AIR QUALITY SCREENING ASSESSMENT

AT

LAND AT BLAINSCOUGH HALL, COPPULL

AQ109654R1

03/12/2020

Prepared For

Paul Dignan
Lea Hough & Co LLP
Oakshaw House
2 Capricorn Park,
Blakewater Road,
Blackburn,
Lancashire,
BB1 5QR

Prepared By

Rachael Harrison
Ensafe Consultants
Osprey House,
Pacific Quay, Broadway,
Manchester,
M50 2UE

TABLE OF CONTENTS

EXECUTIVE SUMMARY **4**
1.0 INTRODUCTION **5**
1.1 Background 5
1.2 Site Location and Context 5
1.3 Limitations 5
2.0 LEGISLATION, GUIDANCE AND POLICY **6**
2.1 Background 6
2.2 Local Planning Policy 7
3.0 METHODOLOGY **8**
3.1 Construction Phase Assessment 8
3.2 Operational Phase Assessment 9
4.0 BASELINE **10**
4.1 Local Air Quality Management 10
4.2 Air Quality Monitoring 10
4.3 Background Pollutant Concentrations 10
4.4 Sensitive Receptors 11
5.0 ASSESSMENT **13**
5.1 Construction Phase Assessment 13
5.2 Operational Phase Assessment 17
6.0 CONCLUSION **19**
7.0 ABBREVIATIONS **20**

DISTRIBUTION LIST

Issued To	Title / Company / Location
Elliott Bullock	NJL Consulting
Paul Dignan	Lea Hough & Co LLP

QUALITY ASSURANCE

Issue / Revision	Issue	Revision 1	Revision 2
Remarks	First draft for comment	Minor Amendments	
Date	03/12/2020	03/12/2020	
Prepared By	Rachael Harrison	Josh Davies	
Job Title	Graduate Air Quality Consultant	Principal Air Quality Consultant	
Signature			
Checked By	Josh Davies	Conal Kearney	
Job Title	Principal Air Quality Consultant	Head of Noise and Air	
Signature			
Authorised By	Conal Kearney	Conal Kearney	
Job Title	Head of Noise and Air	Head of Noise and Air	
Signature			
Project Number	AQ109654	AQ109654r1	

EXECUTIVE SUMMARY

Ensafe Consultants were commissioned by Lea Hough & Co LLP to undertake an Air Quality Assessment in support of a proposed residential development at Land at Blainscough Hall, Coppull.

The proposed comprises the development of up to 123 residential units, alongside associated infrastructure and parking.

Due to the nature of the proposals, there is the potential for impacts to arise at nearby sensitive receptors during the construction and operational phases. Impacts could arise as a result of additional fugitive dust emissions associated with earthworks, construction and trackout activities, as well as road vehicle exhaust emissions generated during operation. Additionally, the potential to introduce future site users into areas of existing poor air quality was assessed.

An Air Quality Screening Assessment was produced in order to provide considerations to existing baseline conditions, quantify the significance of associated impacts and assess site suitability for the proposed end-use in accordance with the requirements of the National Planning Policy Framework.

Potential construction phase air quality impacts from fugitive dust emissions were assessed as a result of earthworks, construction and trackout activities. It is considered that the use of good practice control measures would provide suitable mitigation for a development of this size and nature and reduce potential impacts to an acceptable level.

A review of Chorley Borough Councils monitoring data indicated that existing pollutant concentrations within the vicinity of the site are below the relevant Air Quality Objectives at worse case roadside locations. This consideration is further supported by a review of predicted background concentrations which also demonstrate that existing levels at the development site are likely to be **well below the relevant Air Quality Objectives**.

With regards to operational impacts, the level of traffic generation from the site was compared against the EPUK and IAQM screening criteria. Whilst the anticipated development traffic flow marginally exceeds the daily threshold, it is critical to note that the traffic distributes immediately from the site access and reduces below the assessment threshold across the wider transport network. On this basis it has been concluded that impacts on existing pollutant levels as a result of operational phase pollutant emissions are predicted to be **not significant** in accordance with the EPUK and IAQM guidance.

Based on the screening results, both Air Quality impacts and onsite exposure are considered not significant and should not form a constraint to planning consent for the proposed development. It is therefore considered that no further assessment is necessary.

1.0 INTRODUCTION

1.1 Background

Ensafe Consultants has been commissioned by Lea Hough & Co LLP, hereafter referred to as "the Client" to undertake an Air Quality Assessment in support of a proposed development, comprising of the Land at Blainsough Hall, Coppull, herein after referred to as the "Proposed Development".

1.2 Site Location and Context

The application site is located Land at Blainsough Hall, Coppull at approximate National Grid Reference (NGR) 355840, 413640. Reference should be made to should be made to Figure 1 within Appendix I for a location plan.

The application site is well setback from notable sources of road traffic emissions including the A49 and B5251. Subsequently, it is unlikely that the Proposed Development will exposure future occupiers to elevated pollutant concentrations during occupation. Due to the scale of the Proposed Development there is however potential to cause impacts at sensitive receptor locations during the construction and operational phases.

An Air Quality Screening Assessment is therefore considered suitable in order to provide considerations to existing baseline conditions at the site, consider the significance of associated impacts and assess site suitability for the proposed end-use in accordance with the requirements of the National Planning Policy Framework (NPPF) and the Environmental Protection UK and Institute of Air Quality Management guidance[1].

1.3 Limitations

This report has been produced in accordance with Ensafe Group's standard terms of engagement. Ensafe Group has prepared this report 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 Ensafe Group; a charge may be levied against such approval.

[1] Land-Use Planning and Development Control: Planning for Air Quality, Environmental Protection UK and Institute of Air Quality Management, 2017.

2.0 LEGISLATION, GUIDANCE AND POLICY

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

- European Union (EU) Directive 2008/50/EC;
- The National Planning Policy Framework (NPPF), updated on 19th February 2019);
- The National Planning Practice Guidance (NPPG), relevant chapters produced on 1th November 2019;
- Section 82 of the Environment Act (1995) (Part IV);
- The Air Quality Standards (Amendment) Regulations (2016)[2];
- Local Air Quality Management Technical Guidance 2016 LAQM.(TG16), DEFRA, 2018[3];
- Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management (IAQM), v1.1, June 2016[4]; and
- Land-Use Planning and Development Control: Planning for Air Quality, Environmental Protection UK and IAQM, January 2017[5].

2.1 Background

The Air Quality Standards (Amendment) Regulations (2016) came into force on 31st December 2016. These Regulations amend the Air Quality Standards Regulations 2010 and transpose the EU Directive 2008/50/EC into UK law. AQLVs were published in these regulations for 7 pollutants, as well as Target Values for an additional 6 pollutants.

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[2]. The AQS sets out AQOs that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale. These are generally in line with the AQLVs, although the requirements for compliance vary slightly.

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

Table 1: Air Quality Objectives

Pollutant	Air Quality Objectives	
	Concentration (µg/m³)	Averaging Periods
NO_2	40	Annual mean
	200	1-hour mean; not to be exceeded more than 18 times a year
PM_{10}	40	Annual mean
	50	24-hour mean; not to be exceeded more than 35 times a year
$PM_{2.5}$	25	Annual Mean

Table 2 summarises the advice provided in DEFRA guidance LAQM (TG16)[3] on where the AQOs for pollutants considered within this report apply.

2 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA, 2007
3 Local Air Quality Management Technical Guidance 2016 LAQM (TG16), DEFRA, February 2018.
4 Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, 2016.
5 Land-Use Planning and Development Control: Planning for Air Quality, EPUK and IAQM, January 2017.

Table 2: Examples of Where the Air Quality Objectives Apply

Averaging Periods	Objectives Should Apply At	Objectives Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed 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 Hotels, unless people live there as their permanent residence 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
24-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

2.2 Local Planning Policy

2.2.1 Chorley Borough Council Local Plan 2012 - 2026

The Chorley Borough Council (CBC Local Plan) consists of the Central Lancashire Core Strategy (Adopted July 2012) and the Preston Local Plan (adopted July 2015). The Core Strategy was prepared jointly by Chorley Borough Council (CBC), Preston City Council (PCC) and South Ribble Borough Council (SRBC) and It sets out the spatial vision, objectives, development strategy and a series of key policies that will guide the scale, location and type of development in the area until 2026. The policies contained within the Core Strategy provide the current basis for the determination of planning applications within CBC's area of administration.

A review of the Core Strategy and Chorley Local Plan indicated the following policy in relation to air quality that is relevant to this assessment:

- ***Core Strategy Policy 30: Air Quality***

"Improve air quality through delivery of Green Infrastructure initiatives and through taking account of air quality when prioritising measures to reduce road traffic congestion."

Reference has been made to this policy during the undertaking of this Air Quality Assessment.

3.0 METHODOLOGY

There is the potential for the Proposed Development to cause impacts at sensitive locations during the construction and operational phases. These have been assessed in accordance with the following methodology.

3.1 Construction Phase Assessment

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 IAQM document 'Guidance on the Assessment of Dust from Demolition and Construction'[4].

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

- Earthworks
- Construction
- Trackout

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
- The risk of health effects due to a significant increase in exposure to PM_{10} and $PM_{2.5}$

The assessment steps are detailed below.

3.1.1 Step 1

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

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

3.1.2 Step 2

Step 2 assesses the risk of potential dust impacts. A site is allocated to 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).

The two factors are combined in Step 2C to determine the risk of dust impacts without the application of best practice mitigation measures.

3.1.3 Step 3

Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance[4] 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.

3.1.4 Step 4

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'**.

The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. This has been considered throughout the assessment when defining predicted impacts. The IAQM guidance[4] suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix III.

3.2 Operational Phase Assessment

3.2.1. Future Exposure

The suitability of the site with regards to future pollutant exposure was determined by a review of the latest air quality monitoring data detailed within the CBC Status Report[6] (ASR), predicted background pollutant concentrations produced by DEFRA[8], and location of any AQMAs.

3.2.2. Road Traffic Exhaust Emission Impacts

The operation of the Proposed Development has the potential to impact on existing air quality as a result of road traffic exhaust emissions, such as NO_2, PM_{10} and $PM_{2.5}$ associated with vehicles travelling to and from the site. A screening assessment was therefore undertaken using the criteria contained within the EPUK and IAQM guidance[5] documents to determine the potential for trips generated by the Proposed Development to affect local air quality.

The EPUK and IAQM guidance[5] document states the following criteria to help establish when an air quality assessment is likely to be considered necessary:

- Proposals that will cause a change in Light Duty Vehicle (LDV) flows of more than 100 AADT within or adjacent to an AQMA or more than 500 elsewhere;

Should the above criteria not be met, the EPUK and IAQM guidance[5] document considers air quality impacts associated with the scheme to be not significant and no further assessment is required. Conversely, should the criterion be exceeded it may be deemed necessary that further assessment is required.

[6] [6] Chorley Borough Council Air Quality Annual Status Report

4.0 BASELINE

Existing air quality conditions in the vicinity of the application site were identified in order to provide a baseline for assessment. These are detailed in the following sections.

4.1 Local Air Quality Management

As required by the Environment Act (1995), CBC, has undertaken Review and Assessment of air quality within their area of administration. This process has indicated that there are no designated AQMA's within the borough.

4.2 Air Quality Monitoring

Monitoring of pollutant concentrations is undertaken by CBC using continuous and passive methods throughout their areas of administration. A review of CBC's most recent Air Quality Monitoring Data 2020 ASR[7] indicated that there are no automatic analysers currently operated by CBC within the vicinity of the Proposed Development.

CBC monitor NO_2 concentrations across the borough using passive diffusion tubes. A review of the most recent air quality monitoring data indicated 2 diffusion tubes located within the vicinity of the application site, presented in Table 3.

Table 3: Diffusion Tube Monitoring Results

ID	Site Name	Type	NGR (m)		Dist' to Site (m)	Annual Mean Concentration (µg/m³)		
			X	Y		2017	2018	2019
CH27	Spendmore Lane/ Preston Road	Kerbside	355568	413792	308	25.8	28.5	24.8
CH28	Coppull	Kerbside	355698	413875	272	25.6	25.3	24.3

As indicated in Table 3, there were no exceedances of annual mean AQO for NO_2 at these diffusion tube locations in recent years. Reference should be made to Figure 2 within Appendix I for a graphical representation of the passive monitoring locations.

4.3 Background Pollutant Concentrations

The total concentration of a pollutant is comprised of explicit local emission sources (such as roads and industrial sources) and the background component. The background component consists of indeterminate sources which are transported into an area from further away by meteorological conditions. Background pollutant concentrations are therefore the ambient level of pollution that is not affected by local sources of pollution.

In reality, it is not usually practical to obtain a true representation of background levels in urban areas due to corruption by local sources; background levels used in assessments may contain a mixture of both sources.

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 across grid square:

- NGR: 355500, 413500

Data for this location was downloaded from the DEFRA website[8]. For the purpose of this assessment, background concentrations are summarised in Table 4 for the verification year (2019) and the predicted development opening year (2025).

Table 4: Predicted Background Pollutant Concentrations

Pollutant	Predicated Background Concentration (µg/m³)	
	2019	2025
NO_x	14.15	10.67
NO_2	10.77	8.28
PM_{10}	12.64	11.91
$PM_{2.5}$	7.28	6.72

As shown in Table 4, background pollutant concentrations are well below the relevant AQOs. Comparison with the monitoring results provided in Table 3 indicate the significant impact that vehicle exhaust emissions from the highway network have on pollutant concentrations at roadside locations.

4.4 Sensitive Receptors

A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. These have been defined for construction dust impacts in the following Sections.

4.4.1 Construction Phase Sensitive Receptors

There are no nationally or European designated ecological receptors within 50m of the Site boundary, or within 50m from a route used by construction vehicles on the public highway (up to 500m from the Site entrance). Therefore, the risk of dust effects at a nationally or European designated ecological receptor site from construction impacts have not been considered further in this assessment.

Human receptors sensitive to potential dust impacts during, earthworks and construction were identified from a desk-top study of the area up to 350m from the Proposed Development boundary. These are summarised in Table 5.

Table 5: Demolition, Earthworks and Construction Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Human Receptors
Less than 20	10 - 100
20 – 50	10 - 100
50 – 100	More than 100
100 – 350	More than 100

Reference should be made to Figure 3 within Appendix I for a graphical representation of earthworks and construction dust buffer zones.

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 route. These are summarised in Table 6. The exact construction vehicle access routes were not available for the purpose of this assessment as they will depend on sourcing of materials. This is likely to be decided by the contractor. However, it was assumed that construction traffic would access the Proposed Development via Blainscough Lane, to ensure a worst case

8 http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html.

trackout assessment is undertaken.

Table 6: Trackout Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Human Receptors
Less than 20	More than 100
20 – 50	More than 100

Reference should be made to Figure 4 within Appendix I for a graphical representation of trackout dust buffer zones.

A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 7.

Table 7: Additional Area Sensitivity Factors

Guidance	Comment
Whether there is any history of dust generating activities in the area	The site is located in a mixed use industrial/residential area. There is likely to have been a history of dust generating activities due to development and industrial processes in the locality.
The likelihood of concurrent dust generating activity on nearby sites.	A review of the CBC Planning Portal indicated that there are several planning applications within 500m of the Proposed Development. As such, there is potential for concurrent dust generation should the construction phases of the aforementioned developments overlap.
Pre-existing screening between the source and the receptors	There is dense vegetation present along south and east development boundaries Should this be retained it could provide a level of natural protective screening in these directions
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	The wind direction is predominantly from the south and west of the development, as shown in Figure 5 within Appendix I. As such, properties to the north and east of the site would be most affected by dust emissions.
Conclusions drawn from local topography	The topography of the area appears to be predominantly flat. As such, there are no constraints to dust dispersion
Duration of the potential impact, as a receptor may become more sensitive over time	Currently the duration of the construction phase is unknown but considering the 2025 opening year it is likely to extend over at least 4 years.
Any known specific receptor sensitivities which go beyond the classifications given in the document.	No specific receptor sensitivities identified during the baseline

4.4.2 Operational Phase Sensitive Receptors

A desk top study was undertaken to identify the closest receptor locations to the application site. This indicated residential locations within close proximity to all development boundaries. There are also educational and medical facilities in vicinity of the application site. The nearest education facility (Coppull Primary and Nursery) and medical facility (Coppull Medical Practice) located approximately 470m and 420m north-east and west of the site respectively.

5.0 ASSESSMENT

There is the potential for air quality impacts as a result of the construction and operation of the Proposed Development in addition to the exposure of future site users to elevated pollution levels. These are assessed in the following Sections.

5.1 Construction Phase Assessment

5.1.1 Step 1 – Screening

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

The desk-study detailed in Section 4.4.1 identified a number of receptors with a high classification of sensitivity within 350m of the site boundary, and within 50m of the anticipated trackout routes. As such, a detailed assessment of potential dust impacts was required, and summarised in the below sections.

Reference should be made to Appendix II for details of the relevant IAQM construction phase assessment criteria, which were utilised in conjunction with site specific information.

5.1.2 Step 2A – Magnitude

The scale and nature of the works was determined to assess the magnitude of dust arising from each construction phase activity. The determination of magnitude was based upon the criteria detailed in Appendix II, with the outcome of Step 2A is summarised below in Table 8.

Demolition

No demolition is proposed as part of the application. As such this aspect has not been considered further within the assessment.

Earthworks

The Proposed Development site is estimated to cover an area of approximately 52,000m^2. The magnitude of potential dust emissions related to earthwork activities is therefore considered **large**.

Construction

The proposals comprise the construction of 123 residential units, given the scale of the Proposed Development the total building and infrastructure volume is approximately 50,000m^3. The magnitude of potential dust emissions related to construction activities is therefore considered **medium**.

Trackout

Information on the number of HDV trips to be generated during the construction phase of the Proposed Development was not available at the time of assessment. Similarly, the surface material and unpaved road length was not known at this stage of the project. Based on the site area, it is anticipated that the unpaved road length is likely to be greater than 100m. The magnitude of potential dust emissions from trackout is therefore considered **large**.

Table 8: Dust Emission Magnitude

Magnitude of Activities		
Earthworks	**Construction**	**Trackout**
Large	Medium	Large

5.1.3 Step 2B – Sensitivity

The next step (Step 2B) is to determine the sensitivity of the surrounding area, based on general principles such as amenity and aesthetics, as well as human exposure sensitivity.

Dust Soiling

As shown in Section 4.4.1 and Table 6, the desk top study indicated are approximately 10 - 100 sensitive receptors within 50m of the Proposed Development boundary and more than 100 within 20m of the anticipated trackout routes.

Based on the assessment criteria detailed in Appendix II, the sensitivity of the receiving environment to potential dust soiling impacts was considered to be high for all construction phase activities. This is because the site is situated in a predominantly residential area and the people or property would reasonably be expected to be present here for extended periods of time.

Human Health

The annual mean concentration of PM_{10} is **12.64µg/m³** as detailed in Section 4, based on the receptor counts provided above, the area is considered to be of medium sensitivity for trackout phase activities and low for earthworks and construction phase activities.

The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria detailed in Appendix II is summarised in Table 9.

Table 9: Sensitivity of the Surrounding Area

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	**Construction**	**Trackout**
Dust Soiling	High	High	High
Human Health	Low	High	Medium

5.1.4 Step 2C – Risk

Both the magnitude and sensitivity factors are combined in Step 2C to determine the risk of dust impacts without the application of best practice mitigation measures.

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. A summary of the risk from each dust generating activity is provided in Table 10.

Table 10: Summary of Potential Unmitigated Dust Risks

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

5.1.5 Step 3 – Mitigation

The IAQM guidance[4] provides a number of potential mitigation measures to reduce impacts during the construction phase. These measures have been adapted for the Proposed Development site as summarised in Table 11. The mitigation measures outlined in Table 11 can be reviewed prior to the commencement of construction works incorporated into the existing strategies as applicable.

Table 11: Fugitive Dust Mitigation Measures

Issue	Control Measure
Communications	• Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. • 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. • Display the head or regional office contact information • Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.
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. • Make the complaints log available to the Local Authority when asked • Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book. • Hold regular liaison meetings with other high-risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.
Monitoring	• Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary. • Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Local Authority when asked • Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Issue	Control Measure
Preparing & Maintaining Site	• Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. • Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive time period • Avoid site runoff of water or mud • Keep site fencing, barriers and scaffolding clean using wet methods. • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping.
Operating Vehicle/Machinery & Sustainable Travel	• Ensure all vehicles switch off engines when stationary - no idling vehicles. • Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. • Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un- surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the Local Authority, where appropriate) • Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials • Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)
Operations	• Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. • Use enclosed chutes and conveyors and covered skips. • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. • Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste Management	• Avoid bonfires and burning of waste materials.
Earthworks & Construction	• Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable • Only remove the cover in small areas during work and not all at once • Avoid scabbling (roughening of concrete surfaces) if possible • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Issue	Control Measure
	• Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. • For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout	• Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. • Record all inspections of haul routes and any subsequent action in a site log book. • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. • Access gates to be located at least 10 m from receptors where possible.

5.1.6 Step 4 – Residual Impacts

Assuming the relevant mitigation measures outlined in Table 11 are implemented, the residual effect from all dust generating activities is predicted to be negligible and therefore **not significant** in accordance with the IAQM guidance[4].

5.2 Operational Phase Assessment

5.2.1. Road Traffic Exhaust Impacts

Any additional vehicle movements associated with the proposed development will generate exhaust emissions, such as NO_2, PM_{10} and $PM_{2.5}$ on the local and regional road networks.

The Proposed Development comprises of circa 123 residential units with parking.

Traffic data was provided by Crofts, the appointed traffic consultant for the scheme. It is anticipated that the Proposed Development will result in additional vehicle flows of marginally above 500 AADT flows on the local road network.

Whilst the total anticipated development AADT marginally exceeds the EPUK and IAQM[5] screening threshold at Grange Road and the site access, the guidance describes the criteria as “precautionary” and should be treated as indicative and should not be applied rigidly. It is also recommended to utilise professional judgement to consider if there is a possibility of a significant effect on local air quality. Given that the anticipated development AADT distributes directly from the site access and reduces accordingly across the wider network it is not anticipated that development flows in excess of 500 AADT would be present at any location outside of

Grange Road. It is therefore considered that the Proposed Development would not lead to any significant impact at nearby sensitive locations along the B5251 and A49 corridors, respectively.

Subsequently, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **not significant in** accordance the EPUK and IAQM[5] screening criteria shown in Section 3.2.2.

5.2.2. Future Exposure

A review of existing air quality data has been undertaken, in accordance with relevant guidance, to assess the probability for future exposure to elevated annual mean NO_2 concentrations during the occupation of the Proposed Development.

The latest CBC monitoring data was assessed. The review process indicated that the most representative monitored annual mean NO_2 concentrations were monitored at 24.8µg/m^3 (CH27) and 24.3µg/m^3 (CH28) at kerbside locations adjacent to the B5251 and A49. The Proposed Development provides a greater setback distance from the B5251 and A49 and as such it is expected that on-site NO_2 concentrations would be well below those monitored by CH27 and C28.

A further review of the DEFRA pollutant background maps provided in Table 4 indicate that the existing pollutant concentrations across the Proposed Development are **well below of the relevant AQOs** for all referenced pollutant species. Given these results it is not expected that unacceptable pollutant exposure would be present during occupation.

In light of the baseline information, it is concluded that air quality at the Proposed Development is unlikely to exceed any AQOs, and as such there is low potential for existing residents to be exposed unacceptable pollutant concentrations.

6.0 CONCLUSION

Ensafe Consultants were commissioned by the Client to undertake an Air Quality Assessment in support of a proposed residential development at Land at Blainscough Works, Coppull.

During the construction phase of the Proposed 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 potential air quality impacts from dust generated by construction, earthworks and trackout activities was predicted to be **not significant**.

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. An assessment was therefore undertaken using the EPUK and IAQM screening criteria to determine the potential for vehicle trips generated by the Proposed Development to affect local air quality. The traffic data provided by Crofts, indicated that operational traffic flows are below the relevant thresholds. Based on this information associated impacts are likely to be **not significant** throughout the operational phase.

A review of CBC monitoring data at representative locations indicated that monitored NO_2 concentrations were below the relevant AQOs at roadside locations. A further review of the DEFRA pollutant background maps indicated that the existing levels at the development site are well below the relevant AQOs. When assessing the existing background levels in the vicinity of the site and distance to specific monitoring locations, it is considered that future site users would not be exposed to unacceptable air pollution concentrations.

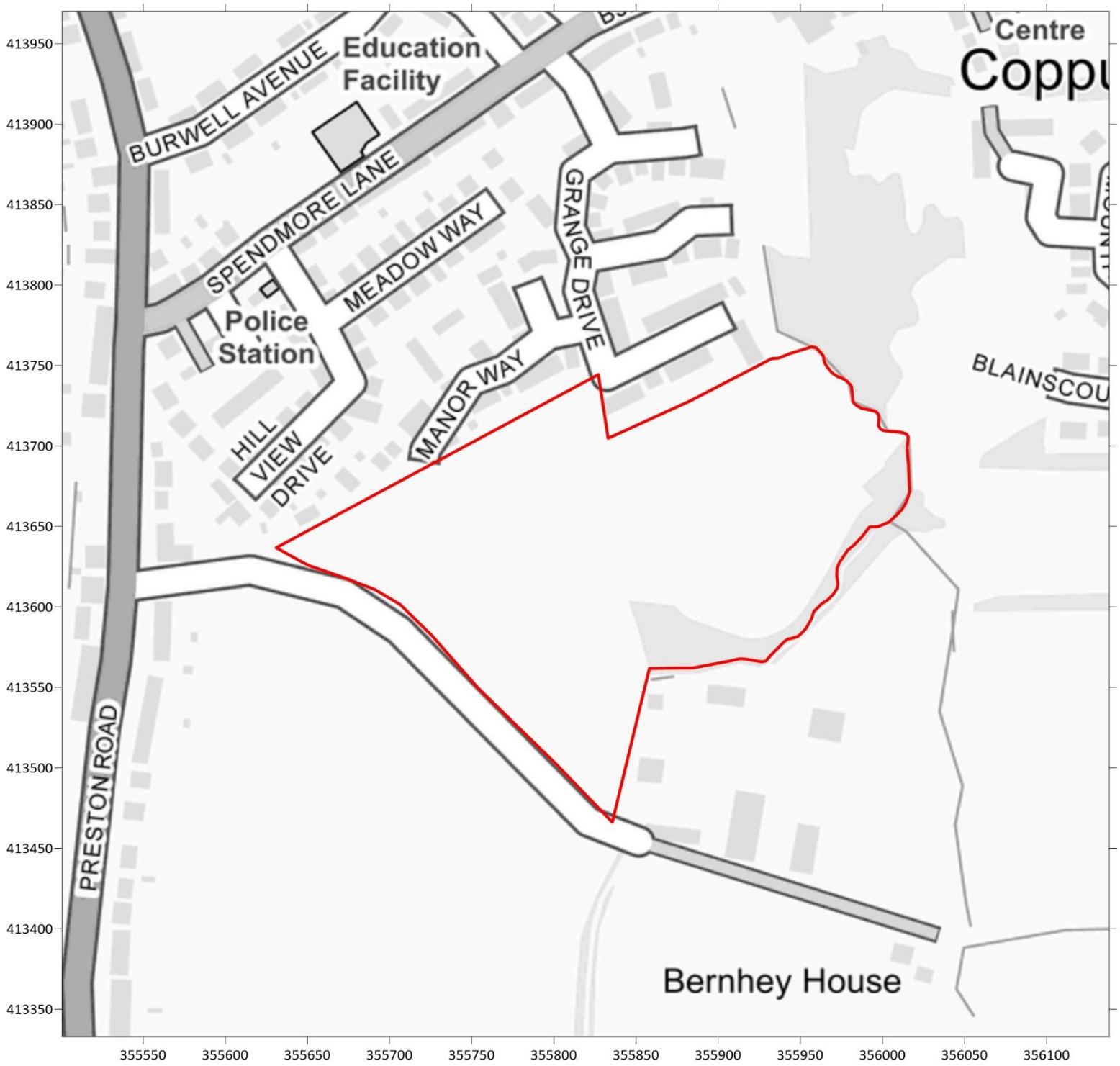
Based on the assessment results, air quality is not considered a constraint to planning consent and the Proposed Development is considered suitable for residential use.

7.0 ABBREVIATIONS

AADT	Annual Average Daily Traffic
AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
AQO	Air Quality Objectives
AQS	Air Quality Strategy
CBC	Chorley Borough Council
DEFRA	Department for Environment, Food and Rural Affairs
DMP	Dust Management Plan
EPUK	Environmental Protection UK
EU	European Union
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LA	Local Authority
LDV	Light Duty Vehicle
NGR	National Grid Reference
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5µm
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10µm

END OF REPORT

APPENDIX I - FIGURES



Legend

Site Boundary

Title

Figure 1

Site Location

Project

Land at Blainscough Hall, Coppull
Lancashire

Project Number

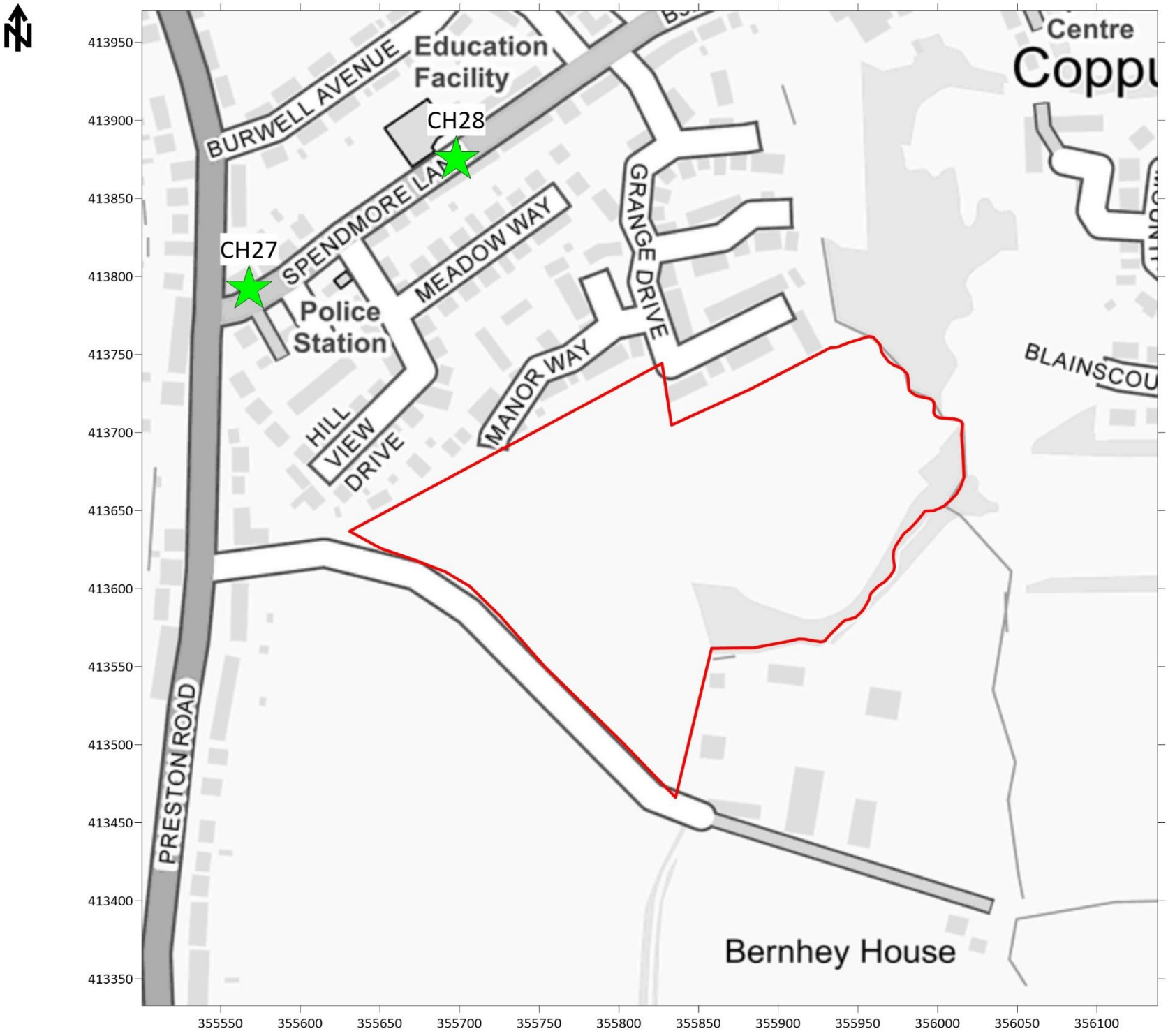
AQ109654

Client

Lea Hough & Co LLP

Contains Ordnance Survey Data
© Crown Copyright and Database Act 2010

Ensafe Consultants
Osprey House, Broadway, Manchester M50 2UE
Tel – 0161 868 1300
www.ensafe.co.uk



Legend

Site Boundary

Diffusion Tube Monitoring Locations

Title

Figure 2

Diffusion Tube Monitoring Locations

Project

Land at Blainscough Hall, Coppull
Lancashire

Project Number

AQ109654

Client

Lea Hough & Co LLP

Contains Ordnance Survey Data
© Crown Copyright and Database Act 2010

Ensafe Consultants
Osprey House, Broadway, Manchester M50 2UE
Tel – 0161 868 1300
www.ensafe.co.uk

Legend

- Site Boundary
- 20m from Site Boundary
- 50m from Site Boundary
- 100m from Site Boundary
- 350m from Site Boundary

Title

Figure 3

Earthworks and Construction
Dust Buffer Zones

Project

Land at Blainscough Hall, Coppull
Lancashire

Project Number

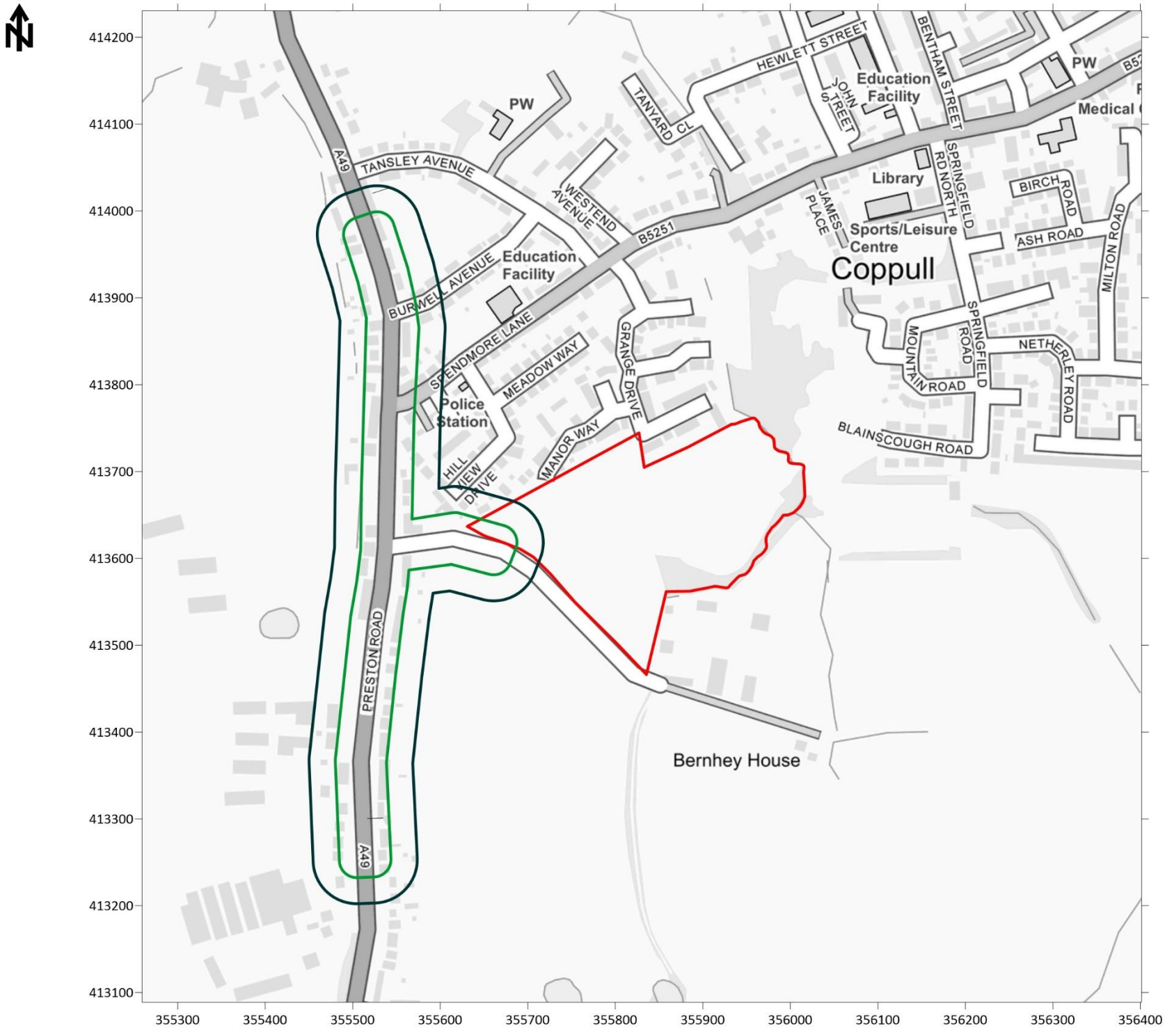
AQ109654

Client

Lea Hough & Co LLP

Contains Ordnance Survey Data
© Crown Copyright and Database Act 2010

Ensafe Consultants
Osprey House, Broadway, Manchester M50 2UE
Tel – 0161 868 1300
www.ensafe.co.uk



Legend

- Site Boundary
- 20m from Site Access Route
- 50m from Site Access Route

Title

Figure 4

Trackout Dust Buffer Zones

Project

Land at Blainscough Hall, Coppull
Lancashire

Project Number

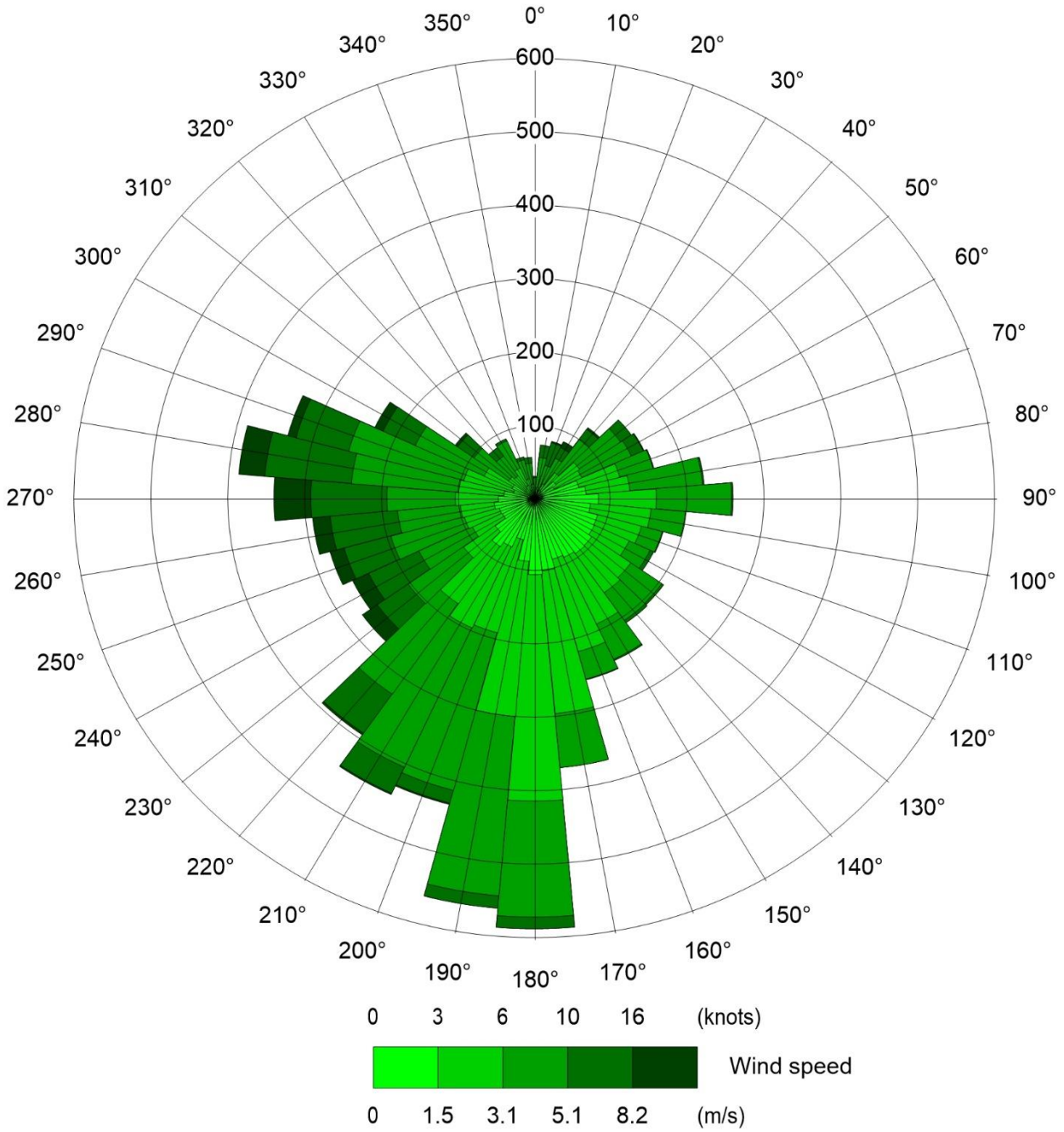
AQ109654

Client

Lea Hough & Co LLP

Contains Ordnance Survey Data
© Crown Copyright and Database Act 2010

Ensafe Consultants
Osprey House, Broadway, Manchester M50 2UE
Tel – 0161 868 1300
www.ensafe.co.uk



Title

Figure 5

Wind Rose Manchester Ringway Meteorological Station 2019

Project

Land at Blainscough Hall, Coppull
Lancashire

Project Number

AQ109654

Client

Lea Hough & Co LLP

Ensafe Consultants
Osprey House, Broadway, Manchester M50 2UE
Tel – 0161 868 1300
www.ensafe.co.uk

APPENDIX II – CONSTRUCTION PHASE ASSESSMENT CRITERIA

CONSTRUCTION PHASE METHODOLOGY

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'[9].

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

- Earthworks;
- Construction; and
- Trackout.

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} and $PM_{2.5}$.

The assessment steps are detailed below.

Step 1

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

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

Step 2

Step 2 assesses the risk of potential dust impacts. A site is allocated to 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).

The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.
Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table AIII.1.

Table AIII.1: Construction Dust - Magnitude of Emission

9 Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, 2016.

Magnitude	Activity	Criteria
Large	Earthworks	• Total site area greater than 10,000m^2 • Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • More than 10 heavy earth moving vehicles active at any one time • Formation of bunds greater than 8m in height • More than 100,000 tonnes of material moved
	Construction	• Total building volume greater than 100,000m^3 • On site concrete batching • Sandblasting
	Trackout	• More than 50 Heavy Duty Vehicle (HDV) trips per day • Potentially dusty surface material (e.g. high clay content) • Unpaved road length greater than 100m
Medium	Earthworks	• Total site area 2,500m^2 to 10,000m^2 • Moderately dusty soil type (e.g. silt) • 5 to 10 heavy earth moving vehicles active at any one time • Formation of bunds 4m to 8m in height • Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	• Total building volume 25,000m^3 to 100,000m^3 • Potentially dusty construction material (e.g. concrete) • On site concrete batching
	Trackout	• 10 to 50 HDV trips per day • Moderately dusty surface material (e.g. high clay content) • Unpaved road length 50m to 100m
Small	Earthworks	• Total site area less than 2,500m^2 • Soil type with large grain size (e.g. sand) • Less than 5 heavy earth moving vehicles active at any one time • Formation of bunds less than 4m in height • Total material moved less than 20,000 tonnes • Earthworks during wetter months
	Construction	• Total building volume less than 25,000m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	• <10 HDV (3.5t) outward movements in any one day • Surface material with low potential for dust release • Unpaved road length <50m

Step 2B defines the sensitivity of the area around the development site for construction, earthworks and trackout. The factors influencing the sensitivity of the area are shown in Table AIII.2.

Table AIII.2: Examples of Factors Defining Sensitivity of an Area

Sensitivity	Examples	
	Human Receptors	**Ecological Receptors**
High	• Users expect of high levels of amenity • High aesthetic or value property • People expected to be present continuously for extended periods of time • 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 • Aesthetics or value of their property could be diminished by soiling • 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
Low	• Enjoyment of amenity would not reasonably be expected • Property would not be expected to be diminished in appearance • Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, playing fields, farmland, footpaths, short term car park and roads	• Locally designated site e.g. Local Nature Reserve

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

- 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 the 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.

These factors were considered in the undertaking of this assessment.

The sensitivity of the area to dust soiling effects on people and property is shown in Table AIII.3.

Table AIII.3: 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
	1 - 10	Medium	Low	Low	Low

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

Table AIII.4 outlines the sensitivity of the area to human health impacts.

Table AIII.4: 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
	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
	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	-	More than 1	Low	Low	Low	Low	Low

Table AIII.5 outlines the sensitivity of the area to ecological impacts.

Table AIII.5: 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

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

Table AIII.6 outlines the risk category from earthworks and construction activities.

Table AIII.6: Dust Risk Category from Earthworks and Construction

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

Table AIII.7 outlines the risk category from trackout.

Table AIII.7: Dust Risk Category from Trackout

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

Step 3

Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance 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

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'.

APPENDIX III – ASSESSOR' S CURRICULUM VITAE

JOSHUA DAVIES

Senior Air Quality Consultant

BSc (Hons) AMIEnvSci

KEY EXPERIENCE

Josh is an Environmental Consultant with specialist experience in the air quality sector. 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.
- Management of Environmental Permit Applications primarily for the Medium Combustion Plant Directive (MCDP)

SELECT PROJECTS SUMMARY

- Back Lane, Congleton - for a residential development of 140 dwellings.
- Imperial War Museum, Duxford – Air Quality screening assessment associated with dust and odour as a result of proposed restoration activities
- London South Bank University -AQA for redevelopment of the campus, with associated energy centre
- Scunthorpe United Football Stadium - AQA for new sports stadium and commercial and retail park
- Heineken UK, Manchester – Production of various AQAs for the expansion of the Manchester Brewery site.
- Cricklewood Freight Terminal – AQA for an aggregate freight terminal in Brent. Dust and HGV impact assessment and mitigation strategy
- Llay Wrexham – AQ associated with a Short-Term Reserve Operation site in line with the Medium Combustion Plant Directive (MCPD)

ES Chapters

- Great Jackson Street Framework - Production of a number of ES chapters for large-scale mixed use multi storey buildings
- Keele University – Road and Energy Assessment for the proposed re-development of the student campus
- Newton Farm, Perth - EIA for a medium scale residential development in close vicinity to the A9.

Odour Assessments

- Clipsone House Farm – Quantitative odour and ammonia assessment in support of a proposed extension to a large-scale poultry farm.
- Chatteris AD Plant - Quantitative odour modelling and sniff tests to discharge condition on an existing anaerobic digestion plant
- Jennychem, Snodland - Risk Assessment and Best Practice Statement in support of the proposed car repairs facility spray booth

London Borough of Southwark Experience

- Camberwell Road, Southwark - Exposure assessment for a proposed gym within an AQMA, 24 hour and 1 hour mean AQOs assessed.
- Pelier Street- AQA for a residential development located within the Southwark AQMA
- Haddonfield Estate - AQA for a residential development located within the Southwark AQMA
- Lavington Street - AQA for mixed use scheme in AQMA in Southwark, including an AQN assessment.
- Daniels Road - AQA for a residential development within the Southwark AQMA

Educational Developments

- Brinsworth Comprehensive School, Rotherham - Baseline and Construction phase assessment for the proposed extension and new Sports Hall. Site suitability due to the Schools close proximity to the M1 Motorway.
- Ashton House, Waterloo Street, Bolton – Exposure and impact assessment related to a proposed expansion of the existing site located within the Greater Manchester AQMA
- St Marys and Johns CE School, Barnet AQA for the refurbishment of the existing school and the construction of a 3-storey classroom block, within the borough wide Barnet AQMA.
- St Peters Catholic School, Guildford - AQA for the redevelopment of the existing site, and the construction of a two-storey classroom block.

Monitoring & Surveying Experience

- Co-ordination and management of NO2 diffusion tube monitoring surveys in accordance with DEFRA guidance.
- Odour Acuity certified, undertaken numerous site sniff tests

QUALIFICATIONS

- Bachelor of Science
- Member of the Institute of Environmental Science (IES)
- Odour Acuity Certified Master of Science
- Member of the Institute of Air Quality Management
- Member of the Institute of Environmental Science