³)	16
Table 6-1: Summary of Source Odour Potential	20
Table 6-2: Effectiveness of Odour Pathway	20
Table 6-3: Assessment of Potential Odour Effects at the Proposed Development	21

Figures

Figure 1-1: Location of the Proposed Development in Relation to Nearby Potential Odour and Dust Sources	5
Figure 6-1: Windrose for Larkhill Meteorological Station (2019-2023 inclusive)	19

1 Introduction

- 1.1 This report presents an odour and dust assessment for the proposed residential development on land east of Spitfire Road in Calne, Wiltshire. The report has been prepared by Air Quality Consultants Ltd (AQC) on behalf of Robert Hitchins Ltd. The proposed development is located to the south of Abberd Fields Farm, to the southwest of Sand's Farm Recycling Facility (operated by Hills Waste Solutions Ltd), to the west of a mineral/gravel extraction/quarry site and inert extractive waste management area associated with Calne Quarry (operated by Hills UK Ltd), and to the south of Abberd Lane Piggery and Benham Bodyworks. Additionally, a wood and waste recycling facility is located at the same site as Abberd Lane Piggery.
- 1.2 Abberd Fields Farm, Abberd Lane Piggery, Benham Bodyworks, and Sand's Farm Recycling Facility are potential sources of odour. Abberd Fields Farm, the wood and waste recycling facility, mineral/gravel extraction/quarry and the management of inert or extractive waste associated with Calne Quarry, are potential sources of nuisance dust for new residential receptors within the development.
- 1.3 The Honeyball Household Recycling Centre, Lower Compton Landfill, Lower Compton Waste Recovery Facility, and the southern extent of Calne Quarry, which are further potential sources of nuisance dust, are located to the southeast of the proposed development. However, these have been screened out of the assessment as they are located over 1 km from the site boundary, and the potential for dust or odour nuisance to arise at the proposed development as a result of these facilities is thus considered to be negligible.
- 1.4 The assessment identifies the potential odour and dust effects associated with the potential odour and dust sources within 1 km of the proposed development, utilising odour and dust risk assessment approaches.
- 1.5 The location of the proposed development in relation to the nearby dust and odour sources is shown in Figure 1-1.

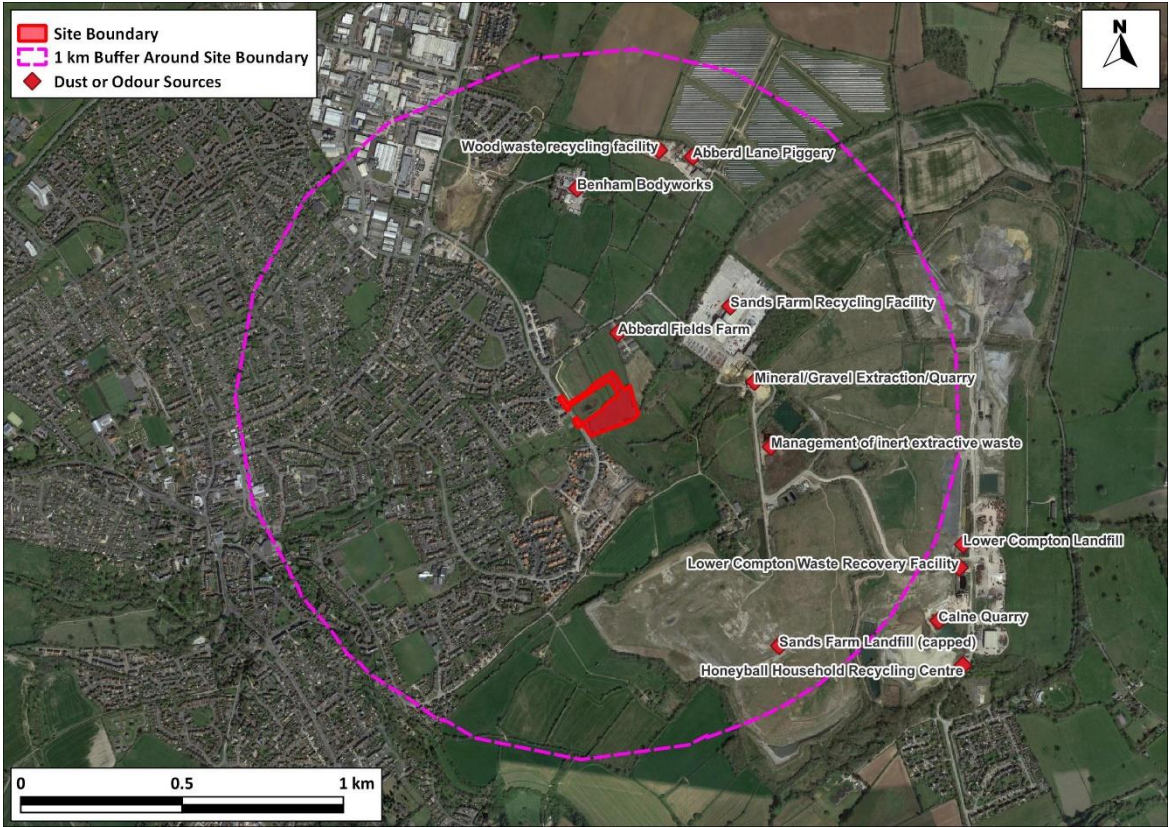


Figure 1-1: Location of the Proposed Development in Relation to Nearby Potential Odour and Dust Sources

Imagery ©2025 Maxar Technologies

2 Policy Context

Air Quality Strategy 2007

- 2.1 The Air Quality Strategy (Defra, 2007) published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives.

Air Quality Strategy 2023

- 2.2 The Air Quality Strategy: Framework for Local Authority Delivery 2023 (Defra, 2023a) sets out the strategic air quality framework for local authorities and other Air Quality Partners in England. It sets out their powers and responsibilities, and actions the government expects them to take. It does not replace other air quality guidance documents relevant to local authorities.

Clean Air Strategy 2019

- 2.3 The Clean Air Strategy (Defra, 2019) sets out a wide range of actions by which the UK Government, in partnership with the Governments of Scotland, Wales and Northern Ireland, will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

Environment Act 2021

- 2.4 The UK's new legal framework for protection of the natural environment, the Environment Act (2021) passed into UK law in November 2021. The Act gives the Government the power to set long-term, legally binding environmental targets. It also establishes an Office for Environmental Protection (OEP), responsible for holding the government to account and ensuring compliance with these targets.
- 2.5 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (SI 2023 No. 96) sets two new targets for future concentrations of PM_{2.5}. These targets are described in Paragraph 3.4.

Environmental Improvement Plan 2023

- 2.6 Defra published its 25 Year Environment Plan in 2018 (Defra, 2018). The Environment Act (2021) requires Defra to review this Plan at least every five years. The Environmental Improvement Plan 2023 (Defra, 2023b) is the first revision. This outlines the progress made since 2018 and adds detail to the goals defined in the 2018 Plan, including that of achieving clean air.
- 2.7 The Environmental Improvement Plan 2023 sets out the new air quality targets which have been set for concentrations of PM_{2.5}. These targets, which are described in more detail in Paragraph 3.4, include the long-term targets in the Statutory Instrument described in Paragraph 2.5, and interim targets to be achieved by 2028.
- 2.8 The 2023 Plan outlines the role of local authorities in helping it meet both its targets and existing commitments. It also outlines the respective roles of industry, agricultural sectors, and the Department

for Transport in providing the coordinated action required to meet both its new, and pre-existing targets and commitments.

Environmental Protection Act 1990

2.9 There are currently no statutory standards in the UK covering the release and subsequent impacts of odours or dust. This is due to complexities involved with measuring and assessing odours against compliance criteria, and the inherently subjective nature of dust and odours.

2.10 However, it is recognised that dust and odours have the potential to pose a nuisance for residents affected by them. Determination of whether or not dust or odour constitutes a statutory nuisance in these cases is usually the responsibility of the local planning authority or the Environment Agency. The Environmental Protection Act 1990 (1990) outlines that a local authority can require measures to be taken where any:

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

"fumes or gases are emitted from premises so as to be prejudicial to health or cause a nuisance.."

2.11 Dust and odour can also be controlled under the Statutory Nuisance provisions of Part III of the Environmental Protection Act.

Planning Policy

National Planning Policy Framework

2.12 The National Planning Policy Framework (NPPF) (2024) sets out planning policy for England. It states that the purpose of the planning system is to contribute to the achievement of sustainable development, and that the planning system has three overarching objectives, one of which is an environmental objective:

"to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy"..

2.13 To prevent unacceptable risks from pollution, the NPPF 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, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality".

and

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

2.14 The NPPF is supported by Planning Practice Guidance (PPG) (Ministry of Housing, Communities & Local Government, 2019), which makes clear that "Odour and dust can also be a planning concern, for example, because of the effect on local amenity".

Local Policies

- 2.15 Neither the Wiltshire Minerals Core Strategy (Wiltshire Council and Swindon Borough Council, 2009a) nor Waste Core Strategy (Wiltshire Council and Swindon Borough Council, 2009b) have any policies relating to odour or dust from existing sources, or encroachment of new developments near to existing odour and dust generating sites. The strategies focus on the odour or dust generation of proposed new sources, rather than new residential developments near to existing sources.
- 2.16 Wiltshire's current Core Strategy (Wiltshire Council, 2015) does not contain any policies relating to dust or odour, nor does the emerging Air Quality Supplementary Planning Document (Wiltshire Council, 2023).

3 Assessment Criteria

- 3.1 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are based on assessment of the effects of each pollutant on human health, including the effects on sensitive sub-groups. The 'objectives' set out the extent to which the Government expects the standards to be achieved *taking account of practical considerations*. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations (2002).
- 3.2 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its Local Air Quality Management Technical Guidance (Defra, 2022). The annual mean objectives for PM₁₀ and PM_{2.5} are considered to apply at the façades of residential properties, schools, hospitals etc. The 24-hour mean objective for PM₁₀ is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties.
- 3.3 The relevant air quality criteria for this assessment are provided in Table 3-1.

Table 3-1: Air Quality Criteria for PM₁₀ and PM_{2.5}

Pollutant	Time Period	Value
PM ₁₀	24-hour Mean	50 µg/m ³ not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³
PM _{2.5}	Annual Mean	20 µg/m ³

- 3.4 For PM_{2.5}, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is convention to assess against the limit value (Air Quality Standards Regulations (2010)¹), originally set at 25 µg/m³ and currently set at 20 µg/m³.
- 3.5 Defra has also recently set two new targets, and two new interim targets, for PM_{2.5} concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean PM_{2.5} concentration of 10 µg/m³ by the end of 2040, with the interim target being a value of 12 µg/m³ by the start of 2028². The second set of targets relate to reducing overall population exposure to PM_{2.5}. By the end of 2040, overall population exposure to PM_{2.5} should be reduced by 35% compared with 2018 levels, with the interim target being a reduction of 22% by the start of 2028.
- 3.6 Defra will assess compliance with the population exposure targets by averaging concentrations measured at its own background monitoring stations. This will not consider small changes over time to precisely where people are exposed (which would relate to exposure introduced by a new development). Furthermore, as explained in Paragraph 2.8, all four new targets provide metrics against which central Government can assess its own progress. While local authorities have an important role delivering the required improvements, these are expected to relate to controlling emissions and not to directly assessing PM_{2.5} concentrations against the targets.

¹ As amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

² Meaning that it will be assessed using measurements from 2027. The 2040 target will be assessed using measurements from 2040. National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4 µg/m³ would not exceed the 10 µg/m³ target.

- 3.7 Development control decisions can most effectively support Defra to achieve all four targets by optimising new developments to reduce their total emissions. The ambient concentrations to which occupants of new developments are exposed will have no effect on the ability to meet these targets.

Operational Dust Guidance and Criteria

- 3.8 Dust is categorised into two size classes: 'suspended dust' with particle diameters below 10 µm (PM₁₀; the finest size fraction, below 2.5 µm diameter, is known as PM_{2.5}) and 'disamenity' dust with particle diameters between 10 µm and 75 µm.
- 3.9 Suspended dusts remain in the air for long periods and are fine enough to be inhaled, potentially causing health effects. Disamenity dusts have a larger particle size, which deposit on surfaces more easily, may be visible to the naked eye, and can cause loss of amenity through soiling and staining, being generally associated with nuisance impacts.
- 3.10 The assessment criteria for suspended dust are the air quality objectives for PM₁₀ and PM_{2.5} (see Table 3-1). There are currently no statutory standards in the UK covering the release and subsequent impacts of disamenity dust, or levels for dust deposition above which 'nuisance' is deemed to exist. This is due to the inherently subjective nature of nuisance, and is highly dependent upon the existing conditions. Determination of whether or not dust constitutes a statutory nuisance in these cases is usually the responsibility of the local planning authority or the Environment Agency.
- 3.11 The Institute of Air Quality Management (IAQM)³ has produced guidance on the Assessment of Mineral Dust Impacts for Planning (IAQM, 2016), which has been followed in this assessment.

Odour Guidance and Criteria

Environment Agency Guidance

- 3.12 The Environment Agency has produced a horizontal guidance note (H4) on odour assessment and management (Environment Agency, 2011), which is designed for operators of Environment Agency-regulated processes (i.e., those which are classified as Part A(1) processes under the Pollution Prevention and Control (PPC) regime). The H4 guidance document is primarily aimed at methods to control and manage the release of odours, but also contains a series of recommended assessment methods which can be used to assess potential odour impacts.
- 3.13 The Environment Agency's Guidance for the recovery and disposal of hazardous and non-hazardous waste (Environment Agency, 2004) sets out the technical requirements of Integrated Pollution Prevention and Control (IPPC). The guidance describes the sources of odours likely to arise from the handling (storage, transfer or bulking) of any substance that is or may contain volatile organic compounds (VOCs) or other odorous substances, such as sulphur-containing compounds, and provides recommendations for the control of fugitive emissions of dusts, fine particulate matter and odours.

Institute of Air Quality Management Guidance

- 3.14 The latest UK guidance on odour was published by the IAQM in 2018 (IAQM, 2018). The IAQM guidance sets out assessment methods which may be utilised in the assessment of odours for planning applications. It is the only UK odour guidance document which contains a method for estimating the significance of potential odour impacts.

³ The IAQM is the professional body for air quality practitioners in the UK.

Screening Criteria

Dust Assessments

- 3.15 The IAQM Guidance on the assessment of Mineral Dust Impacts for Planning (IAQM, 2016) details screening criteria to determine whether dust emissions have the potential for significant air quality impacts.
- 3.16 The screening criteria for disamenity dust are as follows:
- if there are no relevant receptors within 1 km of the operations, then a detailed dust assessment can be screened out. In such a case, it is considered that, irrespective of the nature, size and operation of the site, the risk of an impact is likely to be 'negligible' and any resulting effects are likely to be 'not significant';
 - in cases whereby receptors are located between 400 m (for hard rock quarries) or 250 m (for sand and gravel quarries) and 1 km of operations, it would normally be assumed that a detailed disamenity dust impact assessment is not required. However, the decision on whether to assess should be made and justified on a site-specific basis; and
 - if there are relevant human receptors within 250 m or 400 m (depending on the rock type) then a disamenity dust impact assessment will almost always be required.
- 3.17 When considering the suspended (human health) dust, if the long-term background PM₁₀ concentration is less than 17 µg/m³ there is little risk that the Process Contribution⁴ would lead to an exceedance of the annual-mean objective, and such a finding can be put forward qualitatively (IAQM, 2016).
- 3.18 Where the potential dust impact of a mineral site cannot be screened out, a more detailed dust assessment will be required.

Odour Assessment

- 3.19 The IAQM Guidance on the assessment of Odour Impacts for Planning (IAQM, 2018) does not specify criteria to screen the risk of odour impacts based on distances to relevant exposure. However, the qualitative risk assessment approach described in the guidance can be used to determine whether there is a risk of odour impacts. The risk assessment utilises the Source–Pathway–Receptor approach, which is based on the principle that for an impact to occur there needs to be a source of odour, a pathway by which exposure might occur and a receptor that could be adversely affected.

⁴ Process contribution (PC) is a term used to define the contribution to ambient concentrations due to the emissions from the process under consideration.

4 Assessment Approach

Consultation

- 4.1 The assessment follows a methodology discussed with Wiltshire Council via email correspondence between the Peter Nobes (Senior Public Protection Officer) and Ben Collier (AQC) on 23 January 2025. Specifically, a qualitative approach to assess both the dust and odour sources was discussed. No site visits were requested by the Officer.

Study Area

- 4.2 The study area for the assessment includes the proposed development site itself, and potential sources of odour and dust within 1 km of the application site, as shown in Figure 1-1⁵.

Receptors

- 4.3 Individual receptor locations have not been identified due to the homogeneous nature of the site. Instead, a worst-case approach has been adopted where the site boundary closest to the dust and odour sources has been assumed to be representative of future residential exposure throughout the site.

Operational Dust Impacts

- 4.4 The activities associated with Abberd Fields Farm, the wood and waste recycling facility, mineral/gravel extraction/quarry, and the management of inert or extractive waste, have the potential to generate dust emissions. The dust assessment considers the potential for impacts within certain distances of the sources of dust.
- 4.5 The assessment of dust emissions is undertaken using a qualitative approach based on IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning (IAQM, 2016). The first stage of the assessment has been to screen out activities that are at a distance greater than 1 km from the site boundary. The second stage follows the recommended screening criteria for both disamenity and suspended (human health) dust.

Operational Odour Impacts

- 4.6 Odour impact assessment is a challenging and subjective science. There are a number of odour assessment methods and tools that have been developed which are widely used in the UK, including desk-based methods, such as complaints analysis and qualitative risk assessment, through to field odour testing (sniff testing) and dispersion modelling. Each has its advantages and disadvantages and not all assessment methods are appropriate in every case; for example, where a potentially odorous process is proposed rather than existing, then assessment methods such as sniff testing and odour sampling are less relevant than predictive methods such as odour risk assessment. The scale and location of odorous processes is also important in selecting appropriate assessment methodologies, with more simple methodologies often sufficient for small or remotely located processes.

⁵ Note that there are no specific distance screening thresholds for odour sources in the IAQM guidance.

- 4.7 The approach to assessing the odour impacts from Sands Farm Recycling Facility, Abberd Fields Farm, Abberd Lane Piggery, and Benham Bodyworks, has been to utilise the qualitative risk assessment approach described in the IAQM guidance on assessment of odours for planning (IAQM, 2018).

Odour Risk Assessment

- 4.8 The odour risk assessment set out in the IAQM guidance (IAQM, 2018) follows a Source-Pathway-Receptor approach. This approach describes the concept that, in order for an odour impact (such as annoyance or nuisance) to occur, there must be a source of odour, a pathway to transport the odour to an off-site location, and a receptor (e.g. people) to be affected by the odour.

- 4.9 The risk of odour effects at a given receptor location may be estimated using the following fundamental relationship:

$$\text{Effect} \approx \text{Dose} \times \text{Response}$$

- 4.10 In this relationship, the **dose** is a measure of the likely exposure to odours, in other words the **impact**. The **response** is determined by the sensitivity of the receiving environment and thus the overall **effect** is the result of changes in odour exposure at specific receptors, taking into account their sensitivity to odours.

- 4.11 In order to determine the risk of potential odour effects from the sources, the 'FIDOR' factors for odour exposure have been used. These factors are commonly used in the assessment of odours and are outlined in the IAQM guidance, but are also described in the Environment Agency's H4 guidance document on odour management (Environment Agency, 2011). The FIDOR factors are:

- **F**requency – the frequency with which odours are detected;
- **I**ntensity – the intensity of odours detected;
- **D**uration – the duration of exposure to detectable odours;
- **O**ffensiveness – the level of pleasantness or unpleasantness of odours; and
- **R**eceptor – the sensitivity of the location where odours are detected, and/or the proximity of odour releases to an odour-sensitive location.

- 4.12 Odour emissions from the sources have been assigned a risk-ranking based on the "effect $\approx$ dose x response" relationship, whereby the dose (impact) is determined by the "FIDO" part of FIDOR, and the response is determined by the "R" (receptor sensitivity). The risk of odour effects can therefore be described as:

$$\text{Effect} \approx \text{Impact (FIDO)} \times \text{Receptor Sensitivity (R)}$$

- 4.13 The key factors that will influence the effects of odours are the magnitude of the odour source(s), the effectiveness of the pathway for transporting odours, and the sensitivity of the receptor. The methodology set out in the IAQM guidance document describes in detail a Source-Pathway-Receptor approach to odour risk assessment, and includes tables and matrices to assist in determining the likely risk of odour effects. The IAQM methodology is outlined below. It includes an element of professional judgement.

- 4.14 The assessment examines the source odour potential (source magnitude) of the sources, and then identifies the effectiveness of the pathway and receptor sensitivity at sensitive locations.

- 4.15 Table 4-1 describes the risk-rating criteria (high, medium and low) for source odour potential, pathway effectiveness and receptor sensitivity applied in this assessment. This table has been adapted from Table 8 in the IAQM odour guidance document.

Table 4-1: Source-Pathway-Receptor Risk Ratings

Source Odour Potential	Pathway Effectiveness	Receptor Sensitivity
Large Source Odour Potential: Large-scale odour source and/or a source with highly unpleasant odours (hedonic tone -2 to -4); no odour control.	Highly Effective Pathway: Very short distance between source and receptor; receptor downwind of source relative to prevailing wind; ground level releases; no obstacle between source and receptor.	High Sensitivity: Highly sensitive receptors e.g. residential properties and schools.
Medium Source Odour Potential: Medium-scale odour source and/or a source with moderately unpleasant odours (hedonic tone 0 to -2); basic odour controls.	Moderately Effective Pathway: Receptor is local to the source; releases are elevated, but compromised by building effects.	Medium Sensitivity: Moderately sensitive receptors e.g. commercial and retail premises, and recreation areas.
Small Source Odour Potential: Small-scale odour source and/or a source with pleasant odours (hedonic tone +4 – 0); best practise odour controls.	Ineffective Pathway: Long distance between source and receptor (>500 m); receptors upwind of source relative to prevailing wind; odour release from stack/high level.	Low Sensitivity: Receptors not sensitive e.g. industrial activities or farms.

- 4.16 The risk ratings for source magnitude and pathway effectiveness (for each receptor) identified using the criteria in Table 4-1 are then combined using the matrix shown in Table 4-2 to estimate an overall risk of odour impact at each specific receptor location.

Table 4-2: Assessment of Risk of Odour Impact at a Specific Receptor Location

Pathway Effectiveness	Source Odour Potential (Source Magnitude)		
	Large	Medium	Small
Highly Effective	High Risk	Medium Risk	Low Risk
Moderately Effective	Medium Risk	Low Risk	Negligible Risk
Ineffective	Low Risk	Negligible Risk	Negligible Risk

- 4.17 The next stage of the risk assessment is to identify the potential odour effect at each receptor location. This is done using the matrix presented in Table 4-3, which combines the overall odour impact risk descriptor for each receptor with the receptor sensitivity determined using the criteria in Table 4-1.

Table 4-3: Assessment of Potential Odour Effect at a Specific Receptor Location

Risk of Odour Impact	Receptor Sensitivity		
	High	Medium	Low
High Risk	Substantial Adverse Effect	Moderate Adverse Effect	Slight Adverse Effect

Risk of Odour Impact	Receptor Sensitivity		
	High	Medium	Low
Medium Risk	Moderate Adverse Effect	Slight Adverse Effect	Negligible Effect
Low Risk	Slight Adverse Effect	Negligible Effect	Negligible Effect
Negligible Risk	Negligible Effect	Negligible Effect	Negligible Effect

- 4.18 As a final stage of assessment, an overall significance of odour effects is determined, based on professional judgment and taking into account the significance of the effect at each specific receptor location.

Assessment of Significance

Operational Dust

- 4.19 In the absence of formal criteria, the significance of the impacts has been judged based on professional experience of the consultants preparing the report, and taking account of the IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning (IAQM, 2016). The experience of the consultants preparing the report is set out in Appendix A1.

Odour

- 4.20 There are no formal assessment criteria for quantifying odours. In the absence of formal criteria, the significance of the impacts has been judged based on professional experience and taking account of the H4 guidance published by the EA and the IAQM Guidance on the Assessment of Odour for Planning (IAQM, 2018).

5 Baseline Conditions

Relevant Features

- 5.1 The proposed development is located on the eastern outskirts of Calne and is bounded by Spitfire Road and Gregor Drive to the west / southwest. The site currently consists of agricultural land, with existing residential properties to the west and southwest. There is currently agricultural land to the north, south, and east of the site. Land adjacent to the proposed development has been granted planning permission for residential development (application reference PL/2022/07893) and a Local Centre (application reference PL/2023/10421).
- 5.2 Abberd Fields Farm is located approximately 60 m to the north of the proposed development, with Sands Farm Recycling Facility approximately 260 m to the northeast. The closest activities associated with the quarry (mineral/gravel extraction/quarrying and management of inert extractive waste) are approximately 270 m to the east of the proposed development. Benham Bodyworks and Abberd Lane Piggery (including a wood and waste recycling facility) are located approximately 570 m and 710 m, respectively, to the north of the application site.

Local Air Quality Monitoring

- 5.3 Wiltshire Council measures PM₁₀, and infers PM_{2.5}, concentrations at three roadside locations. However, these locations are not considered representative of the proposed development site, being roadside sites in town centres and affected by local traffic much more than the relatively rural site of the proposed development.
- 5.4 Background levels of dust and odour are not routinely monitored in the UK.

Background Concentrations

- 5.5 Estimated background concentrations of suspended dust (PM₁₀ and PM_{2.5}) have been determined using Defra's 2021-based background maps (Defra, 2024). Estimated background concentrations at the proposed development are set out in Table 5-1 and are all well below the objectives.

Table 5-1: Estimated Annual Mean Background Pollutant Concentrations in 2025 (µg/m³)

Year	PM ₁₀	PM _{2.5}
2025	10.9	6.7
Objective	40	20 ^a
AMCT	-	10 ^b

^a The 20 µg/m³ PM_{2.5} objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

^b To be met by 2040

6 Impact Assessment

Initial Assessment

- 6.1 A search of Defra's Pollutant Release and Transfer Register (PRTR) (Defra, 2025) and the EA Permit Register⁶ identified several industrial sources on the eastern outskirts of Calne.
- 6.2 Honeyball Household Recycling Centre, Lower Compton Waste Recovery Facility (EA Permit VP3235SZ), and Lower Compton Landfill (EA Permit BU5801ID) are located over 1 km away from the proposed development. Over this distance, they are not considered likely to affect the proposed development, in terms of dust or odour. These potential sources of dust and odour have therefore been screened out from further assessment.
- 6.3 Sands Farm Landfill (EA Permit BK6858ID), located to the south of the proposed development, is associated with the previous extensive use of Sands Farm as a soft sand quarry (as corroborated by Wiltshire's Minerals Core Strategy (Wiltshire Council and Swindon Borough Council, 2009a)), the majority of which has since been used as a landfill. The PRTR records that methane was emitted from the site 2023. However, this is not a typically odorous compound, and satellite imagery shows the site is now covered by soil and vegetation. Environment Agency data⁷ indicate that the landfill was full at the end of 2019. This potential source of odour has therefore been screened out from further assessment.
- 6.4 The potential dust and odour sources associated quarrying activities within 1 km of the proposed development relate to Calne Quarry and include the 'management of inert or extractive waste at mine' (EA Permit EB3337RY/V002) and 'mineral/gravel extraction/quarry' (EA Permit SW/EPRSP3897EA/001).
- 6.5 Sands Farm Recycling Facility is also covered by EA Permits (HB3307HF and SW/011331/002). The materials accepted at the Sands Farm Recycling Facility include glass, plastic, paper, tins, cans, cardboard, and textiles. Any non-recyclable waste delivered to the site is transferred directly to the Lower Compton site (more than 1 km away) for disposal or energy recovery offsite. At the Sands Farm Recycling Facility, delivery vehicles unload all recyclable materials within the building, and all sorting is contained within the building before being baled or containerised. Only plastic and metals are stored externally.
- 6.6 Neither Abberd Fields Farm, Benham Bodyworks, or Abberd Lane Piggery were identified on either register but have been identified through satellite imagery. The wood and waste Recycling Facility operates under an EA Standard Rules Permit GB3302TC/A001. Previous site visits carried out by AQC have not identified Abberd Fields Farm as source of dust or odour; it is not used for storage with no livestock, or livestock waste stored at the farm. This farm has therefore been screened out of further assessment.

Further Assessment

Dust

- 6.7 This report focusses on assessing the dust impacts of the existing activities associated with Calne Quarry (mineral/gravel extraction/quarry and management of inert extractive waste) and the wood and waste recycling facility at Abberd Lane, on the proposed development. Dust emissions have the

⁶ <https://environment.data.gov.uk/public-register/view/index>

⁷ <https://environment.data.gov.uk/portalstg/sharing/rest/content/items/6d9f51ee5bd3471da2679b539e3b7c48/data>

potential to arise from the processing of wood waste materials, and the quarrying, transportation, and storage of sand.

- 6.8 The Larkhill meteorological station⁸ is located at Larkhill Royal School of Artillery, approximately 30 km to the south of the proposed development. Both the application site and the Larkhill meteorological monitoring station are located in the southwest of England where they will be influenced by the effects of inland meteorology over hilly topography. A wind rose for the years 2019 to 2023 inclusive is presented in Figure 6-1. This demonstrates that the prevailing wind is from the southwest (between 200° and 250°), which occurred 34.1% of the time between 2019 and 2023.
- 6.9 The potentially dust-causing activities are located to the east (mineral/gravel extraction/quarrying and management of inert or extractive waste) and north-northeast (wood and waste recycling facility) of the proposed development. Between 2019 and 2023, wind speeds occurred from the east and north-northeast on average 4% and 8% of the time, respectively, on dry days (days with rainfall no more than 0.2 mm/day (IAQM, 2016)). However, when considering winds of at least 5 m/s (lower wind speeds are unlikely to pick up or transport dust) this reduces to 1% and 3% of the time
- 6.10 Following the IAQM screening guidance (IAQM, 2016), a detailed assessment for disamenity dust has been screened out of the assessment. This professional judgment takes account of the following factors:
- the quarry material is soft, coarse-grained rock (sand) and the proposed development is located more than 250 m from the nearest quarry-related activities;
 - while wood dust is lighter than coarse-grained rock and therefore has the potential to travel further, the proposed development is located upwind of (during prevailing wind conditions), and over 500 m away from, the wood and waste recycling facility;
 - as determined by the air quality assessment, the proposed development is located well away from any busy roads, in an area where pollutant concentrations would be expected to be close to background levels (see Table 5-1 and the air quality assessment accompanying this report (reference J10/15212A/10/1/F2, dated 6th May 2025);
 - the size of the site areas incorporating the nearby dusty activities is relatively small (< 4 ha combined); and
 - the land between the proposed development and dust-generating activities is vegetated with a number of mature hedgerows, which provides a buffer and some screening that will reduce the risk of dust impacts.
- 6.11 The need for a detailed assessment of suspended dust in relation to human health effects has also been screened out, as, in addition to the points above, the predicted background PM₁₀ concentration is less than 17 µg/m³ in 2024, as shown in Table 5-1.
- 6.12 Overall, the operational dust effects on the proposed development are judged to be 'not significant'.

⁸ The Lyneham Meteorological Station is located closer to the proposed development but has limited data capture. Therefore, Larkhill Meteorological Station has been used.

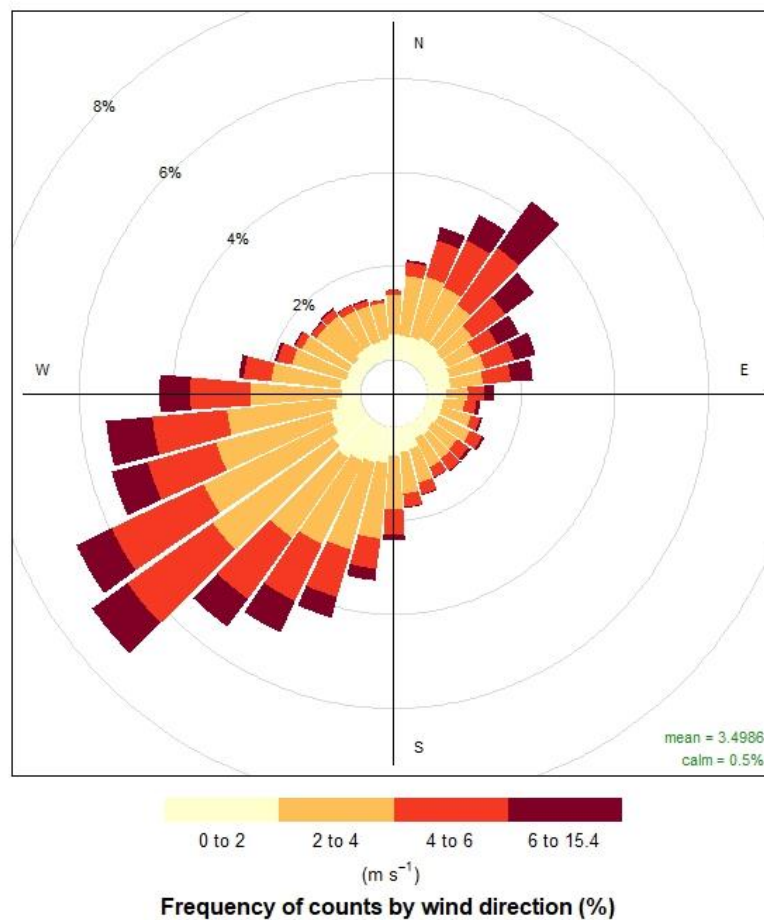


Figure 6-1: Windrose for Larkhill Meteorological Station (2019-2023 inclusive)

Odour

Process Description

- 6.13 In order to identify the potential odour impacts from the Sands Farm Recycling Facility, Benham Bodyworks and Abberd Lane Piggery, it is necessary to consider the sources of odour. Likely sources of emissions to air, which may be odorous, will be largely associated with animal waste, VOCs from paint spraying, and the delivery, processing, and storage of household recyclable waste, respectively.

Source Odour Potential

- 6.14 The first step of the odour risk assessment is to identify the source odour potential or odour magnitude. This takes into account the scale and nature of the odorous processes; the continuity, intensity and offensiveness of odour releases; and any odour control measures that are used. In essence, it must consider the odour potential of the source with respect to the FIDO part of FIDOR.
- 6.15 The materials accepted at the Sands Farm Recycling Facility include glass, plastic, paper, tins, cans, cardboard, and textiles. These materials are judged to have a low odour potential. Due to the low odour potential of the material itself, and the processing being contained within the building, the overall source odour potential of the recycling facility is judged to be 'Small'.

- 6.16 Benham Bodyworks does not feature on the PRTR, the EA Permit Register or Wiltshire Council's list of Part B processes. The facility appears to comprise a single room used for paint spraying. It is unknown what vapour recovery or control is present. Odours from this are likely to be unpleasant. However, given the enclosed and intermittent nature of the operation, the source odour potential is likely to be 'Small'.
- 6.17 While Abberd Lane Piggery is small in size, the odour is likely to be unpleasant (although some agricultural odour may be expected in a rural location) and continuous. All operations appear to be contained within buildings and aerial photographs do not show any exterior animals, slurry storage or similar sources of odour. It is unknown whether there are any odour controls in use. The source odour potential is therefore judged to be 'Medium'.
- 6.18 A summary of the odour potential for each source is presented in Table 6-1.

Table 6-1: Summary of Source Odour Potential

Source	Odour Potential
Sands Farm Recycling Facility	Small
Benham Body Works	Small
Abberd Lane Piggery	Medium

Pathway Effectiveness

- 6.19 In order to consider the effectiveness of the pathway, it is important to consider receptor locations in terms of their proximity to the odour source and the prevailing wind direction.
- 6.20 As discussed in Paragraph 6.8, the prevailing wind direction in the area is from the southwest. In general, odours will be transported by the wind and will not be detectable at locations upwind of a source. The exception to this is during very light wind conditions when odours may disperse against the wind direction, although typically only for relatively short distances.
- 6.21 The effectiveness of the odour pathway between the odour sources and the proposed development is summarised in Table 6-2, which draws upon the guidance set out in Section 4.

Table 6-2: Effectiveness of Odour Pathway

Source	Distance from Proposed Development	Direction from Development (°)	% Winds from Source	Pathway Effectiveness ^a
Sands Farm Recycling Facility	260 m	45 - 60	5.26	Moderate
Benham Body Works	570 m	340 - 355	2.67	Ineffective
Abberd Lane Piggery	710 m	15 - 25	2.98	Ineffective

^a Overall pathway effectiveness is based on professional judgement, taking account of distance between source and receptor, and frequency of winds with respect to the average.

Receptor Sensitivity

- 6.22 The proposed development is for residential properties, and therefore the sensitivity of receptors is 'High', based on the descriptors presented in Table 4-1.

Potential Odour Effects at the Proposed Development

- 6.23 The assessment of the potential odour effects at sensitive receptor locations are presented in Table 6-3. This combines the source odour potential, effectiveness of pathway and receptor sensitivity identified using the criteria described in Table 4-1, to identify an overall potential for odour effects, using the matrices set out in Table 4-2 and Table 4-3.

Table 6-3: Assessment of Potential Odour Effects at the Proposed Development

Receptor	Risk of Odour Impact (Dose)			Receptor Sensitivity	Likely Odour Effect
	Source Odour Potential	Effectiveness of Pathway	Risk of Odour Impact		
Sands Farm Recycling Facility	Small	Moderately effective	Negligible	High	Negligible
Benham Body Works	Small	Ineffective	Negligible	High	Negligible
Abberd Lane Piggery	Medium	Ineffective	Negligible	High	Negligible

- 6.24 The potential odour effects have been identified using the effect $\approx$ dose x response relationship identified in Paragraph 4.9. The process is described as follows:

1) Identify the impact:

- 6.25 Based on a small source odour potential where the pathway is deemed to be moderately effective or ineffective, the risk of odour impacts (dose) is judged to be negligible (see Table 4-2). Additionally, a medium source odour potential where the pathway is deemed to be ineffective, the risk of odour impacts (dose) is judged to be negligible.

2) Consider the response:

- 6.26 Based on the matrix presented in Table 4-3, a negligible risk of odour impacts will lead to a negligible odour effect regardless of receptor sensitivity.
- 6.27 In this case, it is judged that that overall significance of odour effects is 'not significant'. This conclusion is based on the findings of the risk assessment that have identified a negligible risk of odour effects.

Overall Discussion

- 6.28 Overall, dust and odour effects are judged to be 'not significant' across the whole of the proposed development.

7 Summary

- 7.1 An odour and dust assessment has been undertaken for the proposed development. It is located to the west and northwest of activities associated with Calne Quarry and to the south of a wood and waste recycling facility, which have the potential to lead to dust impacts at the development. It is also located to the southwest of Sands Farm Recycling Centre, and to the south of Abberd Lane Piggery and Benham Bodyworks, which have the potential to lead to odour impacts at the development.
- 7.2 The dust risk assessment, based on IAQM Guidance, has concluded the operational dust effects on the proposed development are **not significant**.
- 7.3 The odour risk assessment has also concluded **negligible** impacts at the proposed development from the odour sources.
- 7.4 Overall, it is judged that the dust and odour effects at the proposed development will be **not significant**.
- 7.5 This does not mean that there will never be occasions when dust or odour impacts are detectable, but that the frequency and magnitude of any such occurrences will be sufficiently low that they are not significant.

8 References

Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*, Defra.

Defra (2018) *A Green Future: Our 25 Year Plan to Improve the Environment*, [Online], Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf.

Defra (2019) *Clean Air Strategy 2019*, Available: <https://www.gov.uk/government/publications/clean-air-strategy-2019>.

Defra (2022) *Review & Assessment: Technical Guidance LAQM.TG22 August 2022 Version*, Available: <https://laqm.defra.gov.uk/documents/LAQM-TG16-April-21-v1.pdf>.

Defra (2023a) *Air Quality Strategy: Framework for Local Authority Delivery*, [Online], Available: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england/air-quality-strategy-framework-for-local-authority-delivery>.

Defra (2023b) *Environmental Improvement Plan 2023*, [Online], Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1133967/environmental-improvement-plan-2023.pdf.

Defra (2024) *Local Air Quality Management (LAQM) Support Website*, [Online], Available: <http://laqm.defra.gov.uk/>.

Defra (2025) *UK Pollutant Release and Transfer Register*, [Online], Available: <http://prtr.defra.gov.uk/map-search>.

Environment Act 2021 (2021).

Environment Agency (2004) *Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste*, [Online], Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/298118/LIT_8199_dd704c.pdf.

Environment Agency (2011) *H4 Odour Management. How to comply with your environmental permit*.

HMSO (1990) *Environmental Protection Act 1990*.

IAQM (2016) *Guidance on the Assessment of Mineral Dust Impacts for Planning*.

IAQM (2018) *Guidance on the assessment of odours for planning v1.1*.

Ministry of Housing, Communities & Local Government (2019) *Planning Practice Guidance*, Available: <https://www.gov.uk/government/collections/planning-practice-guidance>.

Ministry of Housing, Communities & Local Government (2024) *National Planning Policy Framework*, Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf.

The Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument 3043 (2002), HMSO, Available: <https://www.legislation.gov.uk/uksi/2002/3043/contents/made>.

The Air Quality (England) Regulations 2000 Statutory Instrument 928 (2000), HMSO, Available: <http://www.legislation.gov.uk/uksi/2000/928/contents/made>.

The Air Quality Standards Regulations 2010 Statutory Instrument 1001 (2010), HMSO, Available: http://www.legislation.gov.uk/uksi/2010/1001/pdfs/uksi_20101001_en.pdf.

Wiltshire Council (2015) *Wiltshire Core Strategy*, [Online], Available: <https://www.wiltshire.gov.uk/media/372/Wiltshire-Core-Strategy-adopted-2015/pdf/Wcs.pdf?m=637099399373530000>.

Wiltshire Council (2023) *Air Quality Supplementary Planning Guidance Consultation Draft*.

Wiltshire Council and Swindon Borough Council (2009a) *Minerals Core Strategy*, [Online], Available: <https://www.wiltshire.gov.uk/media/8546/minerals-core-strategy-june-2009/pdf/minerals-core-strategy-june-2009.pdf?m=637804441195500000>.

Wiltshire Council and Swindon Borough Council (2009b) *Waste Core Strategy*, [Online], Available: <https://www.wiltshire.gov.uk/media/8548/waste-core-strategy-july-2009/pdf/waste-core-strategy-2009-july.pdf?m=637804444234270000>.

9 Appendices

A1 Professional Experience

Martin Peirce, BSc (Hons), MSc, MIEncSci, MIAQM

Mr Peirce is an Associate Director with AQC and has some thirty years' experience in environmental modelling and assessment, most relating to air quality and carbon and greenhouse gases (GHGs). He has extensive experience in the calculation of emissions to air and compiling emission inventories, for both local air quality assessments and carbon footprinting. For air quality, he also has extensive expertise in modelling the atmospheric dispersion of pollutants for comparison against regulatory limits and for assessment of health and environmental impacts. He has prepared assessments in support of Environmental Impact Assessments (EIA), permit applications and planning applications (under both Town and Country Planning Act (TCPA) and Development Consent Order (DCO) regimes), and has acted as expert witness. He has particular experience in modelling aviation and transport sources, non-road mobile machinery, construction and industrial sources.

Dr Helen Robinson, BSc (Hons) MSc PhD MIEEnvSc MIAQM

Dr Robinson is a Senior Consultant with AQC, having joined in September 2021. Prior to joining AQC she was based at the University of Birmingham, completing a BSc in Geography, MSc in Applied Meteorology and Climatology, and PhD in Air Quality. Her PhD research specialised in air quality modelling where she developed a range of tools to estimate real-time pollutant concentrations on Birmingham's road network, and to quantify the impacts of Low Traffic Neighbourhoods on residential population exposure. Additionally, she provided the air quality modelling expertise on the NERC-funded project, 'GI4RAQ' (Green Infrastructure for Roadside Air Quality), to quantitatively assess the impacts of 'green' interventions in street environments. She also has substantial experience in the field of air quality monitoring and assessment for a range of planning applications.

Ben Collier, BSc (Hons)

Mr Collier is an Assistant Consultant with AQC and joined the company in 2023. Throughout his BSc Environmental Science degree at the University of the West of England, he developed an interest in planetary processes and impacts, in particular those in relation to air quality. During his studies, Mr Collier completed several atmospheric-related projects, with topics varying from the impact of urban air pollution to the potential of renewable energy to improve air quality; many of these included GIS based analysis. Since joining AQC he has numerous air quality assessments, including road traffic modelling and construction dust risk assessments.



London • Bristol • Warrington • Brighton • Brussels