Template Noise, Vibration Air Quality and Dust Management Plan (Level 1 and 2 Sites)

Site: Westminster City Hall, 64 Victoria Street, London, SW1E 6QP

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Overview

This document provides guidance of a Noise Vibration Dust Management Plan that forms part of the Wider Site Environmental Management Plan SEMP. These will be required to be submitted and approved by Westminster City Council (WCC) before works commence onsite.

Relevant Guidance

The following guidance are considered relevant for the activities proposed and will be complied with at all times:

- BS5288, 'Code of practice for noise and vibration control on construction and open sites';
- CIRIA Environmental good practice on site
- Network Rail Best Practicable Means: Control of Noise and Vibration from Construction Operations
- London Good Practice Guide: Noise & Vibration Control for Demolition and Construction The London Authorities Noise Action Forum July 2016
- Mayors SPG 'The Control of Dust and Emissions during Construction and Demolition', July 2014
- Guidance on the assessment of dust from demolition and construction, Version 1.1, IAQM October 2018
- Guidance on Monitoring in the Vicinity of Demolition and Construction Sites, Version 1.1, IAQM, October 2018
- Best in Class 'Guidance on Dust and Emissions from Construction' LLECP, March 2019

Site Details

Site details should be provided in the form of a plan/map that locate the site its context within Westminster and depict the site boundary.

Sensitive Receptors

The sensitive receptors are identified based on locations where public could be adversely affected by noise vibration dust and changes in local air quality caused by a development. Higher Sensitive receptors include places such as hospitals, schools/education establishments, theatres, recording studios and residential properties whereas the medium/low sensitivity receptors are shops, workplaces and parks.

Residents living within 50m of the construction site can potentially be affected by noise and vibration therefore all sensitive receptors within 50m of the site boundary should be identified.

Residents living in proximity to such a site can potentially be affected by site dust up to 1 km from the source, although continual or severe concerns about dust sources are most likely to be experienced near to dust sources, generally within 100 metres. In general, large dust particles (greater than 30µm) make up the greatest proportion of dust emitted from construction sites and will largely deposit within 100 m of sources. Intermediate sized particles (10-30µm) are likely to travel up to 250-500m. Smaller particles (less than10µm), which make up a small proportion of the dust emitted, can travel up to 1km from sources. Dust sensitive receptors should be identified within 100m of the site boundary.

Example

The proposed development is located at in Westminster City Hall, 64 Victoria Street, London, SW1E 6QP. (See Figure 1).

Figure 1- Site Location Plan with a 100m Buffer around the site (sensitive receptors: Orange = Residential Green = Commercial)

The sensitive receptors identified within 100m of the site boundary who are most likely to be impacted by site works (See Figure 1) are as follows:

- XX residential properties on Victoria Street
- XX commercial properties on Victor Street
- XX School Behind the site
- Cinema on Victoria Street
- Recording studio on Victoria Street
- Theatre on Victoria Street
- Religious venue on Victoria Street.

Hoarding

The installation of site hoardings is essential for containing construction/demolition dust onsite and to act as a barrier to shield sensitive receptors from noise.

Details of the site hoarding on all site boundaries should be provided along with a plan showing its position.

Hoarding requirements

Prior to any site clearance works a site hoarding will be installed that meets the following standards properties

- A minimum of 2.4-meters in height
- Solid in construction and will be erected on all site boundaries.

Hoardings are required to be greened using climbing plants where:

- There is a horizontal hoarding of more than 50 metres
- Adjacent to a road
- In place for 6 months or more.
- If practicable this should incorporate full cover of climbing plants or wildflower mats

Plans for appropriate ongoing maintenance, irrigation, and sustainable disposal of green hoardings will need to be provided.

The hoarding's properties will require approval from the highways officer in addition the Environmental Sciences team.

Site Layout

Careful planning of site layout can reduce the environmental impact to nearby sensitive receptors. Sites should be arranged to maximise the distances between storage areas, points of access and egress, stockpiles and other noise, vibration and dust generating activities to the identified sensitive receptors.

Example

The layout of the site will be designed ensure that the noise vibration and dust generating activities and machinery will be located as far away as practically as possible from the off-site sensitive receptors. (See Figure 2)

Figure 2:

- Hoarding on site boundaries;
- Location of NRMM;
- Materials and Stockpiling Area;
- Fuel Storage area;
- Wheel wash location (X);
- Water supply point (X);
- Site drainage and enclosed areas to prevent contaminated water leaving the site (X)

Responsibilities and Site Management

Sites are required to have a designated team structure to manage site operations and have access to specific personnel who are suitably qualified or have sufficient experience in managing noise, vibration and air quality pollutants from construction and demolition sites. In addition, sites should appoint a specific community relations personnel to liaise with the stakeholders through the duration of the project.

The roles and responsibilities for the site's Key personnel in relation to noise vibration dust and air quality control should be provided

Example: The following roles and Responsibilities table provides an example of the information required.

Roles	Responsibilities
Principal Contractor Details	• Name and Address
Site Manager ***Contact details should be provided***	• Ensure work is carried out in accordance with the Site Environmental Management Plan • Ensure staff are aware of the requirements of environmental plans and procedures • Ensure that BPM is implemented and maintained on site • Undertake Subjective and Visual Monitoring emissions as part of general site inspections • Ensure site documentation (method statements and environmental risk assessments) includes noise vibration and dust mitigation • Respond to alerts and complaints and maintain the site diary. • Report to WCC monthly environmental monitoring data and exceedances in accordance with the parameters set out in this document. • In conjunction with the environment team, deliver regular training to the site workforce about noise vibration and dust control.
Environmental Specialist ***Contact details should be provided***	• Advise and instruct management team on how to meet legal and contractual noise vibration and dust requirements • Assist in the implementation and monitoring of this NVAQ Management Plan • Plan, implement and manage continuous monitoring network • Carrying out compliance checks on monitoring units • Respond and alerts and complete Trigger, Incident and Complaint (TIC) forms and assist site manager with reporting. • Advise on preventative action and mitigation measures that may need to be employed.
Community Liaison ***Contact details should be provided***	• To act as the first and point of contact for the community contact site. • Liaise with the Environmental Manager to report complaints relating to on site environmental issues • Prepare newsletters • Manage and organise community liaison groups
All Personnel	• Carry out the works in accordance with agreed methods and briefings • Report anything that deviates from agreed processes to site management. • Report all incidents and examples of best practice to section manager • Attend environmental Training and Induction.

Pre commencement Community liaison

Developers are required to notify all identified sensitive receptors/surrounding community association/groups and any other identified stakeholder about the SEMP within 100m of the site boundary. Contact is required to be made to a minimum of 3 weeks before submission of the SEMP to Westminster City Council. All points and concerns raised by stakeholders following the notification, are required to be reported along with the measures adopted/implemented by site to address any concerns raised.

In addition to the notification process, the applicant is required to review all representations made during the planning application consultation process. Any concerns or comments made relating to construction impacts are required to be identified and the SEMP should set out what action is proposed to address these concerns.

Template table summarising Planning Consultation and notification responses.

Community	Community response	Developers' response.
Office on Victoria Street	*I am an office and hold meetings at specific hours of the day where we need to meet clients and need discuss important business details*	We have built in "Quiet periods" for particular noisy works packages into our working plan. These will be communicated to all stakeholders so they can arrange their meetings around our quiet periods.
A resident on Victoria Street	*I have Asma and is concerned about dust and vehicle emission impacting my condition and health.*	We have completed a dust risk assessment in accordance with the Mayors SPG all required dust mitigation measures will be implemented onsite during construction and demolition and will be monitored to test their effectiveness in controlling both Dust and PM10. We have ensured that all combustion plant onsite comply with the required emission limits and have ensured that any static combustion plant is place as far away from sensitive receptors as practicable.
Theatre on Victoria Street	*We have a Tuesday Afternoon matinee every Second Tuesday of the Month starting at 2pm for 2 hours and concerned about noise and vibration impacting our events.*	We will ensure that any particular noisy/vibration generating activities will not occur onsite during these shows. We will provide site contact details to the theatre so they can have regular dialog with site to discuss their specific requirements further.

Demolition/Construction Methodology

Site specific methodology for the different phases should be provided. We do not Require RAMS or health and Safety documentation but should set out the methodology simply for identified stakeholders to understand.

It is expected that the site will incorporate the following points as a minimum into the methodology. Further site-specific mitigation will be required, and this is addressed later in the document.

- **For all Phases**
  - Maximise the screening effect of existing buildings and temporary stockpiles through programming / phasing of works
  - Water Suppression will be provided to prevent fugitive air quality emissions.

- **Demolition**
  - Maximise the screening effect of existing buildings and temporary stockpiles through programming / phasing of works
  - Utilise low impact demolition methods such as munching techniques – percussive plant should only be used where there is no viable option.
  - Building to be encapsulated sheeted in Acoustic Monaflex to aid in controlling dust and noise emission.
  - Building openings will be kept closed/sealed to aid in controlling dust and noise emissions
  - Building should be isolated to break vibration transmission paths.

- **Piling**
  - Adopt the following hierarchy of groundwork / piling methods, in order of preference to minimise the impact of piling, if ground conditions, design and safety allows:
    - Pressed-in methods, e.g. Hydraulic jacking
    - Auger / bored piling
    - Diaphragm Walling
    - *Vibratory piling or vibro-replacement*
    - *Driven piling or dynamic consolidation*[1]

- **Construction**
  - Use prefabricated building structures or elements to minimise noise and dust onsite

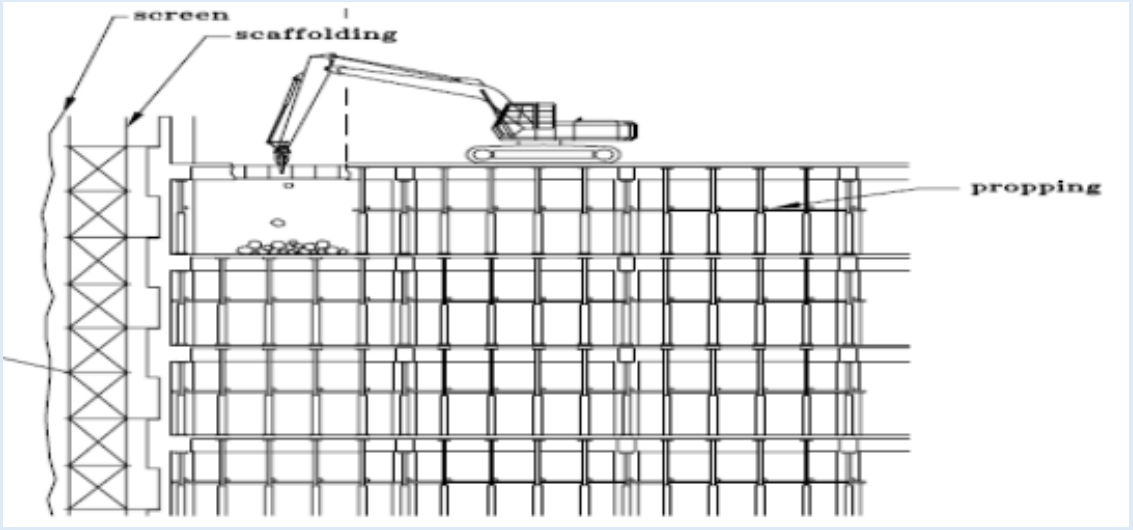
[1] These methods will not normally be permitted within Westminster due to their potential for high noise/vibration unless evidence is provided that demonstrates that these methods are the only method available.

- When working within a building ensure all openings (e.g. windows and doors) are closed or sealed up.

Example for the demolition Phase.

Building will be demolished from the tip down using non percussing techniques where practicable using munchers. 1 Excavators will be completing the demolition and be craned on the roof.

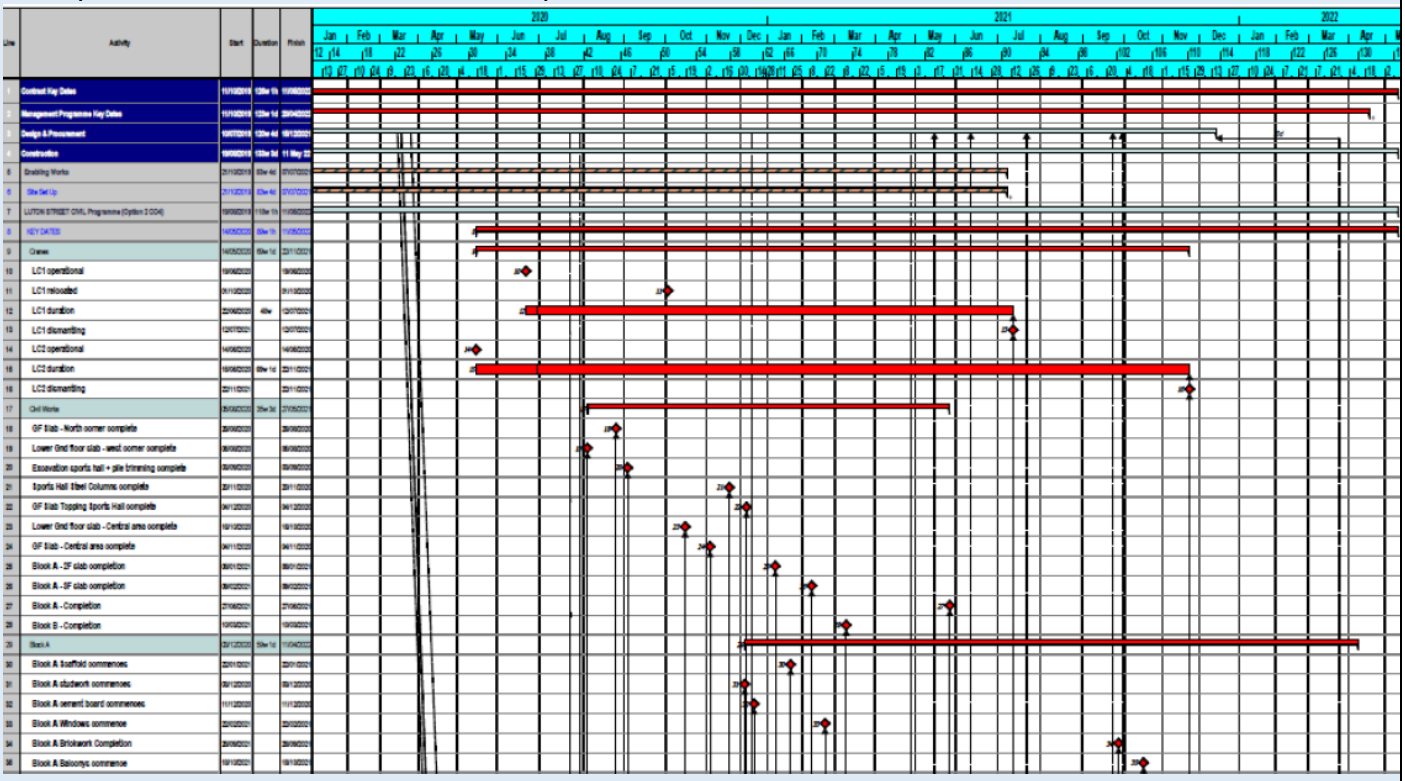
The building will be encapsulated in Acoustic Monaflex before demolition commences and all openings such as windows and doors will be sealed. All static plant such as generators and pumps will be enclosed in temporary acoustic enclosures. Where practicable additional acoustic screening will be provided to specific work areas.



Project Programme of Potential Noise vibration and Dust Generating Activities

The project plan should be provided, that sets out the duration of the works and a timetable that sets out when air quality, noise and vibration generating activities are likely to occur.

Example of the information that will be req



In addition, all the activities that have the potential to give rise to high noise, vibration and air pollution emissions have been highlighted below

Programme of Noise Vibration and Dust Generating Activities

Month	Responsibilities
Site set-up *Month 1*	Installation of hoarding Site traffic, deliveries and general plant operation Vehicle and plant emissions
Demolition *Month 1-2*	Demolition works Site traffic movement, deliveries and general plant operation Vehicle and plant emissions Minimal use of NRMM – most of the demolition by hand so that bricks can be re-used
Basement construction *Month 2-6*	Site traffic movement, deliveries and general plant operation Vehicle and plant emissions Concrete pumping Dig will require excavator & piling rig on site (NRMM)
Construction of structural shell *Month 6-10*	• Site traffic movement, deliveries and general plant operation. Vehicle and plant emissions in connection with the below activities: Steel Frame Brickwork and Blockwork Roofing Metsac walls and rib-deck floors Structure supporting front façade removed during this phase

General fit-out construction *Month 11-14*	• Site traffic movement, deliveries and general plant operation Vehicle and plant emissions	
Site demobilisation and completion activities *Month 15*	Reinstatement of footpath and street furniture Removal of hoarding and reopening of footpath	

Working Hours

The SEMP will need to clearly set out the permitted hours of works and should reference the restriction set by the planning condition.

Permitted working hours are:

Monday to Friday:8.00am to 6.00pm
Saturday:8.00am to 1.00pm

In residential areas noisy works associated with a development or basement excavation will be limited to weekdays from 0800 to 1800 hours, unless otherwise agreed.

Noisy working is not permitted on Sundays and Bank Holidays.

Individual site requirements which differ from the above will be considered on a site by site basis. Noisy operations shall not take place outside these hours without the prior approval of the City Council.

Training

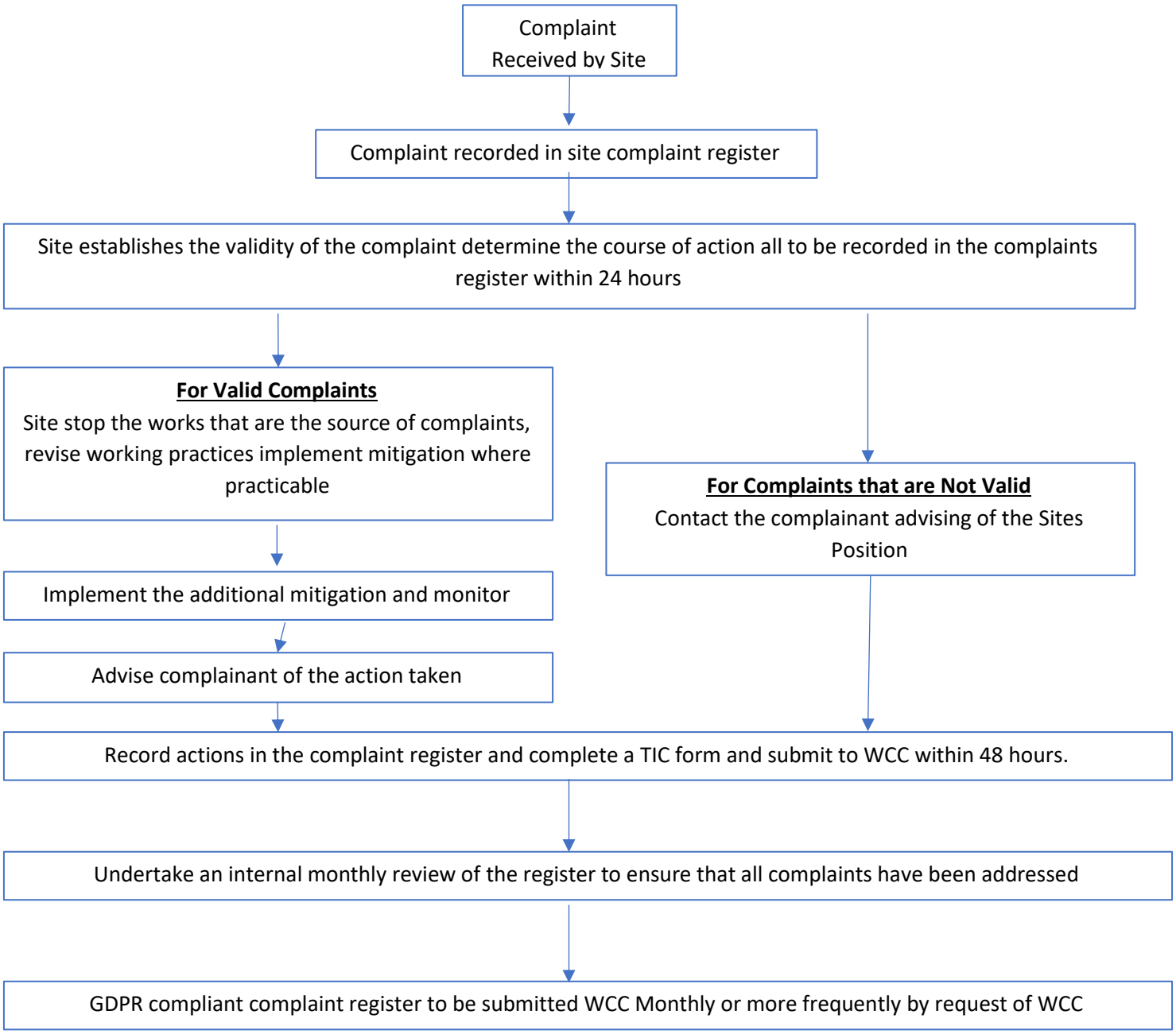
All site personnel are required to be trained and informed about noise vibration, dust and air quality control. The applicant should set out how training will be incorporated into site practice.
For example, sites should incorporate site specific training procedures and practises relating to noise, vibration, air quality and dust control into the site and employee inductions. Toolbox talks will be delivered to all site operatives weekly to ensure that all aspects of the management plan are understood and put into practice.

A management plan will be implemented alongside this document to ensure operatives are aware of the consequences of not following this plan and know how to respond to any potential incidents.

Managing Complaints Compliments

All complaints of air pollution, noise and vibration are required to be recoded investigated and actioned in a timely manner.

Example complaints procedure


Complaint Received by Site
Complaint recorded in site complaint register
Site establishes the validity of the complaint determine the course of action all to be recorded in the complaints register within 24 hours
For Valid Complaints
Site stop the works that are the source of complaints, revise working practices implement mitigation where practicable
Implement the additional mitigation and monitor
Advise complainant of the action taken
For Complaints that are Not Valid
Contact the complainant advising of the Sites Position
Record actions in the complaint register and complete a TIC form and submit to WCC within 48 hours.
Undertake an internal monthly review of the register to ensure that all complaints have been addressed
GDPR compliant complaint register to be submitted WCC Monthly or more frequently by request of WCC

Monitoring

Realtime noise, vibration and dust monitoring will be required for sites. It must operate continually throughout all phases of the development. The nature and extent of the monitoring will be site specific and depending on the nature of the programmed works. The monitoring strategy will need to be agreed with WCC.

Example monitoring strategy

The location of monitors is set out in figure XX

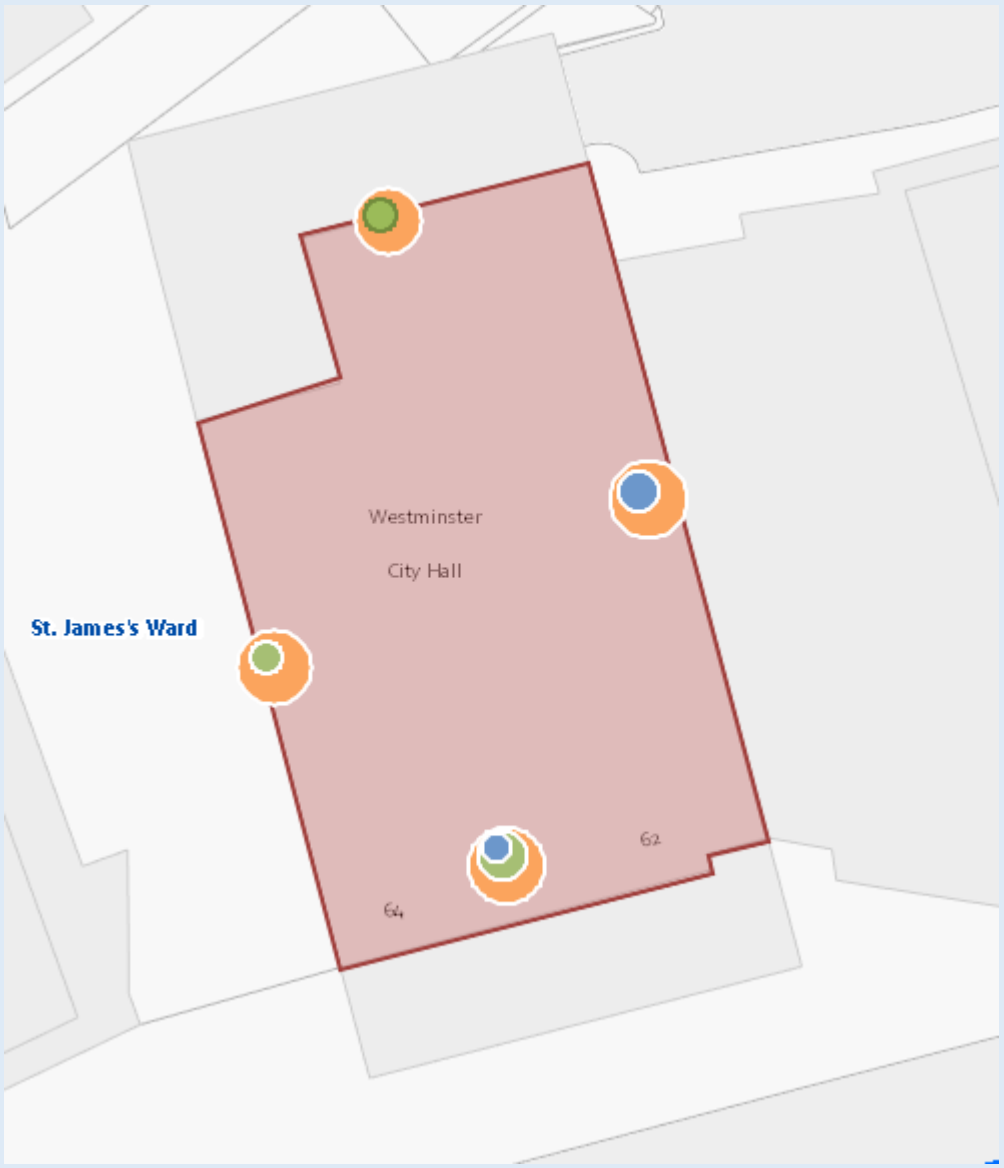


Figure X Indictive map with proposed monitoring locations Orange - Noise
Blue - Vibration
Green – Dust/PM10

Noise Monitoring

Noise monitoring will be required for all sites and the monitoring strategy will need to meet the standards set out in the example below

Example Noise monitoring requirements

Noise levels will be monitored according to the methods set out in BS 5228. All measurements shall be made on a sound level meter complying with BS EN 61672: 2003 (Electro acoustics - Sound level meters - Specifications).

All personnel undertaking noise monitoring shall be sufficiently competent; as a minimum such personnel shall be a full or associate member of the Institute of Acoustics or experienced in managing construction noise and vibration.

The site will be required to install continuous noise monitoring system, combined with a real-time alarm system. the alerting system will be agreed on an individual basis and trigger and action thresholds will be agreed within the Prior Approval Section 61 COPA 1974.

Trigger and action levels will be site specific and dependent on-site activities but generally there will be:

- 1-Hour LAeq Trigger and Action level
- 10- Hour LAeq. Action level (5-hours LAeq for Saturday Working)
- Shorter duration triggers and action levels may be appropriate on a case by case basis.

Vibration Monitoring

Vibration monitoring will be required for all sites and the monitoring strategy will need to meet the standards set out in the example below:

Vibration levels will be monitored according to the methods set out in BS 6472: 2008 (Evaluation of Human Exposure to Vibration in Buildings).

All personnel undertaking monitoring shall be sufficiently competent, as a minimum such personnel shall be a full or associate member of the Institute of Acoustics or experienced in managing construction noise and vibration.

The site will be required to install continuous noise monitoring system, combined with a real-time alarm system. the alerting system will be agreed on an individual basis and trigger and action thresholds will be agreed within the Prior Approval Section 61 COPA 1974.

Trigger and action levels will be site specific and dependent on-site activities but generally will be the following:

Trigger Level: Residential and Other sensitive uses 1mm/s PPV
Trigger level: Commercial 3mm/s PPV

Action Level: Residential and Other sensitive uses 3mm/s PPV
Action level: Commercial 5mm/s PPV

Different levels may be adopted but this will be on a case-by-case basis.

Dust Monitoring

Dust, PM10 and PM2.5[2] monitoring will be required for all sites and the monitoring strategy will need to meet the standards set out in the example below

Dust PM10 PM2.5 monitoring

Dust and PM10 levels will be monitored according to the methods set out in Mayor of London SPG The Control of Dust and Emissions from Construction and Demolition Sites and any revisions. All measurements made on automatic continuous PM10 monitors will comply with the MCERTS Indicative Ambient Particulate Monitors standard or be subject to independent verification of performance. All personnel undertaking noise monitoring shall be sufficiently competent, as minimum such personnel shall be a member of the member of the Institute of Air Quality Management or experienced in managing construction dust and PM10 PM2.5. The monitoring system should be combined with a real-time alarm system. Proposed action level thresholds are set at:

	Threshold	Average period (PM10)	Threshold	Average period (PM2.5)
Trigger	190μg/m^3	1 hour mean	Please contact WCC	1 Hour Mean
Action	150 μg/m^3	15-min mean	Please contact WCC	15-min Mean

Where sites are required to Monitor PM2.5 they are advised to contact WCC to discuss thresholds.
Where MCERTS, reference equipment is proposed to monitor PM10 the developer should seek advice from WCC regarding their requirements.

In the event that sites do not require continuous monitoring, dust deposition monitoring for example frisbees and deposition gauges may be required. The applicant should seek advice from the WCC regarding the council requirements.

Visual assessments
In addition to real-time continuous monitoring sites are required to undertake visual assessments for dust.

Daily Visual Assessment
A daily visual inspection of the site will be carried out by the Site Manager or an appropriately trained operator a minimum of two times per day.

The frequency of visual inspections will be increased to four times per day when activities with a high potential to produce dust are being carried out on site such as during demolition and earthworks. The frequency of inspections should also be increased to four times per day during periods of adverse weather, i.e. during periods of dry weather with high wind speeds. The results of these inspections will be recorded logged in the site diary.

[2] PM2.5 monitoring requirements are for level 1 sites only.

Weekly Visual Assessment
A weekly off-site inspection will consist of a walk around the perimeter of site and making observations about dust emissions and dust soiling, particularly focusing of locations upwind of on-site activities. Observations will include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 25 m of the site boundary. Inspection results will be recorded in the site diary. Where dust soiling is evident and is not identified by the sites monitoring network additional temporary real-time monitoring may be required by the request of WCC.

Significant Dust and Complaints
If significant dust is identified beyond the site boundary, a TIC form should be completed, and immediate investigation (e.g. though cross checking of site activities and monitoring data)/remedial action should be undertaken. The Site Manager will ensure that the TIC forms are submitted to WCC within 2 working days.

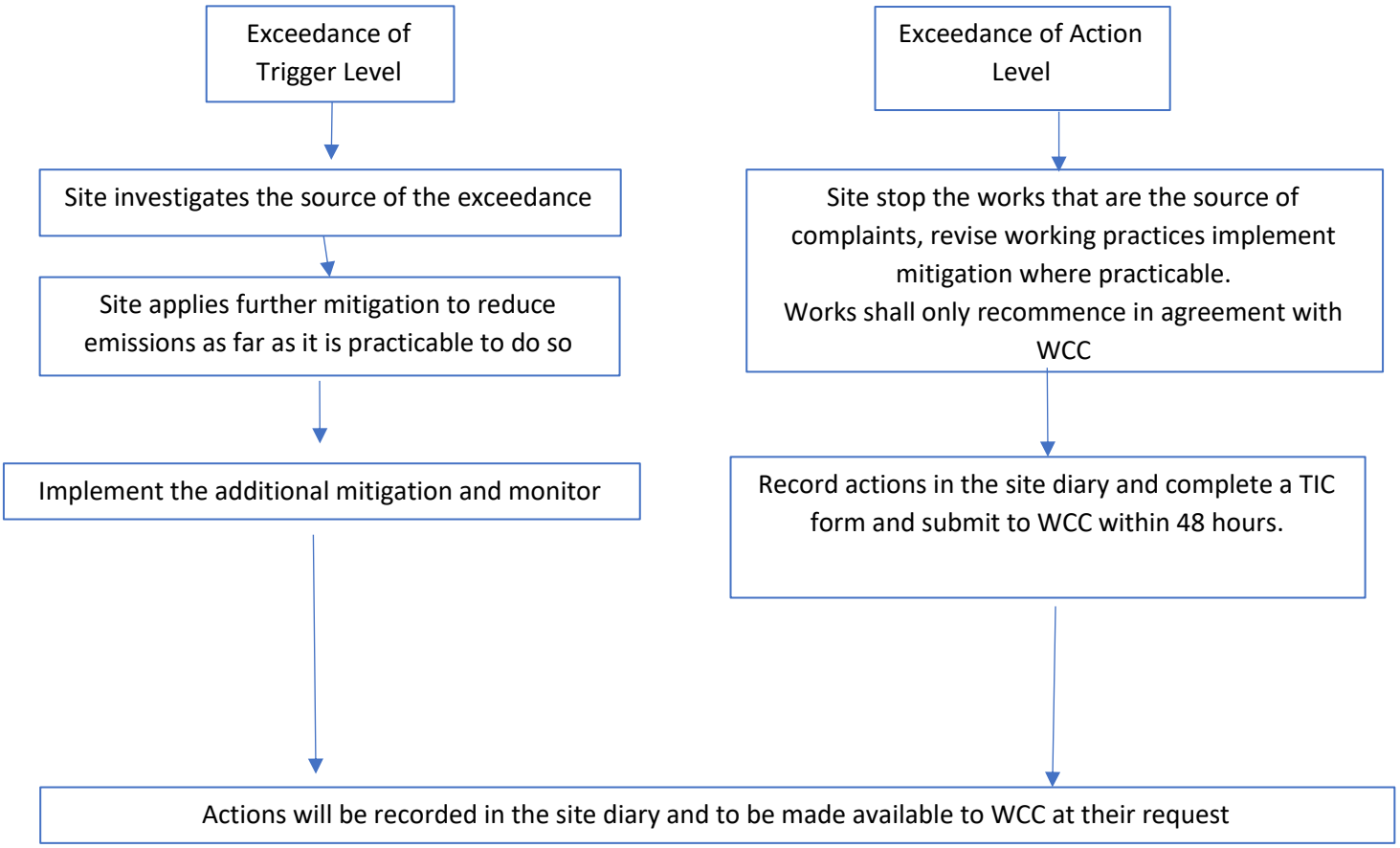
Actions will be recorded in the site diary.

Procedure for Reporting of Exceedances of Noise, Vibration and Dust
Sites are required to have a procedure in place to report exceedances of the action level the following procedure should be adopted

Trigger Levels
Where the measured noise levels are above the Trigger noise level of, an investigation shall be carried out to ascertain the cause of the exceedance and/or complaint and to check that Best Practicable Means are being used to control the noise/vibration or dust. be reduced further if it is reasonably practicable to do so.

Action Levels:
Where the measured noise levels are above the Action Level, the work activity which is likely to be causing the exceedance shall cease and an investigation shall be carried out to ascertain the cause of the exceedance and to check that Best Practicable Means are being used to control the noise.

Specifically for noise If the 10 Hour LAeq Action level is exceeded then only work which will not further increase the measured noise levels shall be permitted to proceed for the remainder of the 10 Hour shift or until such a time that the continuation of noisy work has been agreed by the Council. Once the 10 Hour shift has concluded the requirement to cease work will be lifted so that work can restart during the next 10 hours shift.



Mitigation Measures

All sites are required to mitigate their environmental impact to identified sensitive receptors**.** The Following risk assessments are required to be used to set out the minimum mitigation measures that the site should apply. Sites will be required to build on these measures and specifically demonstrate how they are going to apply the mitigation measures to their proposed demolition and construction practice.

WCC understands that as construction processes evolve mitigation measures also evolve. Developers and contractors are recommended to contact WCC at the earliest opportunity to discuss any new innovative methods to control environmental impacts that the developer or contractor may wish to trial

LANAF Noise and Vibration Risk Assessment.

All sites are required to complete the LANAF risk assessment which informs the site about the level of mitigation that should be employed. The measures identified in the tables are by no means an exhaustive list but do capture good practice measures to help sites mitigate noise and vibration impacts. Please note that following this guidance does not constitute a legal defence for the use of Best Practicable Means, and that the specific guidance presented in the approved Codes of Practice (BS 5228) under s71 of Part III of the Control of Pollution Act 1974 are relevant to the carrying out of works to which Section 60 of the Act applies..

The risk assessment provides good practice measures for the following stages of the development:

- General Considerations
- Plant Vehicle Activity
- Demolition Phase
- Ground Works and Piling Phase
- Construction Phase

- Monitoring
- Communication and Liaison

Example Risk Assessment

The expected duration of the Victoria Street project is 24months
It is expected that normal works hours are proposed although there will be some out of hours works to facilitate safety critical works, deliveries and some works for that need to be extended for engineering reasons.

The planning application indicates that the ambient noise level is 65dB$L_{Aeq\ 10hour}$ and noise sensitive receptors are within 25m of the site.

		Low	**Medium**	**High**
	Program Duration			
	<6 months			
	6 months to 12 months			
	> 12 months			x
	Proximity of nearest sensitive receptors			
	>50m from the site boundary			
	Between 25m and 50m			
	<25m			x
	Day-time Ambient Noise Level			
	High ambient noise level			
	Medium ambient noise level		x	
	Low ambient noise level			
	Working hours			
	Normal working hours only			
	Some extended evening or weekend working		x	
	Some night-time working			
	SUBTOTAL A [3] Add up the number of crosses in each column	0	2	2

[3] If you have the same total in two risk categories, then the higher risk applicable mitigation measures should be employed

A majority of the works will be external outside the building enveloper demolition activities are proposed to last for a duration of 10 weeks.

		Low	Medium	High
	Location of works			
	Majority within existing complete building envelope			
	Majority of works external			x
	External demolition			
	Limited to 2 weeks			
	External demolition between 2 weeks and 3 month		x	
	External demolition greater than 3 months			
	Ground works			
	Limited to non-percussive methods (i.e. hand tools / small excavator / small backhoe)			
	Percussive methods less than 3 months		x	
	Percussive methods greater than 3 months			
	Piling			
	Limited to 1 week	x		
	Bored piling only. No impact or vibratory piling			
	Impact or vibratory piling			
	Vibration generating activities			
	Limited to less than 1 week			
	Between 1 week and 1 month		x	
	Greater than 1 month			
	Street management			
	Required for less than 1 week / or not at all			
	Required for less than 1 month			
	Required for greater than 1 month			x
	SUBTOTAL B Add up the number of ticks in each column	1	3	2

Total Risk Assessment

	Low	Medium	High
Risk Assessment A – Locality / Site Information Carry over SUBTOTAL A	0	2	2
Risk Assessment B - Works information For the highest number of ticks in SUBTOTAL B add one cross to the equivalent risk column	2	3	2
Total	2	5	4

Site is classed as **MEDIUM** risk

Noise Mitigation Measures

The measures set out below are the minimum requirements and Westminster will also encourage developers to be look at innovative approaches to controlling noise and vibration.

Developers will ensure that all contractors and others working on the site apply Best Practical Means (BPM), as defined under Section 72 of the Control of Pollution Act (COPA) 1974. The contractor will also be required to comply with the other provisions of the COPA, Part III Noise, as amended, as well as mitigation measures required by the LANAF risk assessment.

The site will always have staff present with the authority to the take the steps necessary to ensure that noise and vibration is controlled.

All staff will be inducted and briefed on their responsibilities to the application of noise control and the use of BPM to minimise noise and vibration impacts. Training should be regularly reviewed and repeated through all phases of the development.

All sites shall be surrounded by solid hoarding to the required height and density appropriate to the noise sensitivity of the location concerned. Where this is not possible

the site should be fenced that has been acoustically treated for example acoustics blankets. Any damage to the fencing or hoarding surrounding a worksite will be immediately repaired by the nominated representative.

Site should be laid out so that noisy plant or equipment is sited as far away as is practicable from noise sensitive buildings. The use of barriers, (e.g. soil mounds), site huts, acoustic sheds or partitions to deflect noise away from noise sensitive areas must be employed wherever practicable. The sequence of demolition and construction should be planned to leave structures in place or build structures that may shield sensitive buildings from noise for as long as practicable.

All access and egress gates will be controlled to ensure that they are open for the minimum time to allow entry and exit of vehicles minimise noise breakout and should be located as far away from noise sensitive receptors as possible.

Care should be taken when loading or unloading vehicles or dismantling scaffolding or moving materials to reduce impact noise. Loading or unloading bays may have to be housed in suitable acoustic enclosures.

Plant and Equipment

Where practicable WCC strongly encourage that mains electricity should be provided onsite from the start of the project to prevent the use of generators

Where quieter electrically powered equipment is available or practicable to use, WCC recommend that this is used rather than diesel-petrol powered alternatives.

Vehicle and mechanical plant used for the purpose of the works shall be fitted with effective exhaust silencers, will be maintained in good and efficient working order and operated in such a manner as to minimise noise emissions.

Fixed position equipment for example generators and compressors must be "sound reduced/silent" models and should be fitted with properly lined and sealed acoustic covers, that must be kept closed whenever the machines are in use. Equipment should be placed to maximize distances from nose sensitive receptors and were practicable enclosed shielded.

Machines in intermittent use should be shut down in the intervening periods between works or throttled down to a minimum.

Vehicle Movements

All vehicle movements must occur within normal hours or at agreed times, considering the primary function of sensitive receptors in the vicinity (i.e. avoiding school drop-off/pick-up periods).

Maximise the reuse of any waste arising on site to minimise vehicle movements.

Plan deliveries and vehicle movements so that vehicles are not waiting or queuing on the public highway and enforce a no idling policy for all delivery vehicles.

Plan site layout to ensure that reversing is kept to a minimum, and where possible eliminated altogether. Sites were reversing is permitted ensure that reversing alarms are broadband reversing sirens and where it is safe to disengage all sirens and use a banks person.

Care should be taken when loading or unloading vehicles or moving materials to reduce impact noise. Loading or unloading bays may have to be housed in suitable acoustic enclosures.

Demolition Phase

Equipment that breaks concrete by bending, munching, pulverizing, using rotary drills and “bursters” activated by hydraulic or electrical power, or chemically based expansion compounds, to facilitate fragmentation and excavation of hard material rather than by percussion or such other equipment

Avoid the transfer of noise and vibration from demolition activities to adjoining buildings through cutting any vibration transmission path or by structural separation or isolation.

Rather than breaking in-situ, consider the removal of larger sections by lifting them out and breaking them down either in an area away from sensitive receptors or off-site.

Pilling Phase

Piling methods using a diesel or air driven impact or drop hammer will not be permitted onsite unless there are specific engineering reasons, and this is only feasible technique. Techniques such as hydraulically operated or vibratory hammers may be necessary in these circumstances to drive and extract sheet piling, provided the soil strata are suitable for such equipment.

Rotary drills and bursters actuated by hydraulic or electrical power should be used for

excavating hard material where practicable.

Construction Phase

Using prefabricated building structures or elements to minimise noise on site. Where prefabrication is not possible cutting of materials should be undertaken within the building envelope or in an acoustically treated cutting area.

When working within a building ensure all openings (e.g. windows and doors) are closed or sealed up to prevent noise escape.

Where concrete pours are required, consider their sizes and plan the start of concrete pours as early as possible within normal working hours to avoid the possibility of the site overrunning past normal working hours.

As far as reasonably practicable, the noise from reversing alarms will be controlled and limited. This will be managed through the following hierarchy of techniques:

- the site layout will be designed to limit and where reasonably practicable, avoid the need for the reversing of vehicles however, it is important to note that certain plant must utilise audible warning systems during operation; prior to commencement of works drivers will be made familiar with the

worksite layout.

- banksmen will be utilised to avoid, as far as reasonably practicable, the use of reversing alarms.

- reversing alarms incorporating one of more of the features listed below or any other comparable system will be used where reasonably practicable:

    - highly directional sounders.
    - use of broadband signals.
    - self-adjusting output sounders.
    - flashing warning lights.

reversing alarms will be set to the minimum output noise level required for health and safety compliance.

Air Quality Dust Risk Assessment

All sites are required to complete a dust risk assessment which informs the site about the level of dust mitigation that should be employed. The Greater London Authority's Supplementary Planning Guidance (SPG) for the control of dust from demolition and construction should be used when assessing the dust impacts and mitigation measures required by the development. Guidance published by the IAQM on the 'Assessment of Dust from Demolition and Construction' should also be referend to when making the assessment.
The measures identified in the tables in appendix 7 of the guidance are by no means an exhaustive list but do capture good practice measures to help sites mitigate noise and vibration impacts. Please note that following this guidance does not constitute a legal defence for the use of Best Practicable Means, and action can still be taken under section 79 and 80 of the Environmental Protection Act 1990

As construction processes evolve so should the measures which control dust and particulates and developers / contractors are recommended to contact WCC at the earliest opportunity to discuss any new innovative methods that the developer or contractor may wish to trial.

The risk assessment provides good practice measures for the following stages of the development:

- Demolition
- Earthworks
- Construction
- Trackout

Risks for dust soiling and human health should be rated for all relevant phases for both Human and Ecological receptors.

An assessment of the impacts to ecological receptors should be completed where an 'ecological receptor' is within:

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

The applicant should review of Defra's Multi Agency Geographic Information for the Countryside (MAGIC) website (http://www.magic.defra.gov.uk), which incorporates Natural England's interactive maps, to identify sensitive ecological receptors in the area.

Example risk assessment:

Dust emission magnitude

Table 3: Description of four activities for the proposed development at Victoria Street

Activity	Descriptors
Demolition	Total demolition volume of ~23500 m^3 No on-site crushing and partial screening; Materials to be demolished: Stone, concrete metals, wood products, brick, glass, clay tiles, plasterboard, insulation Height of demolition activities will be up to 20m.
Earthworks	The total site area is approximately 400m^2; Maximum of 1 earth moving vehicles at any one time; The total material to be moved is approximately 750 tonnes.
Construction	Total building volume is ~24500 m^3 Variety of construction materials such as concrete, metal work, zinc cladding, tiles, brick, glass, plasterboard and insulation. No on-site concrete mixing
Trackout	No more than 10 HGV movements in and out of load/unload area in any one day at peak Vehicles will load/unload in dedicated area outside the hoarding – so limited track-out from site.

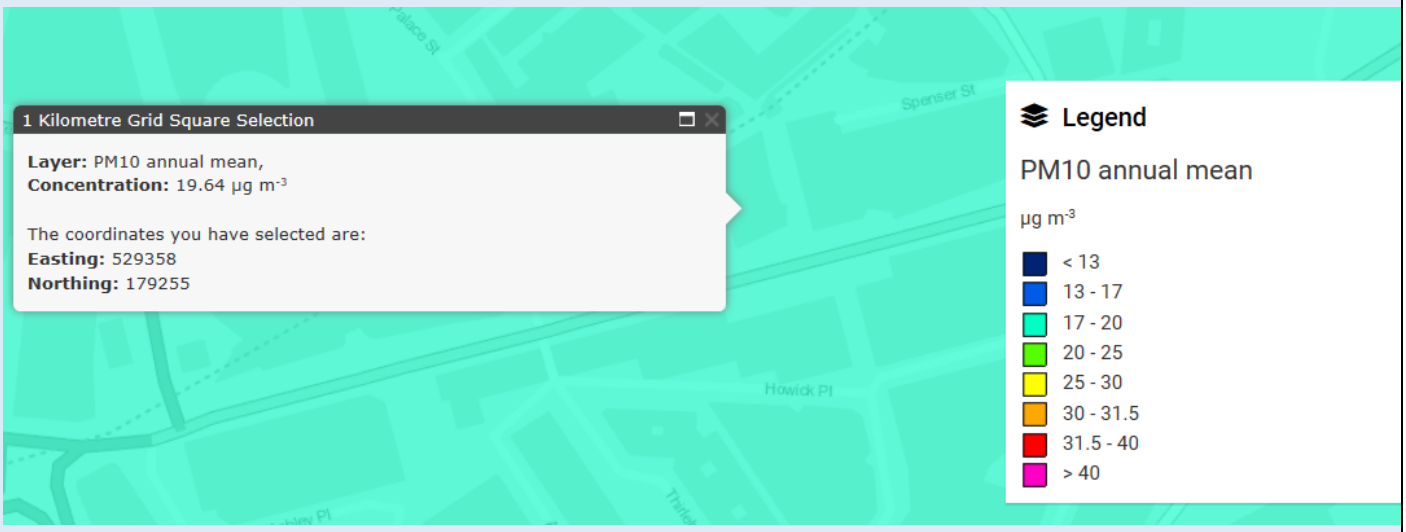
Dust Emission Magnitude

Activity	Dust Emission Magnitude
Demolition	Medium
Earthworks	Medium
Construction	Medium
Trackout	Small

Sensitivity of Surrounding Area for Dust Soiling and Human Health

There are approximately 75 residential properties within 20m of the site boundary and specifically for trackout greater than 100 residential properties within 50m from the preferred route within a 50m radius of the site. The annual mean concentration of PM_{10} below the Air Quality Objective of 40µg/m3 Annual Mean reviewing DEFRA Background Maps.

The sensitivity of the area to all activities can be summarised in Table X that potential dust soiling will medium on all four stages and human health will be low on all four stages.



Activity	Sensitivity to Dust Soiling
Demolition	High
Earthworks	High
Construction	High
Trackout	High

Sensitivity of Surrounding Area for Human Health Impacts

Activity	Sensitivity to Human Health
Demolition	Low
Earthworks	Low
Construction	Low
Trackout	Low

Defining the risk of impacts from Dust Soiling

RISK OF DUST IMPACTS – 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	Low Risk	Low Risk	Negligible

RISK OF DUST IMPACTS – 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

RISK OF DUST IMPACTS – 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

RISK OF DUST IMPACTS – TRACKOUT

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

Defining the risk of impacts to Human Health

RISK OF DUST IMPACTS – 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	Low Risk	Low Risk	Negligible

RISK OF DUST IMPACTS – 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

RISK OF DUST IMPACTS – 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

RISK OF DUST IMPACTS – TRACKOUT

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

Summary Risk Effects of Construction

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

The overall risk of impact of demolition, earthworks, construction and trackout is **MEDIUM** risk.

A qualitative assessment of dust levels associated with the proposed development has been carried out. The impact of dust soiling and PM10 can be reduced to low through implementing the suggested appropriate

mitigation measures set out in appendix 7 of the Mayors SPG medium risk site. Implementation of these Best Practice Measures will help reduce the impact of the demolition and construction activities.

With these mitigation measures enforced, the likelihood of nuisance dust episodes occurring at those receptors adjacent to the development are considered low.

On Road Vehicle and Non-Road Mobile Machinery (NRMM) Emissions

On Road Vehicles

All on-road vehicles will comply with the Ultra-Low Emission Zone (ULEZ) vehicle emission standards. (currently petrol/diesel Euro 6 and Euro VI) as a minimum. It is Highley recommended that that sub contractors and suppliers have been contacted to set out there responsibilities in using ULEZ compliant.

The use of Ultra-Low Emission Vehicles (ULEV) (e.g. Electric, Hybrid (Electric-Petrol) where possible will be encouraged at the procurement stage of the tender for these services. The Applicant will actively work with suppliers that can provide electric or hybrid vehicles where practicable.

Construction site workers will use sustainable means of travel (public transport, walking and carsharing). Information on public transport access to site will be provided in the form of noticeboards and toolbox talks. Car-sharing for contractors will be encouraged on-site by putting in place a notice board, in order for to people to register for car sharing opportunities.

Non-Road Mobile Machinery (NRMM)

Prior to the commencement of works the development all site shall be registered on the NRMM register https://london.gov.uk/non-road-mobile-machinery-register and all NRMM with engines of 37kW-560kW, shall be uploaded.

All NRMM if equal to or over 37kW operating within Westminster, shall comply with the Stage IV NOx and PM10 emission standards. Stage IV emission limits are not defined in legislation for Constant Speed engines (for example generators), therefore the emission standard required for those engines is effectively Stage V. The emission standards relate to the Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 and its subsequent amendments.

The standards for the NRMM Low Emission Zone will get progressively tighter over time and the emission limits will follow the dates below:

- From 1 of January 2030 the standards will be stage V throughout Westminster
- From 1 of January 2040 only zero emission machinery will be allowed.

Where compliance with Stage IV requirements is not achievable or practical, an exemption will be sought from WCC before arrival of the equipment on site and the details recorded.

NRMM where the power output is less than 37kW will be fitted with an after-treatment device (DPF) stated on the approved list managed by the Energy Saving Trust; the ongoing conformity of plant retrofitted with suitable after treatment devices, to a defined performance standard, should be ensured through a programme of on-site checks

Use of NRMM will be minimised as much as possible and electric or battery powered alternatives will be used as a preference. If NRMM under 37kW is to be used, use of the equipment will be minimised and kept as far away from sensitive receptors as is practicable. For NRMM under 37kW, the contractor will endeavour to use equipment fitted with after treatment devices where practicable.

Considerate Contractors Scheme

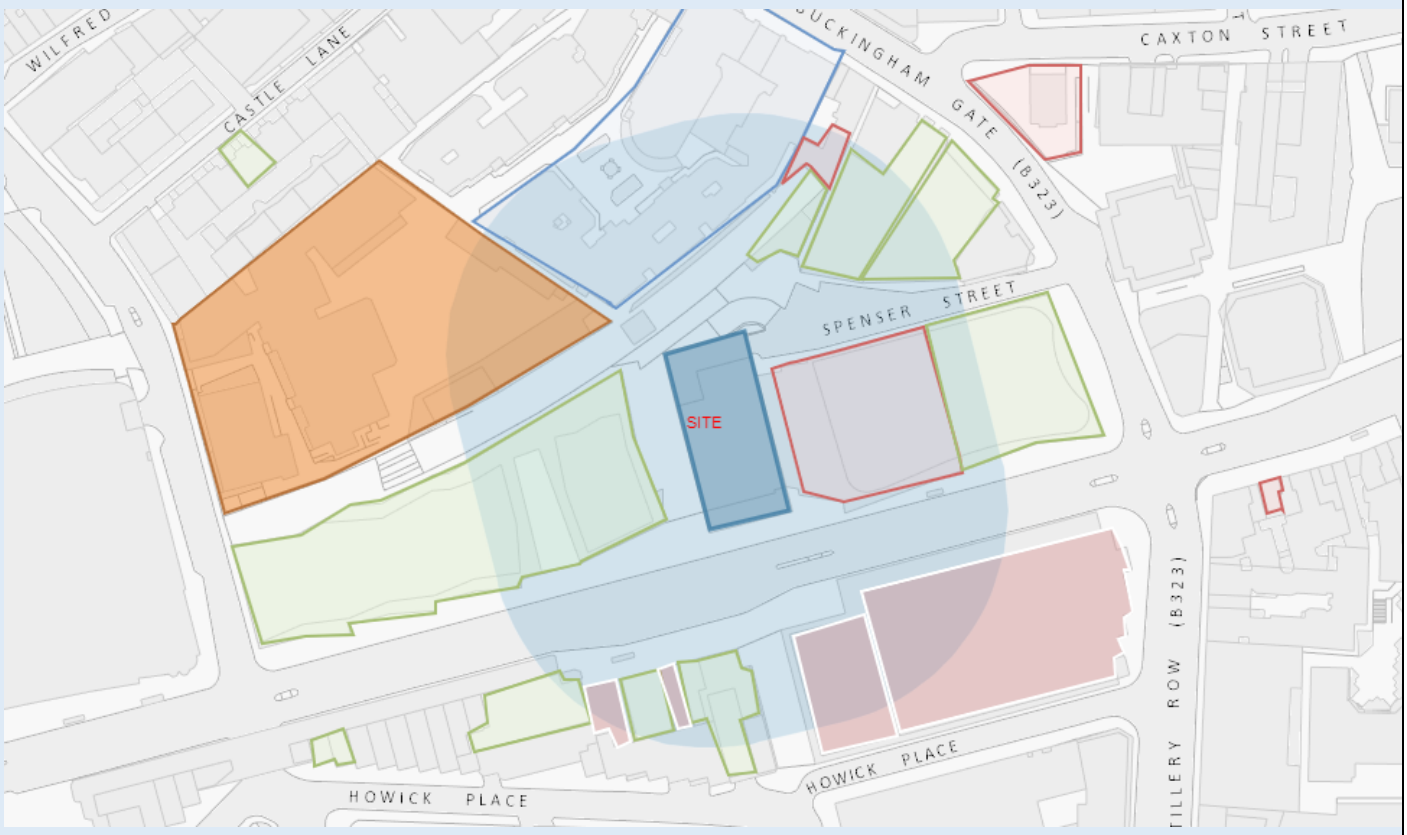
All level 1 and 2 site are required to be signed up to the Considerate Contractors Scheme (CCS). Sites will be required to provide evidence in that they are members and confirm that they will follow the schemes recommendations.

Community Liaison During site Works

All sites are expected to provide regular site updates to all local stakeholders. As a minimum the communication will be made with all stakeholders and all sensitive receptors within 50m from the site and in addition include all stakeholders that provided responses to the original notation of the SEMP. Should any additional stakeholders become apparent during the project these should be added.

Example Public Communication Strategy

Site will regularly communicate with all the receptors that have been identified below. The Blue shaded area representants a 50m buffer from the site boundary. Areas highlighted outside of this shaded area provided a response to the pre commencement consultation.



- Green Residential
- Red Commercial
- Orange Education
- Blue Hotel

The following communication strategy will be adopted.

Site Notice Board

A noticeboard will be attached to the site hoarding that includes:

- Named site contact details
- Information about the project and a copy of the monthly newsletter
- Site working hours
- Out of Hours emergency contact details

Monthly Newsletters

Newsletters should be distributed to all identified stakeholders monthly either electronically or by letter drop. The frequency of newsletters may need to be increases where there are periods of multiple complaints or particularly noisy or high dust generating activities.

The content of newsletter should include:

- Site working hours (including any reduced noise times)

- A monthly look ahead that provides a brief outlie of proposed work packages for the coming month
- Any proposed, agreed out of hours works (e.g., Tower crane erection/large plant delivery).
- Contact names and numbers for site
- Advertise the dates and location/Link (for virtual events) of the community engagement event

The frequency of the news letters may be increased at the request of WCC.

Community Engagement Event

Events will be arranged and held monthly and will provide an opportunity for all stakeholders to meet the contractor and ask questions about the project. Events can be both virtual and or public facing and will be advertised in the monthly newsletter.

Liaison with Other Construction Sites

Construction sites will be required to hold regular Hold regular liaison meetings with other development sites that are in proximity (up to 500m) from the site boundary.

Local Authority Liaison

Sites are required to hold regular monthly meetings with Westminster's Environmental Sciences team. During these monthly meetings the following discussion topics will be discussed. An indictive inspection record is available in appendix.

- Look back at previous months activities
- Look forward of coming months activities including any proposed future out of hours works
- Results of Monthly Monitoring
- Inspection of site complain log and feedback of any complaints
- Feedback form any stakeholder communication.
- NRMM compliance