

TECHNICAL NOTE

Project: Construction Noise Assessment – Noise and Vibration Monitoring Procedure, Great Ducie Street, Manchester

Description: Construction Noise and Vibration Monitoring Methodology

Prepared By: David Hible BA (Hons) AMIOA
Acoustic Consultant

Date: 22/03/2023

Ref: J003897-6071-DH-01

This report has been prepared to provide a method statement for the monitoring of noise and vibration in respect to the prestart condition no. 12 for the proposed construction works to be carried out at Great Ducie Street, Manchester. The 'Environmental Noise Assessment (J003897-5694-DH-01)' produced by PDA is the indicative point of reference for this report.

NEAREST SENSITIVE RECEPTORS AND PROPOSED LIMITS

The nearest noise and vibration sensitive receptors have been identified within Figure 1 as shown below. In order to specify a noise limit, on-site measurement data has been utilised which is summarised within 'Environmental Noise Assessment (J003897-5694-DH-01)' demonstrating a day-time $L_{Aeq,T}$ of 66dB, evening $L_{Aeq,T}$ of 65dB and night-time $L_{Aeq,T}$ of 63dB. The derived noise limit follows the 'ABC' method as detailed within 'BS5228: 2014 Part 1: Noise' which details threshold values based upon the existing ambient noise climate being rounded to the nearest 5 dB. The threshold values are detailed in the table below:

Table 1 – 'Table E.1 Example threshold of potential significant effect on dwellings – BS5228:2014'

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	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

NOTE:

^{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'

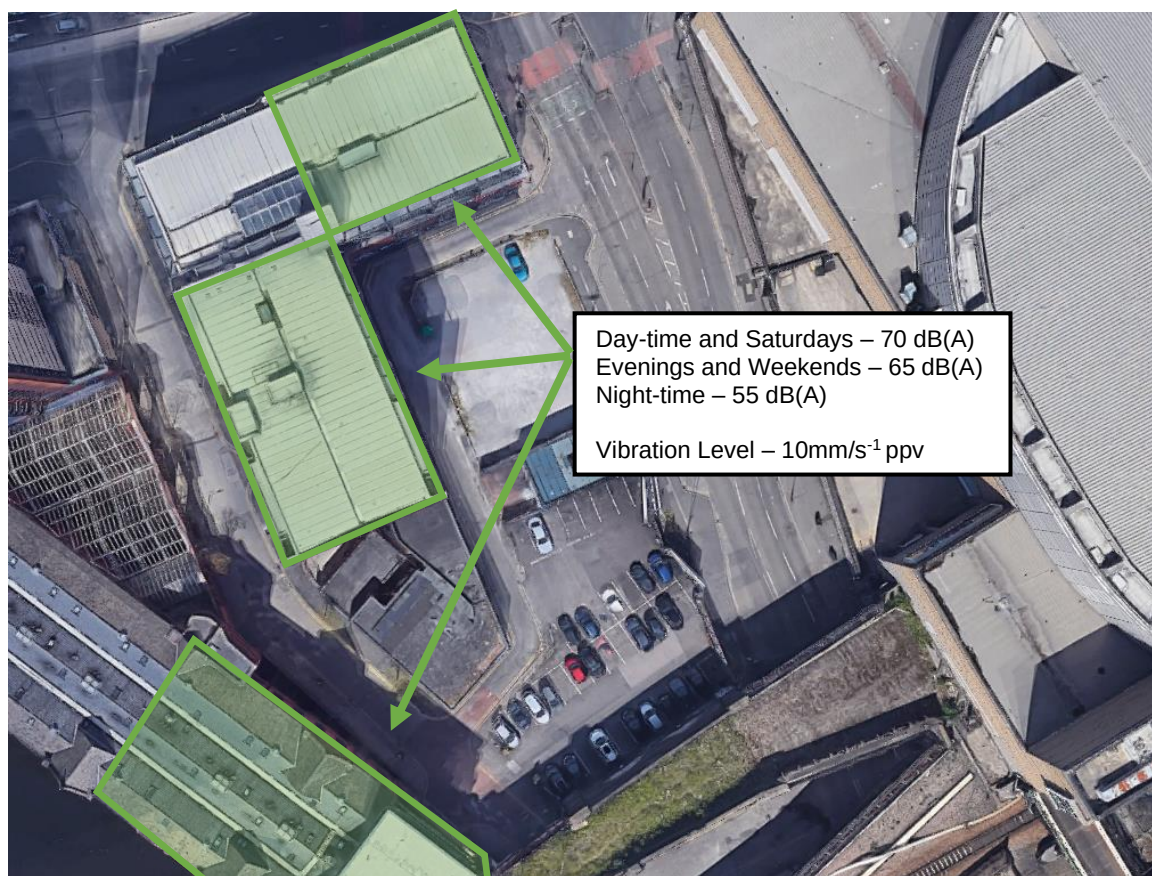
Tel: 01925 759380

Email: enquiries@pdaltd.com



Therefore we would propose the following limits at the nearest sensitive receivers.

Figure 1 – Identified nearest noise sensitive receievers with proposed limts.



In regards to vibration, limits can be obtained from guidance given within 'BS5228:2014 Part 2: Vibration' where the effect of vibration on humans is discussed and the potential comments arising from various levels. The details of which are given in the Table below:

Table 2 – 'Table B.1 - Guidance on effects of vibration levels – BS5228:2014'

Vibration Level	Effect
0.14 mm/s ⁻¹	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 mm/s ⁻¹	Vibration might be just perceptible in residential environments.
1.0 mm/s ⁻¹	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents
10 mm/s ⁻¹	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

NOTE:

'Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in accordance with BS 6472-1 or -2, and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment.'

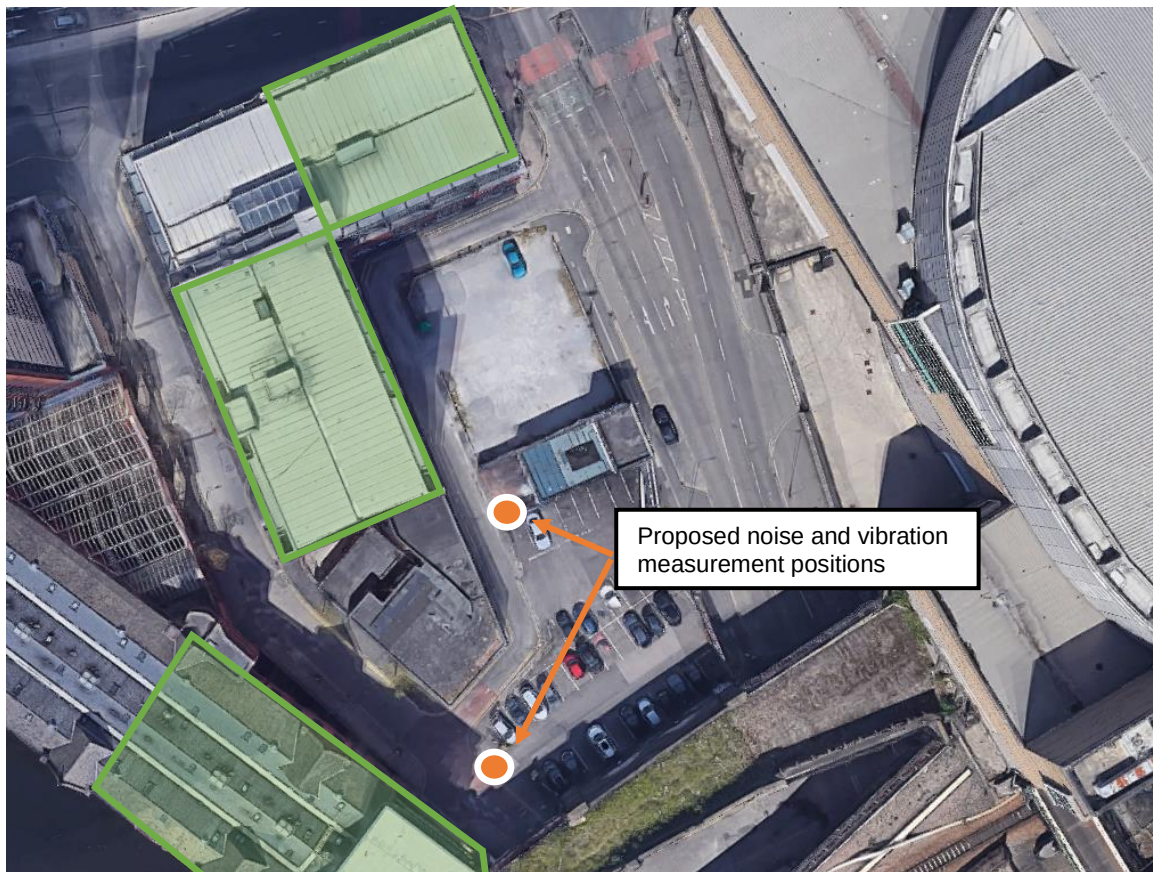
We would therefore suggest that prior warning and explanation should be given to the local residents and the limit of vibration should not exceed 10 mm/s⁻¹ at the receivers identified in Figure 1.

MONITORING PROCEDURE

Noise and vibration emanating from site will be monitored with continual loggers during various phases of the construction process which are connected to a mobile network. An alert system will be implemented via the use of an intranet system which will have the derived limits set up and where exceedances may be experienced various personnel can be informed in real-time, such as site management. Alerts can be delivered via email or SMS. We would note that this will be more applicable during high noise and vibration level activities such as piling.

The proposed positions of monitoring positions are given within Figure 2 below.

Figure 2 – Proposed noise and vibration measurement positions.



We would suggest that where possible, a vibration logger is set-up within the residence of one of the nearest sensitive receptors for an accurate representation of experienced vibration levels. Where measurements are taken at the boundary edge of the construction works, calculations will be carried out on the measured data to predict the expected level as experienced at the sensitive receiver.

Where exceedances of the limits may be experienced, site management can be alerted and works paused until various methods are explored to control the noise and vibration levels. Screening may be provided in order to control noise levels from site in the form of noise barriers, bunds, location of site offices and stacks of certain materials such as brick and aggregates. Where vibration limits may be exceeded use of alternative methods may be explored such as removal of obstructions, cut off trenches and mudding in for rotary bored piles. We would strongly recommend that auger bored piling methods are employed instead of driven piling given the short distance between the site boundary and sensitive receptors.