

**SAFE SYSTEM OF WORK – DUST MONITORING AND CONTROL IMPLEMENTATION METHOD
STATEMENT**

FOR

79 CAMDEN ROAD, CAMPDEN, LONDON. NW1 9EU

REV 02 – DATED 27 04 2015



SSoW08 Rev 0

OUTLINE SAFE SYSTEM OF WORK

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1 Introduction

This Dust Assessment and Control Method Statement of the Project takes into account the legislation, recommendations and guidelines laid out in the following documents:

- The Control of Substances Hazardous to Health Regulations 2002 (COSHH).
- HSE Publication – Construction Information Sheet No. 32 (Rev 2)
- BSI British Standards BS EN 481:1993, BS6069 – Workplace Atmospheres
- IAQM (Institute of Air Quality Management – Guidance on the assessment of dust from demolition and construction.
- IAQM – Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites.
- The Control of Dust and Emissions During Construction and Demolition – Supplementary Planning Guidance – July 2014

Emissions of dust can occur during the entire development of the construction project, especially those of demolition, bulk excavation, general ground works and concrete construction as captured within the Erith Scope of Works for this project.

A large proportion of the dust emissions that are generated can result from site pant and road vehicles moving over the site access haul roads and open ground and then exiting the site onto local roads where it is spread onto the local roads thus creating a dust impact at some distance from the original site location. One of the critical items for dust monitoring and control is to ensure that it is not allowed to be given the opportunity to go off site where it can no longer be controlled by the project itself, other than by external means such as a road sweeper. Instead pro-active measures should be sought first over those of reactive measures, such as in the case of the road sweeper.

Predicting the level of dust emission is extremely difficult because of the complex nature of mineral operations and the variable dispersion and dilution characteristics of dust in the air. This clearly presents problems for development approval. Heavy reliance is therefore made on minimising dust production through "good practice" and monitoring actual dust emissions.

For this reason Erith have taken on the project with the aim of employing good practice through the following means:

- Management Review of each stage of the works to try to find the best way to manage dust being generated.
- Educating its workforce on the causes, implications and best practices methods for controlling dust emissions on site.
- Employing where necessary suitable dust suppression activities to control the levels of dust on the site.
- Employing Supervised Controls in the cleaning down of vehicles exiting the site to ensure dust is contained under best practice within the site.
- Employing Dust Monitoring procedures to capture the effectiveness of the measures being employed on site.
- Reviewing and where necessary making the necessary adjustments in a constant Feedback Loop based on the results of Dust Monitoring carried out on site.

In addition to excess dust emissions just being an inconvenience or annoyance to local residents, the general public and workers on site dust has further safety and health considerations in that it can damage plants and affects the diversity of ecosystems, as well as considerable evidence where long timer particulate matter (PM₁₀) concentrations and the number of days exposed has long been associated with a range of health effects.

It is therefore important to Erith that as part of their Safe Systems of Work (SSoW) they consider a Dust Assessment and Control Method Statement as part of their overall and ongoing Risk Assessments and Method Statements when managing their project based activities as well as contributing to the Environmental Impact Assessments that are often created for local councils. For example the Mayor of London has implemented a requirement construction impact assessments to be carried out on major developments.

The assessment considers that fact that 79 Camden Road as a Construction Site will naturally create levels of dust as a part of its natural process affecting the following:

- Workers on Site.
- Local Residents
- General Public
- Visitors to Site.

As such an assessment of the project is carried out in advance by Erith to ascertain what these expected Dust Emission issues may be and how best to management them through the standard Hierarchy's of Control.

2. Planning of the Project

In planning the project, consideration has first been given to the affect that dust emissions will place upon the general public and local residents outside the site, for whom the option of the last Hierarchy of Control, i.e. the issuing and correct use of PPE is not an option. Instead an assessment of how dust monitoring suppression and control within the Site can be managed, so that its exposure to those outside the project is either eliminated, controlled or reduced, so as to have a limited impact on those receptors outside it. Receptors include:

- External Human Receptors – General Public and Local Residents and Business Owners / workers
- Internal Human Receptors – workers on site.
- External Ecological Receptors – any sensitive habitat affected by dust soiling outside the site, this includes the direct impacts on vegetation or aquatic ecosystems of dust deposition.
- Internal Ecological Receptors – trees within the site and their protective zones around each tree within the Project Site Hoarding.

3. Site Establishment and Set Up.

A wooden hoarding has been placed around the site, which shall act as in addition to a noise reduction barrier also an additional barrier against spoil transference to the surrounding areas outside the site boundary to those members of the public outside the site.

In order to reduce the number of deliveries requiring unloading outside in St Pancras Way, the site has been established to try and maintain all deliveries on site. However in undertaking these works consideration has also had to consider that vehicles entering the site have the potential to pick up site spoil and transfer this off site which can lead to dust being taken off site for distant disposal. To manage this the Gate area, which currently has a tarmac base, shall be maintained for as long as possible as a solid base. This area will need cleaned down and jet washing facilities set up to clean off vehicles leaving site where required. In addition cleaning operations will be maintained outside the gates to ensure that the roads are kept clean and any unplanned transference of dirt from wheels into the street can immediately be cleaned.

4. Scope of Work – Dust Emitting Activities.

The scope of works on site includes:

- Demolition Works:
- Piling Works
- Bulk Excavation Works
- Basement Construction

5. Demolition Works.

Level of Risk of Dust Emission: - High.

Level of Risk of Spoil Transference: - Medium

Demolition works involves the generation of Crush Demolition (6F2) material. Following the Guidelines of the IAMQ this would recognise that demolition with the contributing factors of crushing demolition materials on site will create a Risk Level of Dust Emissions being 'High'. A large percentage is to be recycled to create a working platform on site. However approximately 500 Tipper loads of 6f2 material will still require removing from site.

6F2 – crushed demolition material creates a lot of 'fines' and dust particles as part of its nature. Therefore Dust suppression in the form of hosing down and a Mechanical Dust Suppression machine will be used to water down the respective areas:

- Demolition activities taking place.
- Crushing Activities taking place.
- Storage and Stockpiling of 6F2 whilst awaiting re-use or collection.
- Ongoing Haul Roads and Working Platforms

Water for the dust suppression requirements is to be arranged through an approved system of water supply by Thames water including a meter fire hydrant supply sourced within Rochester Place. Readings from which are recorded regularly and submitted to Thames Water on request.

6F2 requires regularly watered down and this will be constantly monitored and controlled on site, given its dry inorganic nature 6F2 does not tend to retain water content for long and will dry out quickly in hot weather, therefore appropriate additional dust suppression needs to be considered comparative to climatic conditions including daily temperature and wind speed/direction.

6. Piling Works

Level of Risk of Dust Emission: - Low.

Level of Risk of Spoil Transference: - Medium

The piling system to be employed on site involves a Case and Auger system for the piling rig instead of the original proposed concept of CFA Piling. CFA piles require pouring to the full height of the working platform which currently sits 3 to 5m above pile cut off levels. There are over 600 bearing piles on site and this would have led to significant breaking down of concrete piles generating further concrete debris and dust emissions. Therefore by employing the Cased and Auger Technique, which is an open rotary bored system, the piles can be cast to their approximate correct levels below ground thus greatly reducing this requirement for the cutting down of piles thus reducing the potential dust emissions from this activity. In addition by casting piles to a lower depth approximately 2000Lm of piles do not need concreting, this is approximately 1,500m³ of concrete or alternatively almost 200 additional concrete deliveries that do not need to come to site and risk taking dust and spoil off site, as well as reducing fuel emissions.

Spoil arising's taken from piling activities are the same regarding less of system employed, however control of the arising's on site into well managed stockpiles that can be controlled and stored until removal from site is of great importance. The reason for this is the nature of the sub-soils. The Geotechnical Report identifies that the subsoil being piled is all of clay. This material when dry is a easily managed material, however in the event of clay becoming wet it can easily contaminate the site working platform and risk sticking to plant and site vehicles, including deliver and collection vehicles, making management of spoil emissions leaving site all the harder. Therefore Erith have chosen, in addition to appointing an excavator in attendance, to also allocate an additional 10T Hydreama Dumper Truck. Clay arising's from the piling activities are immediately scraped back and placed into the Dumper Truck, then taken to an allocated stockpile zone where they can be kept isolated from the 6F2 material and do not run the risk of contaminating the haul roads and working platform. Clay Stockpiles can be kept mildly dampened down until collected to stop them from drying out, which leads to dust debris and emissions being generated.

By careful allocation and control stockpiled materials control of dust and spoil emissions can be controlled more effectively. The IAQM does not specifically list Piling activities however it does recognise that removing clay from site which will be prone to suspension when dry due to small particle size does lead to a higher risk of spoil transference on leaving site, therefore it is imperative that damping down of the clay stockpiles on site is maintained to try and mitigate this risk as best as practicably possible.

7. Bulk Excavation Works

Level of Risk of Dust Emission: - Low.

Level of Risk of Spoil Transference: - High

The IAQM recognises Sites of between 2,500 m² and 10,000m² has having a medium risk of spoil transference however given the contents of the bulk excavation being clay this factor leads the risk being of Medium to High and should be managed accordingly. Bulk excavation works require the most management for potential spoil transference, given that these are almost entirely undertaken within the clay layers. Therefore Haul roads to the point of loading are to be regularly maintained and wheel wash facilities thoroughly maintained, including the monitoring of cleanliness of the roads on vehicles exiting the site. In the event of severe inclement weather it may become necessary at times to suspend collection of material from site if the risk of spoil transference to the outside of the site becomes too great.

Erith currently appoint a Traffic Supervisor to monitor and control all activities involving vehicle movements including deliveries and collections from site. At this time his duties shall also include the monitoring and maintaining of the internal haul roads and wheel cleaning activities so that spoil transference can be controlled. Where necessary additional resources may be required to ensure maintenance and compliance with Erith's high standards and expectations of control.

8. Basement Construction

Level of Risk of Dust Emission: - Medium

Level of Risk of Spoil Transference: - Low

At the basement construction phase the risk of vehicles taking material off site and causing spoil transference is greatly reduced, however the standards and expectation and controls shall not be relaxed as a result.

In addition at some point from September 2015 onwards, vehicle shall no longer be able to enter the site given that the basement now extends to the site perimeter, as such all deliveries will take place outside the site (For further information see SSoW002 – Deliveries to Site and SSoW007 – Transport Management Plan). However maintenance of the external public highway shall be thoroughly maintained as well as being overseen and managed by the Appointed Traffic Supervisor responsible for all Traffic/Transport activities to and from the site.

9. Immediate Response Plan to spoil transfer into street

Erith have recognised that despite all the controls put in place, there is still always the risk of spoil contamination occurring off site in the highway and as such have ensured that their Traffic Supervisor is also New Roads and Street Works Qualified and in a position to put into place an temporary Chapter 8 set of barriers and cones to deal with any debris, spoil transference that requires immediate clean up.

10. Dust Raised by Vehicles.

According to the IAQM, research carried out in the United States, has shown that haul trucks generate the majority of dust emissions from surveillance mining sites, accounting for an estimated 78%-97% of total dust emissions. Vehicles using unpaved haul roads in UK construction sites will lead to the release of dust via the same mechanical processes (i.e. re-suspension) and are likely to be a dominant source. Emissions will also arise from vehicles travelling over any unpaved ground on construction site.

The impact declines with distance from the site and it is only necessary to consider track out impacts up to 50m from the edge of the site exit point. However it will also need to be considered that given periods of high Transport movements exiting the site that the impact is cumulative and therefore each consecutive vehicle has the capacity to pick up emissions from the previous vehicle departing and thereby cumulatively carrying them onwards. It is therefore important that Erith fully undertake regular checks of the existing points and ensure that they are where required cleaned down thoroughly where the spoil transference had not been successfully captured fully within the site boundary.

11. Mitigation Measures

Mitigation measures for London are set out in the *The Control of Dust and Emissions from Construction and Demolition*. There are some difference between this London guidance and the IAQM recommendation mitigation measures however for those cases, such as 79 Camden Road, where the risk is assigned as 'negligible' or 'managed' no mitigation measures beyond those required by legislation are required.

12. Training on Site.

Training – Operatives will be trained and supervised to employ appropriate techniques to keep site dust levels and spoil transference levels to a minimum where reasonably practical to ensure that best working practice in respect of dust reduction and dust suppression and spoil transference is adhered to. This ongoing training will cover:

- An understanding of the causes and sources of dust.
- The positioning of spoil heaps and their relationship to proximity to site boundaries.
- The avoidance of unnecessary dust generation (i.e. dampening down first) when carrying out manual operations and when operating plant and equipment,
- The protection of persons against dust generation and correct use of appropriate PPE;
- The operation of dust monitoring equipment (selected and trained Erith personnel).

13. Dust Monitoring.

As part of the special arrangements of the project, Continuous Dust monitoring equipment is to be established on site to monitor the dust levels encountered. The results of these monitoring activities

shall be fed to Erith's Project Manager who will review them and as part of the Monitoring and Control Measures on site use them to ascertain the effectiveness of the current control measures and where necessary make the necessary amendments to how Dust and Spoil emissions need to be better control. This shall remain an ongoing process and where necessary this document itself may be subject to review and amendment to cover any necessary changes to the Procedures adopted.

Erith shall establish and maintain a programme of monitoring to ensure that conditions limits are not exceeded and that all relevant recommendations are met.

14. Control of Dust on Site

On those parts of a site where high levels of dust generation are likely to be a hazard to persons working on the site, prominent warning notices shall be displayed and, where necessary, suitable dust protection shall be provided, as well as face-fit test carried out where necessary. This will be in addition to ensuring that the correct training in the correct use and maintenance of any dust protection PPE is given. This will also include the giving of guidance as part of Tool Box Talks, supervisors regularly checking that operatives are making the correct use of the dust protection equipment and encouraging operatives to raise any of their own concerns in relation to dust exposure, plus encouraging operatives to put forward recommendations on how they think dust could further be controlled.

In accordance with the guidance contained within The Control of Dust and Emissions During Construction and Demolition – Supplementary planning Guidance – July 2014 (SPG) the site at 79 Camden Road has been classified as HIGH RISK due to the potential dust emission magnitude, the sensitivity of the surrounding area and the distance from the source to the receptors.

Therefore the following dust control measures are considered appropriate for the site at 79 Camden Road:-

Site management

- Develop a dust management plan.
- Display the name and contact details of 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 are 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 taken to resolve the situation is recorded in the log book.

- Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.
- Plan site layout: machinery and dust causing activities to be located away from receptors.
- Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary.
- Provide showers and ensure a change of shoes and clothes are required before going off-site to reduce transport of dust.
- Agree monitoring locations with the Local Authority.
- Where possible, commence baseline monitoring at least three months before phase begins.
- Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Prevention

- Access gates to be located at least 10m from receptors where possible.
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Avoid dry sweeping of large areas.
- Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Remove materials from site as soon as possible.
- 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.
- Reuse and recycle waste to reduce dust from waste materials.
- Avoid bonfires and burning of waste materials.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

Suppression

- Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site.

- Keep site fencing, barriers and scaffolding clean using wet methods.
- Cover, seed or fence stockpiles to prevent wind whipping.
- 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).
- Ensure water suppression is used during demolition operations.

Containment

- 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.
- Use enclosed chutes, conveyors and covered skips.
- 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.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- 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.
- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.
- Ensure all non-road mobile machinery (NRMM) comply with the standards set within the SPG.
- Ensure all vehicles switch off engines when stationary – no idling vehicles.

15. Health Risks

Health is affected where systems of work do not take seriously the affects that dust emission scan have on the individual worker and as such it is important that Erith reiterate this message regularly to its workers on site so that they understand the measures that are to be put in place to protect the health of themselves and others.

16. Duty of Employer to their Workers

Erith ensure that they fully compliant in their legal obligations as well as considering the overall welfare of their employees and workers on their site. As such Erith continue to look at the following:

- Improved ways of working to reduce dust emissions.
- Using systems or techniques that will reduce dust generation where reasonably practicable.
- Using screens, barriers or enclosures or absorbent materials
- Limiting the time workers spend in dusty areas.
- Providing employees with dust protection and making sure they use them fully and properly when they are at risk of exposure.
- Provide employees with dust masks they ask for them, and carry out face-fit tests where required if necessary.
- Identify dust generating zones – areas of the workplace where access is restricted, and where dust suppression is to be regularly maintained. (i.e. in crushing activities)
- Will employ safe systems of supervision and training to ensure that dust masks are worn and spoil transference off site is controlled.
- Ensuring that all Dust Protection Systems and PPE supplied is CE-marked and approved.
- Consult with the workers and their representatives over any feedback or queries they may have regarding dust or spoil transfer.

17. Duties of Employees and Workers on Site.

Employees and workers on site have a duty to ensure they are correctly and properly use any dust protection or dust suppression systems properly, and following any working methods that are put in place.

Wear any dust protection that they are given and wear it properly, for which they will be given training, and to wear it all the time when they undertaking dusty or potentially dusty works or are working in zones particular at risk of creating dust. Removing dust masks even for a short time in a dusty environment will greatly reduce the overall protection that is obtained from the correct use of the dust mask protection, meaning that health could still become affected if not used correctly.

All workers are to ensure that they correctly look after any dust protection they are issued. Workers will be instructed how to do this properly and it is the responsibility to all workers to:

- Ensure they look after it correctly.
- Report any damage to their equipment immediately to their supervisor.
- Request new dust masks where their own need to be regularly replaced.
- Discard all old dust masks in the appropriate waste disposal area.

18. Visitors to Site

At all times it is to be assumed that visitors to site are most at risk from the activities taking place with the site area itself and this also applies to their knowledge, understanding and exposure to dust emissions as well as the dust emission risks they present.

As such no visitor to site will be allowed onto the site unless he has been fully inducted or is escorted by an approved member of site personnel.

All personnel when escorting a visitor onto the site, should ensure that they are fully aware of any dust suppression or dust protection restrictions and that they ensure that the person they are escorting is fully aware of requirement to wear dust protection where necessary.

19. MOST IMPORTANT

It should at all times be remembered that Dust Protection such as dust mask and face masks are the last line of defence against health risk or damage.

Dust protection may be mandatory at certain times and in certain locations but the **preferred method of Dust Control** is to **LIMIT OR CONTROL THE DUST EMISSIONS WHERE POSSIBLE AT SOURCE.**

In the event that dust mask protection is the last line of defence against dust emissions, ensure that you recognise the relevant safety signage.

Know the signs: if the following sign is seen then the wearing of dust mask protection is Mandatory and must be complied with.

