Former Park Public House, Wythenshawe

Demolition & Construction Noise and Vibration Assessment

Watson Construction Ltd

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1.0

Introduction

1.0 Introduction

1.1 Overview

Cundall has been commissioned to prepare a demolition and construction noise and vibration assessment for Watson Construction Ltd for the proposed development at the former Park Public House, 153 Moorcroft Rd, Wythenshawe, Manchester M23 0AE.

1.2 Site location

The Site is situated along the junction of Moorcroft Road and Sledmont Road. The surroundings comprise a predominantly residential area with retail units on the opposite side of Moorcroft Road.

The location of the development site is illustrated in Figure 1-1.

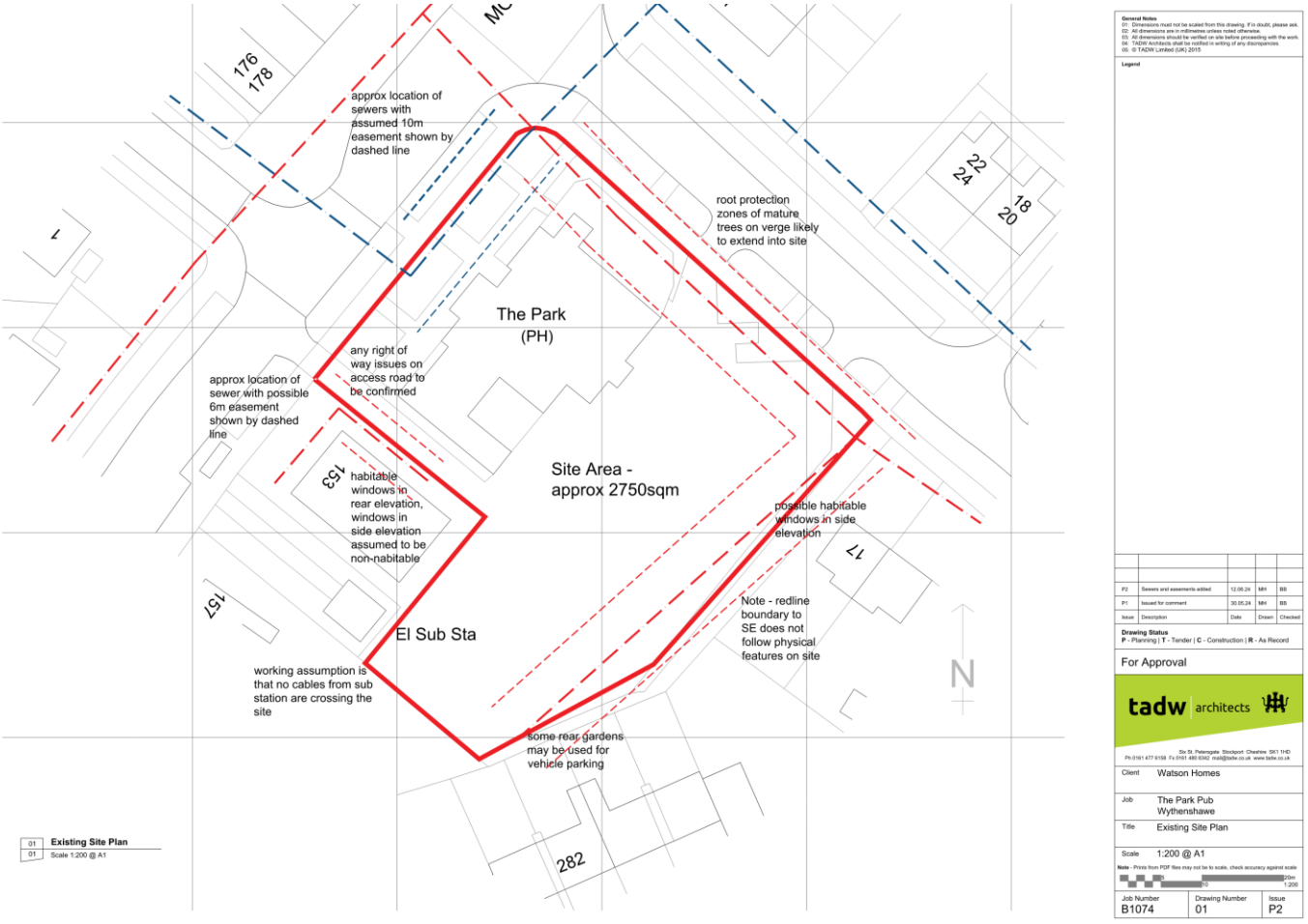


Figure 1-1: Site location (drawing B1074_01_P2)

1.3 Proposed development

The proposed development comprises the demolition of the former Park Public House and construction of a single block of 35 apartments.

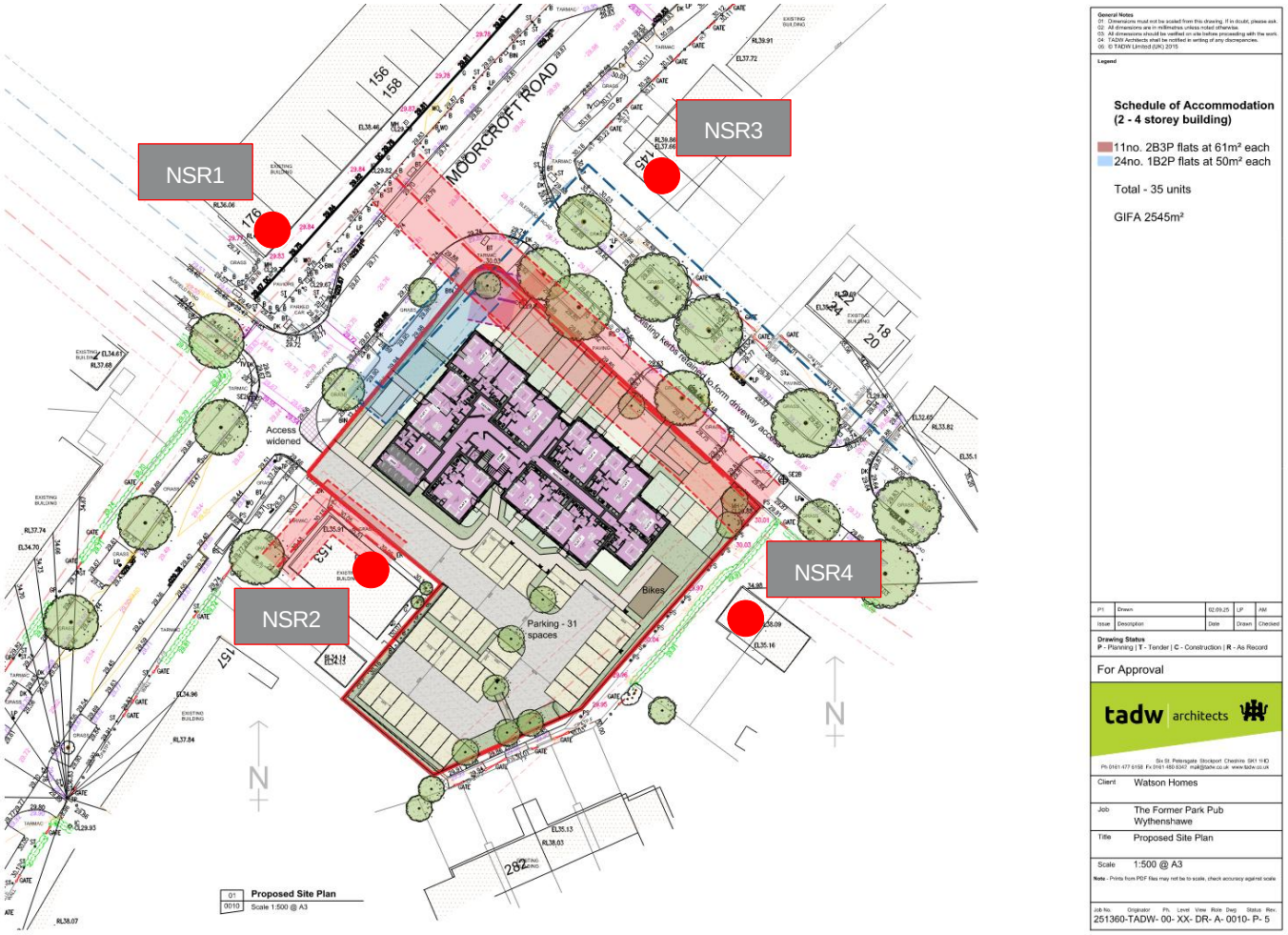


Figure 1-2: Proposed site plan (drawing 251360-TADW- 00- XX- DR- A- 0010- P- 5)

1.3.1 Noise sensitive receptors

The nearest noise sensitive receptors (NSR) to the site are illustrated in Figure 1-2 and summarised in Table 1-1.

Reference	Description	Distance from footprint of proposed building
NSR1	Residential units (above retail units) to northwest on opposite side of Moorcroft Road	~30 m
NSR2	Residential units (above retail units) to directly to the southwest of the site	~6 m
NSR3	Residential units to northeast on corner of Moorcroft Road and Sledmoor Road	~25 m
NSR4	Residential units to southeast along Sledmoor Road	~15 m

Table 1-1: Noise sensitive receptor summary

2.0

Legislation, policy and guidance

2.0 Legislation, policy and guidance

2.1 Legislative framework

2.1.1 Control of Pollution Act

The Control of Pollution Act 1974 (CoPA) provides Local Authorities with powers to control noise (and other pollutants) from construction and demolition works.

Section 72 of the Act requires that 'Best Practicable Means' are adopted to control noise from construction works.

Sections 60 and 61 of the CoPA provide the main legislation regarding enabling works and construction site noise and vibration. If noise complaints are received, a Section 60 notice may be issued by the Local Authority with instructions to cease work until specific conditions to reduce noise have been adopted.

Section 61 of the CoPA provides a means to apply for prior consent to carry out noise generating activities during construction. Once prior consent has been agreed under Section 61, this provides a defence for any contravention of a Section 60 notice provided the agreed conditions are maintained on-site.

2.1.2 Environmental Protection Act

The Environmental Protection Act 1990 defines the fundamental structure for waste management and the control of emissions to the environment, including noise.

Local Authorities are required to investigate any public complaints of noise, and if they are satisfied that a statutory nuisance exists, or is likely to occur or recur, they must serve a noise abatement notice. A notice is served on the person responsible for the nuisance. It requires either simply the abatement of the nuisance or works to abate the nuisance to be carried out, or it prohibits or restricts the activity.

In determining if a noise complaint amounts to a statutory nuisance the Local Authority can take account of various guidance documents and existing case law as no statutory noise limits currently exist for defining a statutory nuisance. Demonstrating the use of BPM to minimise noise levels is an accepted defence against failure to comply with a noise abatement notice.

2.2 Local planning policy

2.2.1 Manchester City Council - Planning & Noise: Technical Guidance (October 2022)

Manchester City Council's Planning & Noise: Technical Guidance (October 2022) refers to guidance from British Standard 5228: 2009 + 2014 amendments 'Noise and Vibration Control on Construction and Open sites' Parts 1 and 2. A summary of BS 5228 is presented in the following section.

2.3 British Standard 5228

British Standard 5228 Parts 1 and 2 provide a 'best practice' guide for noise and vibration control, and include sound power level (L_w) and sound pressure level (L_p) data for individual plant as well as a calculation methods for noise from construction activities.

Case studies are provided in Part 2 for vibration levels which may be produced during piling activities along with example assessment criteria.

2.3.1 Demolition and construction works noise

BS 5288 sets out the methodologies for assessing construction noise and provides examples of criteria for the assessment of the magnitude of construction noise. The standard offers criteria in terms of either fixed noise limits or limits based on the magnitude of change relative to existing baseline noise conditions.

In terms of fixed noise limits, reference is made to a limit of 75 dBA in urban areas near main roads for normal 10-hour daytime construction shifts. This same limit is cited as an example threshold of when noise insulation or temporary housing might be offered as a means of mitigation to residential dwellings affected by long-term construction noise. Accordingly, this value is adopted as the threshold for a 'High' noise impact, to be avoided as far as is practically possible.

To determine other potential noise impacts, reference is made to the guidance for setting criteria based on the change in noise levels, and specifically, the 'ABC' method given in section E.3.2 of BS 5228.

The ABC method, replicated from Table E.1 of BS 5228 Part 1 is presented below.

Assessment category and threshold value period	Threshold value, in decibels (dB) ($L_{Aeq,T}$)		
	Category A [A)]	Category B [B)]	Category C [C)]
Night-time (23.00−07.00)	45	50	55
Evenings and weekends [D)]	55	60	65
Daytime (07.00−19.00) and Saturdays (07.00−13.00)	65	70	75
NOTE 1 A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level. *NOTE 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise.* *NOTE 3 Applied to residential receptors only.*			
[A)] Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values. [B)] Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values. [C)] Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values. [D)] 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.			

Table 2-1: BS 5228-1 'ABC' Method for noise assessment

The 'ABC' method first determines a threshold category (A, B or C) for the appropriate period (night, evening/weekends or day), based on the existing ambient noise levels at the receptor, rounded to the nearest 5 dB.

The predicted construction noise level, rounded to the nearest 1 dB, is then compared to the applicable threshold category. If the construction noise level exceeds the appropriate category value, then a potential significant effect is indicated.

Accordingly, exceedance of the 'ABC' thresholds will be considered as a 'Medium' impact, and measures should be adopted to mitigate demolition and construction activity noise to below this threshold where practicable.

Construction and demolition noise levels below the 'ABC' threshold will be considered as 'Low' impact and would typically be acceptable during normal working hours.

The associated scale of impact for demolition and construction noise is summarised in *Table 2-2*

Impact	Noise level relative to BS5228 'ABC' method threshold values	Justification
High	Construction noise level exceeds absolute level of 75 dB $L_{Aeq,10hr}$	Threshold of when noise insulation or temporary housing might be offered as a means of mitigation to residential dwellings affected by long-term construction noise (e.g. for periods of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any consecutive 6 months).
Medium	Construction noise level exceeds the 'ABC' threshold value	Classed as a potential significant impact in accordance with BS5228 methodology
Low	Construction noise level is below the 'ABC' threshold value	Reducing likelihood of adverse noise impacts

Table 2-2: Scale of impact magnitude – demolition and construction stage noise

2.3.2 Demolition and construction works vibration

BS 5228 provides guidance on the likely significance of vibration effects on people due to demolition and construction generated vibration levels. This provides a simple method of determining annoyance alongside evaluation of cosmetic damage associated with vibration, which has been considered for construction plant and vehicle movements.

The table below details Peak Particle Velocity (PPV) levels (a standard measure of vibration effects) and their potential effect on humans and provides a semantic scale for description of construction and demolition vibration impacts on human receptors.

PPV Vibration Level	BS 5228-2 Description of Impact
< 0.3 mm/s	*"Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration."*
≥ 0.3 to < 1.0 mm/s	*"Vibration might be just perceptible in residential environments."* *
≥ 1.0 to < 10 mm/s	*"It is likely that vibration of this level in residential environments will cause complaint, but it can be tolerated if prior warning and explanation has been given to residents."*
≥ 10 mm/s	*"Vibration is likely to be intolerable for any more than a very brief exposure to this level."*

Table 2-3: BS 5228-2 Vibration criteria for human response

At 1.0 mm/s PPV, it is likely that vibration in residential (or school) environments will cause complaint but can be tolerated if prior warning and explanation has been given. Accordingly, demolition and construction vibration levels below 1.0 mm/s are considered to have a 'Low' impact.

At 10 mm/s PPV, vibration levels are likely to be intolerable for any more than a very brief period of exposure. This value is therefore adopted as the threshold for 'High' impacts and should be avoided as far as is practically possible.

Vibration from demolition and construction activities that fall in the range between 1.0 and 10.0 mm/s are considered to be of 'Medium' impact.

The associated scale of impact magnitude for demolition and construction vibration is summarised in *Table 2-4*.

Magnitude	Vibration Level (peak particle velocity) mm/s	Justification
High	> 10	Intolerable for more than very brief periods
Medium	1 ≤ 10	Potential to cause compliant but tolerable if advance warning given
Low	≤ 1	Reducing likelihood of being perceptible in residential (or school) environments

Table 2-4: Scale of impact magnitude – demolition and construction stage vibration

The recommended PPV vibration limits for transient vibration, above which cosmetic damage could occur for different types of buildings are provided in BS 5228-2 and presented in in the table below. For these limits, 'minor damage' is possible at vibration magnitudes that are greater than twice those given, and 'major damage' can occur at values greater than four times the tabulated values.

Type of building	Peak component particle velocity in frequency range of predominant pulse, at which cosmetic damage could occur	
	4 Hz to 15 Hz	4 Hz to 15 Hz
Reinforced or framed structures, Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	50 mm/s at 4 Hz and above
Unreinforced or light framed structures, Residential or light commercial buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Table 2-5: BS 5228-2 Vibration criteria for cosmetic damage to buildings

3.0

Baseline conditions

3.0 Baseline conditions

3.1 Noise survey - methodology

To determine the existing noise climate at the proposed development, an environmental noise survey was undertaken from Wednesday 10 to Friday 12 September 2025.

A sound level meter was used over a two-day period to capture the baseline noise conditions at the proposed site. The sound level meter position was on the northern end of the existing building at 2 metres (m) above the existing ground level, 16 m from the edge of Moorcroft Road, and with direct line of sight to Moorcroft Road.



Figure 3-1: Survey measurement position

The survey was undertaken following guidance from BS 7445-1:2003 and BS 4142 using a Class 1 sound level meter and peripherals as detailed in Table 3-1. The meter was field-calibrated before and after use with no significant drift witnessed throughout the survey period. Calibration certificates for all equipment are available upon request.

Equipment	Type	Serial no.
Sound level meter	Casella 633	1211404
Pre amp	Casella 495	1180
Microphone	Casella 251	3557
Calibrator	Casella 120/1	3574169

Table 3-1: Equipment details list

All measurements were undertaken by competently trained Cundall acoustics staff.

Weather conditions during the survey were clear, mid/low wind and dry over the survey period.

3.2 Results

3.2.1 Observations

During the survey installation it was observed and noted that the dominant sound source is road traffic along Moorcroft Road and the local road network. Noise from substation located to the west of the development was not audible by attending site engineers.

3.2.2 Summary

A summary of the measured survey results is presented in Table 3-2. With reference to the BS 5228 ABC assessment methodology in Section 2.3.1, the applicable noise thresholds at which medium impact / potentially significant noise impacts are included.

Time Period	Average $L_{Aeq,T}$ (dB)	$L_{Aeq,T}$ (dB) rounded to nearest 5 dB	BS 5228 ABC Threshold $L_{Aeq,T}$ (dB)
Daytime (07:00-19:00)	60	60	65 (Category A)
Evening (19:00-23:00)	57	55	60 (Category B)
Night-time (23:00-07:00)	49	50	55 (Category C)

Table 3-2: Survey results summary and applicable ABC thresholds for construction noise assessment

4.0

Demolition and construction noise risks

4.0 Demolition and construction noise risks

4.1 Plant and noise source data

It is anticipated that noise emissions from the development site will be highest during the demolition, groundworks and substructure phases of construction.

Construction noise predictions have been undertaken following guidance from Annex F of BS 5228-1 and are based on the following assumptions:

- Work would only take place during standard permitted hours for noisy work on construction sites of Monday-Friday (08:00-18:00) and Saturdays (08:00-13:00). No evening or night-time works have been assessed.
- Due to variability in operational times for plant activities over the course of a working day, plant has been modelled as operational for at most 50% of the working day (e.g. each plant item in operation for five hours over a typical ten-hour working day).
- As a reasonable 'worst-case' scenario, works take place on the closest approach to each NSR.
- Basic mitigation measures providing physical screening of noise are employed (e.g. site hoarding and / or equipment enclosures), providing a total noise attenuation of 10 dBA.

In lieu of full a construction methodology and programme, the following example construction plant and noise source data has been taken from BS 5228 to assess potential risks. Further details of the calculations are presented in Appendix A.

Phase	Plant Item	Sound pressure level at 10m dBA	BS 5228 Reference
Demolition	Dozer 20t	81	Table C.2 Ref no. 12
	Backhoe with breaker	92	Table C.1 Ref no. 1
	Tracked Excavator 40t	79	Table C.2 Ref no. 14
	Dump truck	78	Table C.4 Ref no. 2
Groundworks	Tracked Excavator 40t	79	Table C.2 Ref no. 14
	Dump truck	78	Table C.4 Ref no. 2
	Hydraulic vibratory compactor	78	Table C.2 Ref no. 42
	Generator	74	Table C.4 Ref no. 84
	Dozer 20t	81	Table C.2 Ref no. 12
Substructure	Grinder	80	Table C.4 Ref no. 93
	Concrete mixer truck	80	Table C.4 Ref no. 20
	Tracker Excavator 40t	79	Table C.2 Ref no. 14
	Tower Crane	76	Table C.4 Ref no. 48
	Dump truck	78	Table C.4 Ref no. 2
	Generator	74	Table C.4 Ref no. 84
	100t piling rig	83	Table C.3 Ref no. 14

Table 4-3: Example demolition and construction plant equipment

4.2 Potential noise risks

Table 4-4 summarises the predicted construction noise levels for each phase of works and the equivalent impact of works noise at the nearest receptors.

Phase of works	Predicted noise level at receptor dB $L_{Aeq,10hr}$ (dB) and impact (High/Medium/Low)			
	NSR1	NSR2	NSR3	NSR4
Demolition	73 Medium	87 High	75 Medium	79 High
Substructure	68 Medium	82 High	70 Medium	74 Medium
Superstructure	65 Low	79 High	67 Medium	71 Medium

Table 4-4: Prediction construction noise levels and risk of impact

Given that the nearest residential premises (dwellings to the southwest and southeast) are in close proximity to the site, there is a potential for high noise impacts to occur throughout the demolition and construction phase. At more distant receptors, there is the potential for medium impacts.

Demolition and construction noise levels at surrounding receptors will vary depending on the locations and types of works taking place. Due to the variation in construction work activities throughout the works programme, it is considered that any periods of regular high construction noise levels experienced at a receptor would be of a limited short-term duration.

The nature of demolition and construction work means that the worst-case scenario with multiple items of plant working simultaneously at the closest approach may exist for only a matter of days or even hours and there would be regular periods, even during the course of a single day, when the assumed noisy plant will not be in operation during breaks or changes of working routine.

It is recommended that finalised works methodologies and equipment selections are carefully considered prior to commencing works. Should high noise generating works be proposed within 20 m of a receptor, the Principal Contractor will carry out a site-specific risk assessment of the proposed activities prior to works commencing as to identify and confirm any specific mitigation measures that may be required beyond those discussed in Section 6.0.

5.0

Demolition and construction vibration risks

5.0 Demolition and construction vibration risks

5.1 Methodology

It is anticipated that perceptible vibration arising from the development site will be highest during the piling and groundworks activities, where applicable.

BS 5228-2 makes reference to Transport Research Laboratory (TRL) report 429 ; Figure 50 of the TRL report indicates that ground vibration from miscellaneous vehicle operations on demolition and construction sites (including scrapers, rollers, dumpers, breakers, bulldozers and HGVs) are in the region of 1 mm/s PPV at approximately 10 m from the source, decreasing to the region of 0.1 mm/s PPV at approximately 50 m. However, actual vibration levels from construction works are dependent on a number of factors including ground conditions, plant or vehicle size, the nature of the works (in particular piling methods), the speed of HGV movements and the quality of surface of haul or other temporary roads.

Vibration associated with piling activities can vary significantly depending on the type of piling and the underlying ground conditions.

Continuous Flight Auger (CFA) piling, for example, produces lower levels of vibration in comparison to impact piling, as the process does not involve rapid acceleration or deceleration of tools in contact with the ground. However, transient vibrations can occur when the auger strikes the base of the borehole or, if it is necessary to insert an appreciable length of temporary casing to support the boring, a casing dolly can be used and, as with the impact bored piling method, this will give rise to intermittent vibrations.

Similarly, vibration from ground compaction can significantly vary subject to the methodology adopted. Vibratory compaction is expected to be the preferred solution for the proposed development and would result in lower levels of vibration transmitted into the ground.

In lieu of full a construction methodology and programme, the following likely worst-case vibration generating methodologies have been used to estimate distances at which the various impact threshold would occur, based on the calculation procedures presented within BS 5228-2.

Activity	Input	Calculation limitations	Assumed data
Percussive Piling	Pile toe depth	1 < 27 m	1 m & driven to refusal at 10 m
	Hammer Energy	1.5 < 85 kJ	50 kJ
	Ground conditions	-	Stiff cohesive soils
Vibratory compaction	Number of vibrating drums	Single or Twin drums	Twin
	Vibration amplitude:	0.4<A<1.72 mm	1.7 mm
	Drum width	0.75 < 2.2 m	2.2 m

Table 5-5: Example vibration generating activities and assumptions

5.2 Potential vibration risks

For general site activities, ground vibration from miscellaneous vehicle operations may result in short-term vibration levels above 1 mm/s which presents a medium risk impact at NSR2 (located within 10m of the proposed building footprint). For more distance receptors, general activities are considered to be or a low impact.

Based on the preferred method of vibratory piling, and allowing for a 66% certainty to the calculations, the following vibration risks have been calculated.

Phase	Risk of low impacts i.e. vibration level ≤ 1 mm/s	Risk of medium impacts i.e. vibration level ≤ 10 mm/s	Risk of high impacts i.e. vibration level > 10 mm/s
Percussive piling (at a pile depth of 1 m)	Properties beyond 6 m of a pile location	Properties between 0.5 – 6 m of a pile location	Properties within 0.5 m of a pile location
Percussive piling (piles driven to refusal)	Properties beyond 12 m of a pile location	Properties between 9.5 – 12 m of a pile location	Properties within 9.5 m of a pile location
Vibratory compaction (steady state)	Properties beyond 55 m from the groundworks	Properties between 10.5 – 55 m from groundworks	Properties within 10.5 m from the groundworks

Table 5-6 – Potential demolition and construction vibration risks

Receptor NSR2 may be within 10 m of piling works. For the preferred method of vibratory piling, this may result in short-term vibration levels above 10 mm/s which presents a high risk impact.

For receptors NSR1, NSR3 and NSR4, located beyond 10 m but within 55 m of piling works, vibratory piling may result in short-term vibration levels above 1 mm/s which presents a medium risk impact.

Cosmetic damage to structures (as per the criteria in Table 2-5) is unlikely.

It is recommended that both piling and compaction methodologies and equipment are carefully considered prior to commencing works. The Principal Contractor will carry out a vibration risk assessment of the proposed activities prior to works commencing and identify appropriate mitigation measures to manage vibration emissions.

6.0

Mitigation and management

6.0 Mitigation and management

6.1 General measures

As with any construction programme, there will be temporary impacts on local receptors. Construction noise and vibration, mitigated through 'Best Practicable Means' (BPM) as defined by Section 72 of the Control of Pollution Act 1974 and careful management will reduce the risk of adverse impact on local residents.

Measures to control noise as defined in Annex B of BS 5228-1 and measures to control vibration as defined in Section 8 of BS 5228-2 will be adopted where reasonably practicable.

At this stage, information relating to the types and locations of onsite works and plant selections is not finalised. It is expected that the noise and vibration emissions of proposed activities will be reviewed by the contractor and appropriate measures put in place to mitigate potential effects on nearby receptors.

General measures may include (but not limited to) the following as appropriate and where required. These are generic good industry practice environmental design and management recommendations and are typically applicable to most construction sites:

- Install solid site hoardings around the site perimeter to a height of at least 2.4 m above ground level.
- Selection of inherently quiet plant where appropriate. Electrical plant items (as opposed to diesel powered plant items) should be used wherever practicable. All major compressors should be 'sound reduced' models fitted with properly lined and sealed acoustic covers which should be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools should be fitted with mufflers or silencers of the type recommended by the manufacturers.
- Using low impact piling techniques, such as continuous flight auger piling rigs as to reduce airborne noise and ground borne vibration emissions.
- Proper use of plant with respect to minimising noise and vibration emissions and regular maintenance. All vehicles and mechanical plant used for the purpose of the works should be fitted with effective exhaust silencers and should be maintained in good efficient working order.
- Modern plant should be selected.
- Care should be taken when erecting or striking scaffolds to avoid impact noise from banging steel. All operatives undertaking such activities should be instructed on the importance of handling the scaffolds to reduce noise to a minimum before access is possible.
- Wherever possible, the use of hydraulic attachments or other means of crushing concrete and hard materials should be used in preference to pneumatic breakers. Where the use of impact hammers is necessary, their attachment to larger and heavier excavators often can reduce the level of vibration.
- Machines in intermittent use should be shut down in the intervening periods between work or throttled down to a minimum.
- The loading and unloading of materials should take place away from residential and school properties, ideally in locations which are acoustically screened from nearby noise sensitive receptors.
- Materials should be handled with care and be placed, not dropped. Materials should be delivered during normal working hours.
- All ancillary plant such as generators, compressors and pumps should be positioned to cause minimum noise disturbance, i.e. furthest from receptors or behind close boarded noise barriers. If necessary, acoustic enclosures should be provided and/or acoustic shielding.
- No radios or music should be played on site where there is the potential to cause disturbance.
- Construction contractors should be obliged to adhere to the codes of practice for construction working and piling. Site operations and vehicle routes should be organised to minimise the need for reversing movements, and to take advantage of any natural acoustic screening present in the surrounding topography.

- Deliveries should be programmed to arrive during daytime hours wherever practicable. Care should be taken when unloading vehicles to minimise noise. Delivery vehicles should be routed so as to minimise disturbance to local residents. Delivery vehicles should be prohibited from waiting on the highway or within the site with their engines running.
- Vehicles will not wait or queue on the public highway or on the worksite with engines running.
- As far as reasonably practicable, the noise from reversing alarms will be controlled and limited, through the use of highly directional sounders, use of broadband signals, self-adjusting output sounders; or flashing warning lights where reasonably practicable.
- No employees, subcontractors and persons employed on the site should cause unnecessary noise from their activities e.g. excessive 'revving' of vehicle engines, music from radios, shouting and general behaviour etc. All staff inductions at the site should include information on minimising noise and reminding them to be considerate of the nearby residents.
- Measures should be put in place to ensure that employees know that minimisation of noise and vibration will be important at the site.
- Good community relations should be established and maintained throughout the construction process. This should include informing residents on progress and ensuring measures are put in place to minimise noise and vibration impacts.

6.2 Training and awareness

All project personnel, subcontractors and consultants attending site will be required to complete induction training which shall be arranged by the appointed contractor. This will include a noise and vibration component to reinforce the important management issues and the measures that will be implemented to protect prevent adverse noise impacts. Ongoing toolbox talks will highlight specific environmental requirements associated with activities underway at the time.

Examples of topics that may be covered during project induction and toolbox talks include:

- Normal work hours;
- What activities can and can’t take place outside of these working hours;
- The process for seeking approval for out of hours works, including consultation;
- Location of noise sensitive areas;
- The employment of reasonable and feasible noise mitigation measures; and
- Roles and responsibilities of the Project team related to noise and vibration.

6.3 Communication with stakeholders

In general, good public relations and extensive consultation with the local Environmental Health Officer (EHO) will be essential to help to minimise the effect of construction work. Local residents in particular will need to be assured that any higher levels of noise will only be for a short period of time and so it will be necessary to publicise and adhere to a stated works schedule.

In order to minimise the likelihood of complaints, the local council and affected residents will be kept informed of the works to be carried out, and of any proposed work outside normal hours, especially night-time works. The Contractor, throughout the construction phase, should operate a complaints procedure. This process should ensure that any complaints or queries raised by residents are promptly addressed. Additionally, community liaison meetings can provide the public with development updates as well as providing a forum for issues/complaints.

It is recommended that there be a dedicated contact number for local residents to phone should they have any queries or complaints. A log must be kept of all complaints, along with the actions taken to resolve these.

6.4 Monitoring

6.4.1 Methodology

Noise and vibration monitoring can assist in the identification and management of excessive noise and/or vibration levels.

Where noise and/or vibration monitoring is to be carried out:

- All noise monitoring should be in accordance with the construction monitoring guidelines presented in BS 5228 Part 1 Annex G.
- All vibration monitoring should be in accordance with the construction monitoring guidelines presented in BS 5228 Part 2 Section 9.

Noise monitors should be compliant with requirements for 'Class 1' instruments from BS EN 61672-1:2003 Electroacoustics. Sound level meters. Specifications, or (for instruments produced after 2013), BS EN 61672-1:2013. All noise monitors to be calibrated in accordance with BS EN 60942.2003 Electroacoustics. Sound calibrations. Noise monitors will be field calibrated on a three-monthly basis to ensure compliance and functionality.

The instrumentation appropriate for the measurement of building vibration with respect to human response is defined in BS EN ISO 8041. The transducers shall have a sensitivity and frequency range to cover the anticipated range of vibration frequencies and velocities.

Noise monitors should be set to record on a 'fast' time response and as a minimum the following indices will be measured:

- $L_{Aeq,T}$ The A-weighted equivalent continuous noise level for the duration of the measurement time interval, T, in decibels dB
- $L_{Amax,F}$ The maximum A-weighted noise level for the duration of the measurement time interval, measured with the meter set to Fast response, in decibels dB

Vibration monitors should measure the following indices:

- PPV The peak particle velocity for the duration of the measurement time interval, in mm/s

Noise and vibration monitoring equipment installed should be capable of issuing an email/text message alert upon trigger of a pre-set level. Email/text alerts should be sent to the relevant on-site personnel responsible for the management of environmental noise and vibration emissions.

Noise and vibration data should be capable of being downloaded at least monthly and more frequent review of data may be required in response to a complaint or local authority request.

6.4.2 Noise/vibration incident response

Noise and vibration measurements will be used to:

- Check whether all Best Practicable Means are being adhered to; and
- Investigate any noise complaints.

Where the results of the monitoring indicate that the measured levels from the works detailed in this report significantly exceed the predicted levels contained this report, the following actions will be undertaken:

- Review the monitoring data to determine as far as is reasonably practicable the activities / plant responsible for the exceedance(s); and
- Ascertain if there are any additional reasonably practicable means of reducing the construction noise/vibration levels. Noise/vibration incidents, causes and any corrective action will be documented.

6.4.3 Corrective actions

Where actual noise and vibration levels are found to exceed the predicted worst-case levels, the cause/source of excessive noise generation will be identified, the Contractor will review the works in progress, and if it is identified that construction works are resulting in non-compliance then the infringement will be stopped immediately. Any additional reasonable and feasible measures available shall be implemented to either reduce noise and vibration emissions, or reduce impacts on receivers.

6.5 Working hours

6.5.1 Normal working hours

Where there are surrounding sensitive receptors, including residential, school and commercial premises likely to be affected by noise, the hours of noisy works shall normally be restricted to:

- Monday-Friday: 08:00-18:00
- Saturday: 08:00-13:00
- Sunday and Bank Holidays: No noisy activities on site

6.5.2 Working outside of approved hours

While it is not envisaged at this stage, where working outside of approved hours are proposed it may be beneficial for the contractor to seek a Section 61 consent under the CoPA 1974, which would normally specify the method of working, the hours of work, noise predictions and controls to be applied in accordance with BPM.

By obtaining a Section 61 consent and complying with the agreed conditions, a contractor avoids the risk of being served with a Notice under the terms of Section 60 of the CoPA or Section 80 of the Environmental Protection Act 1990 (EPA), providing that consent conditions are not breached. The consequence of breaching the conditions may lead to prosecution under CoPA 1974.

7.0

Conclusions

7.0 Conclusions

This demolition and construction noise and vibration assessment report provides details of the following:

- Legislation, policy and guidance
- Baseline conditions
- Demolition and construction noise and vibration risks
- General mitigation measures
- Training and awareness
- Communication with stakeholders
- Monitoring and compliance
- Working hours

Reasonable steps will be taken by the contractor to mitigate and manage demolition and construction noise and vibration emissions through adoption of BPM as defined in section 72 of the CoPA e.g. use of acoustic barriers and enclosures, selection of quiet equipment, sensitive scheduling and programming of works.

For the nearest properties to the site, worst-case levels of works noise during the early stages of works may exceed 75 dBA for limited periods (e.g. if multiple items of plant are simultaneously at their closest approach), albeit such noise impacts would be temporary, with no permanent residual effect once works are completed.

During later stages of the works, as well as at the majority of more distant receptors, construction works noise will be lower and also would be temporary in nature.

Vibration resulting from piling may be noticeable at nearby receptors. Mitigation will still be applied in the form of adoption of BPM e.g. selection of low vibration equipment, sensitive scheduling and programming of works.

It is recommended that finalised works methodologies and equipment selections are carefully considered prior to commencing works. Should high noise or vibration generating works be proposed within 20 m of a receptor, the Principal Contractor will carry out a site-specific risk assessment of the proposed activities prior to works commencing and identify appropriate additional mitigation measures to manage noise and vibration emissions.

It may be beneficial for the contractor to seek a Section 61 consent under the CoPA 1974, which would normally specify the method of working, the hours of work, noise predictions and controls to be applied in accordance with BPM. By obtaining a Section 61 consent and complying with the agreed conditions, a contractor avoids the risk of being served with a Notice under the terms of Section 60 of the CoPA or Section 80 of the Environmental Protection Act 1990 (EPA), providing that consent conditions are not breached.

Appendices

Appendix A Construction noise predictions

BS 5228-1 reference	Plant	Noise dB(A) at 10m	Demolition		Groundworks		Substructure	
			Qty	% on time per day	Qty	% on time per day	Qty	% on time per day
Table C.2 Ref no. 12	Dozer 20t	81	1	50%				
Table C.1 Ref no. 1	Backhoe with breaker	92	1	50%				
Table C.2 Ref no. 14	Tracked Excavator 40t	79	1	50%				
Table C.4 Ref no. 2	Dump truck	78	1	50%				
Table C.2 Ref no. 14	Tracked Excavator 40t	79			1	50%		
Table C.4 Ref no. 2	Dump truck	78			1	50%		
Table C.2 Ref no. 42	Hydraulic vibratory compactor	78			1	50%		
Table C.4 Ref no. 84	Generator	74			1	50%		
Table C.2 Ref no. 12	Dozer 20t	81			1	50%		
Table C.4 Ref no. 93	Grinder	80					1	50%
Table C.4 Ref no. 20	Concrete mixer truck	80					1	50%
Table C.2 Ref no. 14	Tracker Excavator 40t	79					1	50%
Table C.4 Ref no. 48	Tower Crane	76					1	5%
Table C.4 Ref no. 2	Dump truck	78					1	50%
Table C.4 Ref no. 84	Generator	74					1	50%
Table C.3 Ref no. 14	100t piling rig	83					1	50%
Total noise at 10m			**90**		**85**		**82**	

			Stage		
			Demolition	**Groundworks**	**Substructure**
			dB(A)	**dB(A)**	**dB(A)**
Receptor	NSR1		90	85	82
Distance (m)	30		-10	-10	-10
Screening	-10		-10	-10	-10
Façade	3		3	3	3
Noise level dB(A)			**73**	**68**	**65**
Receptor	NSR2		90	85	82
Distance (m)	6		4	4	4
Screening	-10		-10	-10	-10
Façade	3		3	3	3
Noise level dB(A)			**87**	**82**	**79**
Receptor	NSR3		90	85	82
Distance (m)	25		-8	-8	-8
Screening	-10		-10	-10	-10
Façade	3		3	3	3
Noise level dB(A)			**75**	**70**	**67**
Receptor	NSR4		90	85	82
Distance (m)	15		-4	-4	-4
Screening	-10		-10	-10	-10
Façade	3		3	3	3
Noise level dB(A)			**79**	**74**	**71**

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