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36 HEATH DRIVE, LONDON

VIBRATION BASELINE SURVEY

(11/05/2018 – 15/05/2018)

Report 17622.VM.Baseline

Prepared on 31 May 2018

For:

MY construction Ltd.

Unit 5 Sayer House Oxgate La

London

NW2 7JN

Registered in England Company No. 7947892
KP Acoustics is the Trading Name of KP Acoustics Limited

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1.0 INTRODUCTION

KP Acoustics Ltd has been appointed by MY Construction Ltd., Unit 5 Sayer House Oxgate La London NW2 7JN to undertake baseline noise and vibration monitoring survey at 36 Heath Drive, London NW3 7SD.

This report outlines the results of the baseline vibration survey undertaken between 11th May 2018 and 15th May 2018, in order to establish the current background levels prior to the commencement of all on-site operations.

2.0 PROCEDURE

Automated noise monitoring was undertaken on the right hand side of the main entrance of the house facing Heath Drive, as indicated on the site plan 17622.SP1.

The choice of these positions was based both on accessibility and on collecting representative vibration data at the boundary of the site.

3.0 EQUIPMENT

The equipment calibration was verified before and after the survey and no calibration irregularities were observed.

The equipment used was as follows.

- 1 No. Svantek Type 958A Sound and Vibration Level Meters
- 1 No. PCB triaxial accelerometer
- Svantek SV110 Vibration Calibrator

4.0 VIBRATION SURVEY

4.1 Background theory on vibration

The vibration monitoring exercise will fully adhere to the following British Standards:

- BS 5228: Part 1: 1997: 'Code of practice for basic information and procedures for noise and vibration control'
- BS 5228: Part 4: 1992: 'Code of practice for noise and vibration control applicable to piling operations'
- BS 7385: 1990 (ISO 4866:1990): 'Evaluation and Measurement for Vibration in Buildings'
    - Part 1: Guide for measurement of vibrations and evaluation of their effects on buildings
    - Part 2: Guide to damage levels from groundbourne vibration
- BS ISO 4866: 2010: 'Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures'

Buildings are reasonably resilient to ground-borne vibration and vibration-induced damage. Vibration-induced damage can arise in different ways, making it difficult to arrive at global criteria that will adequately and simply indicate damage risk. Damage can occur directly due to high dynamic stresses, due to accelerated ageing or indirectly, when high quasi-static stresses are induced by, for example, soil compaction.

There are currently two British Standards that offer advice on acceptable levels of vibrations in structures. British Standard BS7385: Part 2: 1993 'Evaluation and measurement for vibration in buildings Part 2. Guide to damage levels from ground borne vibration' gives guidance on the levels of vibration above which the building structures could be damaged. It considers only the direct effect of vibration on a building, since the other mechanisms are different.

For the purposes of BS7385 damage is classified as cosmetic (formation of hairline cracks), minor (formation of large cracks), or major (damage to structural elements). Guide values given in the Standard are associated with the threshold of cosmetic damage only, usually in wall and/or ceiling lining materials. Since case-history data, taken alone, has so far not provided an adequate basis for identifying thresholds for vibration-induced damage, data using controlled vibration sources within buildings has been established to enable definition of vibration thresholds judged to give a minimal risk of vibration-induced damage.

Limits for primarily transient vibration, as is the case for this assessment exercise, above which cosmetic damage could occur are reported in tabular form and graphical form in the Standard and reproduced below:

Line (see Figure 4.1)	**Type of Building**	**Peak component particle velocity in frequency range of predominant pulse**	
		4Hz to 15Hz	**15Hz and above**
1	Reinforced or framed structures. Industrial and heavy commercial buildings	50mm/s at 4Hz and above	
2	Unreinforced or light framed structures. Residential or light commercial type buildings	15mm/s at 4Hz increasing to 20mm/s at 15Hz	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above
Note 1: Values referred to are at the base of the building			

Note 2: For Line 2, at frequencies below 4Hz, a maximum displacement of 0.6mm (zero to peak) should not be exceeded

Table 4.1: Transient Vibration Guide Values for Cosmetic Damage

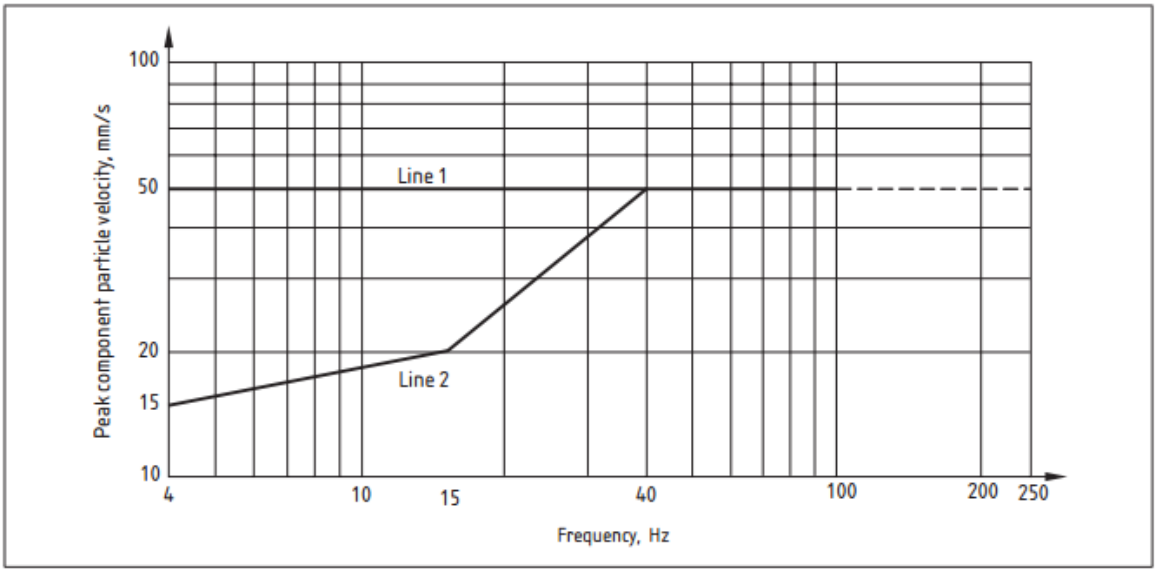

Figure 4.1: Summary of Damage Thresholds for Transient Vibration on Domestic Structures

With respect to vibration limits, BS 5228 states:

"It is recommended that, for soundly constructed residential property and similar structures which are in generally good repair, a conservative threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak particle velocity (P.P.V.) of 10 mm/s for intermittent vibration and 5 mm/s for continuous vibrations. Below these vibration magnitudes, minor damage is unlikely to occur. Current experience suggests that these values may be reduced by up to 50% where the preliminary survey reveals existing significant defects (such as a result of settlement) of a structural nature."

"Buildings constructed for industrial and commercial use exhibit greater resistance to damage from vibrations than normal dwellings, and it is recommended that light and flexible structures …… should be assigned thresholds of 20 mm/s for intermittent vibrations and 10 mm/s for continuous vibrations, whereas heavy and stiff buildings should have higher thresholds of 30 mm/s for intermittent vibrations and 15 mm/s for continuous vibrations."

BS 5228: Part 1 also states the following:

"Vibrations, even of very low magnitude, may be perceptible to people. Vibration nuisance is frequently associated with the assumption that, if vibration can be felt, then damage is inevitable; however considerably greater levels of vibration are required to cause damage to buildings and structures."

4.2 Vibration Results

The results of the background vibration monitoring are shown as a time history of Peak Particle Velocity as shown in Figure 17622.VTH1.

The majority of readings fall below 0.6 mm/s PPV on each axis. Some individual peaks were recorded with highest reading of 1.09 mm/s PPV in x-axis.

5.0 CONCLUSIONS

A baseline vibration survey has been undertaken on site at 36 Heath Drive, London NW3 7SD, to establish the vibration profile of the site prior to the commencement of all on-site works.

Measurements of peak PPV were undertaken between 11th May 2018 and 15th May 2018. All vibration levels have been analysed and reported.

Report by

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Title:

Indicative site plan showing noise, vibration and dust monitoring positions

Ref. Google maps

Date: 31 May 2018

FIGURE 17622.SP1

KP acoustics

17622. Vibration Monitoring Baseline
36 Heath Drive, London

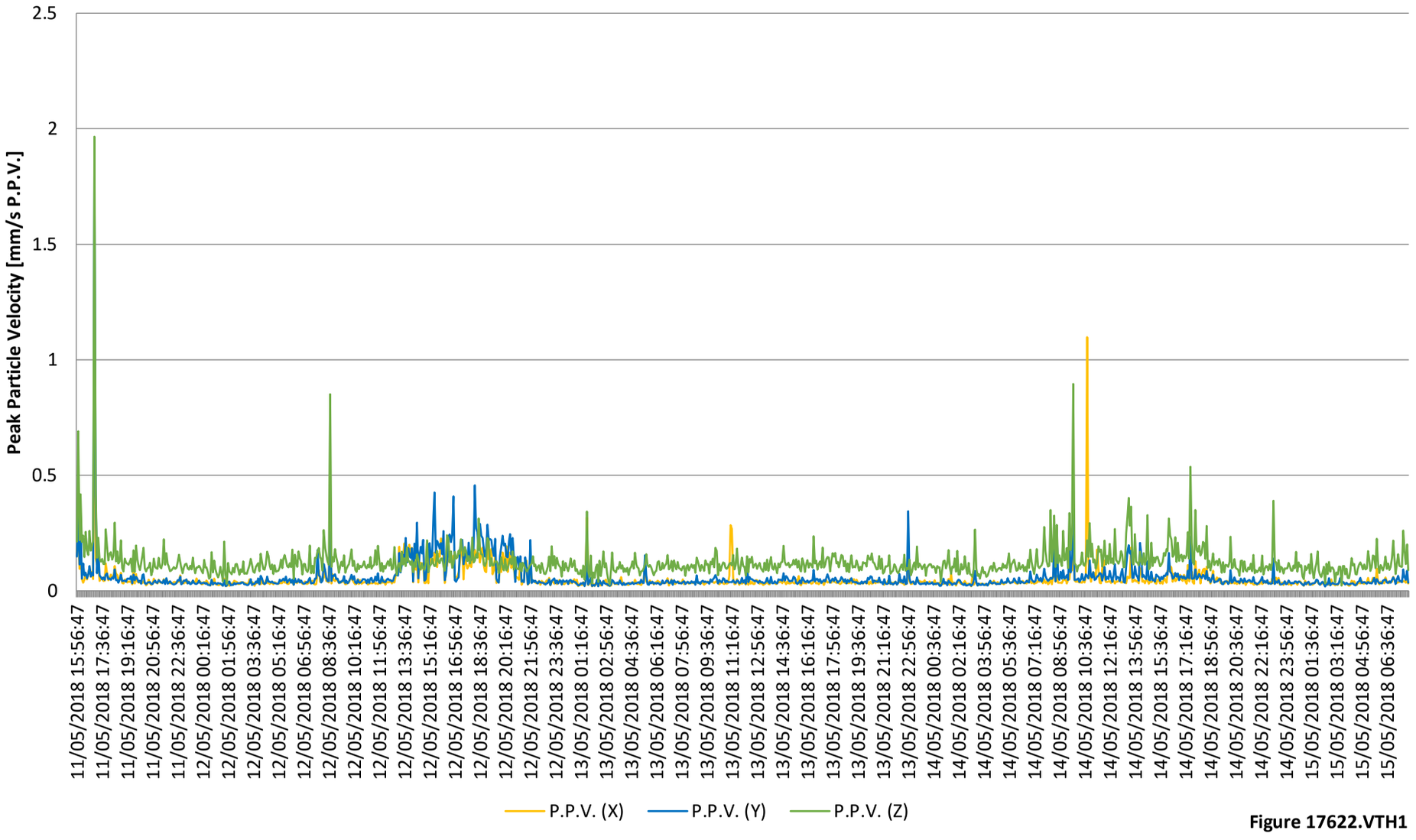

Figure 17622.VTH1