Planning Statement
Air Quality Monitoring
5-17 Haverstock Hill

eight associates

+44 (0)207 0430 418

www.eightassociates.co.uk
info@eightassociates.co.uk

Document prepared for
George Adamopoulos
Star Real Estate

Date of issue
02/11/2020

Issue no.
2

Our reference
5020- 5-17 Haverstock Hill Condition 20 - 2011-02rm

Document prepared by
Ryan Menezies

Quality assured by
Ben Shirbini

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info@eightassociates.co.uk

Overview

Eight Associates has been commissioned to carry out an Air Quality Assessment (AQA) for the proposed development at 5–17 Haverstock Hill, in the London Borough of Camden. The site (0.207 hectares) is located directly to the north of Chalk Farm underground station (Grade II listed), at the junction of Chalk Farm Road, Adelaide Road and Haverstock Hill within an area of more limited change and predominantly occupied by a 6 storey brick building, known as 'Eton Garage', built up to the boundary of the underground station with street elevations facing onto Adelaide Road and Haverstock Hill. There are 6 ground floor retail units along the Adelaide Road frontage which fall within a designated neighbourhood parade. An element of hard standing is located to the rear of the site, with vehicle entrances provided from Adelaide Road and Haverstock Hill.

The proposal includes the demolition of existing building and erection of a part–six, part–seven storey development comprising 77 residential units (8 x studio, 18 x 1–Bed, 32 x 2–Bed and 19 x 3–Bed units) (Use Class C3) and retail (Use Class A1–A5) use at ground floor with associated cycle parking, amenity space, refuse and recycling store and associated works.

5–17 Haverstock Hill is located in an Air Quality Management Area (AQMA), which has been declared for exceedances of the annual mean objective for NO_2 and PM_{10}.

Due to the size of the development and the poor existing air quality, Camden Council has set a condition for the development . This requires that air quality monitoring should be implemented on site. No development shall take place until full details of the air quality monitors have been submitted to and approved by the local planning authority in writing. Such details shall include the location, number and specification of the monitors, including evidence of the fact that they have been installed in line with guidance outlined in the GLA's Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance and have been in place for 3 months prior to the proposed implementation date. The monitors shall be retained and maintained on site for the duration of the development in accordance with the details thus approved.

Methodology
Air Quality Monitoring
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Summary

Eight Associates have consulted Envirochem Analytical Laboratories Ltd to undertake the air quality monitoring services. Envirochem will supply, install and analyse a total of 3x particulate data loggers, 3x settleable dust gauges, and 7x NO_2 diffusion tubes at the 5–17 Haverstock Hill site over a 3–month monitoring period.

There is currently a construction site opposite 5–17 Haverstock Hill. The site appears to be in the construction phase and not the demolition phase, however it should be noted that dependant on the wind, particulates generated from that site will likely be recorded on the monitoring equipment.

Programme

The aim of this exercise is to undertake perimeter dust and nitrogen dioxide monitoring for five months during demolition and construction works at the specified site. First three months monitoring pre–implementation with a further two months. Monitoring will take place for 3 consecutive monthly monitoring periods and an additional 2 months where the present building is to be demolished. The site will be visited to install and remove diffusion tubes at the commencement of month 1, month 2 and month 3, etc. Results will be assessed once all samples have been analysed, at the end of the 5–month monitoring programme.

Further information to be provided on the specific phases of the works that will be monitored.The site borders a number of sensitive receptors. An initial site visit with the project EHO / environment engineer has taken place in order to locate the best locations for the monitoring equipment in terms of the local sensitive receptor list.

Guidance & Best Practice

In accordance with LAQM TG16 (DEFRA, 2018) , diffusion tube locations should be open to the sky, with no overhanging vegetation or buildings. It is important to place diffusion tubes where there is free circulation of air around the tube, but the opposite extreme should also be avoided, i.e. areas of higher than usual turbulence. For this reason, the tube should not be located on the corners of buildings. Care should also be taken to avoid any very localised sources, sinks of NO_2, or disturbances to the airflow. For example, tubes should be mounted greater than 10m from the following:

- Heater flues (particularly low–level balanced flues).
- Bushes or trees overhanging or surrounding the tube location.
- Air conditioning outlets.
- Extractor vents.
- Underground ventilation shafts.

The diffusion tubes must also be vertical, with the open end downwards. It is important that the open end of the tube is exposed to free circulation of air. Placing diffusion tubes in any form of recess should be avoided, and the fittings should be mounted so that the tubes can be changed easily. Tubes must not be fixed directly to walls or similar surfaces, even when the objective is to monitor at a building façade. A spacer block of at least 5 cm may be used between the surface and the tube.

Additional site constraints include that the site is located in an area with significant crime and vandalism occurrences, therefore the location of diffusion tubes should be as discrete and inaccessible to vandalism as possible. Furthermore, there are limited opportunities to secure diffusion tubes to the existing 5–17 Haverstock Hill building, therefore alternative vertical structures near to the building have been identified for diffusion tubes.

In accordance with The Control of Dust and Emissions during Construction and Demolition – Supplementary Planning Guidance, monitoring will vary from visual assessments for low risk sites to the installation of real time automatic monitors for PM10 for high risk sites. On certain sites it may be appropriate to determine the existing (baseline) pollution levels before construction begins. The local planning authority will provide advice on the appropriate air quality monitoring procedure and timescale on a case by case basis. Two frequently used procedures for automatic real–time air quality monitoring are:

- Monitoring along straight lines across the construction site, with monitors set up in the direction of the prevailing wind. This will allow the developer to take into account background levels to determine the relative contribution of air quality and dust emissions from the construction site. Prior monitoring of background air quality may not be needed in this case; and
- Monitoring to take place close to sensitive receptors to assess any impact at these locations.

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Guidance & Best Practice (continued)

As the development site is considered to be a medium risk site, the following should be followed:

- Take into account the impact of air quality and dust on occupational exposure standards to minimise worker exposure and breaches of air quality objectives that may occur outside the site boundary, such as by visual assessment; and
- Keep an accurate log of complaints from the public, and the measures taken to address any complaints, where they were required;
- Determine the prevailing wind direction across the site using data from a nearby weather station
- If measuring air quality along a line;
    - Set up a line across the site according to the direction of the prevailing wind; and
    - Operate a minimum of two automatic particulate monitors to measure PM10 levels at either end of the line – either inside or outside the site boundary. These instruments should provide data that can be downloaded in real-time by the local authority; and
- If monitoring air quality at sensitive receptors:
    - Identify which location(s) need to be monitored and set up an automatic particulate monitor at each of these to measure representative PM10 levels.
    - These instruments should provide data that can be downloaded in real-time by the local authority;
    - If required, supplement monitoring with hand held monitors to get onthe-spot readings at selected points, such as close to sensitive receptors; and
    - Consider also monitoring dust deposition and soiling rates as these can be used to indicate nuisance.

Location
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Particulate data loggers

It is suggested due to the location and security of the site that all three monitors are located on roof areas and ledges off the ground floor to reduce the risk of the equipment being stolen. All three locations will require the monitors to be plugged into the mains electricity supply in the security guard's office area through extension cables.The three location for the particulate data loggers is outlined below and can be seen in Figure 1.

- Location 1 – Dust monitor located on the flat roof ledge on floor four. Access to roof ledge can be via a door on floor four.
- Location 2 – Dust monitor located on the flat roof ledge on top of the security guard's office. Access to roof ledge can be via a ladder
- Location 3 – Dust monitor located on the flat roof area on the top of the building. Access to roof ledge can be via the ninth floor where there is a double door entrance from a plant room accessible with the security guard as locked. Due to flooded areas on the lower section of the roof towards the east, the equipment can be located on the raised area of the roof.

Settleable dust gauges

The settleable dust gauges are free standing and do not require electricity; they will be located in the same areas as the dust monitors on the roof/ ledges with the same access as previously described. The legs of the gauges will be secured down with rope.

For further location details please refer to Appendix A.

Figure 1: Particulate data loggers and settleable dust gauges locations

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NO_2 diffusion tubes

It is suggested that the nitrogen dioxide tubes will be located mostly on lampposts on the pavements surrounding the site, however, tube location seven is located on the external wall of the site. The dimensions of tubes are 2 x 2 x 8 cm. The seven proposed locations are outlined below and can be seen in Figure 2.

- **Location 1** – 20 zone post on Adelaide Road
- **Location 2** – Lampost 4 on Adelaide Road
- **Location 3** – Lampost 2 on Adelaide Road
- **Location 4** – Lampost 1 on Haverstock Hill
- **Location 5** – Lampost 3 on Haverstock Hill
- **Location 6** – Lampost 4 on Haverstock Hill
- **Location 7** – West external wall

For further location details please refer to Appendix A

Additional information on the monitoring station specifications can be found in Appendix B.

Figure 2: NO2 diffusion tubes locations

Appendix A
Location Strategy
5–17 Haverstock Hill

eight
associates

+44 (0)207 0430 418

www.eightassociates.co.uk
info@eightassociates.co.uk

ENVIROCHEM
Analytical Laboratories Ltd.
12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS

Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
occ.hygiene@envirochem.co.uk

Date: 7th October 2020

Location of equipment proposal

Initial site visit: 5th October 2020

Visit included a walk around the internal areas and external boundary of site with access to the roof areas.

Monitoring is to be completed for three months with no changes to the site and an additional two months where the present building is to be demolished.

There is currently no electricity in the building to be demolished apart from the security guard's office area on the ground floor. There is also currently a construction site opposite 5-17 Haverstock Hill. The site appears to be in the construction phase and not the demolition phase, however it should be noted that dependant on the wind, particulates generated from that site will likely be recorded on the monitoring equipment.

Sampling positions for particulate data loggers

The particulate data loggers must be plugged into the mains electricity for the duration of the sampling period. If the electricity supply is cut off or the monitors are unplugged from the supply, they will switch off, potentially deleting the data stored on the data logger. It is therefore very important the electricity supply is not switched off or that they are moved without prior discussion.

It is suggested due to the location and security of the site that all three monitors are located on roof areas and ledges off the ground floor to reduce the risk of the equipment being stolen. All three locations will require the monitors to be plugged into the mains electricity supply in the security guard's office area through extension cables. Once the three months of initial monitoring has been completed, all three monitors will need to be moved before the demolition begins as they will be positioned on the roof areas as described. It is assumed at this stage in the project, hoarding or a site boundary around the building will have already been erected and will encroach upon some of the surrounding pavement on both Haverstock Hill and Adelaide Road. It is suggested at this stage, Envirochem return to relocate the monitors safe locations within the site boundary.

Figure 1: Picture of a particulate data logger

ENVIROCHEM
Analytical Laboratories Ltd.
12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS

Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
occ.hygiene@envirochem.co.uk

Date: 7th October 2020

Location 1 – Dust monitor located on the flat roof ledge on floor four. Access to roof ledge can be via a door on floor four. Approximately 50m of cable would be required to run from the ledge down to the electricity supply in the security guard's office.

Location 2 – Dust monitor located on the flat roof ledge on top of the security guard's office. Access to roof ledge can be via a ladder. Approximately 10m of cable would be required to run from the ledge down to the electricity supply in the security guard's office.

Location 3 – Dust monitor located on the flat roof area on the top of the building. Access to roof ledge can be via the ninth floor where there is a double door entrance from a plant room accessible with the security guard as locked. Due to flooded areas on the lower section of the roof towards the east, the equipment can be located on the raised area of the roof. We do not have the elevations/dimensions of the current building and have therefore estimated that a minimum of 60m of cable would be required to run from the roof location down to the electricity supply in the security guard's office. The cable would need to run from the roof and over the west side of the building to the ground floor.

It was suggested prior to the visit that there was electricity throughout the building, therefore extension cables of lengths of 50m, 10m and approximately 60m depending on the dimensions of the building will need to be provided by the client.

During the demolition, it is assumed there will be a power supply on site for the three monitors to be connected too via a temporary site office or generator etc.

Figure 2: Picture of a settleable dust gauge with collection bottle

Sampling positions for Settleable dust gauges

The settleable dust gauges are free standing and do not require electricity; they will be located in the same areas as the dust monitors on the roof/ ledges with the same access as previously described. The legs of the gauges will be secured down with rope.

ENVIROCHEM
Analytical Laboratories Ltd.
12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS

Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
occ.hygiene@envirochem.co.uk

Date: 7th October 2020

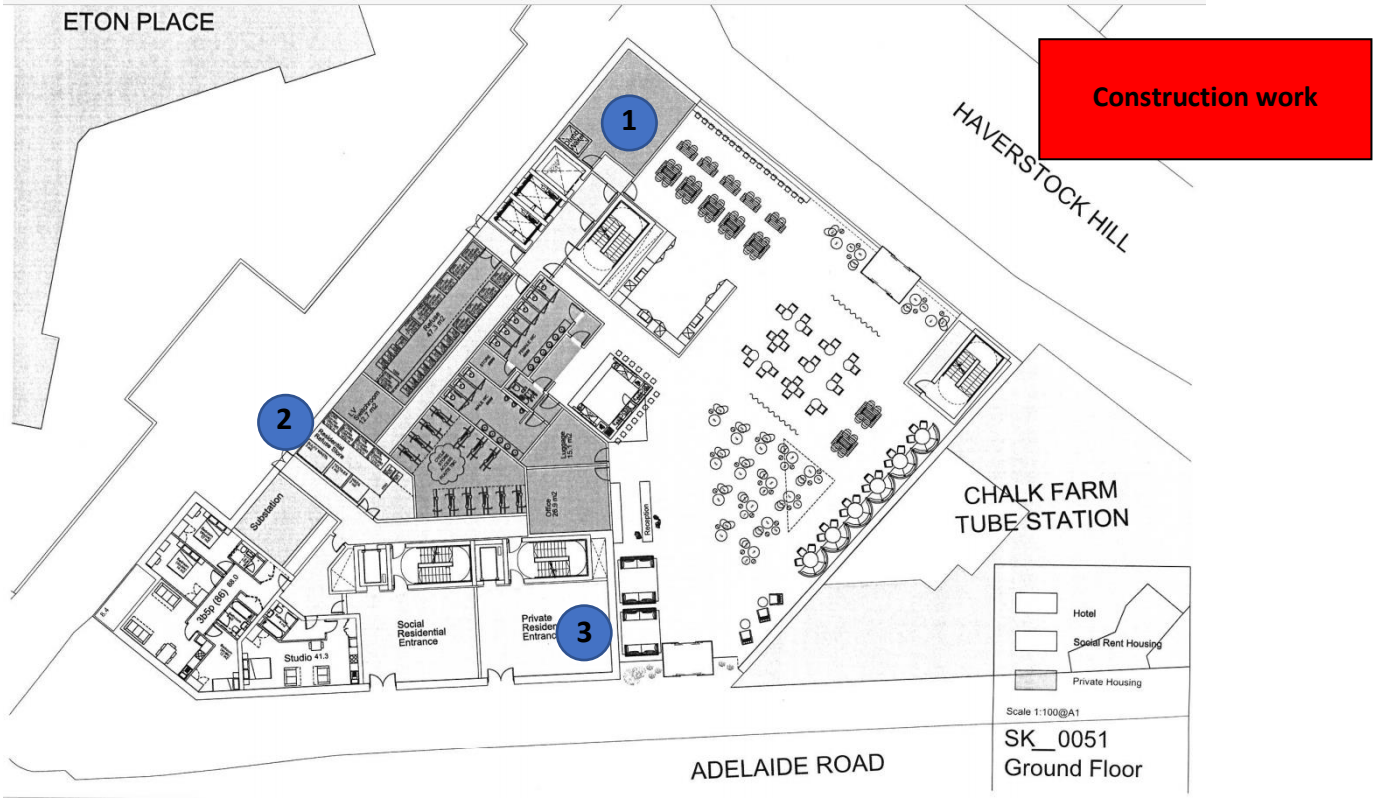

Figure 3: Suggested locations for both the particulate monitor and settleable dust gauges

ENVIROCHEM
Analytical Laboratories Ltd.
12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS

Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
occ.hygiene@envirochem.co.uk

Date: 7th October 2020

Sampling positions for Nitrogen dioxide tubes

The nitrogen dioxide tubes will be located mostly on lampposts on the pavements surrounding the site. Tube location seven is located on the external wall of the site. Dimensions of tubes are 2 x 2 x 8 cm.

Figure 4: Pictures of suggested locations for nitrogen dioxide tubes

ENVIROCHEM
Analytical Laboratories Ltd.
12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS

Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
occ.hygiene@envirochem.co.uk

Date: 7th October 2020

Nitrogen dioxide tube locations – in reference to figure 4

Location 1 – 20 zone post Adelaide Road
Location 2 – Lampost 4 Adelaide Road
Location 3 – Lampost 2 Adelaide Road
Location 4 – Lampost 1 Haverstock Hill
Location 5 – Lampost 3 Haverstock Hill
Location 6 – Lampost 4 Haverstock Hill
Location 7 – West external wall

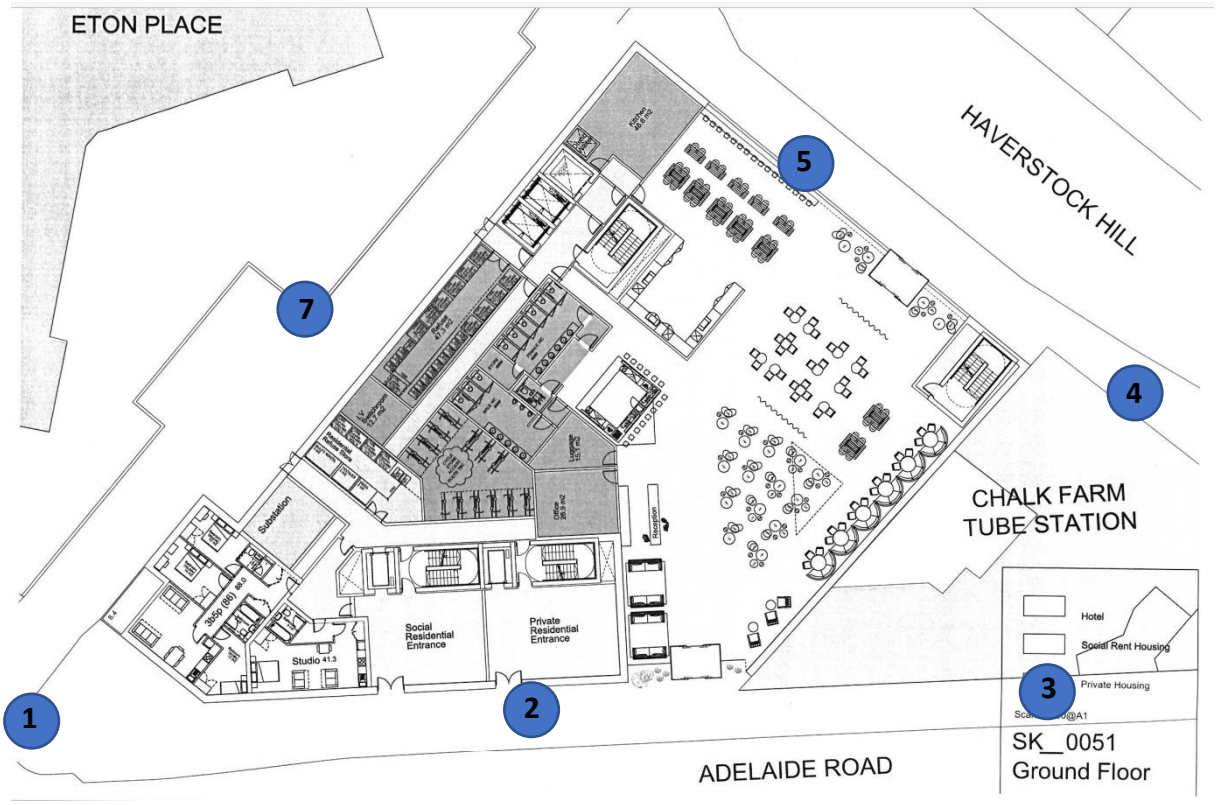

Figure 5: Suggested locations for nitrogen dioxide tubes

Appendix B
Envirochem Proposal
5–17 Haverstock Hill

eight
associates

+44 (0)207 0430 418

www.eightassociates.co.uk
info@eightassociates.co.uk

ENVIROCHEM

Analytical Laboratories Ltd.
12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS

Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
lab@envirochem.co.uk

Our Ref: 20356 QU rev 1
Your Ref:
Date: 10th September 2020

Ryan Menezies
Eight Associates
5th Floor
57a Great Suffolk Street
London
SE1 0BB
E: ryan@eightassociates.co.uk
T: 0207 0430 418

Re: Particulate and nitrogen dioxide monitoring

Dear Ryan,

Subsequent to your recent enquiry, we are pleased to offer the following quotation for dust perimeter monitoring at your site: 5-17 Haverstock Hill

Aim:
The aim of this exercise is to undertake perimeter dust and nitrogen dioxide monitoring for five months during demolition and construction works at the specified site. First three months monitoring pre-implementation with a further two months. Further information to be provided on the specific phases of the works that will be monitored. The site borders a number of sensitive receptors. An initial site visit with the project EHO / environment engineer will need to take place in order to locate the best locations for the monitoring equipment in terms of the local sensitive receptor list.

Works:

- Attend site and set up settleable dust gauges and particulate monitors, as well as nitrogen dioxide diffusion tubes.
- Provide weekly or monthly reports for particulate monitor readings and monthly reports for settleable dust gauge and nitrogen dioxide results.
- Provide an email or text alert system for when a set level of airborne dust has been breached
- Monthly site visit to be completed by Envirochem. During this visit, settleable dust collection bottles will be swapped over, nitrogen diffusion tubes will be swapped over, and particulate monitors will be checked / maintained if needed.
- Maintain monitoring equipment on site where necessary
- Collect all monitoring equipment on site on completion of works.

Methods:

Particulate monitors:

This uses solid state Osiris Light Scattering monitors to automatically measure airborne particulates in real time over four particle sizes: total inhalable, PM_{10}, $PM_{2.5}$ and PM_1. The total inhalable dust and PM_{10} fraction relates to dust from demolition activities. They would also simultaneously record total inhalable dust, PM_{10} and $PM_{2.5}$, this will cover all particles including the very fine particles found in diesel engine fumes.

These monitors are MCERTS accredited and are sensitive to airborne concentrations down to a fraction of a microgram per cubic meter.

The downloaded data will be used to generate plots of dust levels against time over the sampling duration.

The monitors will require two contact numbers, to be calibrated to before set up on site, which will send any alerts that are triggered by high levels of dust being detected.

The dust monitor simultaneously monitors dust in the following size ranges:

Dust Fraction	Description	Particle size	Limits
Total inhalable dust	Fraction of dust entering nose and mouth during normal breathing	< 100µm	• Workplace exposure limit**10 mg/m^3
PM_{10} particulate	The fraction of inhaled material penetrating beyond the larynx (approximated to PM_{10}) or respirable dust	Average size of 10µm and smaller	• 40 µg/m^3 ambient air quality standard* • Workplace exposure limit** of 4 mg/m^3 for an 8 hour time weighted average • Calculated Workplace exposure limit** = 12 mg/m^3 for a 15min short term exposure
$PM_{2.5}$	Fine dust particles	Average size of 2.5µm and smaller	25 µg/m^3 ambient air quality standard*
PM_1	Fine dust particles	Average size of 1µm and smaller	

The limits are taken from two sources:-

*EC/UK ambient background air quality standard (annual average)

** HSE Workplace exposure limits (8 hour working day average)

***Please note*: The machine will require a power supply of 240V and a secure location. There will an equipment hire form to be signed after set up to ensure both parties are happy with the location, once signed it is the client's responsibility to check and look after the machine outside of maintenance visits.**

Settleable dusts:

The British standard dust fall gauge with a polyester foam insert. These are positioned at the edge of the site for duration of 4 weeks and records total dust fall over that period. This method is based upon BS1747 Part 1.
The total dust recorded over the sample period is determined gravimetrically.

Nitrogen dioxide:

Long term (2 weeks +) passive sample tubes. Analysis determined by a sub-contractor.