132B FULHAM ROAD, LONDON SW3

PREDICTED NOISE LEVELS FROM CONSTRUCTION WORKS AT CLOSEST RECEPTORS [SECTION 9]

Calculations have been undertaken to determine the likelihood of impact at the closest receptors. It should be noted that the exact details of the plant and construction schedule have not yet been finalised. The calculations undertaken for this assessment are, therefore, based on a typical scenario for similar projects to provide an indication of the likelihood of noise, dust and vibration impact.

Typical equipment and plant likely to be in used at the site includes, but is not necessarily limited to, the following:

- Piling rig
- Crane
- Mini excavators
- Dewatering pumps;
- Conveyors;
- Handheld breakers;
- Cement mixers;
- Drills, saws and small tools;
- Grinders;
- Grab lorries;
- Generators.

In addition to the above equipment, noise will also be generated by occasional events such as deliveries. Because of their very short duration during a working day these will not add significantly to the predicted noise levels, attached.

High Impact Works are identified in the calculations, attached. **[SECTION 10]**

PROPOSED STEPS TO MINIMISE NOISE AND VIBRATION [SECTION 11]

NOISE

Based upon typical CSA library levels, supported by information given in BS5228-Part1: 2009 *Code of practice for noise and vibration control on construction and open site: Noise*,

indicative worst case noise emissions have been predicted at the most affected residential neighbours, 37 Cranley Gardens and 132 Fulham Road, the nearest facades of which are both approximately 5m from the centre of the proposed area of works. The calculations are attached.

Due to the close proximity of the nearby properties, screening attenuation will be required at this site. Site hoarding of at least 2m in height would typically be required.

In addition, due to the nearby properties overlooking the site, localised screening should also be provided by portable screens close to specific areas of noisy works (e.g. grinders, saws and compactors). It has been assumed in this assessment that such acoustic screens and enclosures will be used with appropriate attenuation figures assumed.

For the purpose of the assessment all works have been assumed to be in the centre of the area of works. In reality some activities will be marginally closer but similarly some will be further away. The scenario calculated is likely to be representative of anticipated 10-hour average L_{Aeq} noise levels. The *'on time'* for activities has been assessed on the typical anticipated plant usage.

These robust calculations show that the noise levels are likely to exceed the suggested CoCP 70dB limit during the breaking out phase, if not subject to physical controls and/or when occurring for the entire working day. The Contractor is, therefore, required to reduce noise levels on site, wherever practicable, and implement physical measures to mitigate noise propagation to neighbouring properties. The highest impact plant will be breakers which may also give rise to structural borne noise.

VIBRATION

Vibration levels are expected to be at their highest during the breaking-out of underground structures. Referencing CSA's extensive database of vibration measurements from demolition works, heavy breakers typically generate vibration levels of 3mm/s to 5mm/s P.P.V. in structures situated within several metres of the working area. Due to geometric spreading and geological attenuation, vibration will diminish rapidly with increasing distance. Although the vibration is likely to be perceptible in some areas of the neighbouring properties, the anticipated levels of groundborne vibration are

considered highly unlikely to cause cosmetic damage of structures. It is possible that the levels may give rise to re-radiated noise within the neighbouring residential premises.

MITIGATION AND MANAGEMENT

The following key factors have been identified as determining the degree and type of mitigation required.

Site Location & Existing Ambient Noise Levels

Sensitive neighbours have been identified. A detailed environmental noise survey has been carried out to quantify prevailing noise levels on and around the site.

Duration of Works

It is essential to cultivate an appropriate environment in which this exposure can be best tolerated from the outset, minimising adverse community reaction.

Communications and public relations are dealt with in detail below but it is important to establish that communication of information regarding the overall project duration is significant in controlling adverse community reaction.

Hours of Works

It is understood that the permitted hours for 'noisy works' are restricted to 8am to 6pm Monday to Friday. In addition to the above permitted hours, further restrictions are placed on works deemed to be of "high impact" in terms of the level of disturbance caused to neighbouring residents and businesses. This is to ensure that nearby occupiers have sufficient breaks from activities that can be extremely disruptive. The potential "high impact" works have been identified in the attached calculations summary. The permitted hours for 'high impact works' are 9am-12pm and 2pm-5:30pm Monday to Friday.

These hours should be rigorously observed for any operations which are likely to generate noise levels noticeable by neighbouring residents. In addition, it may be necessary to undertake noisy works on an on/off basis, thereby providing neighbouring residents with some respite. Any exceptions deemed essential to the works which need to be authorised by the Local Authority and must also be communicated with the residents.

It should be noted, however, that it is sometimes preferable to extend working hours for a limited period in order to quickly complete essential noisy operations rather than increase their duration, which might cause more annoyance.

Attitude to the Site Operator

In conjunction with effective communication of site activities and scheduling, liaison with local residents is essential in cultivating a positive attitude in the community. A dedicated telephone number and designated staff contact should be made available to respond to any complaints or queries, with a messaging service for 'out of hours' enquiries. Information on current and forthcoming activities should be made as freely available as possible.

Noise Characteristics

Some noisy activities are particularly intrusive due to tonal or impulsive characteristics which tend to draw more attention to their operation. A typical example of this is heavy duty percussive breakers. Awareness of these issues is important in liaison with local residents. Local temporary acoustic screening to these activities, as required, will also significantly reduce the impact at the closest residential properties.

Contractor's Obligations

In order to minimise and manage noise and vibration impacts at neighbouring properties, the Contractor will;

- Erect good quality imperforate hoarding or temporary mass barrier sheeting, such as Echo Barrier, fixed to Heras fencing, or similar, around any openings made in the facades to the maximum practicable height, allowing for stability, wind loading, etc.;
- At all times and subject to availability, select and use quietest plant, machinery and vehicles appropriate for the task being undertaken. All vehicles and mechanical plant used for the purpose of the works will 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;
- Employ at all times the Best Practicable Means (BPM), as defined in Section 72 of the Control of Pollution Act 1974, to reduce noise (including vibration) to a minimum, with reference to the general principles contained in British Standard BS5228;
- Facilitate an early community involvement exercise with neighbours to establish and agree protected areas of their properties and then to continually update

progress and forewarn of impending noisy works. A member of onsite staff should be designated as community relations manager to maintain good communications with neighbours;

- Adopt and adhere to agreed 'on' and 'off' times for noisy works and/or vibration sources, if required to do so by the council;
- If deemed necessary, undertake or employ an independent third party to undertake noise, vibration and dust monitoring at locations to be agreed with the Local Authority, with pre-set 'soft' and 'hard' trigger levels and text message alerts to instantly notify when and where they are exceeded. The Contractor should commit to stop work immediately once an alert is received and to investigate. Working procedures may then need to be reviewed and modified to prevent re-occurrence. Records of monitor data should be compiled and reported weekly to all relevant parties. The extent of monitoring required can then be continually assessed and amended as found necessary or desirable;
- It may be appropriate to undertake some test works prior to the commencement of the project to demonstrate the likely levels of vibration in the neighbouring properties. Depending on the outcome of the exercise, alternative plant or working programme may need to be considered;
- Operate a 'considerate builder' type scheme in which a commitment is made, amongst others, to undertake proper maintenance of equipment, control use of radios on site, site equipment with due consideration to proximity of neighbours and ensure it is turned off when not in use.

PROPOSED STEPS TO MINIMISE DUST [SECTION 12]

In order to manage dust at the site, the Contractor will employ the following best practice techniques as set out in The London Councils' Best Practice Guidance: *The control of dust and emissions from construction and demolition* (November 2006).

- Damping down;
- Covering bulk materials;
- Use of bagged or silo stored materials;
- Erect wind breaks/fences (these can double as acoustic barriers).

MONITORING REGIME [SECTION 13]

Noise, vibration and dust monitoring may need to be undertaken subject to agreement with the Noise and Nuisance Team. A monitoring regime would be agreed with the Council prior to commencement of any works. The regime would follow the advice as set out in Section 11 of the CoCP. The following is an example of an appropriate Scope of Works for monitoring.

Noise Monitoring

Class 1 integrating logging sound level meters e.g. Rion NL-32 or similar, will be installed with calibration verified (before and after) with a Class 1 acoustic calibrator. The instrumentation will have been fully calibrated by the manufacturer, or other approved body, as required by the relevant British Standard, with current calibration certificates available. The meters will be set to measure and store samples of various acoustic parameters such as L_{Aeq}, L_{A90}, L_{A10} and L_{Amax}. SMS alerts would be utilised and data would be downloaded remotely on a regular basis.

It is proposed that the meters are configured to log continuous 1-hour samples of noise throughout the working day, which will be used to calculate a 10-hour (daily) L_{Aeq}. Daily limits and hourly action levels will be agreed with the Council prior to the works.

Vibration Monitoring

Vibration monitoring will be undertaken with the use of Vibrock V901 seismographs, or similar, measuring the peak particle velocity [ppv] continuously over defined activity periods. The instrumentation will have been fully calibrated by the manufacturer, or other approved body, as required by the relevant British Standard, with current calibration certificates available. SMS alerts would be utilised and data would be downloaded remotely on a regular basis.

It is proposed that the meters are configured to log continuous 30-second samples of maximum ppv levels throughout the working day. Action levels will be agreed with the Council prior to the works.

Dust Monitoring

Automated particulate monitoring of average 15-minute PM10 dust levels will be undertaken with Turnkey Osiris monitors, or similar. The monitoring will be undertaken in accordance with The London Councils' Best Practice Guidance: The control of dust and emissions from construction and demolition (November 2006).

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Summary of Calculations

Receptors at 37 Cranley Gardens and 132 Fulham Road

Site Preparation and Enabling Works

Plant	Sound Pressure level	Distance (m)	In concurrent use	Distance to receptor	Noise Level at receptor	Screening	Mitigated Noise Level	53
Generator	59	10	1	5	65	-15	49	dB(A)
Makita Combi Drill	67	10	1	5	73	-15	51	10-hour

Above Ground Demolition (High Impact Works)

Typical Plant	Sound Pressure level	Distance (m)	In concurrent use	Distance to receptor	Noise Level at receptor	Screening	Mitigated Noise Level	72	Corrected for high impact works hours (0900-1200, 1400-1730) 70
Heavy Duty Hand-held Breaker	83	10	1	5	89	-15	68	dB(A)	dB(A)
Dumper	76	10	1	5	82	-10	69	10-hour	10-hour
Grab Lorry	68	10	1	5	74	-10	58		
Mini Excavator	65	10	1	5	71	-15	53		
Maxiveyor Conveyor	68	10	1	5	74	-10	63		

Slab Breakout (High Impact Works)

Typical Plant	Sound Pressure level	Distance (m)	In concurrent use	Distance to receptor	Noise Level at receptor	Screening	Mitigated Noise Level	72	Corrected for high impact works hours (0900-1200, 1400-1730) 70
Heavy Duty Hand-held Breaker	83	10	1	5	89	-15	68	dB(A)	dB(A)
Dumper	76	10	1	5	82	-10	69	10-hour	10-hour
Grab Lorry	68	10	1	5	74	-10	61		

Piling/Underpinning (High Impact Works)

Typical Plant	Sound Pressure level	Distance (m)	In concurrent use	Distance to receptor	Noise Level at receptor	Screening	Mitigated Noise Level	77	Corrected for high impact works hours (0900-1200, 1400-1730) 75
Piling Rig	83	10	1	5	89	-10	76	dB(A)	dB(A)
Diesel Compressor	72	10	1	5	78	-15	60	10-hour	10-hour
Concrete Pump	75	10	1	5	81	-15	63		
Generator	59	10	1	5	65	-15	49		
Concrete Mixer	76	10	1	5	82	-15	64		
Makita Combi Drill	67	10	1	5	73	-15	52		
Mobile Crane	70	10	1	5	76	-10	60		

Pile Reduction (High Impact Works)

Typical Plant	Sound Pressure level	Distance (m)	In concurrent use	Distance to receptor	Noise Level at receptor	Screening	Mitigated Noise Level	71	Corrected for high impact works hours (0900-1200, 1400-1730) 69
Mini Excavator	65	10	1	5	71	-15	53	dB(A)	dB(A)
Heavy Duty Hand-held Breaker	83	10	1	5	89	-15	71	10-hour	10-hour

Bulk Excavation (High Impact Works)

Typical Plant	Sound Pressure level	Distance (m)	In concurrent use	Distance to receptor	Noise Level at receptor	Screening	Mitigated Noise Level
Heavy Duty Hand-held Breaker	83	10	1	5	89	-15	68
Dumper	76	10	1	5	82	-10	69
Grab Lorry	68	10	1	5	74	-10	61
Hydraulic Tracked Dumper	70	10	1	5	76	-15	58
Mini Excavator	65	10	1	5	71	-15	53
Mobile Crane	70	10	1	5	76	-10	63

73	Corrected for high impact works hours (0900-1200, 1400-1730)
dB(A)	71 dB(A)
10-hour	10-hour

Steelwork Installation

Typical Plant	Sound Pressure level	Distance (m)	In concurrent use	Distance to receptor	Noise Level at receptor	Screening	Mitigated Noise Level
Mobile Crane	70	10	1	5	76	-10	63
Hammer Drill	70	10	1	5	76	-15	55
Welder generator	59	10	1	5	65	-15	44
Makita Combi Drill	67	10	1	5	73	-15	52

64
dB(A)
10-hour

Structural Concrete Pours

Typical Plant	Sound Pressure level	Distance (m)	In concurrent use	Distance to receptor	Noise Level at receptor	Screening	Mitigated Noise Level
External Form Vibrator	70	10	1	5	76	-15	58
Diesel Compressor	72	10	1	5	78	-15	60
Concrete Pump	78	10	1	5	84	-15	66
Concrete Mixer	76	10	1	5	82	-15	64

69
dB(A)
10-hour