



## **NOISE, VIBRATION AND DUST MITIGATION MEASURES**

### **Kensington Palace Orangery Yard Project**

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## CONTENTS

<b>1. Minimising the Impact of Noise, Vibration and Dust</b> .....	3
1.1. Considerate Constructors Scheme.....	3
1.2. Code of Considerate Practice.....	4
1.3. Working Hours.....	7
1.4. Noise Mitigation and Management.....	7
1.5. Key References.....	7
1.6. Access / Egress Procedures.....	7
1.7. Cleanliness of Highways.....	8
1.8. Environmental noise and vibration – “Statutory nuisance”.....	10
1.9. Emissions – Dust, Pollutants, Odour, Fumes and Lighting.....	11

# CODE OF CONSTRUCTION PRACTICE

## 1. MINIMISING THE IMPACT OF NOISE, VIBRATION AND DUST

The Royal Borough of Kensington and Chelsea sets out the expectations of the Construction process in the Document entitled “Code of Construction Practice, Minimising the Impact of Noise, Vibration and dust.”

This document should be issued to any Trade Contractor or Subcontractor that will be involved in the Kensington Palace, Orangery Yard Project.

The document is very informative and sets out the standards expected from The Royal Borough of Kensington and Chelsea. The document can be viewed at the following web address:  
<https://www.rbkc.gov.uk/code-construction-practice-minimising-impact-noise-vibration-and-dust>

The main purpose of the code is to:

- Raise awareness of the very real problems caused by construction for local communities.
- Detailing the legislation dealing with noise and vibration and how the Council will use its powers to mitigate disturbance to residents.
- Encourage Architects and developers to design the project from the outset to minimise impact on neighbor’s.
- Set out how construction impacts should be assessed.
- Describing best practice for controlling noise, vibration and dust.
- Giving guidance on how Contractors should engage with the local community and deal with complaints.

The following document details the measures that can be taken at the construction phase of the project to minimise the impact of noise, vibration and dust.

The CTMP for the Kensington Palace Orangery Yard Project also details best practice, legislation and mitigation measures in more detail.

### 1.1. Considerate Constructors Scheme

The Considerate Constructors Scheme is the national initiative set up by the construction industry to improve its image. The Scheme is shaping UK construction into a more considerate industry, one that engages with its community, supports and develops its workforce, and better protects the environment. This is important, as the requirement for organisations to register with an appropriate good practice scheme is a feature of the standards the Government has set out for construction procurement.

Construction sites and companies that register with the Scheme are monitored against a Code of Considerate Practice, designed to encourage best practice beyond statutory requirements. The Scheme is concerned about any area of construction activity that may have a direct or indirect impact on the image of the industry as a whole. The main areas of concern fall into three categories: the general public, the workforce and the environment.

## 1.2. Code of Considerate Practice

Considerate constructors always seek to improve the image of the construction industry by striving to promote and achieve best practice under the Code. This outlines the Scheme's expectations and describes those areas that are considered fundamental. The Code applies to all registered sites and companies, regardless of size, type or location. The details by which the code will be applied to the project are as below:

### Enhancing the Appearance

Constructors should ensure sites appear professional and well managed:

- Ensuring that the external appearance of sites enhances the image of the industry.
- Being organised, clean and tidy.
- Enhancing the appearance of facilities, stored materials, vehicles and plant.
- Raising the image of the workforce by their appearance.

### Respecting the Community

Constructors should give utmost consideration to their impact on neighbours and the public:

- Informing, respecting and showing courtesy to those affected by the work.
- Minimising the impact of deliveries, parking and work on the public highway.
- Contributing to and supporting the local community and economy.
- Working to create a positive and enduring impression, and promoting the Code.

### Protecting the Environment

Constructors should protect and enhance the environment:

- Identifying, managing and promoting environmental issues.
- Seeking sustainable solutions, and minimising waste, the carbon footprint and resources.
- Minimising the impact of vibration, and air, light and noise pollution.
- Protecting the ecology, the landscape, wildlife, vegetation and water courses.

If required, monitoring equipment such as Casella's "Boundary Guardian" could be employed to provide ongoing noise /dust and vibration monitoring stations with the data easily accessible by all parties. With a bolt on vibration pack as currently used at Earls Court Exhibition centre. This monitoring is in accordance with BS4142 / BS5228 for Noise and for Dust the Environment Agencies guidance on PM10 dust. Continued support and guidance can be gained from Casella Measurement.



Ensure compliance and an impressive ROI, through remote monitoring of noise, dust and vibration.

BOUNDARY Guardian is a web-based remote monitoring system for noise, dust and vibration emissions from construction, demolition or process sites to ensure compliance with regulatory limits. Savings on consultancy fees mean an easily demonstrable return on investment with payback typically less than 6 months.

#### Applications

- Demolition phase monitoring
- Construction sites
- Roadside / traffic monitoring
- Waste transfer stations
- General compliance monitoring
- Site monitoring strategies
- Planning guidance monitoring
- Section 61 compliance (UK)
- PPG24 compliance (UK)

#### Key features

- Real time dust (PM10, PM2.5 or TSP) and noise levels (LAeq, LAFmx)
- IEC61672-1 Compliant Sound Level Meter
- Heated inlet to reduce moisture interference
- Vibration level (peak particle velocity)
- Maintenance free wind speed and direction sensor (optional)
- Noise percentile readings (e.g. L90)
- Email and text alarms for exceeded noise, dust and vibration levels
- Web hosted data with a secure private login
- Noise or dust only versions available

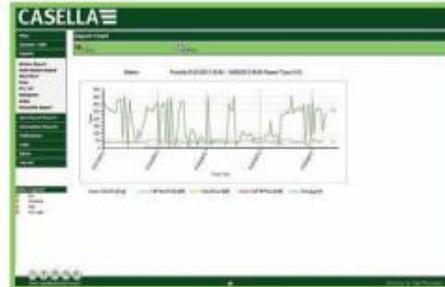


Example of possible “live” monitoring of noise, dust and vibration equipment

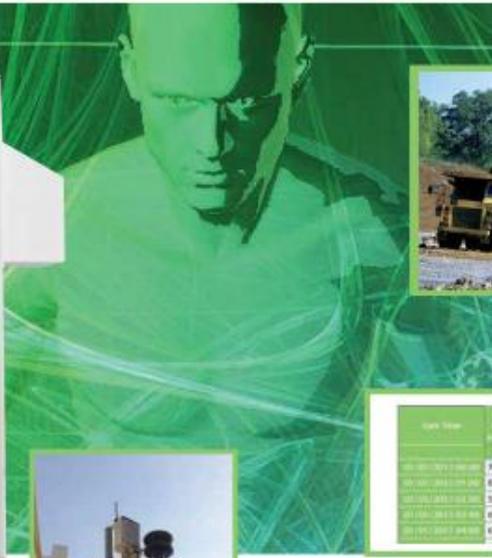


Demolition monitoring

*“What’s more”, AIBn concludes: “The Local Authority Environmental Health Officer welcomed the use of the BOUNDARY Guardian because the versatility of the monitor helped us to achieve full environmental compliance.”*



Access and analyse your data via our dedicated website [www.dstview247.com](http://www.dstview247.com)



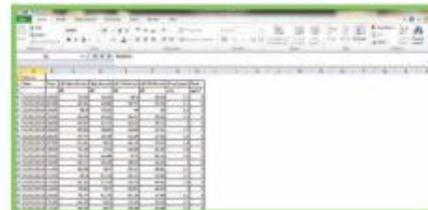
Waste management

Unit Name	Unit ID	Temp	Humidity	PM10	PM2.5	CO	NO2	SO2	NOx	Vibration
Unit 001	001	25.5	65.0	120.0	45.0	0.5	1.2	0.1	1.5	0.05
Unit 002	002	26.0	66.0	115.0	44.0	0.5	1.3	0.1	1.6	0.05
Unit 003	003	25.8	65.5	118.0	46.0	0.5	1.4	0.1	1.7	0.05
Unit 004	004	26.2	67.0	122.0	47.0	0.5	1.5	0.1	1.8	0.05
Unit 005	005	25.9	66.5	119.0	45.5	0.5	1.3	0.1	1.6	0.05
Unit 006	006	26.1	67.5	121.0	46.5	0.5	1.4	0.1	1.7	0.05
Unit 007	007	25.7	65.8	117.0	44.5	0.5	1.2	0.1	1.5	0.05
Unit 008	008	26.3	68.0	123.0	48.0	0.5	1.6	0.1	1.9	0.05
Unit 009	009	25.6	65.2	116.0	44.0	0.5	1.1	0.1	1.4	0.05
Unit 010	010	26.4	68.5	124.0	49.0	0.5	1.7	0.1	2.0	0.05

Easy to print, export and report data



Roadside monitoring



Produce Graphical or text reports

*He continues: “This required real time 24-hour monitoring. We chose the Casella BOUNDARY Guardian because it has some new features such as local alarms and emails that inform us when dust or noise limits are exceeded, plus a dedicated website for viewing real time and historical data from the unit.”*

### 1.3. Working Hours

The permitted hours of work for any works that are audible at the site boundary are as follows:

- Mon-Fri 8.00– 18.00 hours
- Sat 08.00 –13.00 hours
- No noisy working will be permitted on Sundays and Bank Holidays

Allowable delivery times are noted in section 5.0.

Working outside these hours must be in agreement with the Client and Contract Administrator. In the case of work required for an emergency, the relevant parties and local residents will be advised as soon as is reasonably practicable that the works are taking place and their likely duration.

### 1.4. Noise Mitigation and Management

The Main Contractor will establish background noise levels at the boundary of the site and will restrict activities or alter demolition and piling methods, if applicable, and practicable. During the demolition and construction of the steel frame monitoring of noise and vibration will be carried out if necessary, consultation with the Royal Borough of Kensington and Chelsea Noise team would allow the scheme to be developed fully.

Consultation as to achieving the authority's requirements has occurred with Mr Shaun Knott of Casella who is available to advise further on the methods of monitoring and control of noise, dust and vibration.

### 1.5. Key References

- Control of Pollution Act 1974 (CO PA)
- The Environmental Protection Act 1990 (EPA)
- BS 5228: 1997 Noise and Vibration control on construction and open sites

### 1.6. Access / Egress Procedures

Deliveries to the site will be planned as outlined on the programme of works and each subcontractor will be requested to provide their own trade specific traffic management method statement as part of their initial package information. This will be based on the main contract programme and traffic management plan. Due to space restrictions the principle of "just in time" delivery / removal will be adopted for the site.

Works including the provision of safety zones and temporary signage will be carried out in accordance with Chapter 8 of the Traffic Signs Manual and "Safety At Streets And Road Works – A Code of Practice" published by the Department of Transport.

A specific route will be agreed with all contractors to ensure that all vehicles will comply with this route to minimise heavy construction vehicles utilising other minor residential roads in the vicinity. With regard to managing vehicles on site and minimising pollution the following methodology will be instigated:

- All vehicles will be required to switch off engines at all times whilst on site and making deliveries.

- All waste loads leaving the site will be covered.
- The road outside the project site location will be kept clean at all times by regular cleaning and wheel cleaning facilities if required.
- On-road vehicles will comply with the Low Emission Zone in operation generally within London including rear CCTV to display blind spots whilst reversing with a qualified Banksman.

Careful planning and phasing of the work will be developed to provide good access for the plant and vehicles necessary to undertake the civil engineering and excavation works during the first phase of the project.

Highway safety will be proactively managed and will include measures such as restricting deliveries where possible to avoid busy local times and ensuring that a Banksman and two traffic marshals are in place to allow the safe reversing of vehicles. Signage will be posted around the site boundary and adjacent to the access gates providing clear warnings of the construction activity and vehicular movements. During deliveries, the open gates will form a pedestrian barrier ensuring no access by the potentially waiting pedestrians.

The site operational hours will be Monday to Friday 8.00am to 6.00pm and Saturday 8.00am to 1.00pm.

## 1.7. Cleanliness of Highways

### Objective

The objective is to ensure footways and carriageways adjacent to the site are kept clean at all times, ensuring no mud, dirt, debris or other loose materials are deposited outside the site on highways or footpaths.

### Contractor Requirements

#### **Roads and Highways – provide:**

- Where reasonable practicable easily cleaned hard standings for vehicles entering, parking and leaving the site.
- Wheel washing facilities during the demolition, and ground works of the new build phase of the project, including provisions to clean the chassis and wheels.
- Road sweeping to clean the site hard standings and any mud or debris deposited by site vehicles on roads or footpaths in the vicinity of the site.
- Sufficient bins and waste facilities.
- Litter picking facility for un-attributable materials.
- Facilities to minimize the formation and spread of dust by a continuous fine water spray.

**Gullies and Drains** – provide:

- Measures to ensure mud and residue is not washed into nearby gullies and drains.
- Maintain silt traps.
- Protection plates/sheeting to highly trafficked gullies and drains.

**Vehicles** – ensure:

- All loads of loose (including excavated materials, debris, concrete) or dusty materials transported from site shall be securely and adequately loaded and sheeted.

Mitigation Measures

In consideration of the local environment, site planning will include attention to the following mitigation measures:

- Dust mitigation measures such as water suppression will be deployed for excavation, cutting or similar operations. All personnel working within associated construction activities will be fully trained in dust suppression methods, which will be overseen by the site management team who will maintain overall responsibility for its implementation.
- Materials will be stockpiled as little as possible however if awaiting removal from site will be covered.
- Plant on site will be low emission and will be fitted with catalysts, diesel particulate filters or similar devices. Plant brought onto site that does not have appropriate certification to demonstrate this will not be permitted to be used and will be removed from site.
- All plant brought onto site will have servicing records and test / safety certification.
- All construction vehicles will be required to comply with the Euro 4 emissions standard and the Low Emissions Zone as operational within London.
- As part of the methodology for the carrying out of their works the key contractors with multiple lorry movements and on site plant (groundworks, piling) will be encouraged to adopt 'green fleet management practices' that will assist with reducing tail-pipe CO2 emissions. Initiatives that contractors will be encouraged to adopt will include the use of fuel saving equipment in vehicles, accreditation with FORS (Freight Operator Recognition Scheme run by TfL) or SAFED (Safe and Fuel Efficient Driving run by the DfT).

During all phases the security guard, as well as a traffic controller will manage traffic movements and deliveries. They will minimise any impact that the works may have on other highway and Park users.

We will liaise with the local authority waste management team to ensure there is no conflict between delivery vehicles and refuse vehicles. Initial contact will be made to discuss any possible issues. Although we do not expect this to be an issue.

## 1.8. Environmental noise and vibration – “Statutory nuisance”

### Objective

The objective is to control and limit noise and vibration levels, as far as is reasonably practical, so that dwellings and other sensitive receptors are protected from excessive noise and vibration levels arising from construction activities.

### Definitions

- ‘Noise’ – arising from use of construction plant, machinery and construction processes.
- ‘Vibration’ – arising from use of construction plant, machinery and construction processes.

### Contractor requirements and mitigation of noise and Vibration Nuisance

In all cases, the best practicable means of minimising noise will be used. BS 5228: ‘Noise control on construction sites and open sites’ is generally the accepted guidance during the construction works.

In determining the particulars/method of work and their relationship to minimising noise and vibration the intention is to ensure:

- Adherence to site rules and restrictions, including making due allowance with programme of works.
- Employment of best working practices and methods, including consideration of alternative methods, materials and products which minimise the requirements to make noise.
- Continually investigate and employ plant and methods which minimise noise impact and general nuisance.
- The type of plant/machinery being used is appropriate and it had been constructed to meet the requirements of EEC directives. Research the level of noise generated by plant and equipment before it arrives on site.
  - Ensure all fixed items of construction plant are electrical powered rather than diesel or petrol driven if possible. Where this is not practicable, suitable attenuation measures should be provided if necessary.
  - When breaking concrete do not employ percussion type plant when practicable.
  - Where practicable, rotary drills and bursters actuated by hydraulic or electrical power should be used for excavating hard materials.
- All equipment used is maintained in good mechanical order and fitted with the appropriate shields, silencers, mufflers or acoustic covers/enclosures.
- Fixed noise sources are sited as far as possible from the noise sensitive areas, and where necessary acoustic barriers and screens should be used to shield them.
- Briefing of management and operatives to ensure all restrictions are clearly noted with method statements. State the types of plant being used including manufacturer literature to advise of the sound power level of the plant, and the proposed noise control methods.

- Movement of vehicles and plant to and from the site is controlled and within the permitted hours unless otherwise agreed.
- Liaise with the Contract Administrator and relevant parties in advance of problems, out of hours working or where deviations are required.
- Compliance with Human Exposure regulations associated with vibration in construction
- Activities are carried out in such a way that vibrations arising will not cause damage to adjacent structures, residents and passers-by.
- Consider and employ noise and vibration monitoring and measurements if appropriate.

## 1.9. Emissions – Dust, Pollutants, Odour, Fumes and Lighting

### Objective

The objective is to work in such a way that emissions to air of dust, pollutants, odour, fumes and lighting are minimized and that the best practicable means are used to avoid creating a statutory nuisance.

### Contractor Requirements and Mitigating Measures

- Undertake best working practices to avoid dust and emissions being generated e.g. “monoflex” to scaffolding, covers to skips, damping of demolition or excavation, filtered dust extraction.
- Carry out dust suppression measures to reduce the potential for dust on site e.g. dampening down with fine water spray.
- Ensure all plant and equipment is regularly maintained to ensure emissions are kept.
- Complaints Procedures.

A complaints procedure will be published as part of the plan to provide a mechanism for any comments or complaints to be registered and actioned. Each of the local and surrounding properties will be contacted in writing and provided with contact names and numbers prior to the commencement of the works and they will be kept regularly updated on progress and also planned activities that may affect them.

A close liaison will be established in this way with the local community and in addition, contact numbers of the site management team will be displayed on hoardings to enable quick and easy contact to be made by any member of the public. The site team will endeavour to respond to all comments or complaints within a 24 hour period, and they will be required to keep a record of any such comments together with confirmation of actions taken to resolve the issue.

There will be a 24 hour emergency contact number available to call, should any problems arise.