



Horniman Museum & Gardens

Air Quality Dust Management Plan (AQDMP)

Planning Reference Number:	DC/23/130987, DC130988LB
Planning Condition Reference:	Condition 3
Client:	Horniman Museum and Gardens
Project Title:	Nature + Love Project
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Appendices:	Appendix A ~ Rooff NRMM Record Log Sheet Appendix B ~ Programme Appendix C ~ Site Plan

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Air Quality Statement

The Horniman and Roof are committed to applying the Air Quality Management standards required by Section 11 of the *Planning Guidance Supplementary Planning document* (London Borough of Lewisham) and confirm that we shall apply the relevant air quality control mitigation measures outlined in The *Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance* document, produced by the Mayor of London and dated July 2014.

These are more fully described later in this Air Quality Dust Management Plan.

1.0 Introduction

1.1 Background

The purpose of the Air Quality Dust Management Plan (AQDMP) is to outline our approach to managing the construction impacts from dust and air pollutant emissions at the building project at the, in accordance with Planning Approval DC/23/130987 Condition 3 which states the following:

Prior to the commencement of development hereby approved, a Dust Management Plan (DMP), based on an AQDRA (Air Quality and Dust Risk Assessment), shall be submitted to and approved, in writing, by the local planning authority. The DMP shall be in accordance with The Control of Dust and Emissions during Construction and

Demolition SPG 2014. The DMP will need to detail the measures to reduce the impacts during the construction phase. The development shall be undertaken in accordance with the approved plan.

Reason: To manage and prevent further deterioration of existing low-quality air across London in accordance with London Plan Policy SI 1 'Improving air quality' and Policy T7 'Deliveries, servicing and construction' of the London Plan (March 2021), and paragraph 181 of the NPPF.

Approved details shall be fully implemented and permanently retained and maintained during the construction phases of the development. To comply with the requirements of the NPPF (2019), Policies 7.14a-c of the London Plan (2016) and policy CC10 of the Local Plan (2018)"

This document includes our Air Quality (Dust) Risk Assessment, inventory and timetable of dust generating activities, dust emission control methods to be employed, Non-Road Mobile Machinery (NRMM), Ultra Low Emission Zone (ULEZ) vehicles, complaints and incident procedures.

During construction, site activities will have the potential to affect local air quality from dust deposition and increases in particulate matter concentration. Mitigation measures will be implemented to ensure that any impact on local air quality is minimised.

The agreed contents of this AQDMP will form part of the development plan, it is a Planning obligation requiring discharge by the London Borough of Lewisham (LBL) prior to commencement of work. The Plan will be regularly reviewed, and any changes and/or improvements will be developed, added and agreed with the Council. The Plan will be revised and reissued as necessary.

These proposals are to enable third parties to understand the nature of the works and the various construction activities associated with the development.

The AQDMP will be distributed to the Client and their consultant team and used for liaison with the stakeholders and other interested parties throughout the project. As information is updated and as the project develops, particular attention will be paid to the neighbours. This will ensure they are kept informed of progress and future works on the project. Communication will be via a regular newsletter issued electronically and included in letter drops.

The information provided in this document is an overview of the key project activities for the enabling and construction phase at Horniman Museum and Gardens. Statements herein are to be further incorporated into plans, procedures and detailed method statements from newly appointed subcontractors as the project develops.

1.2 Project Overview

The Nature + Love project consists of a new Sustainable Gardening Zone, including demolition of existing structures and the construction of a new glass house with external covered area in the nursery hub, paved terrace, paths, and landscaping for the Winter Garden, paving and planting for Community wellbeing garden.

The construction of a new cafe, toilet block, store house and play area within old boating lake to Nature Explorers Zone, interpretation panels and entrance gate and ramp on the nature trail.

Internally to the Natural History Gallery the aim is to consolidate the showcase layout and reduce the overall number of show cases to improve the overall access routes and pinch points between the show cases. Many of the existing historic showcases are to remain and be refurbished, some will be repositioned and reallocated, removed or dismantled and placed in storage. A number of the existing more contemporary showcases are to be either relocated or removed. New display cases are to be installed to meet the modern criteria in terms of environmental conditioning.

External works to the Natural History Gallery to include new roof coverings, louvres to eastern windows; enlargement of western plant enclosure; plant enclosure on west side of gallery; ductwork penetrations, guardrails to east elevation, new fencing and gates and other internal and external alterations to the elevations at Horniman Museum and Gardens, 100 London Road SE23.

Rooff have been appointed as Principal Contractor for the Internal & External works to the Natural History Gallery, only. The remaining areas of The Nature + Love Project will be carried out by the Landscape and Fit Out Contractors and this document will be adhered to going forward.

1.3 Guidance

This document has been prepared in accordance with the following guidance:

- Mayor of London SPG 'The Control of Dust and Emissions during Construction and Demolition', July 2014.
- Institute of Air Quality Management (IAQM). Guidance on the assessment of dust from demolition and construction, Version 1.1, June 2016.
- IAQM. Guidance on Monitoring in the Vicinity of Demolition and Construction Sites, October 2018.
- London Low Emission Construction Partnership (LLECP). Best in Class 'Guidance on Dust and Emissions from Construction' LLECP, March 2019.
- London Borough of Lewisham Good Practice Guide

2.0 Project Overview

2.1 Site Description

The Horniman Museum and Gardens (the Site) is in Forest Hill, Southeast London, within LBL. The eastern boundary of the London Borough of Southwark is separated from the Nature Trail by the houses and gardens located on the eastern side of Wood Vale.

The Site first opened as Surrey House Museum in 1890 in the Horniman family residence. In 1901 it changed its name to the Horniman Museum when it re-opened in a new purpose-built museum building. The site was gifted to the people in 1901 for their education, recreation, and enjoyment. This vision remains central to the Horniman today.

The site consists of a mix of high-quality collections displayed in the galleries on site; these span natural, multicultural, and musical worlds alongside 16 acres of well managed open space. The Museum offers community-based learning, education and leisure programs and a wide range of performance events and activities. The Horniman serves a local, national and international audience. It is a popular local resource in southeast London.

The Museum is Grade II* listed and has seen new extensions over the years including, most recently by Allies and Morrison in 2002. The Gardens are extensive and range in style and form from Sunken Gardens, grasslands, to the Sound Garden, Bee Garden, Wildlife Garden, Meadow Field, South Downs Meadow, and Prehistoric Garden. The Gardens underwent a significant redevelopment project in 2012 which provided new opportunities for education and creative pursuits.

The site is free to access and open to the public all year round. The Museum is open daily from 10am – 5.30pm and the Gardens open daily from dawn to dusk (time of year dependent).

2.2 Site Location Plan



2.3 Proposed Site Works

2.3.1 Enabling Works Phase

The key elements of the enabling works development about the potential impact on the surrounding areas are:

- Secure site work areas using hoarding or Heras fencing panels
- Set up contractors compound to include site office and welfare accommodation
- Set up storage/staging areas
- Form new vehicular and pedestrian access routes

Note: - All the above as indicated on the proposed Construction Management Site Plan NLP-FF-00-XX-DR-A-00119- and Natural History Gallery Project – proposed Site Logistics – Plan 001.1

From site possession an independent Environmental Consultant shall establish the noise, dust and vibration baseline monitoring levels.

2.3.2 Main Construction Works Phase

The key element of the works to the Natural History Gallery with regards to the potential impact on the surrounding areas is: -

- Scaffolding
- Demolition works
- Envelope-Roofworks

The Nature + Love Fit Out package consists of Natural History Gallery Exhibition Design Fit Out incl. graphics, AV hardware, new showcases, setworks, interactives, lighting, tactile map, general mounts and wayfinding/signage.

2.3.3 Roles and Responsibilities

The appropriate resources will be supplied to cover the requirements of dust control on site ensure that these are communicated effectively and acted upon in an appropriate manner. The Site Manager will be the person on site responsible for dust control and site activities in general. In the event of absence, responsibility will be assigned to another suitably qualified person.

2.4 Inventory and Timetable of Dust and Nox Air Pollutant Generating Activities

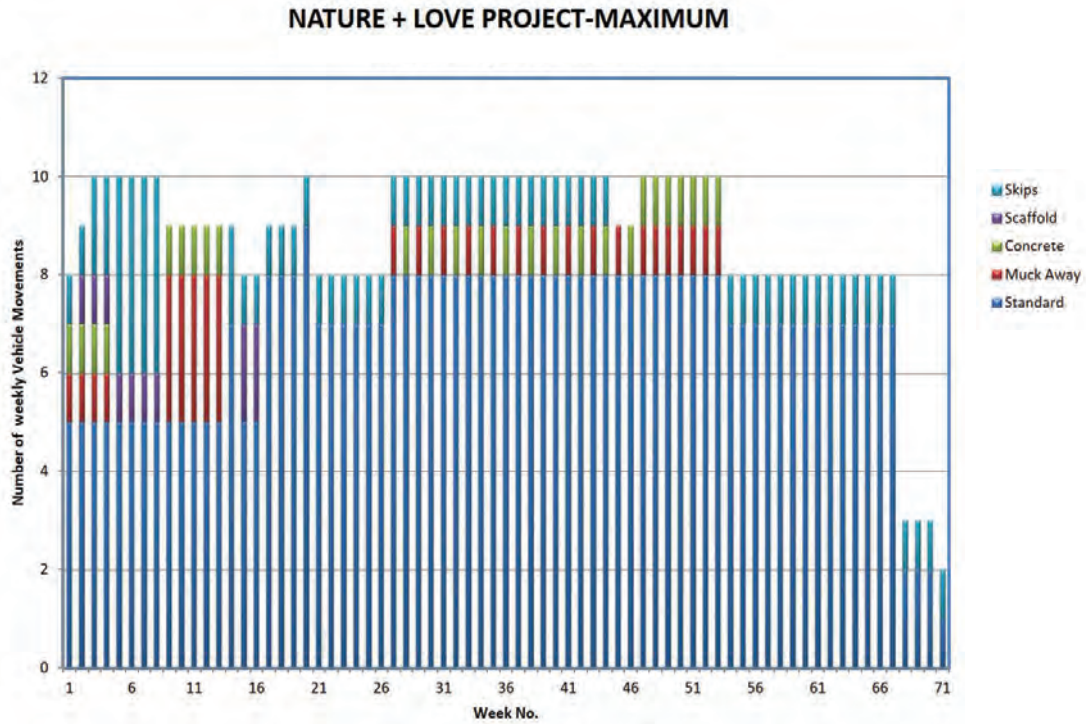
The following activities are identified as limited sources of dust emission to occur on this project (refer to works programme 023-0026 TMP1 in Appendix C & D Options)

- Scaffolding Weeks 3 -18
- Demolition (roof strip) Weeks 12-20
- Envelope and finishes Weeks 18-43

See preliminary traffic movement plan below indicating **maximum weekly** traffic movements during the construction period. This histogram gives the indicative traffic movement based on 023-0026 TMP1 programme over approximately 71 weeks. The above is based on an average of two deliveries an hour on a 'just in time' basis.

The indicative traffic movements are based on the current allocated delivery slot of 6-8am and 9am-2pm (ten per week). Current restriction on traffic movement delivery times by LBL between 8-9 am and 2-4pm to allow for school groups who may be travelling & Peak rush hour traffic.

Option 1



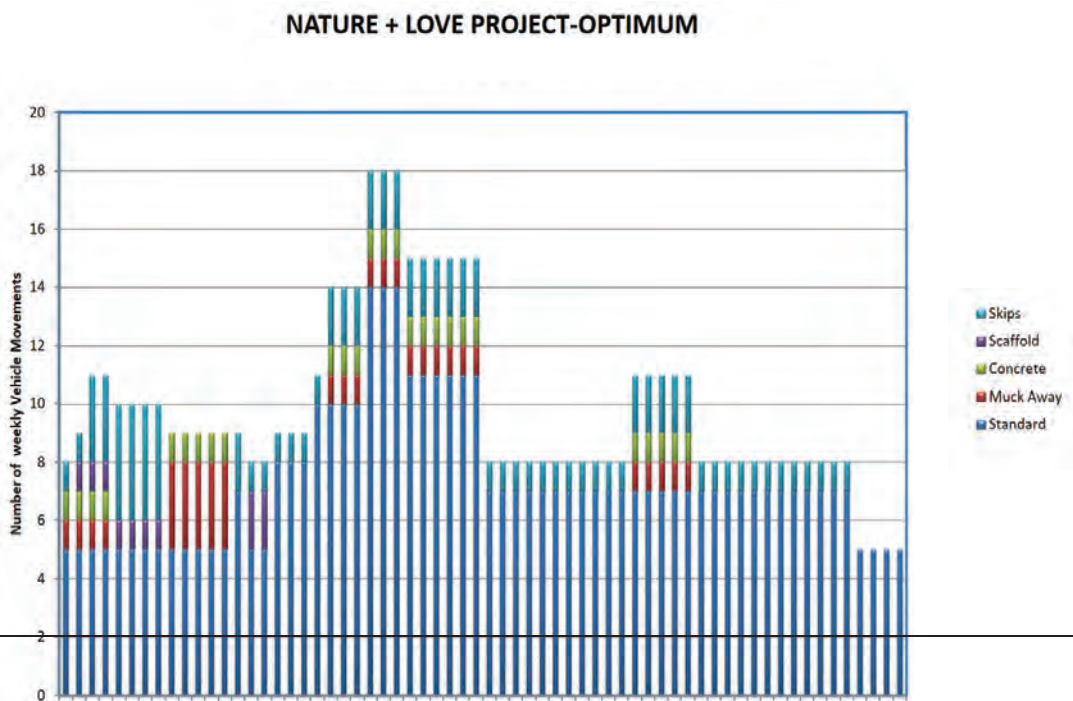
The histogram below gives the *optimum indicative* traffic movement based on the Construction Programme over approximately 71 weeks. The above is based on an average of two deliveries an hour on a 'just in time' basis.

The allocated delivery slots keep all deliveries clear of the local school run dropping-off and pick-up times.

This gives greater flexibility in achieving the optimum period on site for the construction works.

Note: Consideration can be given to earlier timed deliveries of prefabricated components to further reduce traffic movements.

Option 2



2.5 COSHH

COSHH products will be stored in a locked container and items stored on bunds to ensure that they do not leak on to the surrounding area.

Spill kit and fire stations will be in the immediate vicinities to ensure, in the event of an accident, it can be dealt with quickly and efficiently. Spillages as covered in the Project Environmental Management Plan will be addressed in site inductions and toolbox talks so that all staff members are aware of how to manage should a spill occur on site.

2.6 Training

- All site personnel will be made aware of the air quality issues covered in this plan during site induction.
- Regular Toolbox talks will be given to remind all site personnel of the requirements of dust management. Attendance records will be completed and filed appropriately to demonstrate good practice.
- All operatives will have a minimum of a CSCS card which includes environmental test questions as well as a site-specific induction which will set out the basic control measures of dust prevention.
- A training matrix will be completed, detailing the expected training requirements of individuals who have responsibilities on the project.
- Method statements and risk assessments will also be written (and briefed to all site personnel) before any works that may impact air quality are carried out on site. All subcontractors that are likely to undertake works with the potential for nuisance issues will read and sign to say they understand their Risk Assessment and Method Statement which will include the necessary environmental controls.
- Integrated into these documents will be the specific control and risk mitigation methods relating to the air quality issues detailed in this document.

3.0 Air Quality (Dust) Risk Assessment

The construction dust assessment considers the potential for impacts within 50m of the site boundary or within 50m of any road used by construction vehicles, up to 500m from the site boundary. The assessment methodology follows the Greater London Authority (GLA) Supplementary Planning Guidance (SPG) on the Control of Dust and Emissions During Construction and Demolition (2014) which is based on that provided by the Institute of Air Quality Management (IAQM). The Dust Emission Magnitude (DEM) is based on the scale of the anticipated works and the site will be classified as Small.

The risk evaluation considerations are based on the following steps:

- Step 1: Screen the need for a detailed assessment of human and ecological receptors
- Step 2A: Define the potential dust emission magnitude based on the scale of anticipated works
- Step 2B: Define the sensitivities of the area to any dust that may be raised
- Step 2C: Define the risk of dust impacts without appropriate mitigation

Rooff's site activities can be classified into four phases according to dust risk and are assessed based on site activities and the sensitivity of nearby receptors, these are: demolition, construction and track out phases.

Step 1: Area Sensitivity Screening

The adjacent buildings and sensitive receptors to this site include:

- Horniman Museum campus including the Butterfly House
- Horniman Triangle playground
- Horniman Primary School
- Surrounding residential properties
- Aquarium & Aquarium plant room
- Other Galleries adjacent to the Natural History Gallery

Site Plan

Please refer to Appendix C.

Step 2A: Dust Emission Magnitude

Demolition Phase

The phase of this project has been assessed as low risk based on the nature of the works involving dusty construction material (concrete). The extent of demolition (small quantity) falls into the category of small risk and is isolated to roof areas (existing roof covering strip off) which will be contained under a temporary roof and the sides encapsulated with sheeting.

Construction Phase

The key issues when determining the potential scale of dust emissions during the construction phase include the size of the building, the method of construction, the construction materials to be used and the duration of the build.

The scale of potential dust emissions from the site is low risk given the scope of works in the construction phase. Construction is isolated to roof areas (reinstallation of roof covering) which will be contained under a temporary roof and the sides encapsulated with sheeting.

Trackout Phase

Factors that determine the risk of dust emissions from the trackout are vehicle speed, geology and duration. Only receptors within 50m of the route(s) used by vehicles on the public highway and up to 500m from the site entrance are at risk from the effects of dust trackout.

The scale of potential dust emissions from the site is low risk.

Table 1: Dust emission magnitude overview

Activity	Dust Emission Magnitude
Demolition	Low
Construction	Low
Trackout	Low

Step 2B: Sensitivity of the Area

The sensitivity of the area considers several factors including:

- The specific sensitivities of receptors in the area
- The proximity and number of those receptors
- In the case of PM₁₀, the local background concentration; and
- Site specific factors

The sensitivity of the area has been assessed for each phase of construction activity (i.e., demolition, construction and track out) and the highest level of sensitivity has been addressed.

Sensitivity of People to Dust Soiling Effects

The sensitivity of people to dust soiling effects within the local area of this project has been assessed as medium based on the following principles:

- Users would expect to enjoy a reasonable level of amenity but would not reasonably expect to enjoy the same level of amenity as in their home.
- The people or property would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal use of the land (e.g., place of work).

Table 2 Sensitivities of people to dust soiling effects.

Receptor Sensitivity	Number of Receptors	Distance from the Source (m) ^c			
		<20	<50	<100	<350
Medium	>1	Medium	Low	Low	low

Sensitivities of People to the Health Effects of PM₁₀

The sensitivities of people to the health effects of PM₁₀ are based on whether receptors are likely to be exposed to elevated concentrations over a 24-hour period, consistent with Defra's advice for local air quality management (Defra, 2009, LAQM Technical Guidance LAQM.TG (09)). This analysis to be carried out prior to the commencement of works.

The London Borough of Lewisham Air Quality Annual Status Report states the Annual Mean PM₁₀ as 40ug/m³. (<https://lewisham.gov.uk/myservices/environment/air-pollution/check-air-quality-levels>.)

The sensitivities to health effects on this project have been assessed as low based on the following principles:

- Locations where members of the public are exposed over a time relevant to the air quality objective for PM₁₀. In the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day (e.g., Hospitals and schools)

Table 3 Sensitivities of people to the health effects of PM10

Receptor Sensitivity	Annual Mean PM ₁₀ concentration	Number of Receptors'	Distance from the Source (m) ^E				
			<20	<50	<100	<200	<350
High	40ug/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low

Sensitivities of Receptors to Ecological Effects

Dust can have two types of effects on vegetation: physical and chemical. Direct physical effects include reduced photosynthesis, respiration and transpiration through smothering. Chemical changes to watercourses or soils may lead to loss of plants or animals via changes in acidity. Indirect effects can include susceptibility to stressors such as pathogens and air pollution. These changes are likely to occur only because of long-term demolition and construction works adjacent to a sensitive habitat. Often impacts will be reversed when the works are completed and dust emissions cease.

The sensitivities of receptors to ecological effects have been assessed as low based on the following:

- Locations with a local designation where features may be affected by dust deposition.

Table 4 Sensitivities of receptors to ecological effects

Receptor Sensitivity	Distance from the Source (m) ^c	
	<20	<50
Low	low	Low

Additional Factors to Consider

The following additional factors have been considered when determining the sensitivity of the area:

- Any history of dust generating activities in the area
- The likelihood of concurrent dust generating activities on nearby sites
- Any pre-existing screening between the source and receptors
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant
- The season during which the work will take place
- Any conclusions drawn from local topography
- Duration of the potential impact, as a receptor, may become more sensitive over time; and
- Any known specific receptor sensitivities which go beyond the classification given

Step 2C: Risk of Dust Impacts with No Mitigation Applied

The below tables combine the dust emission magnitude determined above with the sensitivity of the area determining the risk of impacts with no mitigation applied.

It is Roof's intention to apply maximum mitigation measures more than the requirement to better ensure that a non-nuisance environment exists for all receptors.

London Borough of Lewisham on the Annual Mean is 40ug/m³.

Table 5 Risk of dust impacts – Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium	<u>Low Risk</u>
Medium	High Risk	Medium	Low
Low	Low	Low	Negligible

Table 6 Risk of dust impacts – Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium	<u>Low Risk</u>
Medium	Medium	Medium	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 7 Risk of dust impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium	<u>Low Risk</u>
Medium	Medium	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

4.0 Dust and Emission Control Measures

The overall dust risk classification of the site is low in accordance with the Mayor of London SPG 'The Control of Dust and Emissions during Construction and Demolition July 2014.

Measures to mitigate dust emissions will be required during the project period on Horniman Museum and Gardens to reduce health related dust nuisance for all local receptors.

Referring to visible dust, it is imperative to prevent statutory nuisance arising from the demolition, construction works or dusty activities. Therefore, a philosophy of prevention of dust formation in the first instance shall be adopted. Dust management should be addressed through:

1. Prevention
2. Suppression
3. Containment

These three principles are well established and are central to the control strategies to control dust. They follow a hierarchy to control the emissions.

The Mayor's SPG on The Control of Dust and Emission During Construction and Demolition outlines the best practice measure that should be adopted, where appropriate, to reduce the impact of a medium risk site, along with guidance on the monitoring that should be undertaken throughout the project period. This reflects best practice experience and will be applied, together with the experience and input of the professional consultant and the findings of the dust impact assessment.

The measures outline mitigation procedures of a **low-risk site** which we will implement on site to minimise dust nuisance from our operations. Included are correct storage of raw materials, high standards of housekeeping and site management, minimisation of drop heights and consideration of the prevailing wind.

Suppression techniques will be using water via hoses and dampening down of localised areas during dusty activities during the demolition / construction phases. We will ensure that we have an adequate supply of water on site that has adequate frost protection.

Regardless of regular inspections and procedures, should any airborne dust be seen to be leaving the site boundary the source of the emission will be immediately identified and corrective action will be taken without delay.

These measures are outlined below in section 4.1.

Regardless of the risk level, Roof will ensure that our employees and subcontractors on site always follow best practice to control and limit dust and emissions into the atmosphere from the minor demolition and construction activities, including vehicles and plant.

Regular inspections will be made throughout the project in adherence with Roof ISO14001 Environmental Management System.

All qualifying plant will be registered on the NRMM register and regularly monitored to ensure compliance.

We understand the importance of management techniques for effective control of dust and emissions, our techniques include:

- Proper management, supervision and training for process operations.
- Proper use of equipment (e.g., misting cannons).
- Effective preventative maintenance on all plant and equipment concerned with the control of emissions to air; and

- In addition to the above, effective preventative maintenance will be employed throughout all phases of the site activities including all plant, vehicles, buildings and the equipment concerned with the control of dust and emissions to air.

4.1 Construction Mitigation Measures

The below table outlines Roof's proposed mitigation measures which will be implemented throughout the project for **low-risk site** following review above: -

Table 6 Mitigation measure

Mitigation measure in line with Mayor of London (SPG July 2014)	Implemented on site
Site Management	
The name and contact details of the individual accountable for air quality emissions and dust generated from the site displayed on the site boundary, along with the head or regional office contact information	XX
A site log recording complaints and outcomes of the site inspections in the forms in (Appendix A and B will be issued to the council by email upon request)	XX
Record any complaints and exceptional incidents that cause dust and air quality pollutant emissions, either on-site or off-site, and the action taken to resolve the situation in the site logbook.	XX
Preparing and maintaining the site	
The site logistic plan developed so that Stockpiles, NRMM plant and dust-causing activities are located as remote as possible from off-site residential receptors.	XX
Site runoff of water or mud excluded	XX
Site fencing, barriers and scaffolding kept clean using wet methods	XX
Waste Materials removed from the site regularly	XX
Stockpiles covered or fenced to prevent wind whipping	XX
The use of localized hoarding and Heras fencing will be provided in key areas	XX
Solid screens or barriers erected around dust activities or the site boundary that are, at least, as high as any stockpiles on site	XX
Site or specific operations will be fully enclosed where there is a high potential for dust production and the site is active for an extensive period.	XX
Operating vehicle/machinery and sustainable travel	
Use contractors and suppliers that can provide non-diesel, hybrid, and electric vehicles where possible at the procurement stage of the tender for these services	X
All non-road mobile machinery (NRMM) for engines of 37kW-560kW will comply with the minimum Stage IV emission standards set in EU Directive 97/68/EC and its subsequent amendments unless the machinery is not available or that a comprehensive retrofit to meet both PM and NOx emission standards is not feasible.	XX
Avoid idling – All on-road vehicles will have their engines switched off when stationary	X
The existing site mains electricity power supply where possible to be used. The use of non-diesel, hybrid, or electric vehicles to be encouraged.	X
Secure tool storage on site to avoid the need for contractors to travel by van every day	X

The Construction Logistics Plan (CLP) adhered to minimize the impact of on-road demolition vehicle emissions and restrict on-road demolition vehicle trips to off peak hours	XX
A Travel Plan developed that supports and encourages sustainable travel e.g., public transport, cycling, walking.	X
Operations	
Cutting, grinding, or sawing equipment used where fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems	XX
An adequate water supply on the site for effective dust/particulate matter suppression/mitigation using non-potable water where possible and appropriate. Handheld sprays used. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground	X
Enclosed chutes, conveyors and covered skips used	XX
Drop heights from loading shovels, hoppers and other loading or handling equipment will be minimized, and fine water sprays will be used on such equipment wherever appropriate	XX
Equipment will be 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	XX
The project team will use public transport to travel from the office to the site where possible	X
Waste Management	
Waste recycled where possible to reduce dust from waste materials	XX
Waste Materials removed from the site on average two to three times per week	X
Bonfires and burning of waste materials not permitted	XX
Measures Specific to Demolition	
A soft strip inside buildings before demolition (retaining walls and windows in the rest of the building to provide screening against dust	XX
Water used during demolition operations. Handheld sprays used for water. Water droplets that effectively bring the dust particles to the ground.	XX
No explosive blasting or mass demolition. Manual and or mechanical alternatives methods will only be used	XX
Any biological debris bagged and removed or damped down before demolition	XX
Measures Specific to Earthworks	
Earthworks and exposed areas/soil stockpiles covered or fenced to prevent wind whipping and will be re-vegetated to stabilize surfaces, as soon as practicable	XX
Secure covers removed in small areas during work and not all at once	XX
Measures Specific to Construction	XX
Sand and other aggregates will be stored in bunded areas and will not be allowed to dry out, unless this is required for a particular process, in which case appropriate additional control measures will be put in place.	XX
Only small supplies of fine powder materials will be used on site, and bags will be sealed after use and stored appropriately to prevent dust	XX
Scabbling (roughening of concrete surfaces) will be avoided if possible	XX

Water-assisted dust sweeper(s) used on the access and local roads, to remove any material tracked out of the site daily if required	XX
Vehicles entering and leaving the site covered to prevent escape of materials and dust during transport.	XX
Measures Specific to Track out	XX
Vehicles leaving the site inspected and cleaned to ensure that any mud or other dust causing materials from the vehicles prior to exiting onto the highway.	XX
A maximum-speed-limit of 5mph on surfaced and un-surfaced on -site haul routes and work areas within the site signposted.	XX
Traffic Marshall will be employed to manage all vehicle movements from the access at London Road to the Natural History Gallery vehicle unload area to ensure Horniman estate users and staff safety.	XX
A wheel washing system with rumble grids to dislodge accumulated dust and mud prior to leaving the works area to be installed to prevent material deposited on traffic routes within the Horniman estate and on external highways.	XX
Measures Specific to all works within the Natural History Gallery	XX
Permanent dust curtains/sealed hoarding to be installed prior to any works at openings from Natural History Gallery to other internal areas of the Horniman Museum. If access is required through these opening suitable doorways are to be installed	XX
All access doors from the Natural History Gallery to other areas of the Horniman Museum & gardens are to be kept closed at all times, to prevent escape of materials and dust during construction works.	XX
Regular cleaning within the Natural History Gallery works area to ensure no build up of dust and debris.	XX
When working within the Basement plant area a temporary dust curtain is to be installed to the Aquarium plant room to prevent dust migration into this sensitive area. And the plant room is to be cleaned of any debris and dust prior to removing the dust curtain at the end of each shift.	XX

Key: XX=Required/X Desirable

5.0 Dust Monitoring

Following the dust risk assessment above of the site the project is considered a **low-risk** category. In line with the Mayor of London " *the control of dust and emissions During Construction and Demolition Supplementary Guidance (July 2014)* dust monitoring equipment is not required for this low-risk site

The residual impact of air quality and dust on occupational exposure will be considered to minimise workers exposure and any breaches of air quality objectives that may occur outside the boundary.

An accurate log of complaints from the public will be kept on site recording the measures taken to address complaints where they are required. There will be ongoing communication with the main contractor and the Horniman Estates Team regarding any comments from the public.

5.1 Meteorology

The risk of dust impacts is highly dependent on meteorological conditions. High wind speeds increase the potential for dust to be raised and blown from the site while dry periods reduce the particle cohesion and therefore increase the potential for dust generation. High risk weather conditions include:

- Wind speeds greater than 5.0 m/s; and
- Prolonged periods of dry weather

The wind speed and direction will be measured on site and monitored by the Site Manager to alert staff to potential adverse conditions that may trigger the additional mitigation measures outlined in Section 4.

5.2 Visual Assessment

The frequency of visual inspections will be increased 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 during periods of adverse weather, i.e., during periods of dry weather with high wind speeds.

Regular off-site inspections will consist of a walk around the perimeter of site and making observations about dust emissions and dust soiling, particularly focusing on locations upwind of onsite activities. Observations will include regular dust soiling checks of surfaces such as street furniture, cars and window sills in close proximity to the site boundary, with cleaning to be provided if necessary.

5.3 Complaints and Incident Procedures

It is the responsibility of the Site Manager to record, respond to and follow up all complaints regarding dust. Site Managers are responsible for ensuring that suitably qualified personnel are available to always respond to complaints.

Actions to be taken by the Site Manager

- Note the time, date, name and contact details of complainant. Note if the complaint has been referred from the local authority. Ask complainant to describe the dust emission or nuisance; is it constant or intermittent, how long has it been going on for, is it worse at any time of day/any day of the week, does it come from an identifiable source.
- Within a day after receipt of a complaint undertake a site inspection. Note all dust producing activities taking place. If the complaint was related to an event in the recent past, note any dust producing activities that were underway at that time, if possible. Implement any remedial action as necessary.
- Within a day after receipt of a complaint, visit the area from where the complaint originated to carry out a visual inspection and ascertain if dust is still a problem.
- If another source of dust other than the construction work is identified as causing the nuisance, verify the source. Photograph the source and emissions.
- Within a week after the initial investigations have been completed contact the complainant to explain any problems found and remedial actions taken.
- If necessary, update any relevant mitigation measures to prevent any recurrence of problems.
- Ensure that the Senior management is notified that a complaint has been received, what the findings of the investigation were, and any remedial measures taken. This should be done within two weeks of a complaint being received; and
- Inform workers on site of any complaints, the findings of any investigations and what remedial measures should be taken.

5.4 Dust Soiling Monitoring

If complaints are received regarding dust soiling close to the development site, then a period of dust soiling monitoring may be undertaken to determine whether the dust affecting the complainants is likely to be generated by the site, and whether the level of dust soiling experienced has the potential to be considered a nuisance.

Dust soiling monitoring should be undertaken for a minimum period of four to six weeks but may be continued for longer periods if high levels of dust soiling are measured. Dust soiling monitoring would involve the deployment of monitors such as sticky pad or glass slide dust gauges at several locations including at affected receptors and at the boundary of the site closest to these properties, as well as at background locations upwind of dust generating activities.

Any dust soiling monitoring regime would be discussed and agreed with London Borough of Lewisham Council prior to commencement. Where any high levels of dust soiling are identified which may be caused by demolition and construction activities at the development site, additional dust mitigation measures will be implemented. Further monitoring may then be undertaken to demonstrate the effectiveness of such mitigation measures.

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

6.1 On-Road Vehicles

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 contractor will actively work with suppliers that can provide electric or hybrid vehicles. Subcontractors will be required to comply with the emission hierarchy where practicable.

6.2 NRMM

Non-road mobile machinery (NRMM) is defined as any mobile machine or vehicle that is not solely intended to carry passengers / goods on the road. The emissions requirements are only applicable to diesel (including diesel hybrids) powered machines / vehicles.

All non-road mobile machinery (NRMM) will comply with Stage IV Emission Standards (or the latest standard if the GLA requirements change) as a minimum if equal to or over 37kW. Where compliance with Stage IV requirements is not achievable or practical, an exemption will be sought from the GLA prior to arrival of the equipment on site.

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.

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 onsite checks.

The project team will cooperate with local authority inspections and provide the requisite information as required.

Approved details shall be fully implemented and permanently retained and maintained during the demolition and construction phases of the development.

Appendix A ~ Roof NRMM Record Log Sheet

Non-Road Mobile Machinery (NRMM)

Machinery type						
Access Platform	Bore Rig	Bulldozer	Compressor	Crane		
Crusher	Dumper	Excavator	Forklift	Generator		
Piling Rig	Roller	Telehandler	Other _____			
Date arrived on site						
Expected end date						
Machine ID						
Manufacturer						
KW power rating						
EU emission stage	Stage I	Stage II	Stage IIIA	Stage IIIB	Stage IV	Stage V
Engine approval number						

Company name	
Print name	
Signature	
Date	

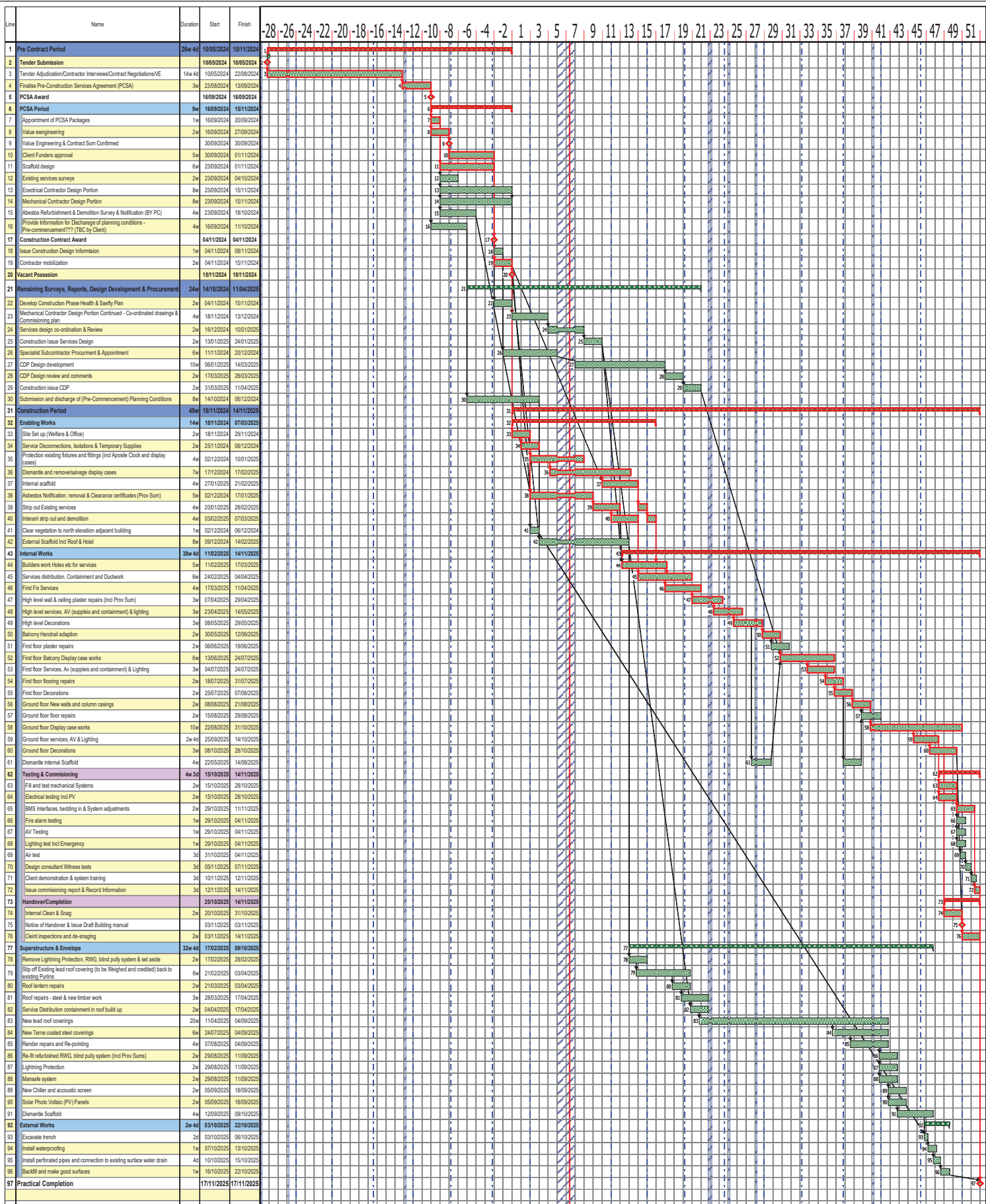
The current emissions requirement on this site:

All machinery on your site must meet EU Emission Stage IIIB. Because EU Emissions Stages IIIB and IV have not been defined for constant speed engines, this means that all constant speed machinery will effectively be required to meet EU Emission Stage V.


The emissions standards apply to all machinery with an engine power between 37 kW and 560 kW. Please add all in-scope NRMM to the site record as it arrives on your site. You can also use the site to record equipment that does not fall within these power bands. This will assist the enforcement officers to identify machines that they do not need to inspect in detail when they visit the site.

As the site administrator you are expected to ensure that all machinery used over the course of the development is correctly logged, including any retrofits or other machinery that requires an exemption to operate. You are also expected to ensure that non-compliant machinery, or machinery that has been refused an exemption, is removed promptly. Failure to comply with the NRMM Low Emission Zone can result in formal enforcement action against the site.

Appendix B ~ Programme



Milestone Appearances
 ◆ Start Milestone

	Programme Title: Horniman Natural History Gallery	Prog no : Revision no : Rev. date :	Manager : Trevor Mingail Drawn by: Planner - TM Notes: PCSA, Design & Construction Programme	Planned by Roof Limited http://www.rooff.co.uk Horniman Museum & Gardens
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Appendix C ~ Site Plan

General Note:
 1. All areas shown in green are to remain open throughout construction.
 2. All areas shown in red are to be retained throughout construction.
 3. All areas shown in blue are to be dedicated to contractor use throughout construction.



Nature Trail footpath to remain open throughout construction works

Public footpath to remain open throughout construction works

Horntown footpath must remain open as much as possible - if unavoidable, alternative route and site signage to be provided

Vehicle access to NEZ7 across meadow, with appropriate ground protection and public safety measures, to be agreed by Contractor and Horntown

Temporary staging area to be agreed with Horntown - area must be removed during weekends and for special events

Existing path to be temporarily widened, with appropriate ground protection provided

Area earmarked for Contractor's compound

Site area to be used part of Contractor's compound - note there are no level areas within area

Vehicle access to Michael Horntown Building to be retained throughout construction

Car Parking area earmarked for Contractor's compound

Grass banks area earmarked for Contractor's compound - note this area is steeply sloped and any temporary works to create level areas will require prior approval

Existing level access fire escape route must be retained throughout construction - require special procedures to be agreed and in place in the event of an alarm

First Floor offices to be made available to contractor for site offices

Primary access point of access for contractor into NHG - sloped

WC facilities to be dedicated to contractor use

External storage area for Horntown to be created - day-to-day access required, from south

Plant areas requiring client access during construction

Site hoarding to separate NHG from publicly accessible areas (at ground and first floors). Doors to be provided strictly for out of hours deliveries

Lift to be programmed to stop first floor access

Vehicle access to B&H area to be retained throughout construction period

Access from London Road required by planning conditions:
 All construction and delivery vehicles be restricted to use A205, Honor Oak Road and Westwood Park
 Wheel and chassis washing facilities at site entrance (requirement of planning permission)

Temporary dedicated footpath to be provided for Horntown staff and contractors



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Client:
 Horntown Museum and Gardens
 Site Address:
 100 London Road, London, SE23 3PQ

Project:
 Nature + Love Project

Drawing Title:
 Proposed Construction Management Site Plan

Project Stage:
 RIBA Stage 3

Scale @ A3:
 1:2000

Drawing Number:
 NLP-FF-00-XX-DR-A-00119

Check:
 EH FF
 P02