AVAL

Air Quality Assessment

5B, Camden Road, London NW1 9LG

Arnold Settlement Trust

June 2020

Project Information

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1 Introduction

1.1 Overview

Arnold Settlement Trust is seeking consent for residential development at 5b Camden Road, London NW1 9LG (hereafter referred to as the 'proposed development'), which is within the City of Camden Council.

AVAL Consulting Group Limited (ACGL) was instructed by the client to produce an Air Quality Assessment to accompany the planning application to the City of Camden Council for consent to undertake the proposed work.

The proposal is to convert the unused office space in the property to C3 Dwelling Houses to provide 2 apartments with associated parking, waste storage and amenity area.

The potential local air quality effects of the proposed development have been assessed using the latest planning guidance from Environmental Protection UK (EPUK), the Institute of Air Quality Management (IAQM)[1] and the Department for Environment, Food and Rural Affairs (Defra)[2].

An air quality neutral assessment has been scoped out for this proposal as no additional parking is proposed, and the energy footprint is not likely to change significantly as a result of the proposed changes.

A construction dust risk assessment has been undertaken, to consider the potential risk from dust-generating activities during the construction phase of the development. This has been carried out in accordance with the latest IAQM guidance on construction dust[3].

1.2 Objective

This report provides an assessment of the following key impacts associated with the constructional and operational phase of the proposed development:

- Nuisance, loss of amenity and health impacts associated with the construction phase of the development on sensitive receptors;
- Changes in traffic-related pollutant concentrations associated with the operational phase of the proposed development; and
- Residential suitability of the proposed development location in terms of existing air quality.

1.3 Site Location

Figure 1.1 shows the proposed site location. The proposed development is located within the Camden Air Quality Management Area (AQMA) declared as a result of breaching NO_2 air quality objective. The closest SSSI is approximately 5km northwest from the proposed development. There are no other nationally designated ecological sites within close proximity to the proposed development. Further site drawings are presented in Appendix E.

1 IAQM (2017): 'Land Use Planning and Development Control: Planning for Air Quality v1.2'
2 Defra (2016): 'Local Air Quality Management – Technical Guidance (TG16)'
3 IAQM (2016): 'Guidance on the Assessment of Dust from Demolition and Construction v1.1'.

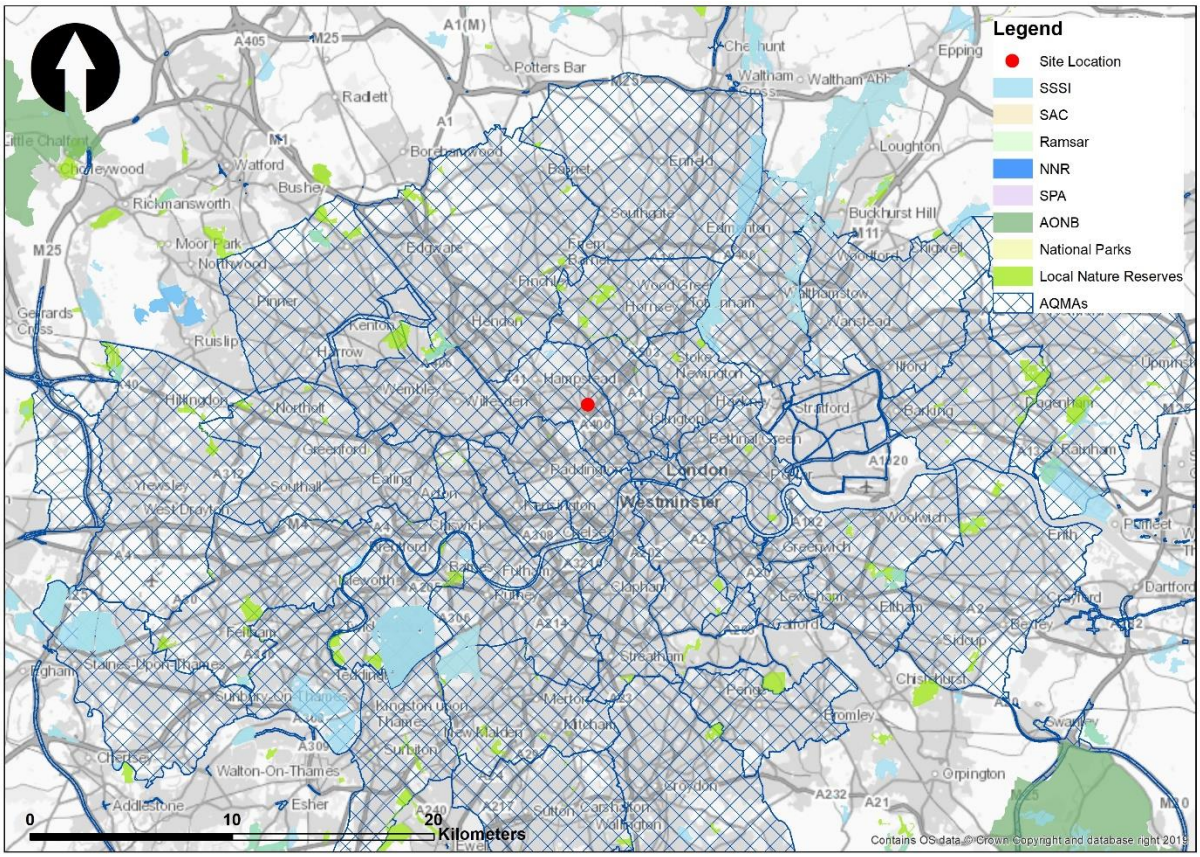

Figure 1.1: Proposed site location

1.4 Key Pollutants

The key pollutants associated with the construction phase of the project will be 'disamenity' or 'nuisance' dust. The key pollutants associated with the operational phase of the proposed development will be road traffic emissions, including nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). These pollutants are therefore considered as part of this assessment. Further details of the key pollutants are presented in Appendix A.

2. Legislation and Policy

This section summarises all legislation, policy, statutory and non-statutory guidelines relevant to the proposed development. Furthermore, the latest regional and local planning policy guidance specifically applicable to the proposed development has been reviewed.

2.1 European Union

The EU sets legally binding limit values for outdoor air pollutants to be met by EU countries by a given date. These limit values are based on the World Health Organisation (WHO) guidelines on outdoor air pollutants. These are legally binding and set out to protect human health and the environment by avoiding, preventing or reducing harmful air pollution effects.

The current air quality directive is the Directive 2008/50/EC[4] on ambient air quality and cleaner air for Europe entered into force in June 2008.This merged most of the existing 'Daughter' Directives[5] (apart from the fourth Daughter Directive); maintaining existing air quality objectives set out by 'Daughter' Directives for sulphur dioxide (SO_2), nitrogen dioxide (NO_2), and oxides of Nitrogen (NO_x), particulate matter (PM_{10} and $PM_{2.5}$), lead (Pb), benzene(C_6H_6), carbon monoxide (CO), ozone (O_3). It also includes related objectives, exposure concentration obligation and exposure reduction targets for $PM_{2.5}$ (fine particles). The 'Daughter' Directives were based upon requirements set out in the first EU Ambient Air Quality Framework Directive 96/92/EEC[6].

2.2 National Level – England

The UK government has a legal responsibility to meet the EU limit values. Part IV of the 1995 Environment Act[7] sets guidelines for protecting air quality in the UK and forms the basis of the local air quality management. The Environment Act requires local authorities in the UK to review air quality in their area periodically and designate 'Air Quality Management Area' (AQMAs) if improvements are necessary. Where an AQMA is designated, local authorities are also required to produce an 'Air Quality Action Plan' (AQAP) detailing the pollution reduction measures that need to be adopted to achieve the relevant air quality objectives within an AQMA.

As part of the Environment Act, the UK Government was required to publish a National Air Quality Strategy (NAQS) to establish the system of 'local air quality management' (LAQM) for the designation of AQMAs. This led to the introduction of the first Air Quality Strategy (AQS) in 1997[8] which since has progressed through several revisions until it was replaced by the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007[9]. Each revision introduced strategies and regulations that considered measures for different pollutants by tightening existing objectives and by introducing new ones to establish a common framework to protect human health and the environment by achieving ambient air quality improvements.

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4 European Union (2008): 'Ambient air quality assessment management', Framework Directive 2004/50/EC.
5 European Union. (1999), 'Ambient air quality assessment management', Framework Directive 1999/30/EC;
European Union. (2000), 'Ambient air quality assessment management', Framework Directive 2000/3/EC;
European Union. (2002), 'Ambient air quality assessment management', Framework Directive 2002/3/EC;
European Union. (2004), 'Ambient air quality assessment management', Framework Directive 2004/107/EC.
6 European Union. (1996), 'Ambient air quality assessment management', Framework Directive96/62/EC.
7 Parliament of the United Kingdom. (1990), 'Environmental Protection Act', Chapter 43. Queen's Printer of Acts of Parliament.
8 Department for Environment Food and Rural Affairs. (1997), 'The United Kingdom National Air Quality Strategy', Cm 3587, Department for Environment Food and Rural Affairs.
9 Department for Environment Food and Rural Affairs. (2007), 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland', Cm 7169, Department for Environment Food and Rural Affairs.

The 2008 EU ambient air quality directive 2008/50/EC was transposed to England law through the introduction of the Air Quality (Standards) Regulations in 2010[10] which also incorporated the fourth EU Daughter Directive (2004/107/EC) that set target values for certain toxic heavy metals and polycyclic aromatic hydrocarbons, (PAH).

2.2.1 National Planning Policy Framework

The principal national planning policy guidance in respect of the proposed development is the National Planning Policy Framework (NPPF)[11]. The most recent update of the NPPF was published on 24th July 2018 by the Department for Communities and Local Government (DCLG). The NPPF Section 170 (e) states that:

"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, taking into account relevant information…"

Section 180 states that:

"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."

Section 181 states that:

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

Section 183 states that:

"The focus of planning policies and decisions should be on whether a 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. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."

10 Statutory Instrument. (2010), 'The Air Quality Standards Regulations', No. 1001. Queen's Printer of Acts of Parliament.
11 National Planning Policy Framework. Accessible at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf

2.2.2 Relevant National Planning Practice Guidance

The DCLG published a number of supporting web-based resources of Planning Practice Guidance (PPG)[12] to supplement the NPPF. With respect to air quality PPG provide guidance on when air quality is relevant to a planning application. It states that:

"Concerns could arise if the development is likely to generate air quality impact in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife)."

The PPG also states that, when deciding whether air quality is relevant to a planning application, the applicant should consider whether the proposal will:

"Significantly affect traffic in the immediate vicinity of the proposed development site or further afield. Introduce new point sources of air pollution…..,

Expose people to existing sources of air pollutants…..,

Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations….,

- Affect biodiversity….."

2.2.3 Statutory Nuisance

It is recognised that the planning system presents a way of protecting amenity. However, in cases where planning conditions are not applicable to a development/installation, the requirements of the Environmental Protection Act 1990 still apply. Under Part III of the Environmental Protection Act 1990, local authorities have a statutory duty to investigate any complaints of:

- "any premises in such a state as to be prejudicial to health or a nuisance
- smoke emitted from premises so as to be prejudicial to health or a nuisance
- fumes or gases emitted from premises so as to be prejudicial to health or a nuisance
- any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance
- any accumulation or deposit which is prejudicial to health or a nuisance"

Where the local authority establishes any one of these issues constitutes a statutory nuisance and believes it to be unreasonably interfering with the use or enjoyment of someone's premises and/or is prejudicial to health, an abatement notice will be served on the person responsible for the offence or the owner / occupier. Failure to comply with the notice could lead to a prosecution. However, it is considered as a defence if the best practicable means to prevent or to counteract the effects of the nuisance are employed.

12 National Planning Practice Guidance web-based resource. Accessible at: http://planningguidance.planningportal.gov.uk/

2.2.4 Relevant National Air Quality Standards

A summary of the relevant Air Quality Standards/Objectives (henceforth referred to as 'AQO') and the types of receptors that are relevant to this assessment are presented in Table 2.1 and Table 2.2. The AQO listed in Table 2.1 applies only at locations with relevant exposure where a member of the public could be exposed to a level of pollution concentration for the specific averaging periods for that pollutant as stated in Table 2.2.

Table 2.1: AQO Relevant to the Proposed Development

Pollutant	**Air Quality Objectives**		**Concentration measured as:**	**Applicable to:**
	Concentration	**Allowance**		
Nitrogen Dioxide (NO_2)	200 µg/m^3	18 per calendar year	1 hour mean	All local authorities
	40 µg/m^3		Annual mean	All local authorities
Particulate Matter (PM_{10})	50 µg/m^3	35 per calendar year	24 hour mean	All local authorities
	40 µg/m^3		Annual mean	All local authorities
Particulate Matter ($PM_{2.5}$) Exposure reduction[(a)]	25 µg/m^3 [(a)]		Annual	England only

Notes: (a) This is a target value set for a 15% reduction in concentrations at urban background aimed to achieve between 2010 and 2020

Source: Department for Environment Food and Rural Affairs (2014): 'Local Air Quality management Technical Guidance' (TG.16).

Table 2.2: Examples of Where the AQO Should Apply

Averaging period	***Objectives should apply at***	***Objectives should not apply at***
Annual	*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	*All locations where the annual mean objective would apply, together with*	*Kerbside sites (as opposed to locations at the building façade), or any other*

	hotels. Gardens of residential properties.[(a)]	*location where public exposure is expected to be short-term.*
1 Hour	*All locations where the annual mean and 24 and 8-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 expected to spend one hour or longer.*	*Kerbside sites where the public would not be expected to have regular access.*

Note: [(a)] "Such locations should represent parts of the garden where relevant public exposure to pollutants is likely, for example where there is seating or play areas. It is unlikely that relevant public exposure to pollutants would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied."

Source: Department for Environment Food and Rural Affairs (2014): 'Local Air Quality Management Technical Guidance' (TG.16).

2.3 Regional (London)

2.3.1 The Mayor of London's Air Quality Strategy

The Mayor of London's Air Quality Strategy was published in December 2010 which includes transport and non-transport related policy measures. The document also include guidance on how regional and local planning processes will be used to enable future developments to be 'air quality neutral or better'.

Policy 15 within the Mayor's air quality strategy is committed to reporting back regularly on the progress made since the strategy has been delivered. The latest progress report was published in July 2015 and includes:

- Analysis of recent trends in air pollution in London;
- An update on the latest understanding of health impacts of air pollution in London;
- An update on the implementation of the transport and non-transport policies included in the Mayor's Air Quality Strategy, including measures announced by the Mayor in February 2013 such as the Ultra-Low Emission Zone;
- Setting out what further action the Mayor will take to improve air quality.

2.3.2 London Plan

The London Plan is the spatial development strategy for London which was first published by then-Mayor Ken Livingstone in 2004. The document has gone through number of alterations and the with most recent alterations published in March 2016.

The London Local Plan sets out the overall strategic plan for London with an integrated approach for economic, environmental, transport and social framework for the development of London over the

next 20–25 years and covers a number of strategies including transport and environmental issues such as climate change and air quality.

Policy 3.2 "Improving Health and Addressing Health Inequalities" states:

- "The policies in this Plan are intended to enable Londoners to live in well designed, high quality homes…limiting…exposure to poor air quality."
- "The Mayor…has also produced other strategies related to…Air Quality…The Mayor will ensure that policies in this Plan are complemented by those in other mayoral strategies (particularly the Mayor's Transport Strategy, which sets carbon dioxide reduction targets to be achieved in the transport system)."

Policy 5.1 "Climate Change Mitigation" states:

- "The Mayor seeks to achieve an overall reduction in London's carbon dioxide emissions of 60 per cent (below 1990 levels) by 2025. It is expected that the GLA Group, London boroughs and other organisations will contribute to meeting this strategic reduction target, and the GLA will monitor progress towards its achievement annually."

Policy 5.3 "Sustainable design and Construction" states:

- "Minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems)"
- "Minimising pollution (including…air)"

Policy 7.14 "Improving Air Quality" states that:

- "Minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans…;
- Promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Councils' 'The control of dust and emissions from construction and demolition';
- Be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs));
- Ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area based approaches
- Where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified."

2.3.3 The Mayor of London Transport Strategy

On the 21st June 2017 the Mayor of London published the draft, The Mayors Transport Strategy setting out the Mayor's "policies and proposals", enabling transport in London to be reshaped over the next 25 years.

The key themes within the strategy are; healthy streets and healthy people, good public transport experiences, new homes and jobs.

Chapter 3, section C “Improving air quality and the environment” includes policy 5 and 6 which relate to transport and air quality.”

Policy 5 states:

“The Mayor, through TfL and working with the boroughs, will take action to reduce emissions – in particular diesel emissions – from vehicles on London’s streets, to improve air quality and support London reaching compliance with UK and EU legal limits as soon as possible. Measures will include retrofitting vehicles with equipment to reduce emissions, promoting electrification, road charging, the imposition of parking charges/ levies, responsible procurement, the making of traffic restrictions/ regulations and local actions.”

Policy 6 states:

“Boroughs, and working with other transport providers, will seek to make London’s transport network zero carbon by 2050, which will also deliver further improvements in air quality, by transforming London’s streets and transport infrastructure so as to enable zero emission operation, and by supporting and accelerating the uptake of ultra-low and zero emission technologies.”

2.4 Local Level – (City of Camden Council)

The City of Camden Council Supplementary Planning Document (SPD), designed for the year 2019, states some policies relevant to air quality as presented below.

In Policy 2.4: Air Quality in Camden, it is stated that:

“The main sources of air pollution in Camden are road transport, gas boilers and construction. The Council’s Clean Air Action Plan outlines measures to reduce emissions from the key sources of air pollution in the borough. Included in the plan are measures to minimise and control nitrogen dioxide and particulate matter associated with new developments both during the construction of a building and its future use.”

3. Methodology

3.1 Overview

This section provides the details of the methodological approach taken to assess the impacts on air quality from the construction and operation of the proposed development.

3.2 Scope of the Assessment

3.2.1 Construction Phase

A construction dust assessment was carried out to consider impacts from 'disamenity' (or 'nuisance') dust, as discussed in Appendix A3, associated with annoyance. The development has the potential to generate dust during the construction phase of the project. Although there are no standards (such as AQO) for dust disamenity or annoyance, various 'custom and practice' criteria have become established.

For the purposes of this assessment, IAQM's 2016 construction dust guidance[13] has been used. The IAQM guidance provides a methodology (Appendix B) to evaluate the potential risk of dust generation for development and the level of mitigation required. The impact of the development is described using one of the following three categories: 'Low Risk', 'Medium Risk' and 'High Risk'. Based on the risk level, appropriate mitigation measures can be considered to minimise any effects of dust from the construction phase.

3.2.2 Operational Phase

Based on the EPUK criteria set out in Appendix A, the need for detailed traffic modelling can be scoped out of this assessment as the development will not generate 100 or more trips per day at any particular road based on the trip distribution analysis to proceed to a detailed assessment. There are no additional parking spaces proposed as part of the development. The residents will benefit from the excellent public transport options available for the local area.

The proposed development will not include any new fixed plant or associated flue stacks. Therefore the need for stack dispersion modelling can be scoped out. The development is likely to use standard low NO_X boilers.

The residential suitability, in terms of existing air quality, has been assessed by comparing local monitoring and background data with the relevant AQO.

13 Institute of Air Quality Management (2014): 'Guidance on the Assessment of Dust from Demolition and Construction'

4. Baseline Conditions

4.1 Overview

The following section sets out the baseline conditions in relation to air quality for the proposed development. Baseline air quality information is available from a number of sources, including local and national monitoring data reports and websites. For the purposes of this assessment, data has been obtained from the Defra air quality resource website[14] and from the latest City of Camden Council Annual Status Report (ASR)[15].

4.2 Existing Baseline Conditions

City of Camden Council undertook automatic (continuous) monitoring of NO_2 and PM_{10} at 3 sites and non-automatic NO_2 monitoring using passive diffusion tubes at 14 sites during 2018 across the borough.

The automatic monitoring station is not considered representative due to the proximity of the proposed development site. The nearest non-automatic monitoring sites is CA23 diffusion tube site which is located approximately 500m from the proposed development site. The latest ASR recorded NO_2 concertation of 27.8 µg/m^3 at this monitoring location. Figure 4.1 presents the monitoring site location in relation to the proposed development.

Further background pollution concentration derived from the Defra backgrounds maps have been used within the assessment and presented in section 4.3.

14 Department for Environmental Food and Rural Affairs. Accessible at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015
15 City of Camden Council (2018): 'Air Quality Annual Status Report for 2018'

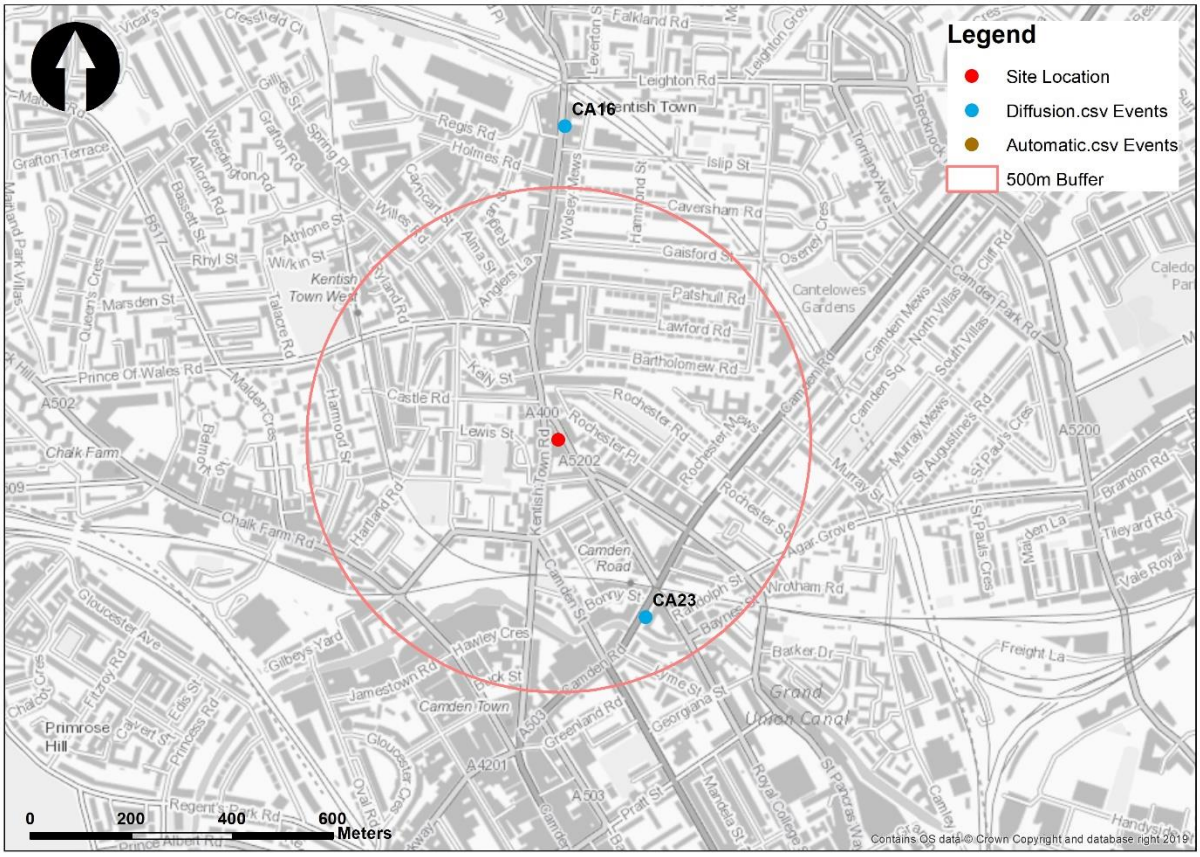

Figure 4.1: Existing nearby monitoring sites

4.3 Defra Background Pollution Concentrations

Defra provides background pollution concentration estimates to assist local authorities to undertake their 'Review and Assessment' work. This data is available to download from Defra air quality resource website for NO_x, NO_2, PM_{10} and $PM_{2.5}$ for every 1 km X 1 km grid square for all local authorities. The current dataset is based on 2017 background data and the future year projections are available for 2017 to 2030. The background dataset provides a breakdown of pollution concentrations by different sources (both road and non-road sources).

Table 4.3 presents the predicted background concentrations for the study area for the earliest year of occupation (2019) for the relevant receptor locations. Background concentrations for all pollutants presented in Table 4.1 are well below the relevant AQO.

Table 4.1: Defra Projected Background Concentrations (for all receptors)

Pollutant	Concentration (µg/m^3)
NO_2	26.70
PM_{10}	18.2
$PM_{2.5}$	12.0

Note: Data presented within the table are derived from the following ordinance survey grid squares: 528500, 137500.

4.4 Baseline Summary

Based on the local monitoring data, and the Defra predicted background pollutant concentration, the proposed development site location is considered suitable for residential development.

5. Potential Impacts

5.1 Construction Phase

The construction phase of the proposed development is yet to be decided. For the purpose of this assessment, the earliest construction year is assumed to be 2020. The impacts from demolition, earthworks, construction and track-out have been considered. In order to assess the worst-case scenario, it has been assumed that all activities will be carried out for the duration of the construction period. Figure 5.1 shows the construction dust assessment study area based on the recommended distances by IAQM.

Magnitude and sensitivity descriptors that have been applied to assess the overall impact of the construction phase are presented in Appendix C.

Table 5.1 presents the potential dust emission magnitude based on project-specific construction activities and is based on the criteria presented in Table C1 within Appendix C.

Figure 5.1: Construction assessment buffers

Table 5.1: Dust Emission Magnitude

Activity	Dust Emission Magnitude
Demolition	No activity (Change of use only)
Earthworks	No activity (Change of use only)

Activity	Dust Emission Magnitude
Construction	Small (internal changes mainly)
Track Out	Small

Table 5.2 presents the sensitivity of receptors to effects caused by construction activities and is based on the criteria presented in Table C 2 within Appendix C.

Table 5.2: Sensitivity of Study Area

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	No activity	No activity	Medium	Medium
Human Health	No activity	No activity	Low	Low

The overall risk of receptors to dust soiling effects and PM_{10} effects are presented in Table 5.3. Risk is based on the criteria presented in Table C 3 to Table C 6 within Appendix C.

Table 5.3: Summary of the Risk of Construction Effects

Sensitivity of Area	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	No activity	No activity	Low Risk	Negligible
Human Health	No activity	No activity	Negligible	Negligible

Based on the above, the largest risk associated with all construction activities are considered to be ‘Low Risk’ with regards to dust soiling and ‘Negligible Risk’ with regards to human health. Based on the outcome of the construction dust assessment, mitigation measures appropriate for the proposed development have been presented in Section 6 Overall, the impacts from disamenity dust and PM_{10} from the construction phase of the proposed development are considered to be not significant.

5.2 Operational Impacts

There are no significant operational impacts associated with the proposed development, as discussed in Section 3.2.2.

Based on the data presented within Section 4, the development is considered suitable for residential uses in terms of exisitng air quality.

6. Proposed Mitigation Measures

6.1 Construction Phase Mitigation Measures

Mitigation measures have been set out in Appendix E in accordance with mitigation measures set out in the IAQM guidance for construction dust to reduce the potential impacts presented in Section 5.

The risks of construction activities in relation to dust soiling were deemed ‘Low Risk’, and all risks to human health were also deemed ‘Negligible Risk’. Therefore, it is recommended that the mitigation measures appropriate to mitigate ‘Low Risk’ effects, as proposed in Appendix D are applied during the construction phase.

6.2 Operational Phase Mitigation Measures

No specific mitigation measures are considered necessary beyond that already included in the project design. However, as a good practice measure, it is recommended that any gas-fired boilers to meet a minimum standard of <40 mgNO_x/kWh.

7. Conclusion

This report provides an assessment of the following potential key impacts associated with the construction and operational phases of the proposed development at 5B, Camden Road, London NW1 9LG

- Nuisance, loss of amenity and health impacts associated with the construction phase of the development on sensitive receptors;
- Changes in traffic-related pollutant concentrations associated with the operational phase of the proposed development; and
- Residential suitability of the proposed development location in terms of existing air quality.

A qualitative assessment of construction dust effects has been undertaken for the proposed scheme. The construction phase is predicted to have a 'Low Risk' of nuisance and/or loss of amenity impacts due to dust nuisance. However, the risk of dust nuisance can be mitigated by implementing the appropriate mitigation measures listed in Appendix D. In summary, the impact of construction dust is not considered significant.

The development is not anticipated to generate a significant number of additional road traffic during the operational phase and fall below the criteria proposed by IAQM to proceed to a detailed assessment.

The development is considered suitable for residential use in terms of existing air quality impact.

It can, therefore, be concluded that the proposed development is not considered to conflict with any national, regional, or local planning policy in relation to construction and operation phase dust and air quality nuisance.

Appendices

Appendix A: Key Pollutants

A1. Nitrogen Dioxide (NO_2)

Nitrogen dioxide (NO_2) and nitric oxide (NO) are collectively referred as oxides of nitrogen (NO_x). During fuel combustion, atmospheric nitrogen combines with oxygen to form nitric oxide (NO), which is not considered harmful. Through, a chemical reaction with ozone (O_3), however NO can further combine with oxygen to create NO_2 which is harmful to human health and vegetation. The foremost sources of NO_2 in the UK are from combustion sources produced mainly by road traffic and power generation.

A2. Particulate Matter

Particulate matter is a term which refers to a mixture of solid particles and liquid droplets found in the air. These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others can be so small that they can only be detected using an electron microscope. Fine dust, essentially particles up to 10 micron (µm), is commonly referred to as PM_{10}.

PM_{10} is known to arise from a number of sources such as construction sites, road traffic movement, industrial and agricultural activates. Very fine particles ($PM_{2.5}$ – $PM_{0.1}$) are known to be associated with pollutants such as oxides of nitrogen (NO_x) and sulphur dioxide (SO_2) emitted from power plants, industrial installation and road transport sources.

$PM_{2.5}$ is generally associated with combustion and traffic sources and is more likely to be associated with the operational phase of the proposed development.

A3. 'Disamenity' Dust

'Dust' is generally regarded as particulate matter up to 75 µm (micron) diameter and in an environmental context can be considered in two categories, according to size: coarser dust (essentially particles greater than 10 µm) and fine particulate matter (PM_{10} and $PM_{2.5}$) as set out above.

Coarser dust (essentially particles greater than 10 µm) is generally regarded as 'disamenity dust' and can be associated with annoyance, although there are no official standards (such as AQO) for dust annoyance. Disamenity dust is more readily described than defined as it relates to the visual impact of short-lived dust clouds and the long-term soiling of surfaces.

Although it is a widespread environmental phenomenon, dust is also generated through many human activities including industrial and materials handling sites, construction and demolition sites and roads. Dust is generally produced by mechanical action on materials and is carried by moving air when there is sufficient energy in the airstream. More energy is required for dust to become airborne than for it to remain suspended.

Appendix B: Operational Impact Assessment Methodology

The EPUK & IAQM guidance refers to the Town and Country Planning (Development Management Procedure) Order (England) 2010 [(Wales) 2012] for a definition of a 'major' development when scoping assessments required for the planning process. Based on the guidance, a 'major' development is such development where:

- The number of dwellings is 10 or above;
- The residential development is carried out of a site of more than 0.5ha where the number of dwellings is unknown;
- The provision of more than 1,000 m^2 commercial floorspace; or,
- Development carried out on land of 1ha or more.

It is recommended that consideration should be given to reduce impacts from any 'major' developments by considering:

- The impact of existing sources in the local area on the proposed development; and
- The impacts of the proposed development on the local area.

The assessment process involves two stages where:

Stage 1 scope out the need for an air quality assessment and **Stage 2** provide guidance of determining the level of assessment required for a project.

Table B 1 below sets out the Stage 1 criteria to determine the need to assess impacts arising from small developments and Table B 2 provides more specific guidance as to when an air quality assessment is likely to be required to assess the impacts of the proposed development on the local area.

Table B 1: Stage 1 Criteria to proceed to Stage 2

	Criteria to Proceed to Stage 2
A	If any of the following apply: • or more residential units of a site area of more than 0.5ha • More than 1,000m^2 of floor space for all other uses or a site area greater than 1ha
B	Coupled with any of the following: • The development has more than 10 parking spaces • The development will have a centralised energy facility or other centralised combustion process

Table B 2: Indicative Criteria for Requiring an Air Quality Assessment

The development will	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight).	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere.
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
3. Realign roads, i.e. changing the proximity of receptors to	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20 m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
7. Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. NB. this includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.	Typically, any combustion plant where the single or combined NO_x emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates. Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable.

Appendix C: Construction Dust Assessment Criteria

IAQM guidance framework on assessing the risk of dust proposes the construction phase should be split into phases dependent on their potential impacts, determining the risk for each individually. Therefore, this assessment has determined the risk of the four construction categories put forward by the IAQM guidance:

- Demolition;
- Earthworks;
- Construction; and
- Track out (transport of dust and dirt onto the public road network).

The IAQM guidance framework states that the risk of dust impacts from the four categories can be defined as 'negligible', 'low risk', 'medium risk' or 'high risk' depending upon the scale and nature of the construction activity and the sensitivity and proximity of receptors to the construction site boundary. This categorisation is used to put forward appropriate mitigation measures, reducing the level of effects from the dust impacts so they are not significant.

The assessment of dust impacts using the IAQM guidance considers three separate effects from dust:

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

Step 1 of the assessment is set out to screen for the requirement for a more detailed assessment for the proposed development. The screening criteria states:

A 'human receptor' within:

- 350 m of the boundary of the application site; or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

An 'ecological receptor' within:

- 50 m of the boundary of the application site; or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

Where there are no receptors and the level of risk is deemed 'negligible', there is no need for further assessment.

Step 2A of the assessment enables the overall dust emission magnitude (small, medium or large) from each dust source (demolition, earthworks, construction and trackout) to be identified in relation with the criteria outlined in Table C 1.

Table C 1: Dust emission magnitude

Source	Large	Medium	Small
Demolition	Total building volume >50,000 m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level.	Total building volume 20,000 m^3 – 50,000 m^3, potentially dusty construction material, demolition activities <10 – 20 m above ground level.	Total building volume <20,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.
Earthworks	Total site area >10,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.	Total site area 2,500 m^2 – 10,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes.	Total site area <2,500 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes, earthworks during wetter months.
Construction	Total building volume >100,000 m^3, on site concrete batching or sandblasting.	Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching.	Total building volume <25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).
Track out	>50 HDV (>3.5t) outward movements[a] in any one day[b], potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.	10-50 HDV (>3.5t) outward movements[a] in any one day[b], moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.	<10 HDV (>3.5t) outward movements[a] in any one day[b], surface material with low potential for dust release, unpaved road length <50 m.

Notes: [a] Vehicle movement is a one-way journey. i.e. from A to B, and excludes the return journey.

[b] HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.

Step 2B allows for the sensitivity of the area (high, medium or low) to be assessed and takes into account a number of factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;

- In the case of PM_{10}, the existing local background concentration; and
- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Receptor sensitivity has been based on the highest of any criteria being met thus, the assessment is considered as robust. The sensitivity of the area is further determined for dust soiling, human health and ecosystem effects by considering the criteria presented in Table C 2.

Table C 2: Magnitude of Receptor Sensitivity

Source	High	Medium	Low
Sensitivities of people to dust soiling effects	• Users can reasonably expect enjoyment of a high level of amenity; or • The appearance, aesthetics or value of their property would be diminished by soiling; and • The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • Indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks[b] and car showrooms.	• Users would expect[a] to enjoy a reasonable level of amenity, but would not reasonably expect[a] to enjoy the same level of amenity as in their home; or • The appearance, aesthetics or value of their property could be diminished by soiling; or • The people or property wouldn't reasonably be expected[a] to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. • Indicative examples include parks and places of work.	• The enjoyment of amenity would not reasonably be expected[a]; or • Property would not reasonably be expected[a] to be diminished in appearance, aesthetics or value by soiling; or • There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. • Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks[b] and roads.
Sensitivities of people to health effects of PM_{10}	• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).[c] • Indicative examples include residential properties. Hospitals,	• Locations where the people exposed are workers[d], and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • Indicative examples include office and shop workers, but will generally not include	• Locations where human exposure is transient.[e] • Indicative examples include public footpaths, playing fields, parks and shopping streets.

Source	High	Medium	Low
	schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.	
Sensitivities of receptors to ecological effects	• Locations with an international or national designation and the designated features may be affected by dust soiling; or • Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. • Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • Locations with a national designation where the features may be affected by dust deposition. • Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.	• Locations with a local designation where the features may be affected by dust deposition. • Indicative example is a local Nature Reserve with dust sensitive features.

Notes: a People's expectations will vary depending on the existing dust deposition in the area, see Section 4.2.

b Car parks can have a range of sensitivities depending on the duration and frequency that people would be expected to park their cars there, and the level of amenity they could reasonably expect whilst doing so. Car parks associated with work place or residential parking might have a high level of sensitivity compared to car parks used less frequently and for shorter durations, such as those associated with shopping. Cases should be examined on their own merits.

c This follows Defra guidance as set out in LAQM.TG (09).

d Notwithstanding the fact that the air quality objectives and limit values do not apply to people in the workplace, such people can be affected to exposure of PM10. However, they are considered to be less sensitive than the general public as a whole because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason workers have been included in the medium sensitivity category.

e There are no standards that apply to short-term exposure, e.g. one or two hours, but there is still a risk of health impacts, albeit less certain.

f Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.

The final step, step 2C allows for the risk of impacts to be defined. The dust emission magnitude derived in step 2A is combined with the sensitivity of the area defined in step 2B to determine the risk of effects on:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and

- The risk of health effects due to an increase in exposure to PM_{10}.

The criteria for each of the dust sources are presented in Table C 3, Table C 4, Table C 5 and Table C 6.

Table C 3: Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table C 4: Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table C 5: Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table C 6: Track out

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Negligible
Low	Low Risk	Low Risk	Negligible

Appendix D: Mitigation Measures for Construction Impacts

Mitigation measures set out are from IAQM guidance for construction dust and are appropriate for the mitigation of 'Low Risk' effects as proposed below:

- Display the name and contact details of the person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.
- Display the head or regional office contact information.
- Record and respond to all dust and air quality pollutant emissions complaints.
- Make a complaints log available to the local authority when asked.
- Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions, and dust is being carried out, and during prolonged dry or windy conditions.
- Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site and the action is taken to resolve the situation is recorded in the logbook.
- Plan site layout: machinery and dust causing activities should be located away from receptors.
- Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.
- Fully enclosure 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 from the site as soon as possible.
- 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 possible.
- Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes 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).
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
- 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 mitigation (using recycled water where possible).
- Use enclosed chutes, 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.

- Reuse and recycle waste to reduce dust from waste materials.
- Avoid bonfires and burning of waste materials.
- 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.

Appendix E: Site Drawings

Please see planning portal for the most recent drawings submitted as part of the planning application