



WOLSEY MEWS

CONSTRUCTION NOISE ASSESSMENT

Acoustics Report A1176/R01
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Report for:

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Contents

1 Introduction 1
2 Methodology and Criteria 1
3 Construction Programme..... 1
4 Assessment 2
 4.1 Vibration 2
 4.2 Noise 2
5 Summary 5

Appendix A: Results of Noise Monitoring by BHA



1 Introduction

Ion Acoustics is appointed by Burd Haward Architects to provide acoustic advice relating to the construction of two new dwellings on Wolsey Mews, Kentish Town, London. The two dwellings will be arranged over three storeys including the basement of the proposed building.

A Construction Management Plan has been asked for by the local authority and as part of that they require construction noise predictions to be included. This report provides an assessment of the noise impact during construction, including calculations, and provides outline advice of mitigation. The local authority also requested baseline noise measurements; these have been carried out by others and the Noise Monitoring Record Sheets giving the results is included in this report.

2 Methodology and Criteria

BS 5228: 2009 "*Code of Practice for noise and vibration control on construction and open sites*" provides methods for prediction and assessment of construction noise and vibration. The standard also provides advice on methods of noise and vibration control and reducing impact. The standard is in two parts: part 1 addresses noise and part 2 vibration.

There are no noise limits within the main text of BS5228:2009 and in fact, the preferred approach is to use 'best practicable means' to reduce noise rather than setting limits. This strategy will be adopted here. Nevertheless, a number of possible construction noise significance thresholds are presented within BS5228-1 Annex E for "*projects of significant size such as the construction of a new railway or trunk road*". Although this is a relatively small construction project these provide a useful reference. The simplest construction noise criterion is a fixed daytime limit of 75dB(A) for urban areas near main roads. However, as baseline ambient noise levels have been measured, BS5228-1 Annex E Example Method 2 can be used which is applicable for residential buildings as well as community and education buildings:

"Noise levels generated from site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5dB or more, subject to a lower cut off of 65dB $L_{Aeq,t}$ from site noise alone for the daytime."

Pre-construction environmental noise levels have been measured by BHA at the centre of the development site as L_{Aeq} 62.5dB over the 7-hour measurement period from 10.00 to 17.00 hrs. The results of this noise survey are presented in Appendix A.

3 Construction Programme

The highest noise levels are expected during the early stages of Enabling and Ground Works. These include demolitions of the existing garages, piling for foundations, excavation and breaking piles and building the basement. Enabling and Ground Works is expected to last 24 weeks in total. The noisiest periods will be demolition in the first week and piling, including breaking down of piles. Piling and breaking down piles is programmed to last 6 weeks from weeks 3 to 9.



After week 9 of the Enabling and Ground Works period heavy equipment such as excavators and the piling rig will be moved off site and noise levels are likely to be slightly lower as concrete is pumped, poured and compacted with a vibratory poker in batches. During this period there may be occasional high noise levels from use of a disc cutter and other handheld cutting tools.

The main construction works from week 25 to 53 are likely to be significantly quieter than Enabling and Ground Works. From week 25 to 42 external works include: pouring concrete floors, laying bricks and blocks, general carpentry including roof frame, roof covering and window fitting. The highest sustained noise levels will probably be from pouring concrete. There will be occasional loud noises from cutting tools etc. but the average noise levels will be much lower than during Enabling and Ground Works. From week 42 most work will be taking place inside the weather tight building and noise levels will be lower still.

In line with Camden Councils policy published on their web site noise from the construction work will be limited to: 8am to 6pm on Monday to Friday, and 8am to 1pm on Saturday. No noisy work should take place on Sundays or bank holidays.

To comply with the requirement to use best practicable means to minimise noise from construction activity a 2.4m solid site hoarding (ply or OSB) should be constructed prior to commencing any work. For breaking down of piles, a low noise method such as the 'Elliott Method' should be used.

4 Assessment

4.1 Vibration

Some types of ground work operations including piling and breaking out of foundations have the potential to generate significant ground-borne vibration. However, auger piling, as will be used here, would not be likely to generate significant vibration in terms of building damage and would normally be tolerated at receptors. It is possible; however, that vibration will be perceptible in neighbouring buildings and could lead to complaints.

The existing buildings on site are garages which are unlikely to have significant foundations requiring more than hand held breakers. Therefore, there is a low risk of significant vibration affecting neighbouring buildings. However, ground-borne vibration levels from ground works are highly dependent on site specifics. Therefore, the contractor should subjectively monitor vibration near receptors at key times. If vibration levels are greater than expected or clearly perceptible at receptor positions, the work should be stopped and vibration measurements arranged before continuing or work rearranged for less sensitive times if practical.

4.2 Noise

Source noise levels from Annex C of BS5228-1 are presented in Table 1 for operations associated with the demolition, auger piling, excavating and pouring concrete. Attenuation due to screening is approximated to 15dB for noise sources close to the ground and 10dB for noise

sources above ground as indicated in Table 1. The total screened noise level is presented in Table 1.

Table 1: Source noise Levels from Construction Plant

Description	BS5228 Reference	Noise Level at 10m ($L_{Aeq,T}$ dB)	Attenuation Due to Screening (dB)
Demolition			
Handheld pneumatic breaker	C.1.6	83	15
Lump hammer breaking stud partition	C.1.19	69	10
Tracked excavator breaking and spreading rubble	C.1.12	82	15
Total / Screened Total at 10m ($L_{Aeq,T}$ dB)		86	71
Piling			
Soilmec CM48 (CFA) 2m fill	C.12.44	77	15
Total / Screened Total at 10m ($L_{Aeq,T}$ dB)			62
Excavating			
22t tracked excavator	C.4.64	75	10
9t dumper	C.4.5	76	10
Total / Screened Total at 10m ($L_{Aeq,T}$ dB)		79	69
Concreting			
Concrete pump and cement mixer truck	C.4.24	67	10
Poker Vibrator	C.4.34	69	15
Total / Screened Total at 10m ($L_{Aeq,T}$ dB)		71	59
Other			
Petrol hand-held circular saw cutting concrete	C.4.72	79	10
Total / Screened Total at 10m ($L_{Aeq,T}$ dB)			69

The nearest noise sensitive receptors to the site and the distance from the site boundary are:

- 20 Wolsey Mews: 6.6m
- 3-7 Islip Street: 7.6m
- Crossroads Women's Centre 25 Wolsey Mews: <1m plan (approx. 4.5m to 1st floor window)

The noise level at receptors from each job has been calculated using the BS5228-1 methodology and assuming hard ground. All noise sources are assumed to be 1m from the site boundary in the calculations. The results include the effect of the recommended 2.4m site hoarding where appropriate. Screening would be less for noise sources further from the site hoarding but distance attenuation would be greater. No screening attenuation is included to the Crossroads Women's Centre as first floor windows directly overlook the site. The calculations are presented in Table 2, 3 & 4.

Table 2: Noise Levels at Receptors – 20 Wolsey Mews

Description	Construction Noise at 10m – including screening correction (L _{Aeqr} dB)	Construction Noise at 20 Wolsey Mews (L _{Aeqr} dB)	Pre-Construction Ambient (L _{Aeqr} dB)	Site activity + pre-construction ambient noise
Demolition	71	73	62.5	73
Piling	62	64	62.5	66
Excavating	69	71	62.5	72
Concreting	59	61	62.5	65
Circular saw cutting	69	71	62.5	72

Table 3: Noise Levels at Receptors – 3-7 Islip Street - Ground Floor

Description	Construction Noise at 10m – including screening correction (L _{Aeqr} dB)	Construction Noise at 3-7 Islip Street (L _{Aeqr} dB)	Pre-Construction Ambient (L _{Aeqr} dB)	Site activity + pre-construction ambient noise
Demolition	71	72	62.5	73
Piling	62	63	62.5	66
Excavating	69	70	62.5	71
Concreting	59	60	62.5	64
Circular saw cutting	69	70	62.5	71

Table 4: Noise Levels at Receptors – Crossroads Women’s Centre

Description	Construction Noise at 10m (L _{Aeqr} dB)	Construction Noise at Crossroads Women’s Centre (L _{Aeqr} dB)	Pre-Construction Ambient (L _{Aeqr} dB)	Site activity + pre-construction ambient noise
Demolition	86	93	62.5	93
Piling	77	84	62.5	84
Excavating	79	85	62.5	85
Concreting	71	78	62.5	78
Circular saw cutting	79	86	62.5	86



No on time correction is included in these calculations. Therefore, the predicted noise levels represent the sustained noise levels likely during the specific activity. The noise level (L_{Aeq}) over the working day would be lower as the noise does not continue for the full day.

Residential Receptors

All noise levels at the residential receptors fall below the 75dBA simple fixed limit which is often implemented for construction noise. Only during demolition, excavation and circular saw cutting is the total noise level more than 5dB above the pre-construction ambient level and also above the lower cut off of 65 dB L_{Aeq} . Therefore, the noise impact at residential neighbours will be low to moderate for much of the construction period.

It is noted that there will be occasions when there is a direct line of site between a noisy construction operation and some residential windows. In particular the closest second floor windows of 3-7 Islip Street may be exposed to unscreened noise from parts of the site. However, these windows would be screened from approximately half the site by the building itself and would benefit from screening from piling works occurring very close to the hoarding.

Crossroads Women's Centre – 25 Wolsey Mews

Noise levels at the Crossroads Women's Centre will be high and are likely to have a significant impact during the first 9 weeks of the Enabling and Ground Works period. From week 9 construction noise levels are likely to be below 75 dB L_{Aeq} most of the time except when the circular saw is used and when concrete is poured at the closest point on the boundary. With external construction noise at around 75 dB L_{Aeq} outside, conversations can reasonably be had inside rooms when windows are closed, although construction noise would be clearly audible. However, above this level there will be a significant impact on users of the community centre. It is expected that discussions with the Women's Centre will need to be held in respect of timings of the noisier works.

Neighbours should be made aware before work likely to have a significant noise impact will begin. It may be helpful to make the construction programme available to all neighbours with an indication of those periods likely to be noisiest (first 9 weeks). Best practicable means should be used to reduce noise levels. This would include selecting the quietest possible equipment and where there is flexibility to site plant away from the nearest receptors this should be done (e.g. careful location of concrete pumps).

The developers and contractor should maintain a close working relationship with the Crossroads Women's Centre and regular communication, so that scheduling of high noise activities on site and noise sensitive room use in the centre might not clash. For example it may be possible to discuss specific times when noisier works will not occur, so that the Women's Centre can schedule in their activities.

5 Summary

A noise assessment of construction noise affecting 20 Wolsey Mews, 3-7 Islip Street and the Crossroads Women's Centre has been carried out based on the proposed construction programme for a new three storey residential building on Wolsey Mews, Kentish Town.



Construction noise will be audible and may cause a significant disturbance at times. A full site hoarding will be constructed prior to any other construction work. A best practicable means approach to mitigation will be taken. This will include the selection of the quietest possible plant and operations. Neighbours will be informed of particularly noisy periods in the construction programme.

In particular noise levels at the Crossroads Women's Centre will be high during particular works, particularly during the ground works period. There is no practical method of significantly reducing this noise and regular contact with the Crossroads Women's Centre should be maintained throughout the construction programme to keep them informed and allow coordination of timings of activities if possible.



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Noise Monitoring Record Sheet

Monitoring Location	Development site adjacent to No 25 Wosley Mews, NWS 2DX
Description of Location	Centre of site, and 5m from street boundary
Date of Monitoring	22 nd June 2017
Noise Meter Model / Identification	Castle GA213 - Sound Level Meter
Noise Monitoring carried out by	T Sykes
Comments	

Measurement Results:	Time	Background Noise dB (L_{A90})	Ambient Noise dB (L_{Aeq})	Max Noise dB (L_{Amax})
Background Noise (L_{A90}) - The level exceeded for 90% of the time	1000	52.1	59.8	74.9
Ambient Noise (L_{Aeq}) - The average noise energy for each period	1100	54.7	63.8	73.5
Maximum Noise (L_{Amax}) - The maximum noise level during the measurement	1200	53.5	61.9	77.6
	1300	54.6	62.3	80.0
	1400	53.5	62.9	78.6
	1500	54.1	63.2	84.3
	1600	53.9	62.7	78.6