CD&B BASEMENTS

CONSTRUCTION MANAGEMENT PLAN

APPENDIX D

Noise, Vibration & Dust Management Plan

Flat 1, 31 Heath Drive, London NW3 7SB

client: Callender Howorth
date: 10th June 2015
prepared by: J.Puddy

1. INTRODUCTION

1.1.1 CD&B Basements have been instructed to produce a Noise Dust Vibration Management Plan (NDVMP) for the proposed basement extension works at Flat 1, 31 Heath Drive NW3 7SB

1.1.2 The purpose of the NDVMP is to identify the level of risk of adverse noise, dust and vibration effects that may be caused by construction activities associated with the basement extension works, and to ensure that potential effects are appropriately controlled so that the project is delivered with minimal impact to the amenity of the local community.

1.1.3 This document forms a record of the noise, vibration and dust mitigation and management which will be adopted during construction of the proposed basement extension at Flat 1, 31 Heath Drive NW3 7SB

1.1.4 Details of the site and the proposed development are described in the following section of this report. Site specific and generic control measures are listed in Section 3. A risk assessment of potential noise, dust and vibration risk effects is presented in Sections 4 though to 6 respectively. Finally a summary of the aforementioned sections is presented in Section 7.

2. SITE DETAILS AND OUTLINE WORKS PROGRAMME

2.1 Site Description

2.1.1 31 Heath Drive is located in a residential area within the administrative boundary of Camden The house is a detached, brick built, timber framed, slate roofed, period property in good condition; access to the working area is through gates at the side entrance

2.2 Proposed Development

2.2.1 The proposal involves extending down the existing lower ground and developing further subterranean rooms below the main house along with associated waterproofing, drainage and fitting out works. Above ground alterations and refurbishment are also planned

2.2.2 No works are planned above the ground floor of the house during the construction of the basement barring the formation of an access void linking the basement to the ground floor, due to restricted access to the house, all materials and plant are to be transferred to the area of works via the side entrance. The property will remain in occupation throughout the works.

2.2.3 All deliveries to the site will take place through the gated entrance to the side elevation, it is planned that construction traffic will approach the site from the north and exit to the south of the property towards Finchley Road. A conveyor belt is to be set up within the site boundary to transfer arisings from the works to the skip, which is to be sited on the road outside the property.

2.3 Sensitive Receptors

2.3.1 The property is surrounded on all sides by sensitive receptors therefore particular care should be taken to preserve their amenity throughout the planned works utilising the measures outlined in this report .

2.4 Construction Methodology

2.4.1 The development site will operate from 08:00 to 17:00 hrs weekdays and 08:00 to 13:00 hrs Saturdays. In order to reduce any negative impact upon the amenity of the identified sensitive receptors during commonly habited times, activities that produce high levels of noise will be limited to 08:30 to 16:30 hrs weekdays

2.4.2 It is expected that the majority of the construction of the basement will take 18 weeks to complete with 2 weeks set aside for final finishes and contingency. A Site Program is presented in Figure 2 of Appendix A

2.4.3 There are 7 key activities required to complete the construction of the basement and these are to be carried out sequentially. Further details of plant and expected usage are presented in Table 1 of Appendix B.

Site Set Up & Access

2.4.4 Upon commencement of the proposed development, works will be carried out to form the site compound, these works will include the erection of a timber framed plywood hoarding and high tensile polyethylene barrier sheeting. All requisite plant and materials for this and subsequent activities will be delivered to the gate of No. 31 Heath Drive and offloaded kerbside. Following delivery, the site crew will transfer all materials manually to within the site compound.

2.4.5 The current lower ground is layed with concrete slab. To form access to the proposed area of excavation, the slab will have to be broken up. It is estimated that this may take up to a two days of steady breaker usage.

2.4.6 All power tools to be used for this operation will be electrically operated; no diesel compressor or generator will be used.

2.4.7 Once the concrete is broken up, it will be transported via the conveyor to the skip, twice daily clearance of the skip is anticipated during this phase of works.

Underpinning & Excavations

2.4.8 Concrete underpinning is proposed under the existing perimeter of No. 31 Heath Drive.

2.4.9 Pins will be excavated measuring 1.2m wide and 3m in depth, temporary shoring will be installed to maintain structural integrity whilst the design reinforcement is being installed, formwork will then be installed and the concrete poured. Each pin will take up to two hours to concrete and will be completed on a frequency of one every two working days.

2.4.10 “Hit and miss” sequencing will be adopted as per traditional underpinning methodology.

2.4.11 In order to minimise vibration, excavations will be carried out using Hilti TE-1000 breakers utilising Active Vibration Reduction (AVR) technology. Excavated spoil will be removed via the conveyor belt and it is thought that two skips a day will be required, it is planned to batch all concrete pins onsite by hand thus reducing site traffic and noise.

Reinforcing

2.4.12 Wherever practicable, pneumatic shears will be used to trim concrete rebar, if this proves impractical due to restricted access and safety considerations, an electrically powered angle grinder will be employed.

Bulk Excavation

2.4.13 Due to access limitations, the remaining mass is to be excavated manually. Excavated spoil will be removed via the conveyor to the skip. Similarly to the underpinning phase it is anticipated that two skips will require clearing per day.

Concrete Pour to Base

2.4.14 Design reinforcement and sub floor drainage will be installed prior to the commencement of the concrete pour to form the slab, the rebar will be cut to size using pneumatic shears and an angle grinder in accordance with mitigation measures listed in Section 3.3.

2.4.15 The concrete pour to the basement is expected to take half a day and will involve a continuous pour for that time period.

Formation of Voids

2.4.16 The formation of voids in any RC slab work is not anticipated in the planned works

Site Finishes & Contingency

2.4.17 Following the completion of the structural phase and the demobilisation of the structural site crew, the site finishes will take place, these works will include the restoration of the garden to its previous state and the internal fitting out works. This is expected to take 12 weeks including a contingency period for works overrun. The site screening and dust protection measures will remain in place for the duration of these works.

3. NOISE DUST VIBRATION CONTROL MEASURES

3.1 Control Measures

3.1.1 The control measures detailed in this section have been developed in accordance with the proposed plant list, detailed in Table 1 of Appendix B and programme in Table 2 of Appendix B. Deviation from approved method statements will be permitted only with prior approval from the supervising engineer following a formal review.

3.2 Site Personnel

3.2.1 All operatives on site will be trained to ensure that noise minimisation and best practicable means (BPM) are implemented at all times. Works will be checked regularly by the Site Supervisor to ensure that BPM is being implemented throughout the program of works.

3.2.2 The site crew and sub contractors will be made aware of the importance of giving due consideration to the residential neighbours, and will be instructed through induction and signage not to generate unnecessary noise whilst in the proximity of the previously identified receptors.

3.3 Noise, Dust and Vibration Control Measures

3.3.1 Noise, dust and vibration control measures include:

· suitability in the choice of methodology/technique for operations (including site layout) will be considered in order to eliminate or reduce emissions at sensitive locations;

· fixed items of construction plant will be electrically powered in preference to diesel or petrol driven;

· wherever practicable fabrication will be undertaken off site;

· noisy plant will be kept as far away as possible from sensitive areas;

· each item of plant used will comply with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701 [4] where reasonably available;

· equipment will be well-maintained and will be used in the mode of operation that minimises noise;

· equipment will be shut down when not in use or throttled down to a minimum during waiting period;

· vehicles shall not wait or queue on the public highway with engines running (unless the engine is required to power the operation of the vehicle e.g. concrete wagon);

· all materials will be handled in a manner that minimises noise; and

· where possible deliveries will be arranged on a just-in-time basis in order to prevent vehicles queuing outside site

3.4 Site Specific Noise and Vibration Control Measures

3.4.1 Control measures detailed below will be implemented

· plant which is considered to introduce the risk of potential noise effects to be limited to working between 08:00 – 16:30 hrs and not permitted on weekends;

· breaker usage to be limited to only where absolutely necessary; where practicable concrete slabs to be cut, drilled and burst;

· all fixed plant (conveyor) is to be kept within the demise of No.16 Hillsleigh Road to reduce potential effects on neighbouring properties and is to be acoustically enclosed;

· a hoarding is to be installed around the site boundary to minimise noise emitted when loading;

· where possible rebar will be cut to the required lengths prior to site delivery to minimise any necessary site trimming;

· hydraulic or pneumatic shears will be used in preference to angle grinders when trimming rebar where practicable; and

· all HGV movements associated with the worksite will only take place during normal working hours, unless otherwise agreed and approved by LB Camden

3.5 Site Specific Dust Control Measures

· dust generated by the construction process will be suppressed via a fine directional spray jet of water aimed at the source;

· wetting down of material to be transported by conveyor;

· skips to be covered when not in use;

· cutting equipment to be used with water suppressant and/or suitable extract system;

· no burning of waste wood or other materials on site;

· the stockpiling of dust generating materials on site will be minimised;

· powders will be sealed when not in use;

· immediate cleanup of spillages of dusty materials in place;

· wet brushing techniques will be used for cleaning;

· regular checks for visual observation of dust and soiling within 50m of site;

· all mobile vehicles should comply with the standards of the Low Emission Zone;

· dust deposition and/or soiling monitoring during construction phase;

· no vehicle idling (unless required e.g. concrete wagon); and

· use of mains or battery powered plant where practicable.

4. NOISE RISK ASSESSMENT

4.1 Overview

4.1.1 This section presents an assessment of the risk of construction noise generated by the proposed works at No.16 Hillsleigh Road, and the associated potential adverse effects on the surrounding area.

4.1.2 An assessment of the potential noise effects has been undertaken based upon the plant and equipment, scheduled construction activities and the programme of works as presented in this document.

4.2 Baseline Conditions

4.2.1 Although no site specific baseline information is available for the site, initial observations indicate that the main noise sources in the locality of the proposed development are from local traffic and other neighbourhood developments. Baseline noise measurements will be obtained prior to the proposed construction to establish pre- existing ambient noise levels at the properties potentially affected by construction noise.

4.2.2 Taking into consideration the number of dwellings potentially affected, the programme of works, and the scale of the development, a level of 75 dB is to be adopted to assess acceptability of this short term project.

4.3 Predicted Noise Risk

4.3.1 Predicted receptor noise risks been determined based on the plant listed for each activity in Table 1 of Appendix B, and the construction programme detailed in Figure 1 of Appendix A.

4.3.2 Appropriate screening from buildings and other local barriers will be installed and maintained for the duration of the project, however, it is understood that barriers will not always screen noise sources from upper storeys as these may overlook the barriers. Worse case levels are presented.

5. DUST RISK ASSESSMENT

5.1 Overview

5.1.1 The purpose of this assessment is to identify the level of risk of dust emission associated with the construction activities, and to propose a suitable mitigation strategy to ensure negative impacts are controlled.

5.2 Baseline Conditions

5.2.1 No baseline information is available for the site, however it is understood that the baseline airborne particulate dust environment will be influenced by road traffic and dust from other sources.

5.3 Site Evaluation

5.3.1 It is recognised that the level of risk attached to a construction site is dependent not only on the size and scale of a development, but also the activities, the timing of works (seasonality) and the sensitivity of the surrounding area. As the works are in the main confined to below ground activity and the relatively short duration of the proposed works the risk of dust nuisance is LOW

5.3.2 Details of the worksite and the proposed scheme are presented in Section 2 of this document.

5.3.3 Sensitive dust receptors are those where the public may be exposed to dust from the worksite. Locations with high sensitivity to dust and within 100m of the proposed site include residential properties.

5.3.4 A list of sensitive receptors and the approximate distances to the worksite will be drawn up prior to the commencement of works. A plan showing the location of receptors in relation to the site is to be maintained at the site office for the duration of the works .

5.3.5 The distance from source to sensitive receptor is a key factor for determining the potential dust effects from a construction site. As a general guide, the main effects are at distances of less than 100 m. The distances from source that dust effects are felt is dependent the extent and nature of mitigation measures, prevailing wind conditions and the presence of natural screening by, for example, vegetation or existing physical screening such as boundary walls and buildings.

5.3.6 There are 10-25 receptors of ‘high sensitivity’ within 50 m of the worksite. No special ecological receptors are located near to the site and ecological air quality impacts are considered negligible.

5.4 Dust Risk Assessment Summary

5.4.1 Generic dust mitigation has been discussed in Section 3 and will be followed during the works. The risk to ecological receptors is negligible, the risk of health effects is low risk and the risk of dust soiling is medium risk during construction activities involving concrete and low risk during other activities.

5.4.2 Mitigation and BPM is detailed in Section 3.5 and visual monitoring of dust will be maintained throughout the works.

6. VIBRATION RISK MANAGEMENT

6.1 Overview

6.1.1 This section presents an assessment of the potential risk regarding vibration generated by the construction works detailed in this document, and the associated adverse effects on the surrounding area. The surrounding area is residential and it is unlikely that these residential buildings will contain sensitive equipment at risk of adverse vibration effects.

6.1.2 The risk assessment has been based on an appraisal of the plant listed in Table 1 of Appendix B, examining the likelihood of each item generating significant levels of vibration at receptors.

6.2 Guidance Vibration Limits

6.2.1 Vibration levels will be evaluated against guidance presented in BS 5228 Part 2 in order to assess the likelihood of both structural damage to neighbouring buildings and the human response of the occupants.

6.3 Vibration Control Plan

6.3.1 To control and minimise vibration effects caused by construction activity, the vibration mitigation measures listed in Section 3 of this report will be adopted at all times.

6.3.2 At the commencement of any potentially disturbing phases of works such as breaking out that are likely to cause complaints it is proposed that attended vibration measurements will be undertaken to ensure receiver levels remain below appropriate thresholds. and prior warning and explanation of the works is to be given to residents.

6.3.3 Works will be controlled on a risk based approach with attended monitoring used to judge the acceptability of the works, and safe working distances going forward.

7. SUMMARY & CONCLUSIONS

7.1.1 A noise, dust and vibration management plan has been prepared on behalf of Callender Howorth to assess the risk associated with the construction of a basement extension at No. 31 Heath Drive.

7.1.2 A construction methodology has been prepared in consultation with the site engineers and specific control measures have been presented for noise and vibration in Section 3.4 and dust in Section 3.5.

7.1.3 Due the enclosed nature of the site and the fact that the majority of the works are to be carried out below ground suggests that the risk of excessive disturbance caused by Noise is low. It is suggested that vibration monitoring be undertaken to ensure that threshold criteria presented in Section 6.2 is not exceeded at sensitive receptors.

7.1.4 The outcome of dust risk assessment presented in Section 5 shows the risk to ecological receptors is negligible, consequently the risk of health effects is low risk and the risk of dust soiling during construction activities involving is low risk.

7.1.5 with the control measures described in this NVDMP, the potential for significant noise, dust and vibration adverse effects will be minimised.

APPENDIX A – Figures

CD&B
BASEMENTS

31 Heath Drive NW3

Site Program

ID	Activity	Week 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1	Site Set Up & Access																																								
2	Underpinning & Excavations																																								
3	Reinforcing																																								
4	Bulk Excavations																																								
5	Concrete Pour																																								
6	Drainage & Waterproofing																																								
7	Site Finshes & Contingency																																								

Figure 1. Site Program

APPENDIX B - Tables

ID	Activity	Plant Name	Plant % on times	No. Plant	Location	Noise Risk	Dust Risk	Vibration Risk
1	Site set up & access	HGV Delivery	5	1	Road	Medium	Medium	Low
		Conveyor	50	1	Site	Low	Low	Low
		Hand Tools	60	3	Site	Low	Low	Low
		TE-1000 Breaker	40	1	Site	High	Medium	Medium
2	Underpinning & excavations	TE-1000 Breaker	50	2	Site	High	Medium	High
		Hand Tools	60	3	Site	Low	Low	Low
		Conveyor	50	1	Site	Low	Low	Low
		Skip Wagon (1 per day)	5	1	Road	Medium	Medium	Low
3	Reinforcing	Pneumatic Shears	50	1	Site	Low	Low	Low
		Angle Grinder	20	1	Site	High	Medium	Low
		Hand Tools	20	2	Site	Low	Low	Low
4	Bulk Excavation	Hand Tools	50	4	Site	Low	Low	Low
		Conveyor	50	1	Site	Low	Low	Low
5	Concrete Pour to Base	Pneumatic Shears	50	1	Site	Low	Low	Low
		Angle Grinder	20	1	Site	High	Low	Low
		Concrete Pump	40	1	Road	Medium	Low	Low
		Concrete Wagon	40	1	Road	Medium	Low	Low
6	Formation of Voids	Concrete Saw	60	1	Site	Medium	Low	Low
		Hydraulic Burster	30	1	Site	Low	Low	Medium
		Pneumatic Shears	10	1	Site	Low	Low	Low
		TE-1000 Breaker	10	1	Site	High	Medium	High
		Hand Tools	20	3	Site	Low	Low	Low
		Conveyor	50	1	Road	Low	Low	Low
		Skip Wagon	5	4	Road	Medium	Medium	Medium
7	Site Finishes & Contingency	Hand Tools	50	4	Site	Low	Low	Low
		HGV Delivery x 2	10	1	Road	Medium	Medium	Medium

Table B. Plant Usage Assumptions and NDV assessed risk values