

13-17 Fitzroy St

Environmental Monitoring Proposal

Ref No.: 3449-MS

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Revision	Issue Date	Reason for Issue	Prepared By
-	18 th November 2022	Preliminary Issue for Client Comment.	SM
01	17 th January 2023	Dust trigger values updated	DK



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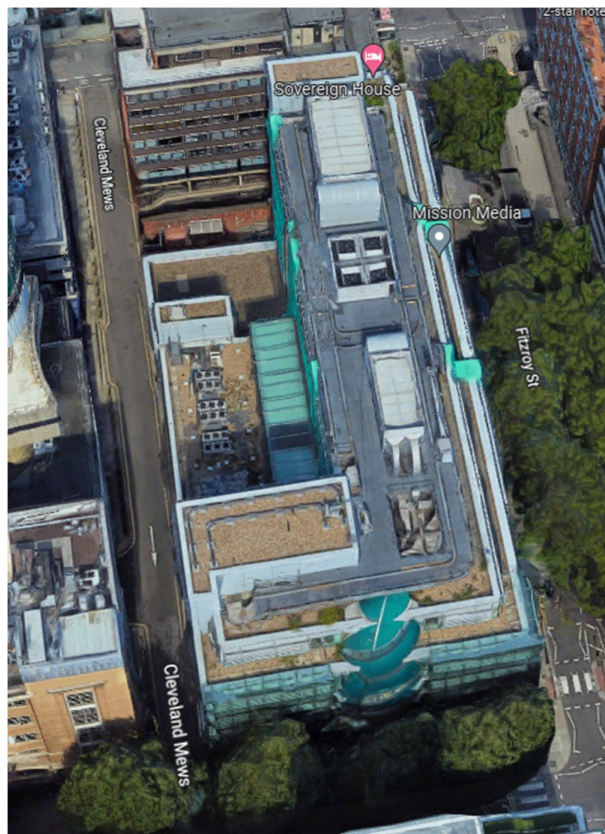
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MONITORING METHODOLOGY

Environmental Monitoring

1. Introduction

The purpose of this proposal is to put forward a monitoring system that will measure the effects the site activities on 13-17 Fitzroy St may have on the neighbouring structures.



The monitoring will consist of the following items:

- Noise Monitors
- Dust Monitors
- Vibration Monitor

This proposal details the methods of environmental monitoring from installation and implementation to reporting and analysis.

2. Installation

It is proposed to install a series of Noise, Dust, and Vibration monitoring units in close proximity to the site at 13-17 Fitzroy St, at the approximate locations indicated in Figure 1 below. The final locations are to be determined on site, following discussion with the Main Contractor, to suit the nature of the works.

A continuous 110V power supply to the location of the monitoring units will need to be provided by the client.

The units will need to be installed in a location with a good GSM signal, for data transfer via sim card.

Clear and safe access to install, maintain and remove the units will need to be provided by the client.

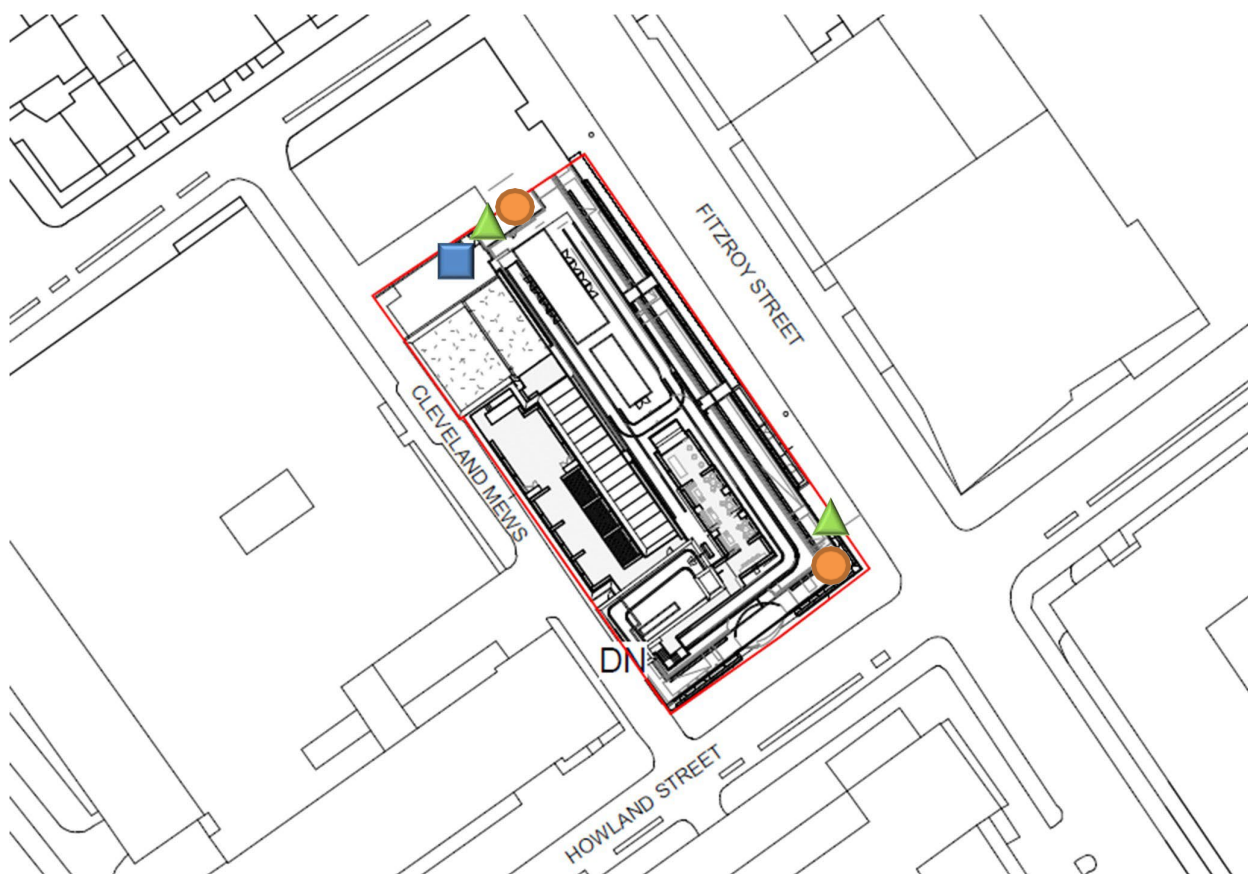
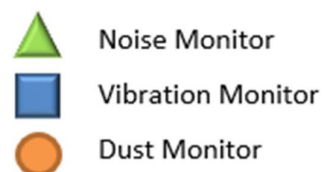


Figure 1 - Location of environmental monitoring units

a) Noise Monitoring

2no. Cass 1 Noise monitoring units are to be installed within the site boundary at the approximate locations indicated in Figure 1 above.

The Noise level meter will consist of a lockable weatherproof casing, which will contain the sound level meter, modem, power supply and backup battery. An external microphone will also be attached. The unit contains a sim card allowing for remote data retrieval.

The microphone is able to be detached from the logging unit, which allows for the unit to be located in a discreet location.



Example of Sound Meter within Weatherproof case and External Microphone

b) Vibration Monitoring

1no. Vibration monitoring unit is to be installed within the site boundary, adjacent to the neighbour to the north of the site - at the approximate location indicated in Figure 1 above.

The vibration unit consists of a vibration monitoring logger component housed in a lockable weatherproof casing, which is coupled to an external geophone.

The geophone will be attached to a fixed part of a structure through a mounting bracket. Vibration levels affecting the structure will be recorded by the geophone at their specified frequency by the data logging unit housed within the protective case.



Example of Vibration Monitoring Unit in Weatherproof case and external geophone



Geophone on bracket



Example of Vibration Unit installation on wall

c) Dust Monitoring

2no. Dust monitoring units are to be installed within the site, at the approximate locations indicated on Figure 1 above, to sample the dust generated by the demolition and construction activities.

The sampling of the data will be conducted using specialist air-quality monitoring equipment capable of recording data at up to 1-minute intervals, although a period of no greater than 15 minutes is advised.



Example of Dust Monitoring Unit

3. Setup and Monitoring Procedure

The data will be recorded automatically at pre-set intervals and will be downloaded remotely on a regular basis. If a regular 110V (or 240V) power supply can be provided, the unit will not need to be accessed, other than for routine maintenance.

-The sound unit is normally set to collect LA_{eq} values in units of decibels (dB) at pre-defined time intervals.

- The Vibration measuring geophone measures PPV (Peak Particle Velocity) values which are stored on the attached data logger in units of millimetres per second (mm.s^{-1}) at pre-set time intervals. Measurements are recorded in the 3 dimension planes, X Y and Z.
- Dust is measured in units of particles in parts per million.

The units are also capable of sending an alarm if a trigger limit is reached. The alarm can be issued in a number of different formats with the most common being either a text message or an email.

4. Monitoring frequency

The units are normally set to record data every 15 minutes, but this is customisable to the client's needs.

5. Trigger Values

Trigger values for the Noise and Vibration will need to be specified by the structural engineers prior to the commencement of works.

Regarding the Dust monitoring, the following trigger values will be applied:

- 15 min average trigger level of $250\mu\text{g}/\text{m}^3$
- 1 hour average trigger level of $190\mu\text{g}/\text{m}^3$

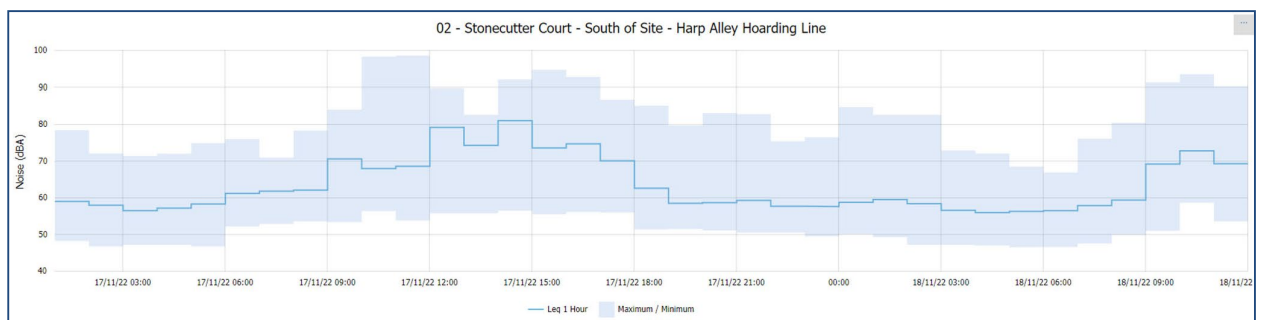
In the event of an exceedance, email alerts are to be issued to the following recipients:

- Jack Everett - j.everett@8build.co.uk
- Keillan Barry – k.barry@8build.co.uk
- Adam Cannon – a.cannon@8build.co.uk

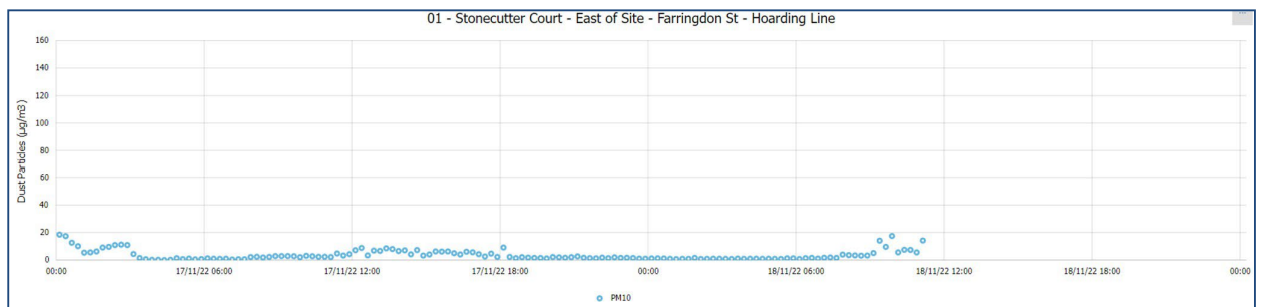
6. Reporting

The data will be transmitted via email back to the head office where it will be processed and a PDF report will be generated.

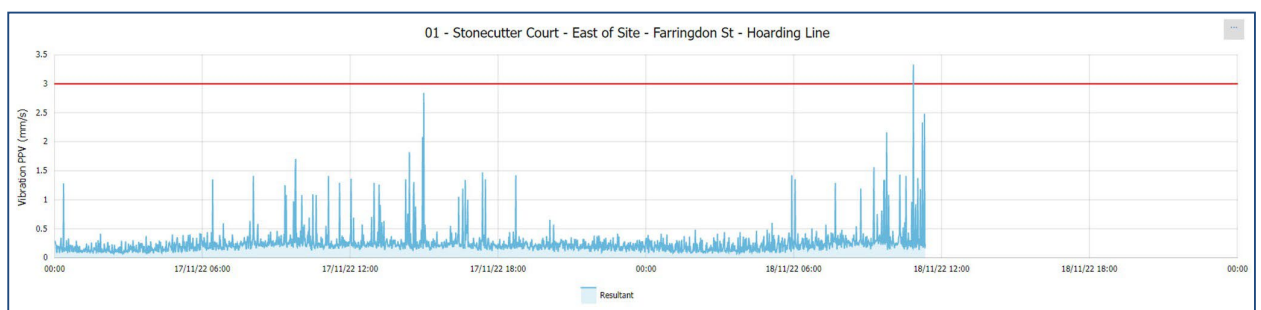
The data can also be uploaded to a project-specific monitoring website if required. A password-protected, web-based output can be utilised to display the results via the ProSES website portal. Graphs of the historical movements will be available to assist in determining movement trends and the approaching of any alarm levels.



Example graph displaying noise data



Example graph displaying dust data



Example graph displaying vibration data

7. Instrumentation

Noise Monitoring Unit



Class 1 sound level meter
Frequency range:
Measurement range:

Svantek - SV 277 Pro,
over 110 dB from 10 Hz up to 20 kHz
16dBA RMS – 140dBA Peak

Vibration Monitoring Unit



Vibra + (or similar)
Geophone
Velocity range

Seismograph
Tri-axial (X, Y, Z)
0.1-200mm/s

Dust Monitoring Unit



Campbell Profiler (or similar)
Measurements
Detection limit
Particle size range
Flow rate

Dust Profiler
TSP, PM10, PM2.5, PM1
0-5000 micrograms per cubic metre
5 to 20 micro diameters
1L per minute