



Air Quality Consulting

VAL-24-0073 – Air Quality Assessment

Talbot Road, Glossop

Derbyshire County Council

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1 Introduction

1.1 Background

Vale Air Quality Consulting Ltd was instructed by Derbyshire County Council to undertake an air quality assessment for the construction of up to 110 dwellings (the Development) at land comprising the former Glossopdale Community College, Talbot Road, Glossop (the Development Site).

An indicative site plan is provided below in Figure 1.1.



Figure 1.1: Development Plan

1.2 Scope

The proposed Development involves the construction of new residential units. As such the Development will introduce new sensitive receptors and existing air quality at the Development Site must be considered.

Based upon size and scale, it is assumed that the Development will not have a significant impact on local road traffic. It has been confirmed by the Development's transport team that any additional traffic flows will be well below an annual average daily traffic (AADT) of 500. As such, an air quality assessment of vehicle emissions is not required, in accordance with the Environmental Protection UK (EPUK) and IAQM guidance 'Land-Use Planning and Development Control: Planning for Air Quality' (2017).

2 Legislation & Policy

2.1 Air Quality Standards Regulations (2010)

The Air Quality Standards Regulations (2010) provides air quality limit values for seven pollutants and target values for an additional five pollutants, based on the requirements of the EU Directive 2008/50/EC.

Part IV of the Environment Act (1995) requires the UK Government to produce a national air quality strategy containing standards, objectives and measures for improving ambient air quality and to keep these policies under review.

The latest air quality strategy sets out air quality objectives (AQOs), which are maximum concentrations not to be exceeded for a range of averaging periods. Table 2.1 provides the objective levels of the pollutants considered within the site suitability assessment.

Table 2.1: Air Quality Objectives (AQO's)		
Pollutant	Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period
NO ₂	40	Annual Mean
	200	1 Hour Mean
PM ₁₀	40	Annual Mean
	50	1 Hour Mean
PM _{2.5}	20	Annual Mean

2.2 Local Air Quality Management

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

2.3 Planning Policy

2.3.1 National Planning Policy

National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and guides their application, this includes policies relating to air quality. The NPPF includes the following considerations which are considered relevant to this Development.

Under Section 15: Conserving and Enhancing the Natural Environment, the NPPF (paragraph 180) requires *'planning policies and decisions should contribute to and enhance the natural local environment by ...preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible help to improve local environmental conditions such as air and water quality.'*

Specifically relating to air quality the NPPF (paragraph 192) states *'planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement.'*

So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'

Paragraph 194 states *'the focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively.'*

2.4 Air Quality Guidance

2.4.1 DEFRA Technical Guidance

The Department for Environment Food & Rural Affairs (DEFRA) Local Air Quality Management (LAQM) guidance (LAQM.TG(22)) sets out detailed technical guidance on how air quality should be monitored and assessed by local authorities. The document provides guidance on how air quality from specific sources should be screened and the approaches that should be used to undertake detailed assessment.

2.4.2 IAQM Technical Guidance

The Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) have published joint guidance on the assessment of air quality impacts for planning purposes (Land-Use Planning & Development Control: Planning For Air Quality, 2017). This includes information on when an air quality assessment is required and what should be included.

2.4.3 IAQM Construction & Demolition Dust Guidance

Guidance produced by the IAQM on assessing impacts from construction and demolition activities includes a methodology for identifying the risk magnitude of potential dust sources associated with four major construction activities. This is then used to identify the level of mitigation necessary in order for the impacts to be not significant.

3 Methodology

3.1 Construction Phase

The IAQM 'Guidance on the assessment of dust from demolition and construction 2024 V2.2', provides a risk assessment based methodology for the determination of the potential air quality impacts associated with demolition and construction activity for new Developments. The emphasis of the guidance document is to classify the risk of dust impacts from a site in order to identify appropriate mitigation measures commensurate with the risk.

The underlying environmental concept of Source-Pathway-Receptor is the basis of the guidance, with four main types of construction activity considered as follows:

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

The potential for dust emissions is assessed for each of these activities, taking into consideration three separate vectors for potential dust impacts:

- Annoyance due to dust soiling;
- The risk of health effects due to an increase in exposure to PM10; and
- Harm to ecological receptors.

3.1.2 Procedure

Step 1

This step initially screens the Development to determine the requirement for a more detailed assessment. If there are no receptors present within a threshold distance then no further assessment is required.

For human receptors, these distances are specified as 250m from the site boundary or 50m from the construction vehicle route within 250m of the site entrance. Should any ecological receptors also be present within 50m of the construction vehicle route within 250m of the site entrance, or within 50 m of the site boundary, these will also require consideration. The assessment proceeds to Step 2 if any receptors are identified within these specified distances.

Step 2

This step assesses the risk of the dust impact for each of four types of activity commonly associated with construction and demolition projects, taking account of the scale and nature of the works to determine the potential dust emission magnitude (Step 2A) and the sensitivity of the area (Step 2B). Step 2C is then undertaken, considering these factors to define the risk of dust impacts.

The criteria used during Step 2 of the assessment, as contained within a series of tables and matrices presented in the IAQM guidance.

Step 3

Step 3 defines site-specific mitigation measures to be adopted, based on the dust risk categories for each of the four activities undertaken at Step 2C.

Where the risk during Step 2C is defined as negligible, no mitigation measures beyond those required by legislation are required. However, control measures may be adopted as part of best practice and will be recommended based upon the specifics of the site in question.

Step 4

The final step determines the significance of the effect after considering the construction activity with associated mitigation.

As recognised within the IAQM guidance, for almost all construction activity, the aim should be to prevent significant effects. Experience has shown that this is normally possible with the application of appropriate mitigation measures. Hence the residual effect will usually be '**not significant**'.

3.2 Operational Phase

The air quality planning guidance published by the IAQM sets out threshold criteria for establishing when there is a risk of significant impacts on local air quality as a result of traffic generated by a proposed development.

The guidance states that where the following criteria are exceeded a more detailed assessment is required:

- An increase in LDV of more than 100 vehicles per day within or adjacent to an AQMA, or an increase of more than 500 per day elsewhere;
- An increase in HDV of more than 25 vehicles per day within or adjacent to an AQMA, or an increase of more than 100 per day elsewhere.

Anticipated trip generation from the operational phase has been supplied by the Development transport team and assessed against the above criteria. Where this criterion is exceeded then a detailed assessment of operational impacts may be required.

4 Baseline Air Quality

4.1 Local Air Quality

The proposed Development is located within the jurisdiction of High Peak Borough Council (the Council). Monitoring data and local background information on the surrounding area have been taken from the most recently available High Peak Borough Council Air Quality annual status report dated July 2023.

There are currently two declared Air Quality Management Areas (AQMA) within the Council's jurisdiction, with the closest to the Development Site being AQMA No.2 located approximately 1.5 km south west of the Development Site.

4.2 Air Quality Monitoring

4.2.1 Nitrogen Dioxide

The Council currently does not undertake monitoring of NO₂ concentrations at any automatic monitoring sites.

The Council currently monitors NO₂ concentrations at 57 non-automatic, diffusion tube locations. Details of representative monitoring sites in proximity of the Development (located in Glossop, approximately 1 km south of the Development), and data recorded since 2018 are set out in Table 4.1.

Table 4.1: High Peak Borough Council Diffusion Tube Monitoring					
Diffusion Tube ID	Annual Mean NO ₂ concentration (µg/m ³)				
	2018	2019	2020	2021	2022
HP24	29.8	29.4	22.9	23.6	22.5
HP61	-	-	-	-	16.6

The data set out in Table 4.1 shows annual mean NO₂ concentrations below the objective limit of 40 µg/m³ at all monitoring location in 2022.

Guidance set out in LAQM.TG(22) indicates that where annual mean NO₂ concentrations are found to exceed 60 µg/m³ there is a risk that the 1-hour objective is also being exceeded. Based on the data set out in Table 4.1 it is unlikely that concentrations are exceeding the 1-hour objective at the monitoring site.

4.2.2 Particulate Matter

The Council does not currently monitor PM₁₀ at any locations within their jurisdiction.

The Council does not currently monitor PM_{2.5} at any locations within their jurisdiction.

4.3 Background Concentrations

2024 background concentrations of NO₂, PM₁₀ and PM_{2.5} have been obtained from the 2018 based background concentration maps provided by Defra for the relevant grid square containing the Development. These are provided below in Table 4.2.

Table 4.2: 2024 Background Pollutant Concentrations for Grid Square 403500,394500	
Pollutant	Background Concentration (µg/m ³)
NO ₂	8.70
PM ₁₀	8.98
PM _{2.5}	6.11

The background concentrations are well below the national air quality objective levels of 40µg/m³ for NO₂, PM₁₀ and 20µg/m³ for PM_{2.5}.

5 Impact Assessment

5.1 Construction Phase

5.1.1 Site and Surroundings

The total area of the Development Site covers approximately 47,500 m² and there are residential properties located immediately adjacent to the Site on all sides. As there are residential receptors within 250m of the site, an assessment of construction related impacts in relation to human receptors has therefore been undertaken.

There are no ecological receptors within 50m of the construction vehicle route within 250m of the site entrance, or within 50 m of the site boundary. As such an assessment of effects on ecological receptors has not been undertaken.

As the site is bordered to the northwest by residential receptors, it is assumed that there are 10 – 100 high sensitivity receptors < 20m from the site boundary. As such, in line with Table 2 of the IAQM guidance, the sensitivity of the surrounding area with respect to dust soiling effects it considered to be **high**.

As set out in section 4.2 the background PM₁₀ concentrations in the vicinity of the site are below 24 µg/m³ and the sensitivity of the site surroundings is therefore considered to be **low** in line with Table 3 of the IAQM guidance.

5.1.2 Risk Assessment

Step 1

Human receptors have been identified within 250m of the site boundary. It is therefore necessary to proceed to Step 2 of the assessment and undertake a detailed assessment.

Step 2

Demolition

It is anticipated that the Development will not involve the demolition of any existing structure. As such, an assessment of demolition effects is not considered.

Earthworks

Earthworks involve excavating material, haulage, tipping and stockpiling. There may also be levelling of the site and landscaping. As the total site area is 47,500 m², the potential dust emission magnitude associated with earthworks is **medium**, as taken from the IAQM guidance criteria.

As the sensitivity of the area to dust soiling effects is **high**, the risk of dust impact during earthworks is **medium** in accordance with Table 7 of the IAQM guidance.

As the sensitivity of the area to human health effects is **low**, the risk of human health impacts during earthworks is **low** in accordance with Table 7 of the IAQM guidance.

Construction

The key issues when determining the potential dust emission magnitude from the construction phase include the size of the buildings, method of construction, construction materials and duration of build. The potential dust emission magnitude associated with potential construction as part of the Development is **medium**, as taken from the IAQM guidance criteria.

As the sensitivity of the area to dust soiling effects is **high**, the risk of dust impact during construction is **medium** in accordance with Table 8 of the IAQM guidance.

As the sensitivity of the area to human health effects is **low**, the risk of human health impacts during construction is **low** in accordance with Table 8 of the IAQM guidance.

Trackout

At this stage there is no information regarding the number of HDV vehicles or the proposed construction routes. Given the size of the site, it has been assumed that unpaved road lengths within the site will be less than 50m in length. The potential dust emission magnitude associated with trackout is **small**, as taken from the IAQM guidance criteria.

As the sensitivity of the area to dust soiling effects is **high**, the risk of dust impact during trackout is **low** in accordance with Table 9 of the IAQM guidance.

As the sensitivity of the area to human health effects is **low**, the risk of human health impacts during trackout is **low** in accordance with Table 9 of the IAQM guidance.

Summary

The risk from each dust generating activity is summarised in Table 5.1.

Table 5.1: Summary of Risk Prior to Mitigation				
Potential Impact	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Medium	Medium	Low
Human Health	N/A	Low	Low	Negligible
Ecological Receptors	N/A	N/A	N/A	N/A

Step 3

Appropriate, site-specific mitigation is to be adopted based on the dust risk categories determined above. The IAQM guidance provides example mitigation to reduce dust impact which are summarised below in Table 5.2 suitable to be included in a Construction Environmental Management Plan (CEMP).

Table 5.2: Proposed Dust Mitigation Measures	
Issue	Control Measures
Communication	• Display the name and contact details of person(s) accountable for dust issues on the site boundary. • Display the head or regional office contact information. • Develop and implement a Dust Management Plan (DMP) which may be incorporated into the overall Construction Environmental Management Plan
Site Management	• Record all dust complaints, identify causes(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 emissions either on or off-site and the action taken to resolve the situation in the log book.
Monitoring	• Carry out regular site inspections to monitor compliance, record inspection results and make an inspection log available to the Local Authority when asked. • Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Preparing and Maintaining the 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 active for an extensive period. • Avoid site runoff of water or mud. • Keep site fencing, barriers and scaffolding clean using wet methods. Remove materials that have the potential to produce dust from site as soon as possible unless being re-used on site. If they are being reused on-site, cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping.

Operations	• Only use cutting, grinding or sawing equipment fitter or in conjunction with suitable dust suppression techniques such as water sprays or local extraction. • Ensure an adequate water supply on the site for effective dust suppression 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.

Step 4

Providing the mitigation measures as summarised in Table 5.2 are implemented, the residual effect is deemed to be **not significant** in accordance with the IAQM guidance.

5.2 Operational Phase

Trip generation data has been analysed by SLR Consulting Ltd, the Development's transport team, and confirms that, as a result of the previous use of the Development Site as a school, the Development would not generate more than 500 additional net AADT vehicle movements.

As such, the IAQM screening criteria as set out in Section 3.2 are not exceeded and impacts on local air quality as a result of traffic emissions from the Development are therefore concluded as being **negligible** and further detailed assessment has been scoped out of the assessment.

The background pollutant concentrations at the site, as provided above at section 4.3, are well below the relevant annual mean air quality objectives, as are. As a result, any slight increase in pollutant concentrations associated with proposed development flows associated with the scheme, will not cause any air quality objectives to be approached or exceeded at existing receptor locations.

Based on professional judgement and taking into account local monitoring and background data showing pollutant concentrations considerably below the relevant UK AQO's, the operational impact of the Development is deemed to be **negligible**.

6 Mitigation

6.1 Construction Phase

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

The Development has been identified as a **medium** to **low** risk site for dust soiling effects. For human health, the Site has been identified as **low** to **negligible** risk. The developer should therefore implement appropriate dust and pollution control measures as set out within the IAQM guidance and identified in Table 5.2.

The proposed dust control measures should be set out within a CEMP and approved by the Council prior to commencement of any works. Following implementation of the measures recommended for inclusion within the CEMP the impact of emissions during construction of the Development would be **negligible**.

6.2 Operational Phase

The assessment has shown that the Development would have a **negligible** impact on local air quality and as such further mitigation is not required.

7 Conclusion

Vale Air Quality Consulting Ltd was instructed by Derbyshire County Council to undertake an air quality assessment for the construction of up to 110 dwellings at land comprising the former Glossopdale Community College, Talbot Road, Glossop.

An air quality assessment has been undertaken, in accordance with relevant guidance, to consider the significance of effects on local air quality during the construction and operational phases of the Development. The outcome of this assessment suggests that any effects should be **not significant**.

Local air quality effects are deemed to be **not significant** as a result of the following factors:

- The 2022 measured concentrations of NO₂ at monitoring locations closest to the site are below the annual mean objective level;
- Background concentrations for the grid square containing the site, obtained from the 2018-based Defra default concentration maps, indicate that annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} are considerably below the annual mean objective levels; and
- Operational flows from the operational phase of the Development will not exceed the criteria >500 AADT.

As a result, it is concluded that air quality should not be prohibitive factor in the determination of this planning application.