

Memo

Project: National Paediatric Hospital

Report Type: Summary of Noise and Vibration Monitoring Results

Period of Monitoring: Sensor data 30th September – 25th October 2017

Introduction

Contained within the project documents for the National Paediatric Hospital development are requirements for Environmental Monitoring to be completed during construction works. This monitoring regime includes recording dust deposition, noise at the perimeter of the site, and ground vibration at the perimeter of the site. Permissible limits for each monitoring regime have been set out in the Project EIS which was submitted with the Planning Permission for the Hospital.

The number of Monitoring points will vary throughout the project depending on the construction works being undertaken. Additional monitoring points may be added if particular features of adjacent properties require it.

Vibration Monitoring.

Vibration monitors have been located at the ‘closest part of sensitive property’ as per the Project Environmental Impact Statement where feasible or alternatively at the site hoarding. The monitors will be located as per the above adjacent to locations where significant works are ongoing on site.

The Project Environmental Impact Statement (EIS) that was part of the project Planning Permission established vibration limit at structures depending on their condition and type. Please see tables below for the limits set.

Table 11.7: Allowable vibration during construction phase for soundly constructed buildings

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
15 mm/s	20 mm/s	50 mm/s

Table 11.8: Allowable vibration during construction phase for sensitive buildings

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
3 mm/s	3 – 8 mm/s	8 – 10 mm/s

Memo

Site operations are monitored using a traffic light trigger system of Green, Amber and Red trigger levels with the Red trigger level set at a vibration limit of 3mm/s PPV which corresponds to the lowest permissible vibration limit for sensitive structures. Any vibration level recorded below Red levels is acceptable within the limits established in Planning.

Number of Monitors on Site:

During the monitoring period summarised for this report (30th of September to 25th October 2017) there were up to 10 active vibration monitors installed at the perimeter of the site.

Location of Vibration and Noise Monitors:



Location of Vibration Monitors

Memo



Location of Vibration Monitors around O'Reilly Avenue

Observations:

Executive Summary:

The majority of vibration readings recorded below the limit specified within the Project EIS. However three number monitors recorded readings above the limit specified within the Project EIS. These breeches were generally caused by commencement of piling and earth work activities but it has been noted that these monitors were located at or inside the site hoarding. Vibration monitors have since been relocated to the 'closest part of the sensitive properties' as per the EIS where this is feasible.

Detailed Summary:

Sensor (8723) (South Circular Road)

- There were approximately 5 number vibration readings recorded above the limit specified within the Project EIS. These have been reported to be caused by the commencement of piling in the area. Each reading appears to be isolated incidents where works appear to have been moderated once trigger level occurred. The readings either side of the peaks are below the limits specified.

Sensor (9244) (O'Reilly Avenue)

- All vibration readings recorded below the limit specified within the Project EIS

Sensor (8681) (Mount Brown)

- There was 1 number vibration reading recorded above the limit specified within the Project EIS. The cause is unknown and it has been reported that there was no construction work in the area. The reading appears to be an isolated incident with the reading either side of the peak below the limits specified.
-

Memo

Sensor (9141) (Hospital A&E)

- All vibration readings recorded below the limit specified within the Project EIS

Sensor (9005) (O'Reilly Avenue from 30th Sept to 5th October, Cameron Square from 5th October to 13th October)

- Then located in the area of O'Reilly Avenue this sensor was located inside the site to act as an early warning trigger for the works. The reportable readings are applicable at the boundary of the site only and as such any triggers prior to the 5th October are not reported here. After the sensor was relocated to Cameron Square there were no vibration readings recorded above the limit specified within the Project EIS.

Sensor (8898) (O'Reilly Avenue)

- All vibration readings recorded below the limit specified within the Project EIS

Sensor (8939) (Cameron Square)

- There was 1 number vibration reading recorded above the limit specified within the Project EIS. It is reported that this was caused by earth work activities in the area. Each reading appears to be an isolated incident where works appear to have been moderated once trigger level occurred. The readings either side of the peaks are below the limits specified.

Sensor (8995) (O'Reilly Avenue)

- All vibration readings recorded below the limit specified within the Project EIS

Sensor (8983) (O'Reilly Avenue)

- All vibration readings recorded below the limit specified within the Project EIS

Sensor (9737)

- All vibration readings recorded below the limit specified within the Project EIS

Noise Monitoring.

During the report period noise monitors have been relocated to the 'closest part of sensitive property' as per the Project EIS where this has been feasible, or alternatively to the outside face of the site hoarding. When works are ongoing the noise monitor sensors run continuously and readings are recorded in decibels (dB) LA_{eq1hr}. Decibels is the standard unit of measurement of sound energy and 'LA_{eq1hr}' means that sensors record all levels of sound over a 1 hour period and then calculate an average equivalent decibel level as if the sound was continuous. Isolated instantaneous loud noises are thus averaged out.

The Project Environmental Impact Statement (EIS) that was part of the project Planning Permission established a noise limit at residential dwellings of 70dB LA_{eq1hr}. Site operations are monitored using a traffic light trigger system of Green, Amber and Red trigger levels with the Red trigger level set at the noise limit set out in the project EIS (70 dB LA_{eq1hr}). Any noise level recorded below Red levels is acceptable within the limits established in Planning.

Number of Noise Monitors on Site:

During the monitoring period (30th September to 25th of October 2017) summarised for this report there were up to 13 active monitors at the site boundaries. Monitor 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, and 13 (shown on the map view above) have recorded results.

Memo

Observations:

Executive Summary:

Eleven of the thirteen monitors recorded noise levels above the limits set out in the Project EIS, these are 01, 02, 03, 04, 05, 06, 08, 09, 10, 11, and 12 with five monitors (02, 03, 05, 08 and 09) exceeding 75 dB LA_{eq1hr} with a peak of 78dB LA_{eq1hr}.

Detailed Summary:

The monitoring results for noise for this period were within the limits set out in the Project EIS with the following exceptions:

Monitor 01 (Cameron Square)

- One recorded breach of the limits set out in the Project EIS on the 6th of October. Noise Monitor 01 recorded levels above those set out in the Project EIS with a peak of 71dB LA_{eq1hr}. It has been noted that Noise Monitor 01 has been located on the site side of the hoarding and as such is recording noise levels within rather than outside the site boundary.

Monitor 02 (O'Reilly Avenue)

- Noise Monitor 02 recorded levels above those set out in the Project EIS on 5 separate days (30th Sept, 2nd, 3rd, 4th, and 16th Oct) with a peak of 76dB LA_{eq1hr}. It has been noted that Noise Monitor 02 has been located on the site side of the hoarding and as such is recording noise levels within rather than outside the site boundary.

Monitor 03 (South Circular Road)

- Noise Monitor 03 recorded levels above those set out in the Project EIS on 5 separate days (2nd, 4th, 10th, 11th, 12th Oct) with a peak of 77dB LA_{eq1hr}. Background ambient noise at this location is BAM to review location of Noise Monitor 3 as this monitor may be subjected to background noise that contributes to the readings taken at this location.

Monitor 04 (Mount Brown Road)

- Noise Monitor 04 is located at Mount Brown and during the monitoring period no works were ongoing. The background noise level due to road traffic commonly reaches 73dB LA_{eq1hr} during the day with occasional peaks of 75 dB LA_{eq1hr}. The baseline value for permitted noise at this point may have been adjusted.

Monitor 05 (O'Reilly Avenue)

- Noise Monitor 05 is located to the rear of Number 72 O'Reilly Avenue. The monitor recorded readings above those set out in the Project EIS on 3 separate days (18th, 19th, and 20th October 2017) with a peak of 78 dB LA_{eq1hr}.

Monitor 06 (O'Reilly Avenue)

- Noise Monitor 06 is located to the rear of Number 68 O'Reilly Avenue. The monitor recorded readings above those set out in the Project EIS on 18th October 2017 at 73 dB LA_{eq1hr}.

Memo

Monitor 07

- All noise readings recorded below the limit specified within the Project EIS

Monitor 08

- Noise Monitor 08 recorded levels above those set out in the Project EIS on the 3rd of October and 10th of October with a peak of 76dB

Monitor 09

- Noise Monitor 09 recorded levels above those set out in the Project EIS on 5 separate days (3rd, 4th, 5th, 9th, 10th Oct 2017) with a peak of 76dB

Monitor 10

- Noise Monitor 10 recorded levels above those set out in the Project EIS on the 6th, 9th and 10th of October with a peak of 74dB

Monitor 11

- Noise Monitor 11 recorded levels above those set out in the Project EIS on the 6th of October with a peak of 71dB

Monitor 12

- Noise Monitor 12 recorded levels above those set out in the Project EIS on the 6th of October with a peak of 74dB

Monitor 13

- All noise readings recorded below the limit specified within the Project EIS