Table 4 Results for Monitoring Location N3 – 26 January 2021

Monitoring Location:	N3 – 26 January 2021					
Period	Date/Time	Measured Noise Levels dB(A)				
		L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07:00-19:00	26 Jan 2021 15:50 – 16:20	55	50	58	77	55
	26 Jan 2021 16:21 – 16:51	55	50	58	74	55
	26 Jan 2021 16:52 – 17:22	54	49	57	69	54
	Average	**55**	**50**	**58**	**73**	-
	Daytime Criterion					-

Daytime comments:
Predominant noise was from traffic on the R148, birdsong, an alarm sounding was present for a brief period.

Table 5 Results for Monitoring Location N6 – 26 January 2021

Monitoring Location:	N6 – 26 January 2021					
Period	Date/Time	Measured Noise Levels dB(A)				
		L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07:00-19:00	26 Jan 2021 17:23 – 17:53	52	49	54	71	52
	26 Jan 2021 17:54 – 18:24	52	48	55	77	52
	26 Jan 2021 18:25 – 18:55	51	47	53	63	51
	Average	**52**	**48**	**54**	**70**	-
	Daytime Criterion					-

Daytime comments:
Predominant noise was from traffic on the R148, birdsong and local traffic.

7.0 Assessment of tonal noise

A 1/3 Octave band frequency analysis was conducted at each measurement position in order to assess any tonal or impulsive component associated with site activities. This methodology is outlined in the 2016 EPA publication *"Guidance Note for Noise: License Applications in Relation to Scheduled Activities (NG4)"*. The methodology recommended in this Guidance Note requires that for a tone to be present, the time-average sound pressure level in the one-third-Octave band of interest should exceed the time-average sound pressure levels of both adjacent one-third-Octave bands by some constant level difference.

The Guidance Note (NG4) states as follows:

> *The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one-third-Octave bands:*
>
> - *15dB in low frequency one-third Octave bands (25Hz to 125Hz)*
> - *8dB in middle-frequency bands (160 Hz to 400Hz)*
> - *5 dB in high- frequency bands (500Hz to 10,000Hz)*

Impulsive noise can be described as a noise source that is clearly audible above everything else like a thumping, banging or an impact noise. Impulsive noise can be determined during the monitoring as it is clearly audible; it also can be determined as outlined in the NG4 Guidance Note. This involves measuring the noise using an impulse time weighting 'I' and comparing this against the result for a fast time weighting 'F'. "A difference of 2dB or greater is considered to indicate the presence of an impulsive characteristic".

Impulsive noise and tonal noise were not detected at any of the noise locations during the day time monitoring. Where tonal or impulsive noise is present a penalty of 5dB is applied to the measured LAeq,T if both tonal and impulsive noise occur on a single adjustment is applied. Neither tonal nor impulsive noise should be audible at any noise sensitive location.

8.0 Evaluation of Results

The recorded L_{Aeq} values at N1 range from 51dB(A) to 53dB(A) over the three monitoring intervals with an average L_{Aeq} value of 53dB (A). The main source of noise at this location was the regular passing traffic on the R148. Birdsong, light construction work nearby and local residential and commercial traffic also contributed to the noise levels at this location.

The recorded L_{Aeq} values at N2 range from 52dB(A) to 55dB(A) over the three monitoring events, with an average recorded value of 53dB (A). The main source of noise at this location was the regular passing traffic on the R148. Birdsong and local residential and commercial traffic also contributed to the noise levels at this location. A vehicle for pulling industrial bins also passed by the monitor twice during the event.

The recorded L_{Aeq} values at N3 range from 54dB(A) to 55dB(A) over the three monitoring events, with an average recorded value of 55dB (A). The main source of noise at this location was the regular passing traffic on the R148. Birdsong and local residential and commercial traffic also contributed to the noise levels at this location

The recorded L_{Aeq} values at N6 range from 51dB(A) to 52dB(A) over the three monitoring events, with an average recorded value of 52dB (A). The main source of noise at this location was the regular passing traffic on the R148. Birdsong and local residential and commercial traffic also contributed to the noise levels at this location

9.0 Conclusion

The noise climate at all four monitoring locations is dominated by the traffic noise on the R148 Chapelizod bypass. The remaining majority of the noise arises from local traffic activity from the existing commercial and residential property.

There were no tonal components observed in the spectra of the daytime monitoring surveys

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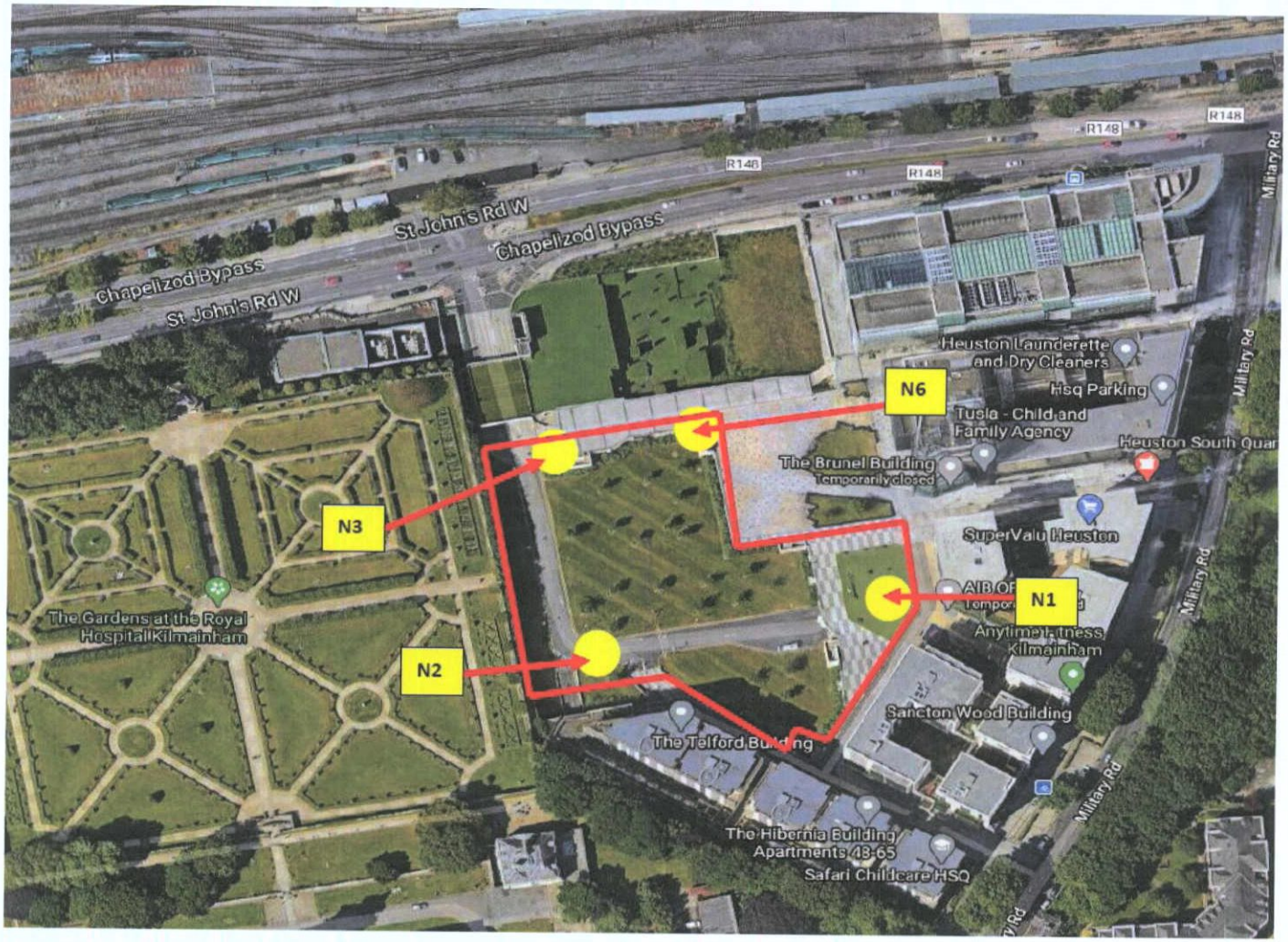
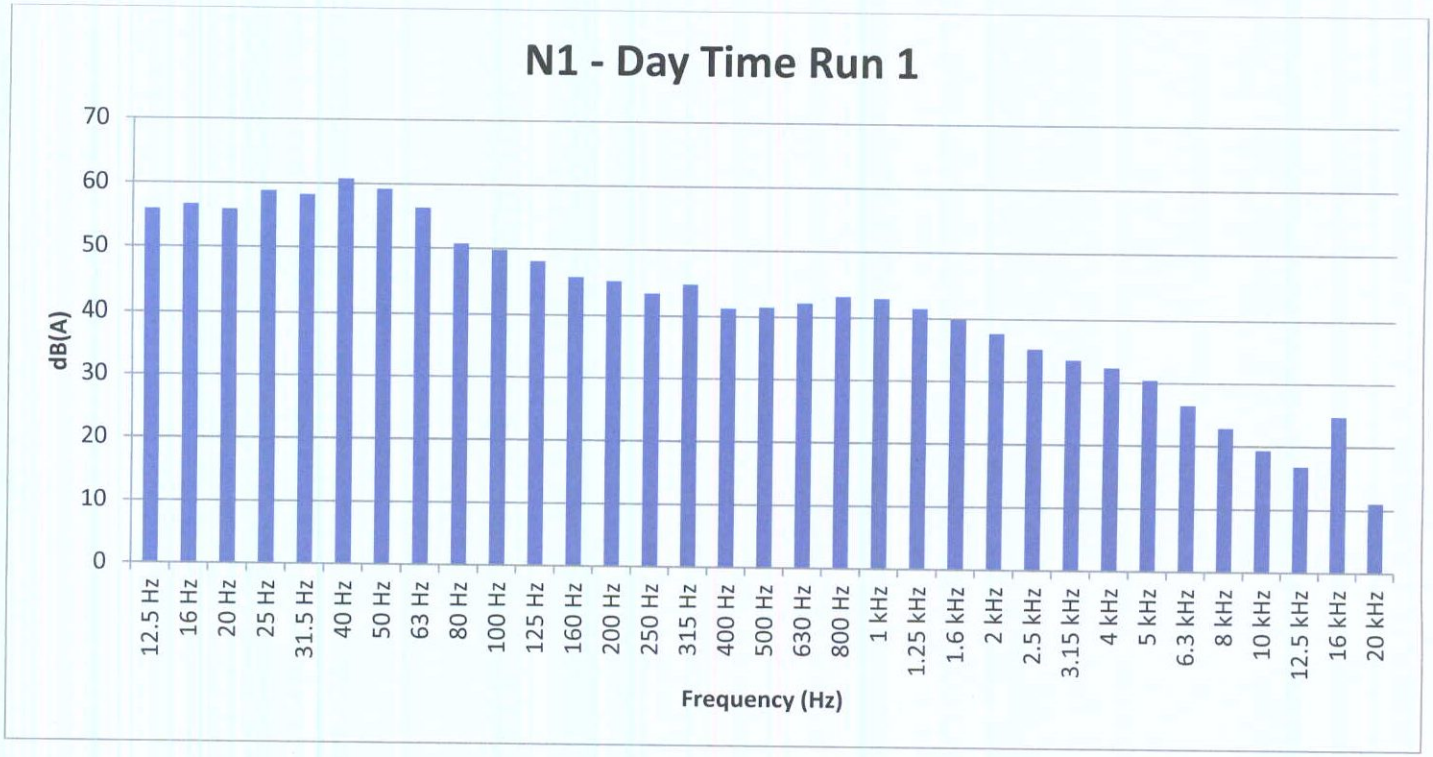
APPENDIX I

MONITORING LOCATIONS

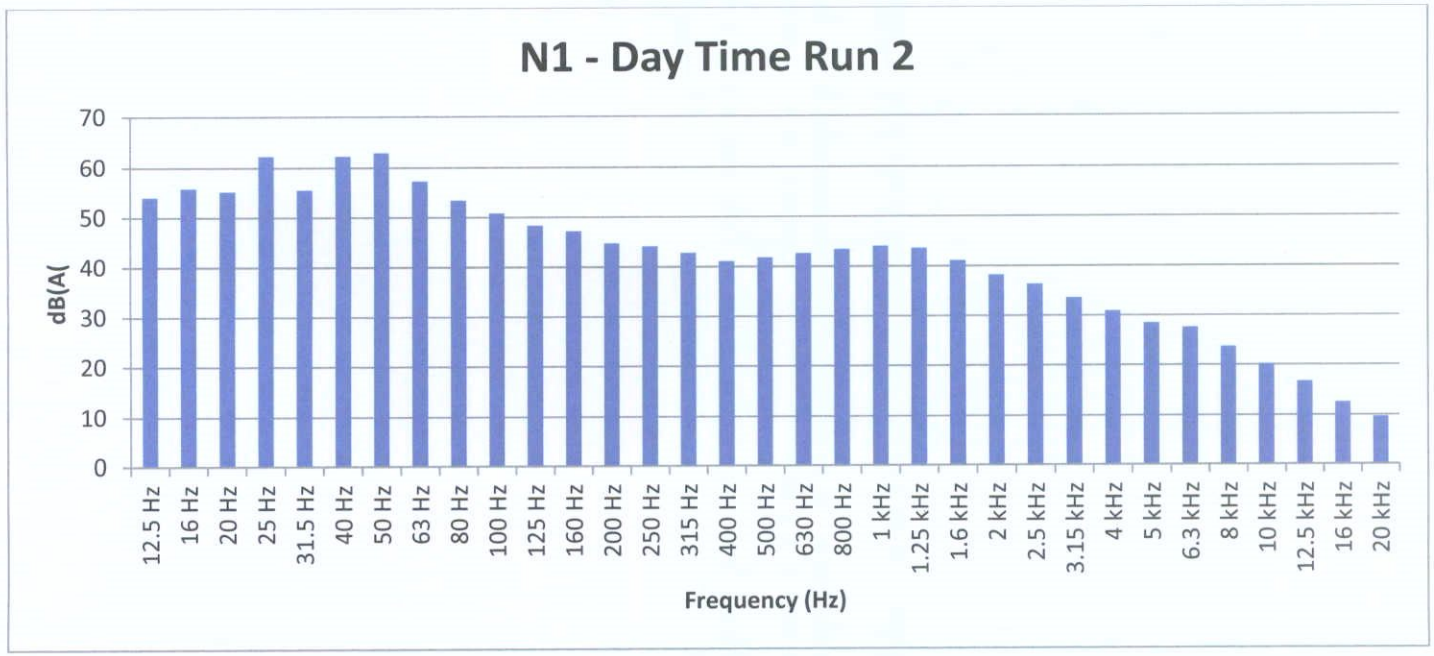

N6
N3
N2
N1
St John's Rd W
Chapelizod Bypass
R148
R146
Military Rd
Heuston Launderette and Dry Cleaners
Hsq Parking
Tusla - Child and Family Agency
The Brunel Building
Temporarily closed
Heuston South Quar
SuperValu Heuston
Anytime Fitness Kilmainham
The Gardens at the Royal Hospital Kilmainham
Sancton Wood Building
The Telford Building
The Hibernia Building Apartments 48-65
Safari Childcare HSQ

APPENDIX II

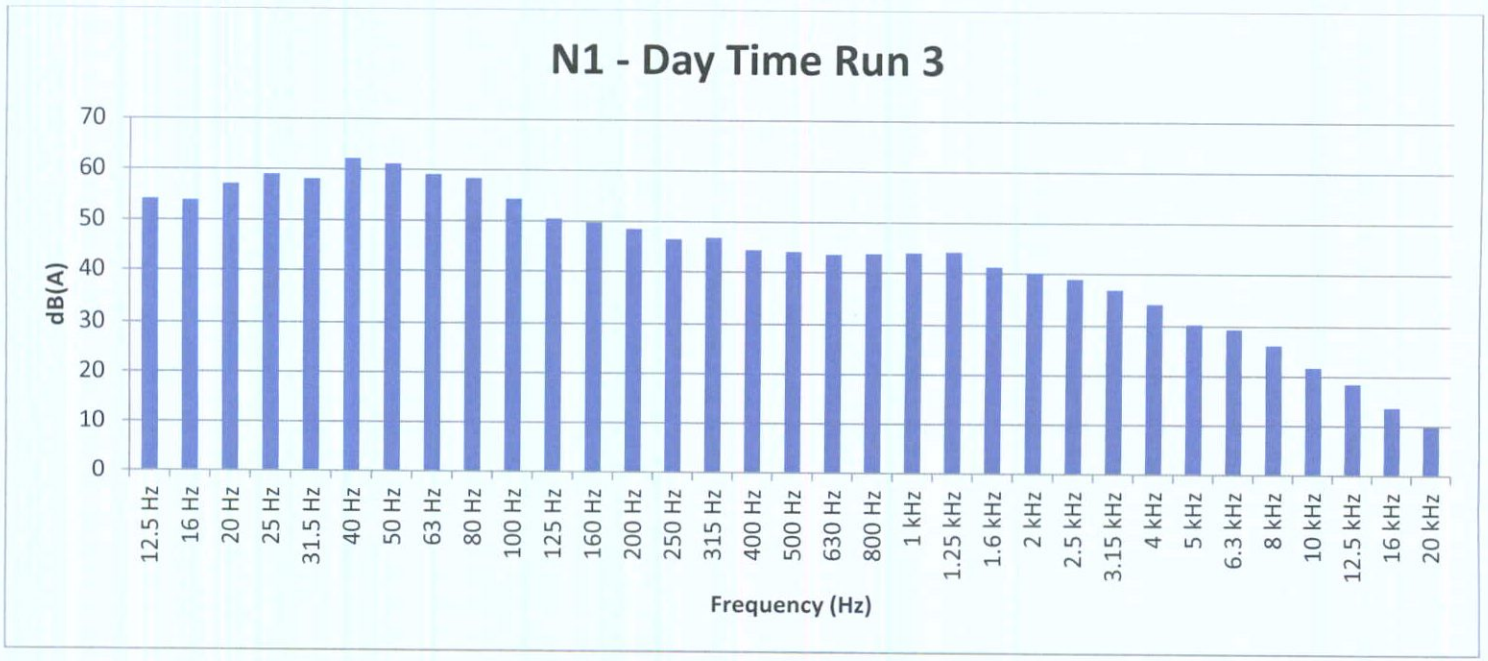
1/3 OCTAVE FREQUENCY SPECTRA



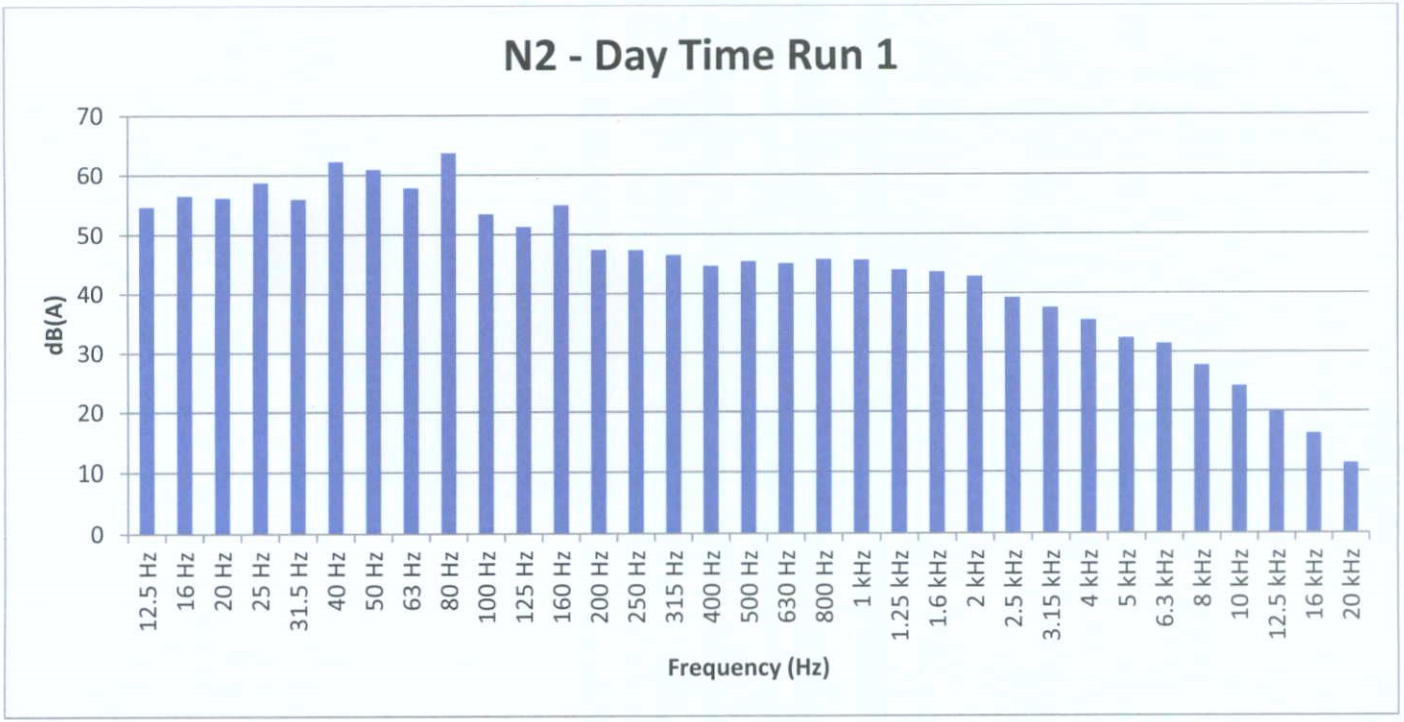
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



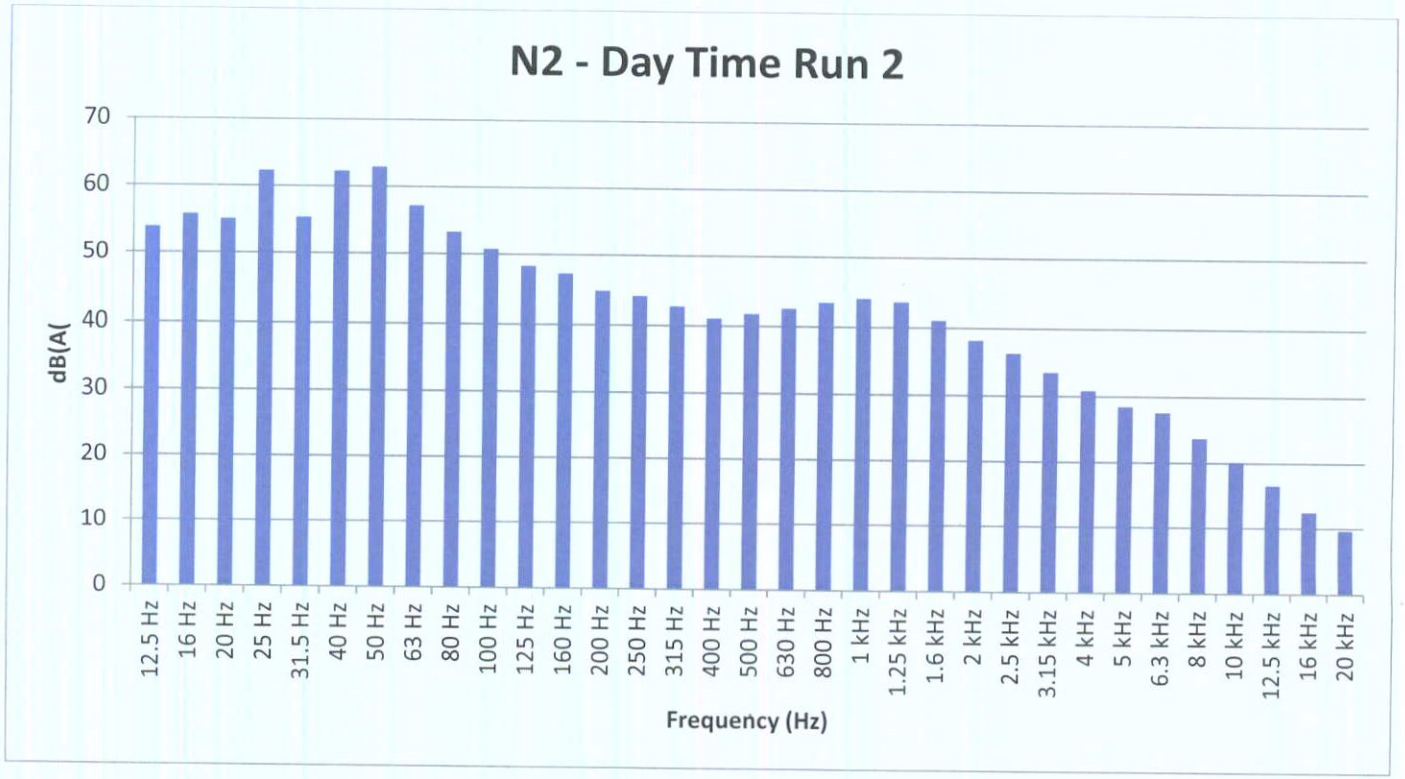
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



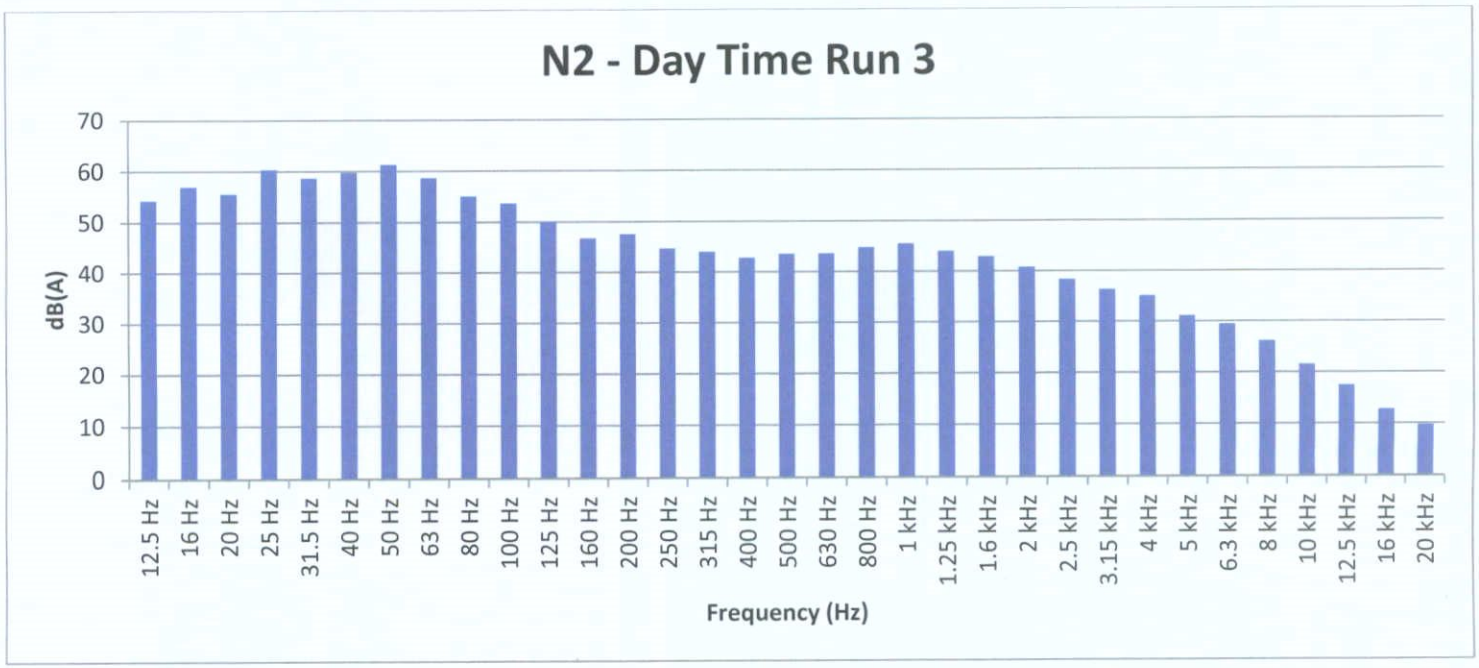
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



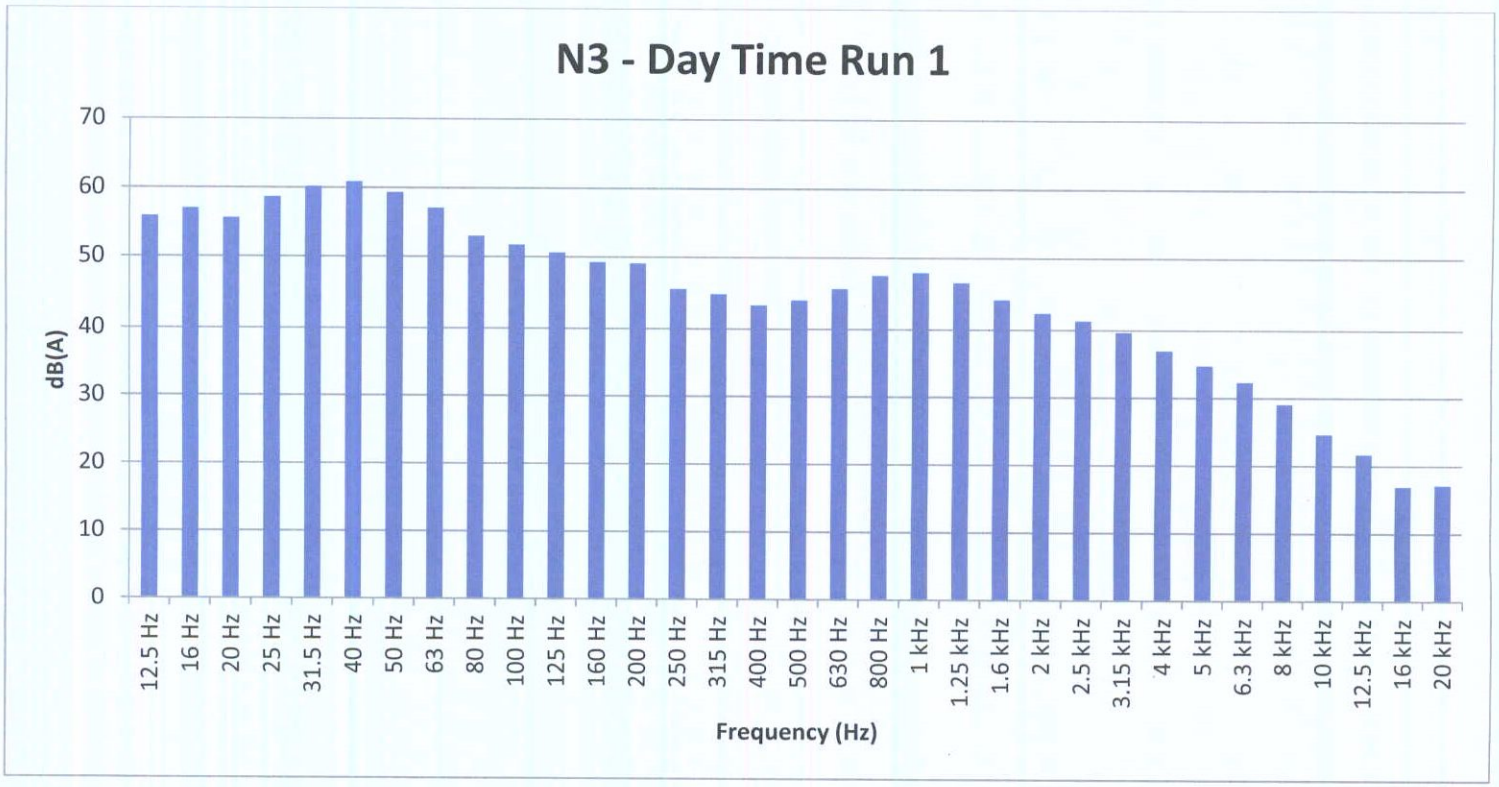
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



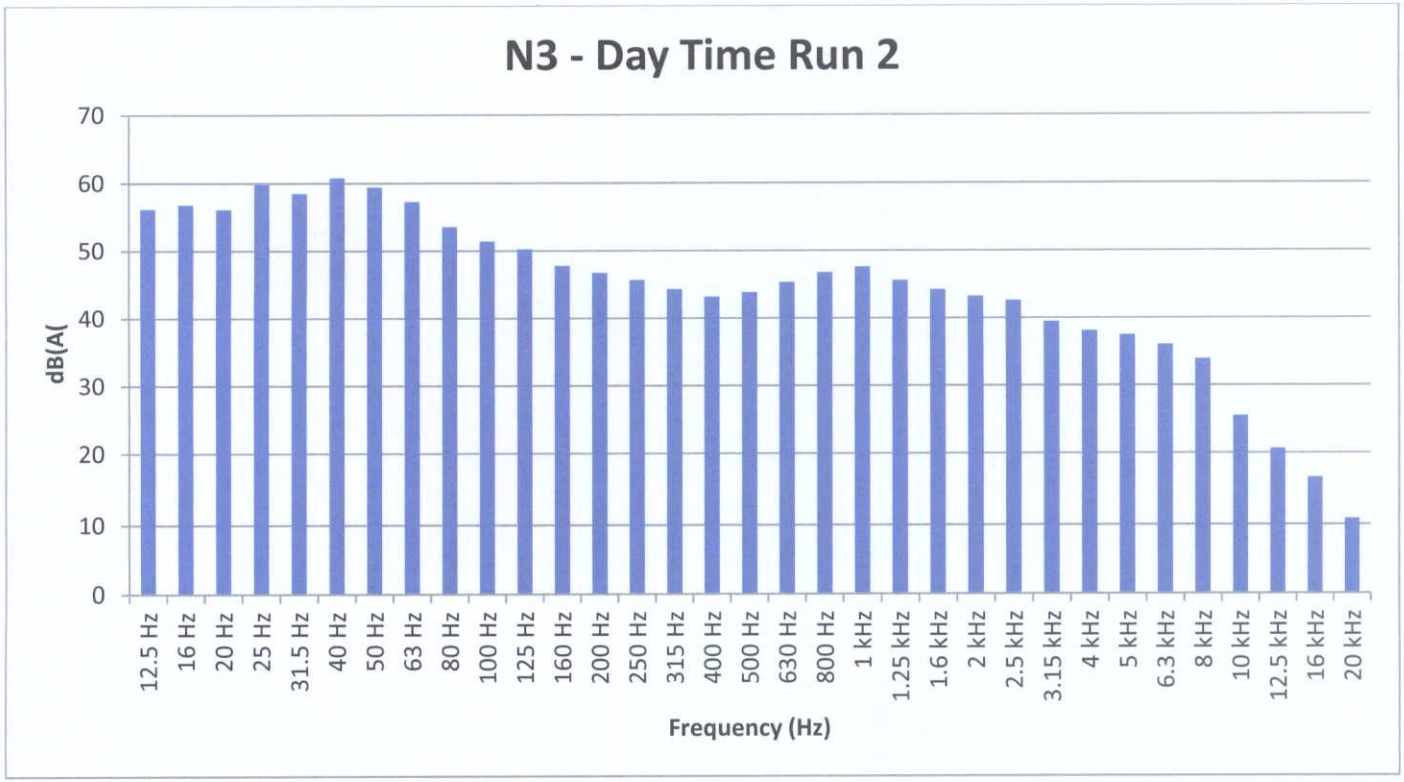
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



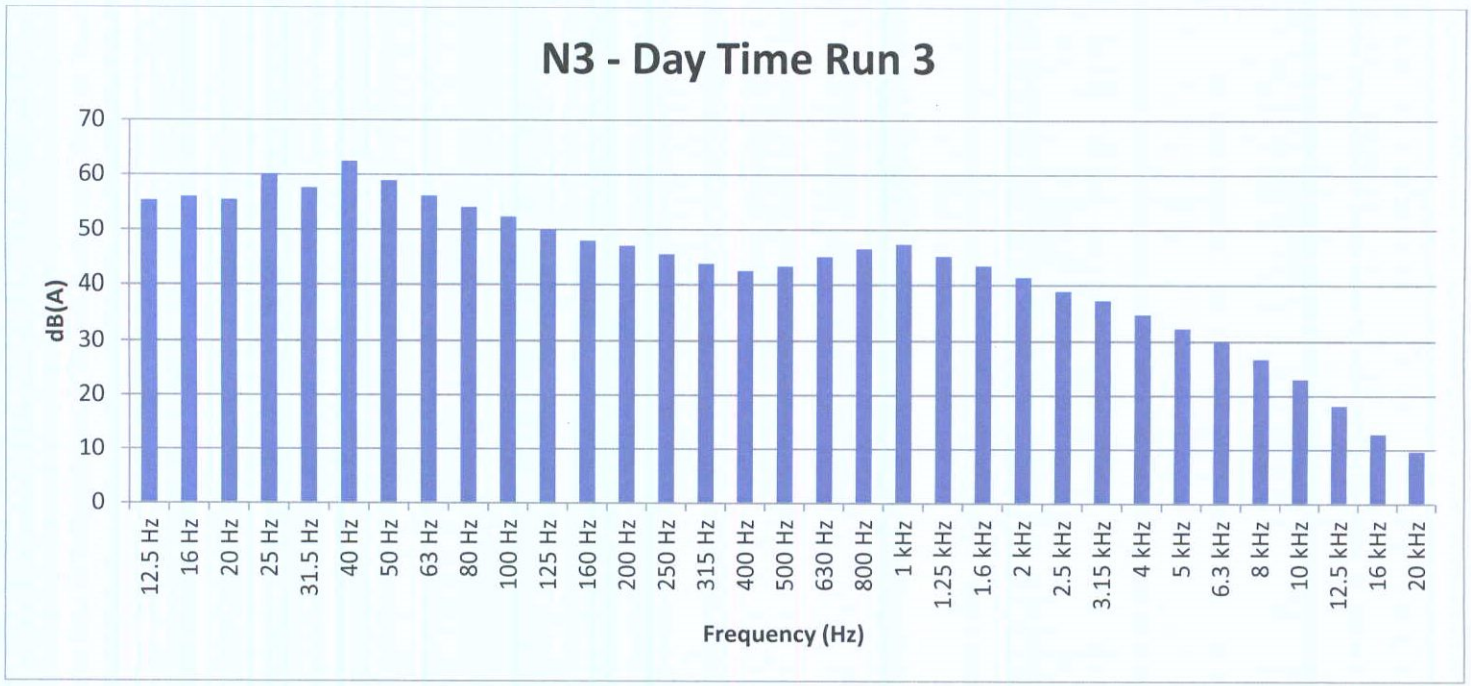
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	1K
Magnitude of Tone, dB L_{eq}	63
Is the magnitude greater than the threshold of hearing?	Yes
Level change from preceding 1/3 Octave Band, dB L_{eq}	2
Level change from following 1/3 Octave Band, dB L_{eq}	3
Are the level changes both greater than or equal to the high-frequency constant of 5dB?	No
Conclusion	No Tone Present



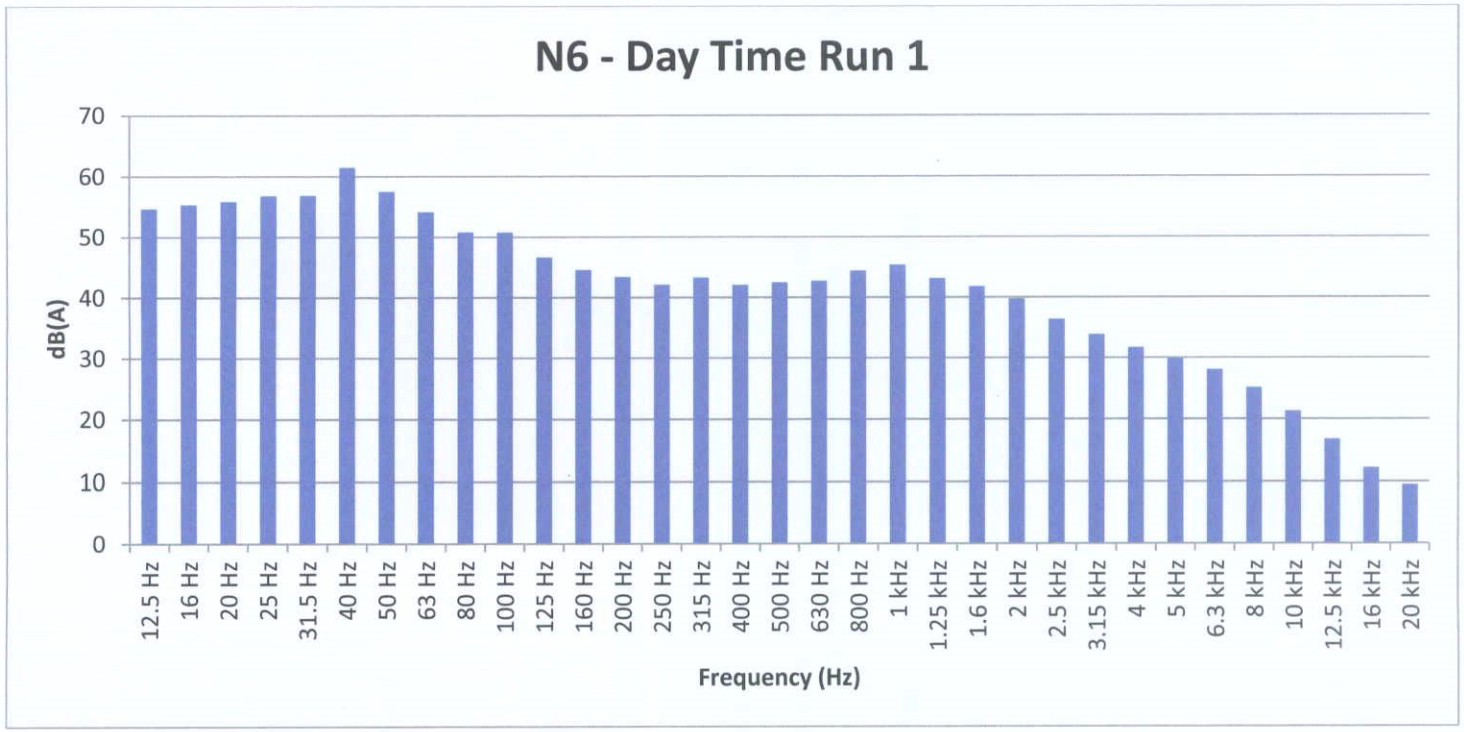
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the middle-frequency constant of 8dB?	N/A
Conclusion	No Tone Present



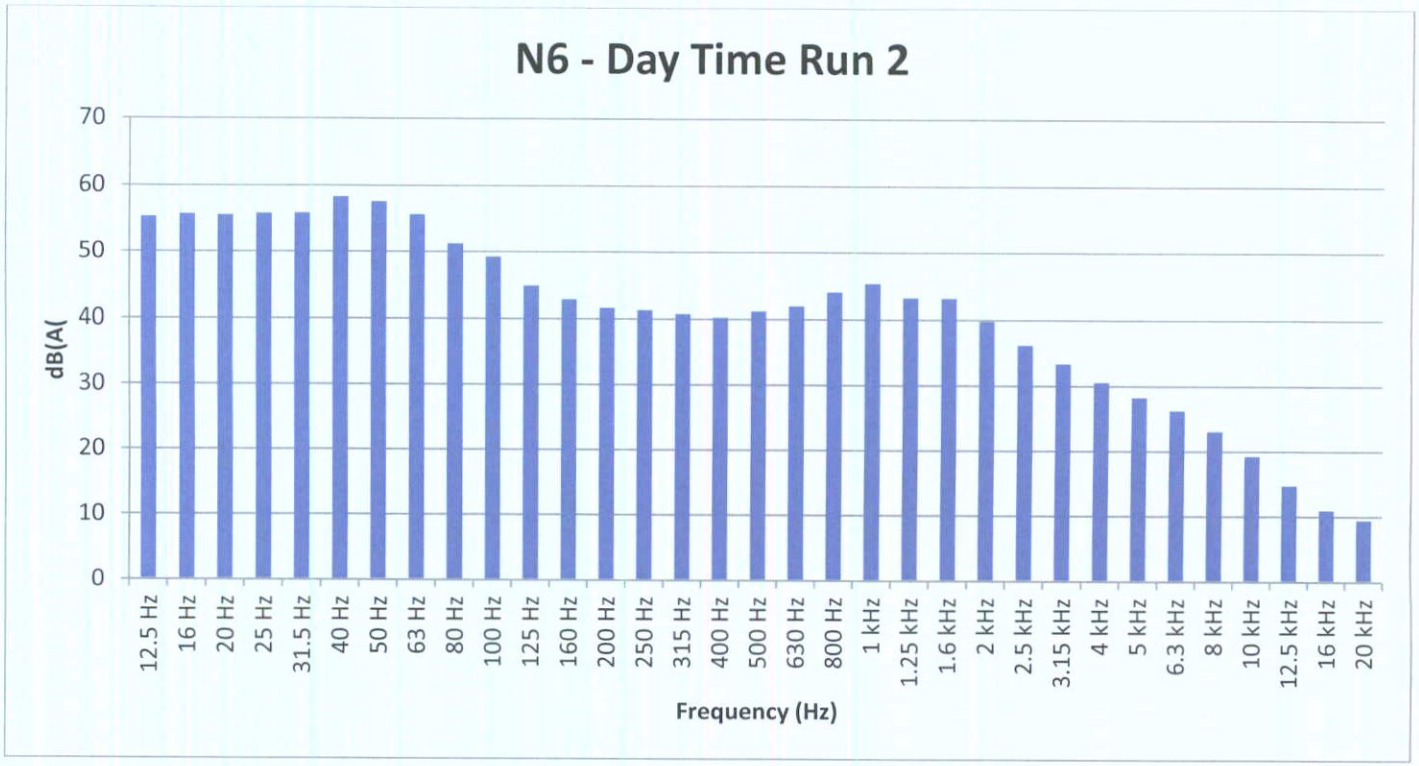
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the middle-frequency constant of 8dB?	N/A
Conclusion	No Tone Present



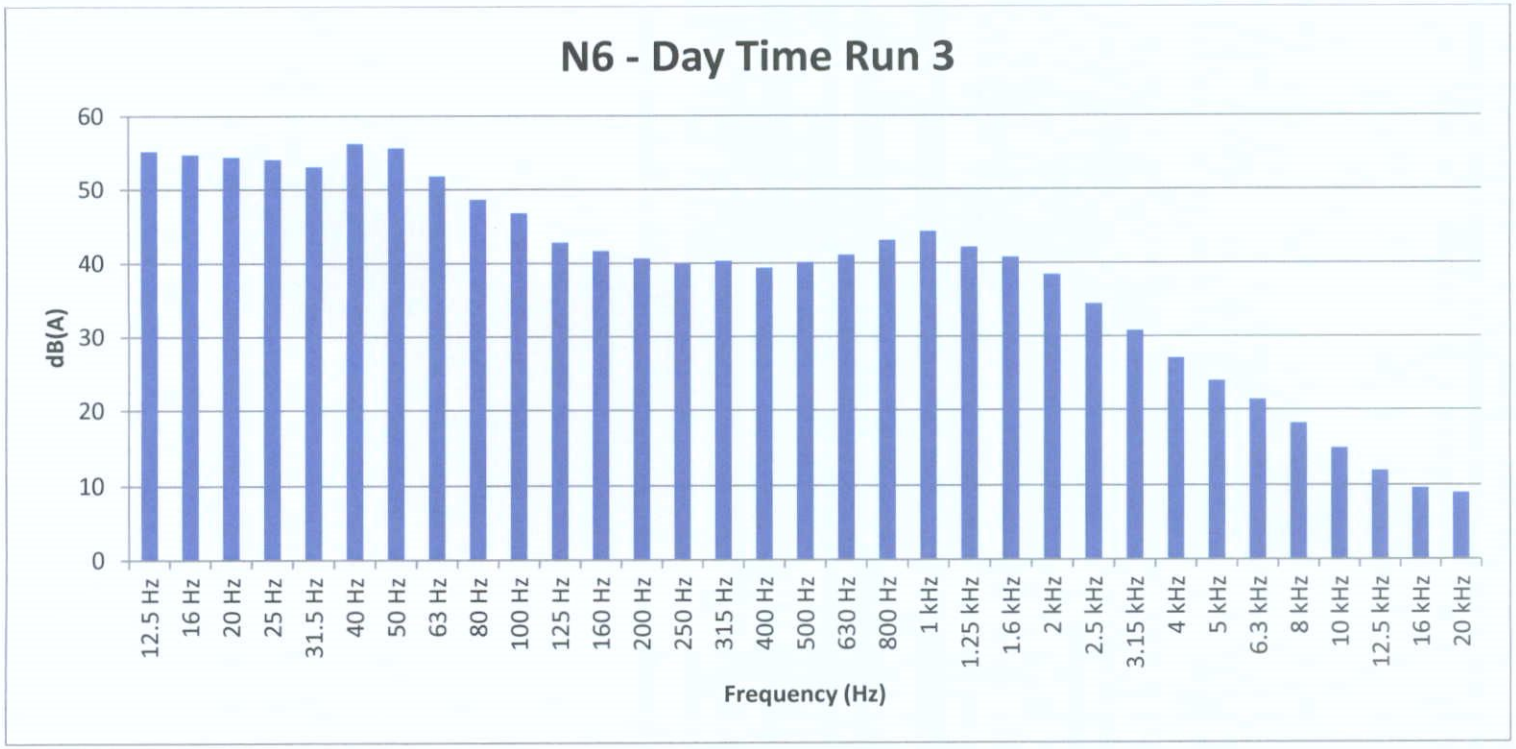
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the middle-frequency constant of 8dB?	N/A
Conclusion	No Tone Present



Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB and Middle frequency constant of 8?	N/A
Conclusion	No Tone Present



Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present

APPENDIX III

CALIBRATION CERTIFICATES

Brüel & Kjær

The Calibration Laboratory
Skodsborgvej 307, DK-2850 Nærum, Denmark

DANAK
CAL Reg.No. 307
Member of EA MLA

CERTIFICATE OF CALIBRATION

No: CDK1909065

CALIBRATION OF

Sound Level Meter:	Brüel & Kjær Type 2250	No: 3028864	Id: -
Microphone:	Brüel & Kjær Type 4189	No: 3232157	
Preamplifier:	Brüel & Kjær Type ZC-0032	No: 29224	
Supplied Calibrator:	None		
Software version:	BZ7222 Version 4.7.5	Pattern Approval:	PTB1.63-4093056 / 1.63-4093058
Instruction manual:	BE1712-22		

CUSTOMER

TMS Environment Ltd
53 Broomhill Drive
Tallaght
. Dublin 24
Ireland

CALIBRATION CONDITIONS

Preconditioning: 4 hours at 23°C ± 3°C

Environment conditions: *See actual values in **Environmental conditions** sections.*

SPECIFICATIONS

The Sound Level Meter Brüel & Kjær Type 2250 has been calibrated in accordance with the requirements as specified in IEC 61672-1:2013 class 1. Procedures from IEC 61672-3:2013 were used to perform the periodic tests. The accreditation assures the traceability to the international units system SI.

PROCEDURE

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System 3630 with application software type 7763 (version 8.0 - DB: 8.00) by using procedure B&K proc 2250, 4189 (IEC 61672:2013).

RESULTS

Calibration Mode: **Calibration as received.**

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of calibration: 2019-11-20

Date of issue: 2019-11-20

Lene Petersen
Calibration Technician

Jonas Johannessen
Approved Signatory

NSAI

National Metrology Laboratory

Certificate of Calibration

Issued to	TMS Environment Limited 53 Broomhill Drive Tallaght Dublin 24
Attention of	Graham Adams

Certificate Number	204772
Item Calibrated	Bruel & Kjaer Type 4231 Sound Level Calibrator
Serial Number	2623773
ID Number	None
Order Number	D20750
Date Received	18 Dec 2020
NML Procedure Number	AP-NM-13
Method	The above calibrator was allowed to stabilize for a suitable period in laboratory conditions. It was then calibrated by measuring the sound pressure level generated in its measuring cavity (half-inch configuration). The calibrator's operating frequency was also measured.
Calibration Standards	Norsonic 1504A Calibration System incorporating: Agilent 34401A Multimeter, No. 0736 [Cal due: 24 Apr 2021] B & K 4134 Measuring Microphone, No. 0743 [Cal due: 27 May 2022] B & K 4228 Pistonphone, No. 0741 [Cal due: 26 May 2022]

Calibrated by	David Fleming	Approved by	Paul Hetherington
Date of Calibration	22 Dec 2020	Date of Issue	22 Dec 2020

CIPM MRA

This certificate is consistent with Calibration and Measurement Capabilities (CMC's) that are included in Appendix C of the Mutual Recognition Arrangement (MRA) drawn up by the International Committee for Weights and Measures. Under the MRA, all participating institutes recognize the validity of each other's calibration certificates and measurement reports for quantities, ranges and measurement uncertainties specified in Appendix C (for details see www.bipm.org)

Glas Naíon | Baile Átha Cliath 11 | Eire
Glasnevin | Dublin 11 | Ireland T+ 353 1 808 2609 | F+353 1 808 2603 | NSAI.ie

APPENDIX 10B

NOISE MONITORING SURVEY REPORTS.

COMMERCIAL SITE

tms environment ltd

Specialists in laboratory analysis, monitoring and environmental consultancy

TMS Environment Ltd
53 Broomhill Drive
Tallaght
Dublin 24

Phone: +353-1-4626710
Fax: +353-1-4626714
Web: www.tmsenv.ie

NOISE MONITORING SURVEY

AT

COMMERCIAL DEVELOPMENT SITE AT HEUSTON SOUTH QUARTER, MILITARY ROAD, KILMAINHAM

Report Ref.: 28172 - 1
Issued: 28 January 2021

Prepared by: Fergal Mulligan
Environmental Scientist

Approved by: Imelda Shanahan Date: 28 January 2021

Dr Imelda Shanahan
Technical Manager

CONTENTS PAGE

1.0 Scope

This report deals with completion of a baseline noise survey for a proposed commercial development at Heuston South Quarter. The survey was carried out to assess the existing noise climate in the area. This report presents the results of the environmental day time noise survey carried out on the 26th of January 2021 at four locations (N3 – N6).

2.0 Regional environmental setting

The proposed commercial site is rectangular in shape. It is bordered to the north by the busy R148 regional road. To the east is existing HSQ commercial property. To the west are the gardens of the royal hospital, Kilmainham. The proposed commercial site borders a proposed residential site to the south.

3.0 Monitoring Locations

Noise measurements were completed at 4 noise monitoring locations. These locations are shown on a map presented in Appendix I. A description of the monitoring locations is presented in Table 1 below.

Table 1 Monitoring locations for noise survey at HSQ

Monitoring Location	Description
N3	NW corner of residential site / SW corner of commercial site Coordinates: 53°20'41.4"N 6°17'56.9"W
N4	NW corner of proposal commercial site Coordinates: 53°20'43.3"N 6°17'57.2"W
N5	NE of proposal commercial site Coordinates: 53°20'43.8"N 6°17'53.3"W
N6	NE corner of residential site / SE corner of commercial site Coordinates: 53°20'42.1"N 6°17'52.7"W

4.0 Survey Protocol

4.1 Monitoring Locations

The noise monitoring locations chosen for this survey were selected to assess the existing noise climate at the proposed site. Noise measurements were made to determine the existing noise climate at noise locations.

The noise monitoring locations were chosen per the guidelines in *ISO 1996 Acoustics - Description and Measurement of Environmental Noise* and in addition, with reference to the 2016 EPA publication, *"Guidance Note for Noise: Licence Applications in Relation to Scheduled Activities (NG4)"*. In all cases the sound level meter was located 1.5m above ground and at least 3.5m away from any sound reflecting objects. A foam windshield was placed on the microphone to reduce any wind interference during measurements. A description of the monitoring points is presented in Table 1.

4.2 Instrumentation and methodology

Noise measurements were made according to the requirements of *ISO 1996: Acoustics - Description and Measurement of Environmental Noise* and in addition, with reference to the 2016 EPA publication, *"Guidance Note for Noise: Licence Applications in Relation to Scheduled Activities (NG4)"*. The measurements were made using a Bruel & Kjaer 2250 Light integrating sound level meter fitted with 1:1 and 1:3 Octave Band Filter. The instrument was calibrated *in situ* at 94 dB prior to and after use. The sound level meter was orientated towards the propose site and mounted on a tripod at 1.5m above ground level. This instrument is a Type 1 instrument in accordance with IEC 651 regulations. The Time Weighting used was fast and the Frequency Weighting was A-weighted as per IEC 651.

4.3 Glossary of terms used

L_{Aeq} : The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over a given period.

L_{A90}: The sound pressure level in dB(A) which is exceeded for 90% of the time.

L_{A10}: The sound pressure level in dB(A) which is exceeded for 10% of the time.

L_{ArT}: the sound pressure level in dB(A) with penalty adjustments added following the detection of tonal and/or impulsive noise.

$^1/_3$ Octave Band Analysis: Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one-third of an octave each. An octave is taken to be a frequency interval, the upper limit of which is twice the lower limit. (The unit of frequency is the Hertz, Hz).

4.4 Survey implementation

TMS Environment Ltd. personnel conducted the attended day time baseline noise survey on the 26th of January 2021. The day time noise survey was carried out between 09:18 – 18:57. All noise monitoring was attended by TMS Environment personnel. The measurement parameters included meteorological observations of prevailing conditions at the time of the survey. The main measurement parameter was

the equivalent continuous A-weighted sound pressure level, $L_{Aeq,\ T}$. In accordance with the requirements set out in the EPA Environmental Noise Survey Guidance document day time noise monitoring was carried out between the hours of 07:00 – 19:00. Monitoring periods for the day time monitoring were 30 minutes at each location. A $^1/_3$ Octave Frequency assessment was carried out as required during all monitoring surveys.

5.0 Weather conditions

The weather conditions at the time of the daytime survey on the 26th of January 2021 were cold and cloudy with an occasional slight south-westerly breeze. The wind speed recorded during the monitoring events ranged from 2 to 8 km/hr.

6.0 Survey results

The environmental noise measurement results are reported in Table 2 to Table 5. The $^1/_3$-octave band frequency analysis results are presented in Appendix II.

Table 2 Results for Monitoring Location N3 – 26 January 2021

Monitoring Location:	N3 – 26 January 2021					
Period	Date/Time	Measured Noise Levels dB(A)				
		L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07:00-19:00	26 Jan 2021 15:50 – 16:20	55	50	58	77	55
	26 Jan 2021 16:21 – 16:51	55	50	58	74	55
	26 Jan 2021 16:52 – 17:22	54	49	57	69	54
	Average	**55**	**50**	**58**	**73**	-
	Daytime Criterion					-

Daytime comments:
Predominant noise was from traffic on the R148, birdsong, an alarm sounding was present for a brief period.

Table 3 Results for Monitoring Location N4 – 26 January 2021

Monitoring Location:	N4 – 26 January 2021					
Period	Date/Time	Measured Noise Levels dB(A)				
		L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07:00-19:00	26 Jan 2021 12:40 – 13:12	71	49	76	86	71
	26 Jan 2021 13:13 – 13:43	72	58	77	87	72
	26 Jan 2021 13:44 – 14:14	73	59	77	85	73
	Average	**72**	**55**	**77**	**86**	-
	Daytime Criterion					-

Daytime comments:
Predominant noise was from nearby traffic on the R148, birdsong, local traffic and there was an alarm sounding briefly outside Heuston station.

Table 4 Results for Monitoring Location N5 – 26 January 2021

Monitoring Location:	N5 – 26 January 2021					
Period	Date/Time	Measured Noise Levels dB(A)				
		L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07:00-19:00	26 Jan 2021 14:17 – 14:47	65	57	68	87	65
	26 Jan 2021 14:48 – 15:18	66	58	68	85	66
	26 Jan 2021 15:19 – 15:49	65	59	68	85	65
	Average	**65**	**58**	**68**	**86**	-
	Daytime Criterion					-

Daytime comments:
Predominant noise was from nearby traffic on the R148, birdsong and pedestrians passing by in close proximity.

Table 5 Results for Monitoring Location N6 – 26 January 2021

Monitoring Location:	N6 – 26 January 2021					
Period	Date/Time	Measured Noise Levels dB(A)				
		L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07:00-19:00	26 Jan 2021 17:23 – 17:53	52	49	54	71	52
	26 Jan 2021 17:54 – 18:24	52	48	55	77	52
	26 Jan 2021 18:25 – 18:55	51	47	53	63	51
	Average	**52**	**48**	**54**	**70**	-
	Daytime Criterion					-

Daytime comments:
Predominant noise was from traffic on the R148, birdsong and local traffic.

7.0 Assessment of tonal noise

A 1/3 Octave band frequency analysis was conducted at each measurement position in order to assess any tonal or impulsive component associated with site activities. This methodology is outlined in the 2016 EPA publication *"Guidance Note for Noise: License Applications in Relation to Scheduled Activities (NG4)"*. The methodology recommended in this Guidance Note requires that for a tone to be present, the time-average sound pressure level in the one-third-Octave band of interest should exceed the time-average sound pressure levels of both adjacent one-third-Octave bands by some constant level difference.

The Guidance Note (NG4) states as follows:

> *The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one-third-Octave bands:*
>
> - *15dB in low frequency one-third Octave bands (25Hz to 125Hz)*
> - *8dB in middle-frequency bands (160 Hz to 400Hz)*
> - *5 dB in high- frequency bands (500Hz to 10,000Hz)*

Impulsive noise can be described as a noise source that is clearly audible above everything else like a thumping, banging or an impact noise. Impulsive noise can be determined during the monitoring as it is clearly audible; it also can be determined as outlined in the NG4 Guidance Note. This involves measuring the noise using an impulse time weighting 'I' and comparing this against the result for a fast time weighting 'F'. "A difference of 2dB or greater is considered to indicate the presence of an impulsive characteristic".

Impulsive noise and tonal noise were not detected at any of the noise locations during the day time monitoring. Where tonal or impulsive noise is present a penalty of 5dB is applied to the measured $L_{Aeq,T}$ if both tonal and impulsive noise occur on a single adjustment is applied. Neither tonal nor impulsive noise should be audible at any noise sensitive location.

8.0 Evaluation of Results

The recorded L_{Aeq} values at N3 range from 54dB(A) to 55dB(A) over the three monitoring events, with an average recorded value of 55dB (A). The main source of noise at this location was the regular passing traffic on the R148. Birdsong and local residential and commercial traffic also contributed to the noise levels at this location

The recorded L_{Aeq} values at N4 range from 71dB(A) to 73dB(A) over the three monitoring events, with an average recorded value of 72dB (A). The main source of noise at this location was the regular passing traffic on the R148. Birdsong and local residential and commercial traffic also contributed to the noise levels at this location. An alarm on a car parked outside a gate to Heuston train station was sounding for a period of time during the second monitoring run.

The recorded L_{Aeq} values at N5 range from 65dB(A) to 66dB(A) over the three monitoring events, with an average recorded value of 65dB (A). The main source of noise at this location was the regular passing traffic on the R148. Birdsong, passing pedestrians and local residential and commercial traffic also contributed to the noise levels at this location

The recorded L_{Aeq} values at N6 range from 51dB(A) to 52dB(A) over the three monitoring events, with an average recorded value of 52dB (A). The main source of noise at this location was the regular passing traffic on the R148. Birdsong and local residential and commercial traffic also contributed to the noise levels at this location

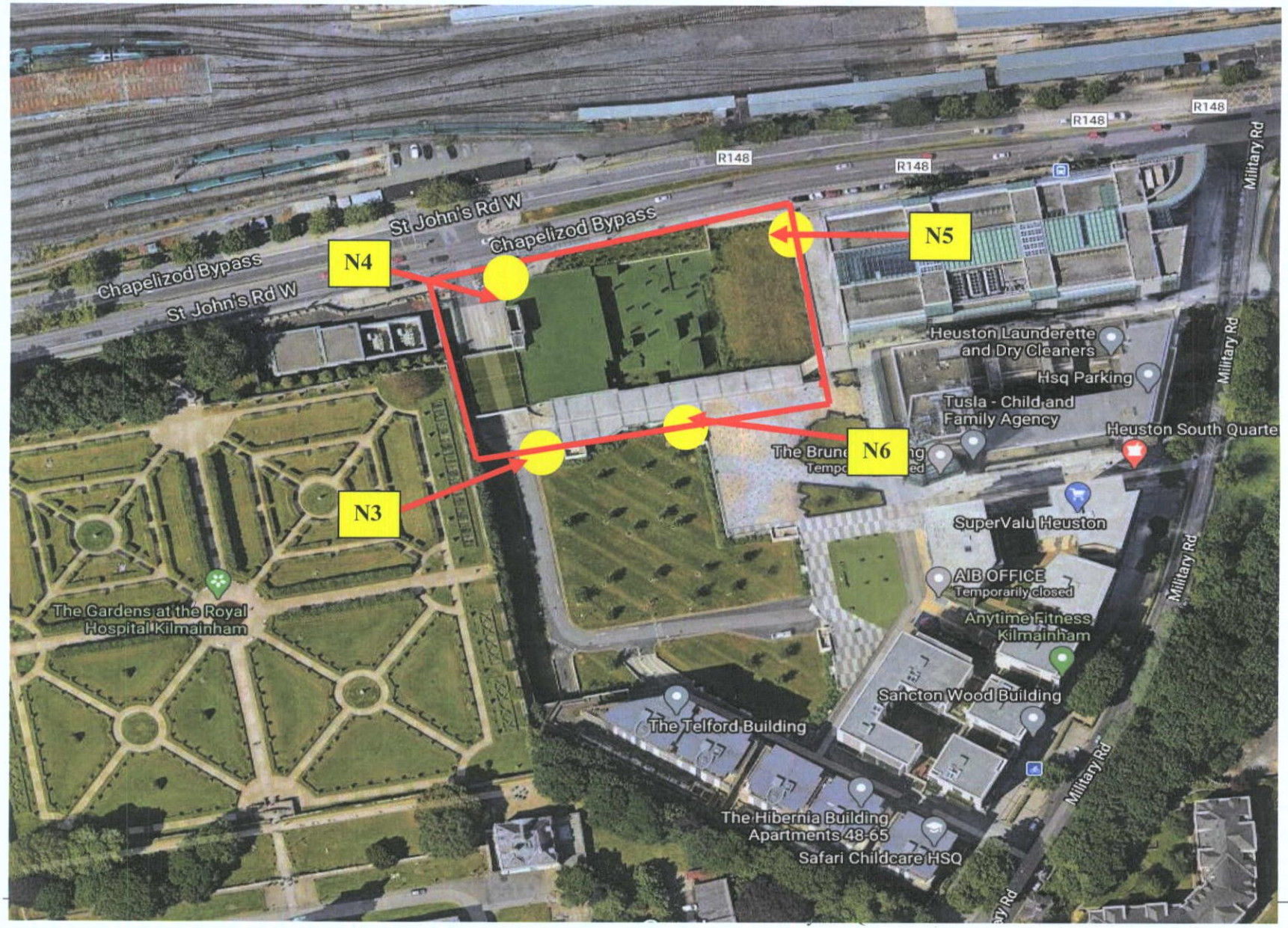
9.0 Conclusion

The noise climate at all four monitoring locations is dominated by the traffic noise on the R148 Chapelizod bypass, with locations N4 and N5 exhibiting average noise levels considerably higher than N3 and N6, due to the close proximity to the road. The remaining majority of the noise arises from local traffic activity from the existing commercial and residential property.

There were no tonal components observed in the spectra of the daytime monitoring surveys.

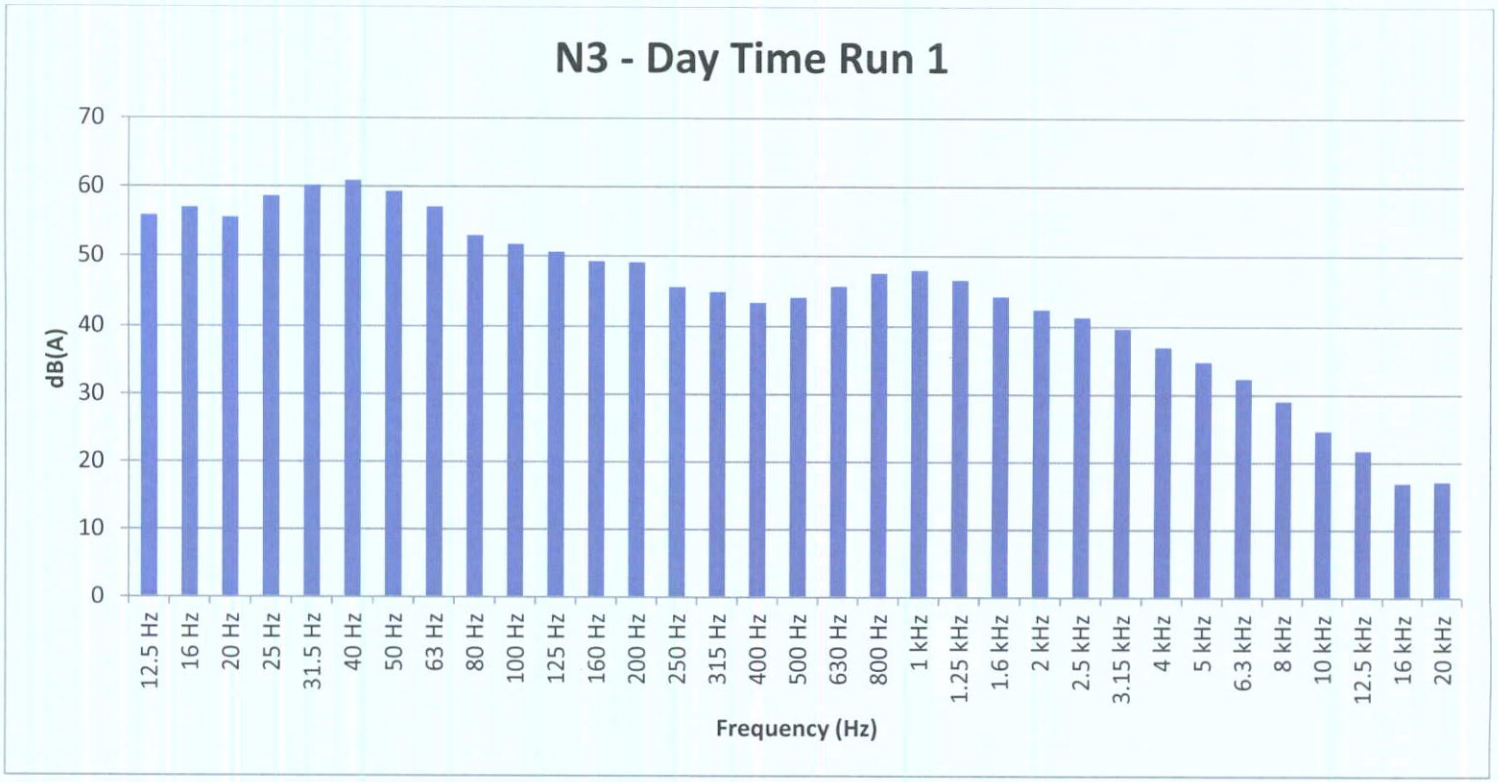
APPENDIX I

MONITORING LOCATIONS

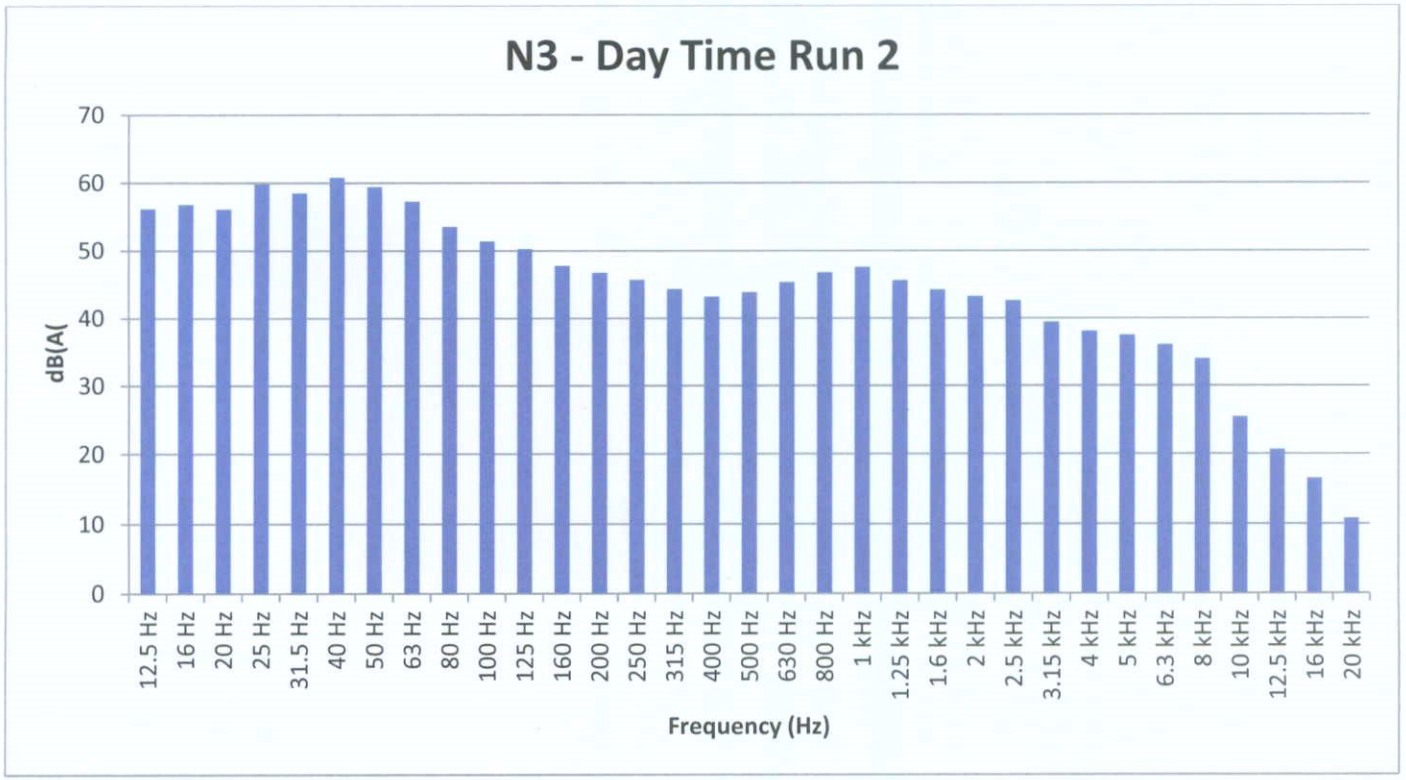

N4
N5
N6
N3
St John's Rd W
Chapelizod Bypass
R148
Military Rd
Heuston Launderette and Dry Cleaners
Hsq Parking
Tusla - Child and Family Agency
Heuston South Quarte
SuperValu Heuston
AIB OFFICE
Temporarily closed
Anytime Fitness Kilmainham
Sancton Wood Building
The Telford Building
The Hibernia Building Apartments 48-65
Safari Childcare HSQ
The Gardens at the Royal Hospital Kilmainham

APPENDIX II

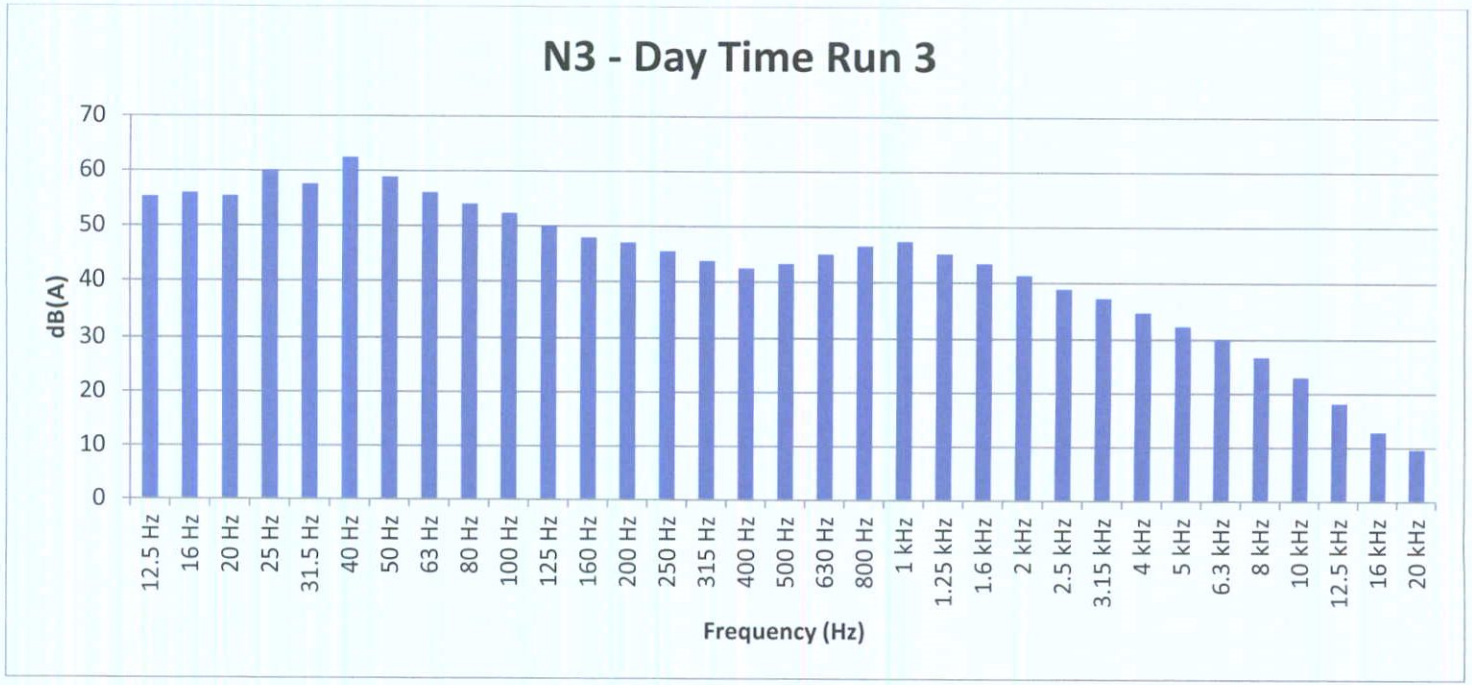
1/3 OCTAVE FREQUENCY SPECTRA



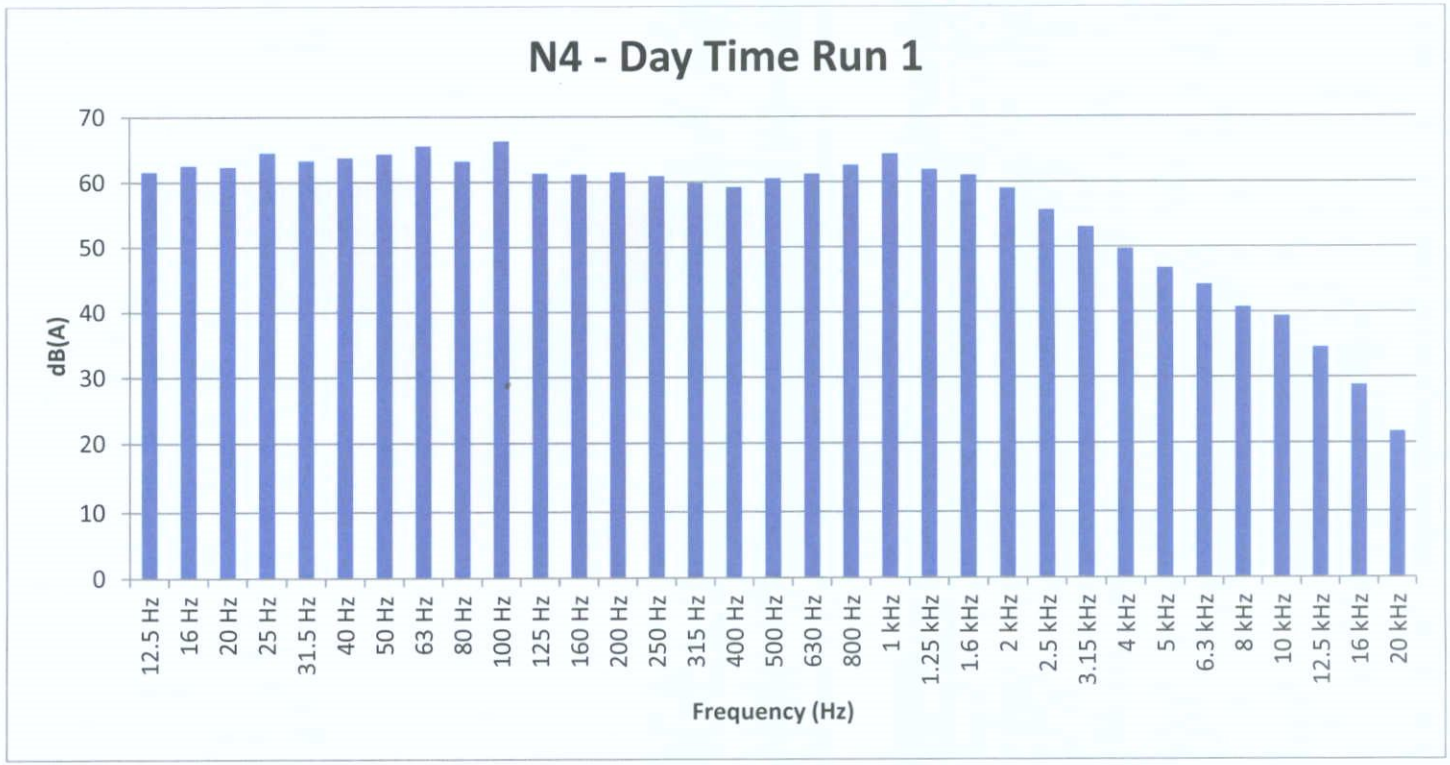
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the middle-frequency constant of 8dB?	N/A
Conclusion	No Tone Present



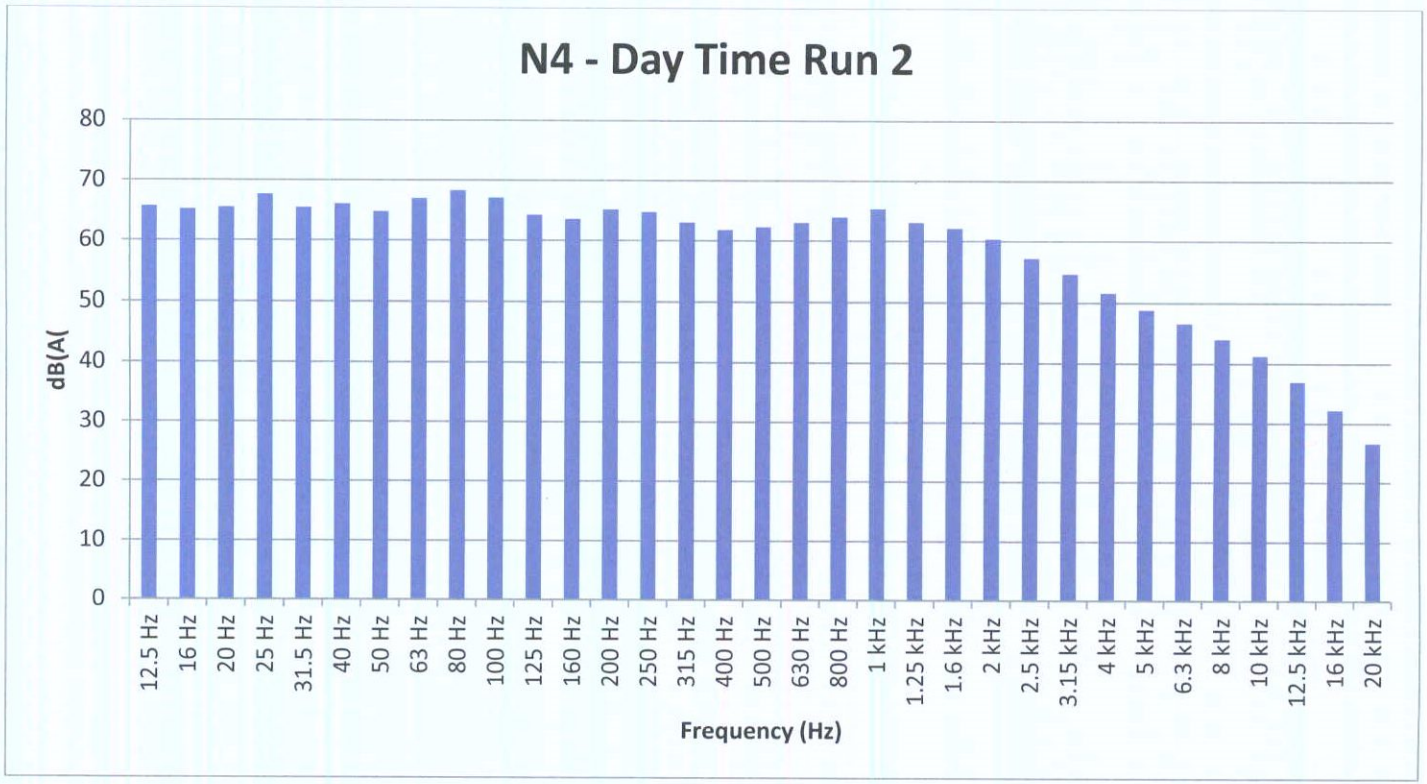
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the middle-frequency constant of 8dB?	N/A
Conclusion	No Tone Present



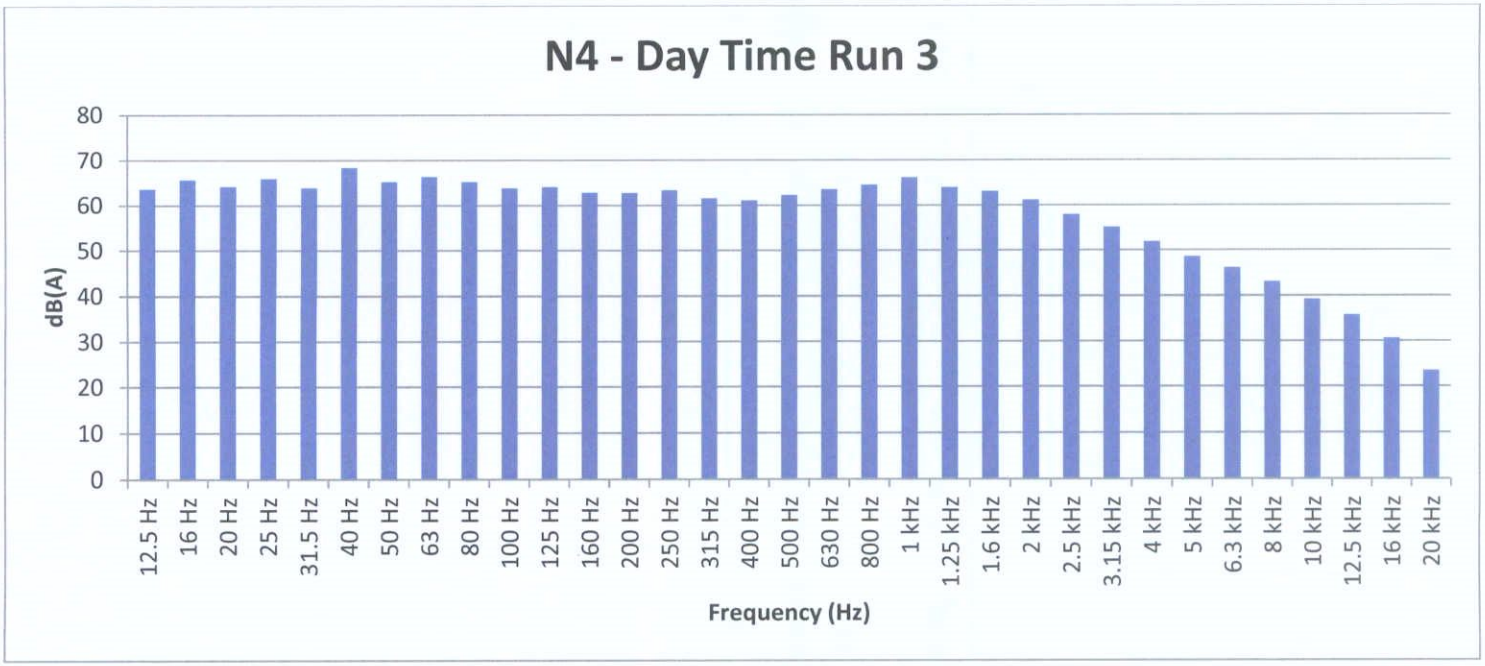
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the middle-frequency constant of 8dB?	N/A
Conclusion	No Tone Present



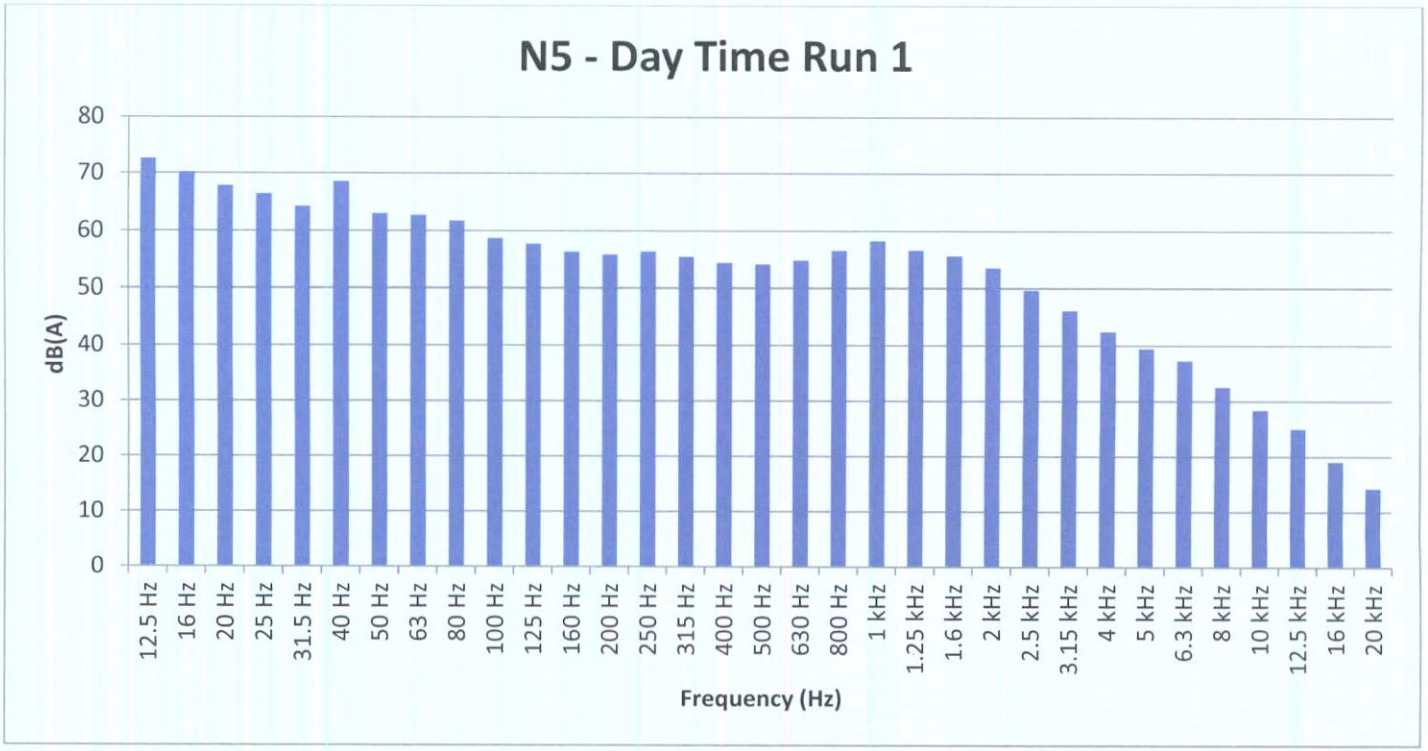
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB and Middle frequency constant of 8?	N/A
Conclusion	No Tone Present



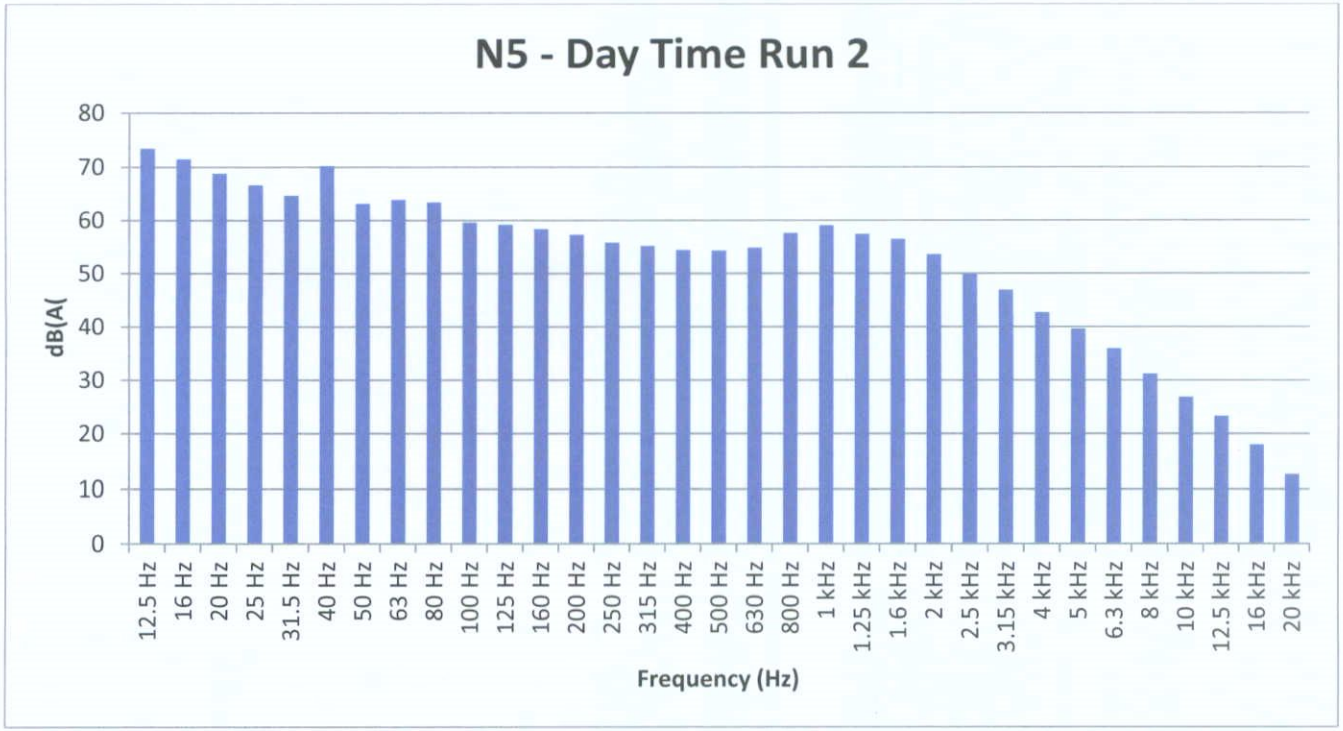
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



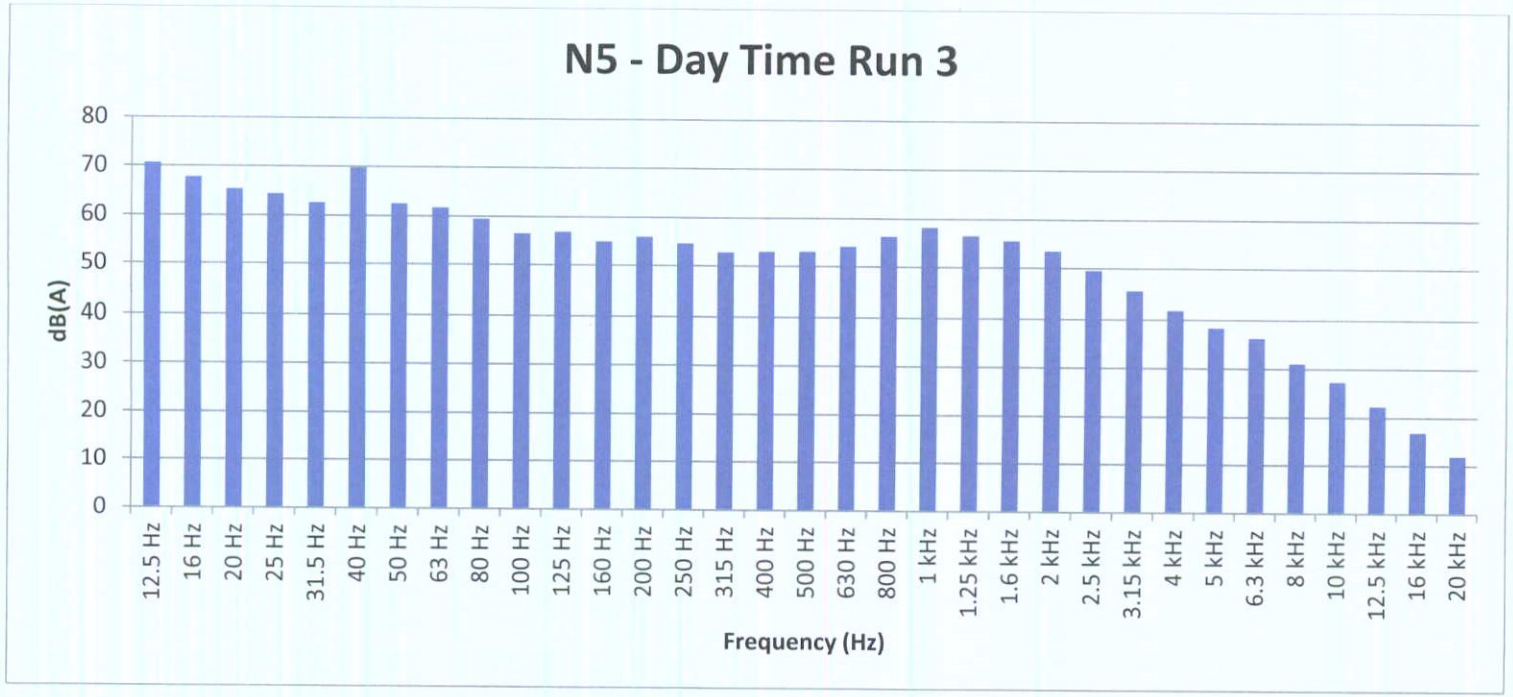
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



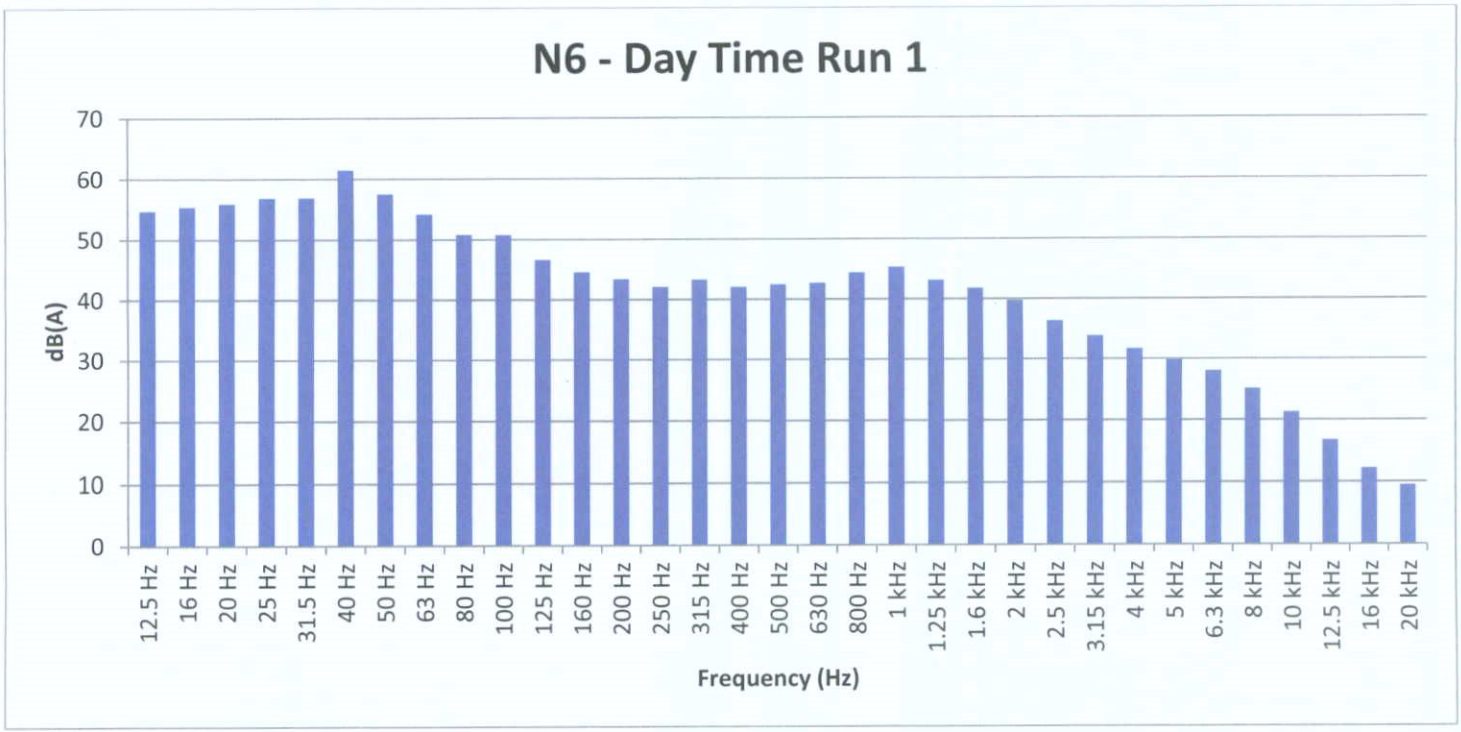
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB and Middle frequency constant of 8?	N/A
Conclusion	No Tone Present



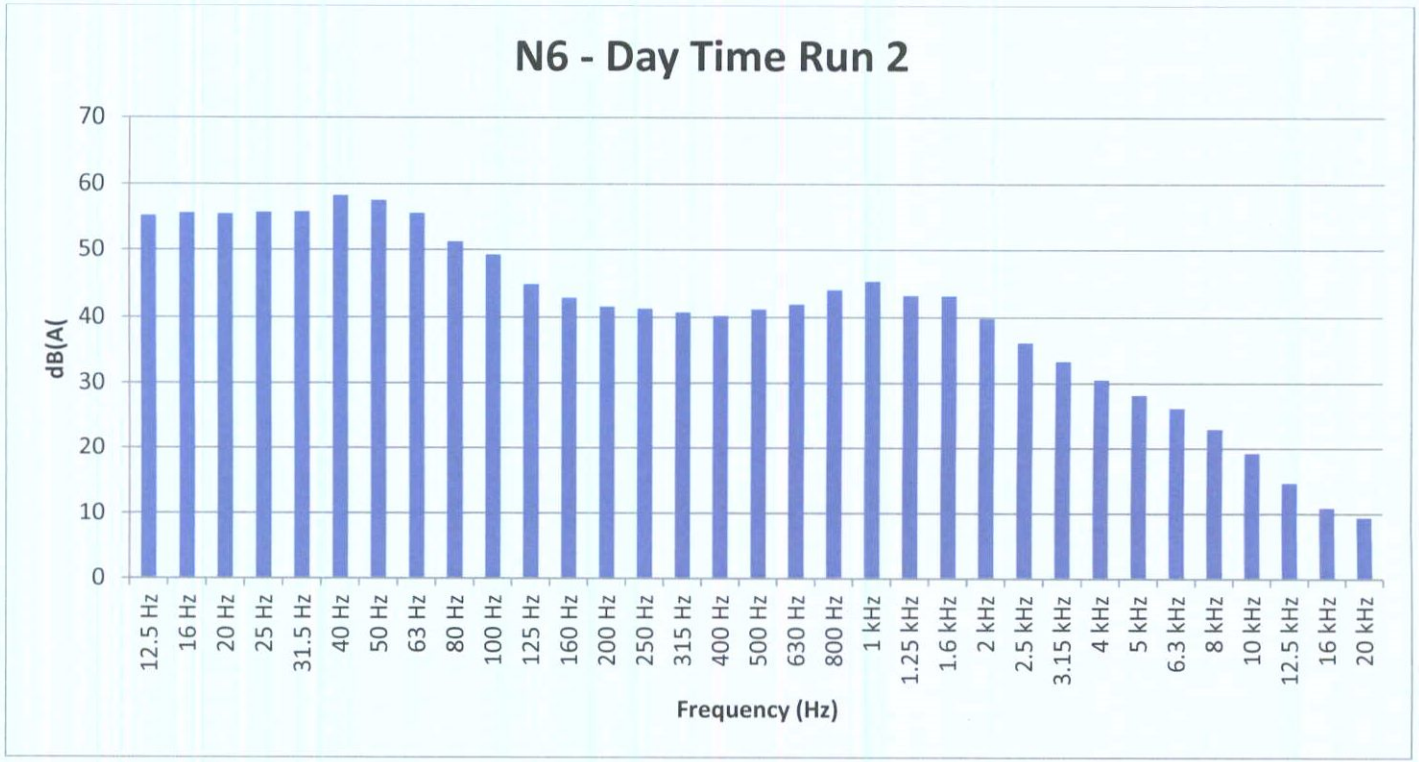
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



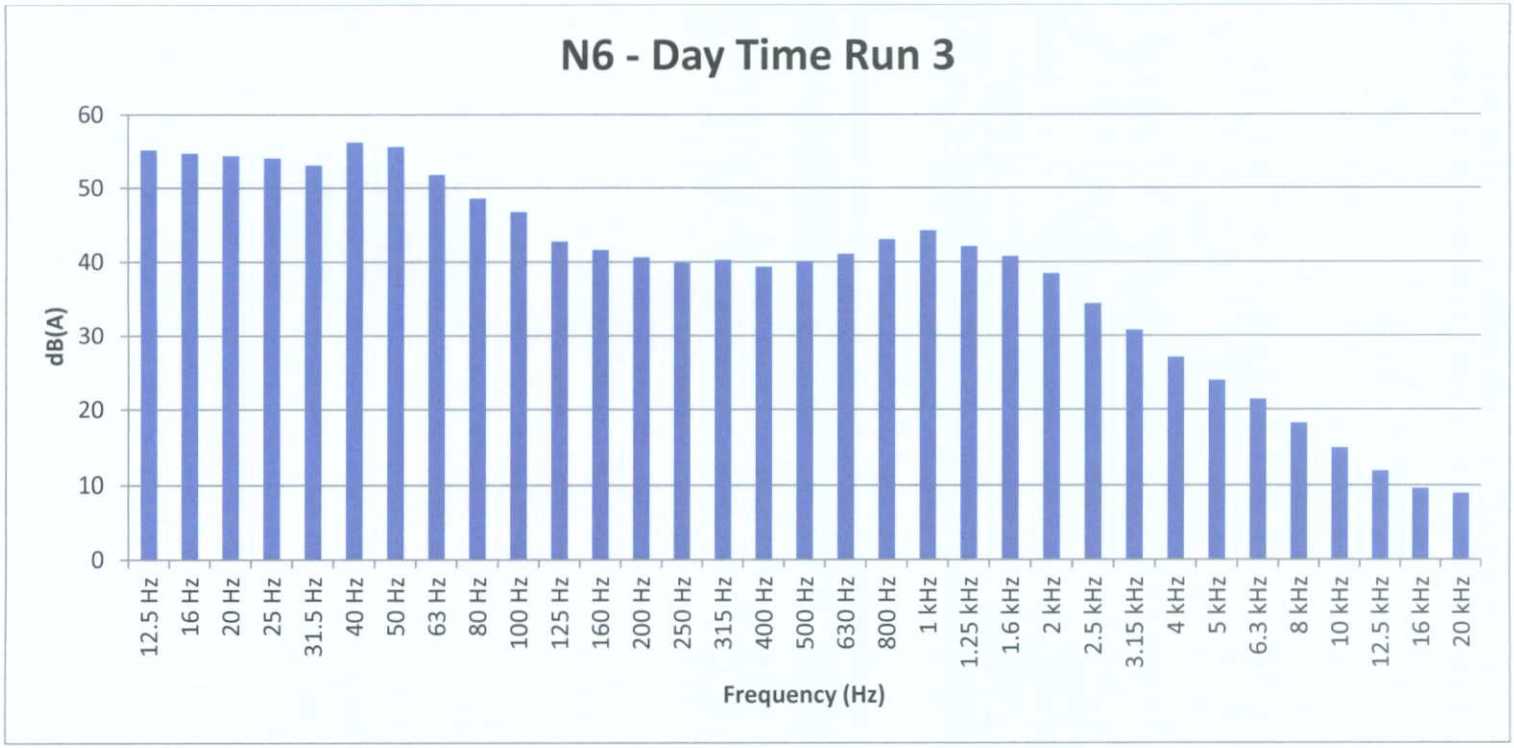
Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB and Middle frequency constant of 8?	N/A
Conclusion	No Tone Present



Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present



Tonal Analysis	
Suspected 1/3 Octave Band Frequency of Tone, Hz	None
Magnitude of Tone, dB L_{eq}	N/A
Is the magnitude greater than the threshold of hearing?	N/A
Level change from preceding 1/3 Octave Band, dB L_{eq}	N/A
Level change from following 1/3 Octave Band, dB L_{eq}	N/A
Are the level changes both greater than or equal to the low-frequency constant of 15dB?	N/A
Conclusion	No Tone Present

APPENDIX III

CALIBRATION CERTIFICATES

Brüel & Kjær

The Calibration Laboratory
Skodsborgvej 307, DK-2850 Nærum, Denmark

ilac-MRA DANAK CAL Reg.No. 307 Member of EA MLA

CERTIFICATE OF CALIBRATION

No: CDK1909065 Page 1 of 11

CALIBRATION OF

Sound Level Meter:	Brüel & Kjær Type 2250	No: 3028864 Id: -	
Microphone:	Brüel & Kjær Type 4189	No: 3232157	
Preamplifier:	Brüel & Kjær Type ZC-0032	No: 29224	
Supplied Calibrator:	None		
Software version:	BZ7222 Version 4.7.5	Pattern Approval:	PTB1.63-4093056 / 1.63-4093058
Instruction manual:	BE1712-22		

CUSTOMER

TMS Environment Ltd
53 Broomhill Drive
Tallaght
. Dublin 24
Ireland

CALIBRATION CONDITIONS

Preconditioning: 4 hours at 23°C ± 3°C

Environment conditions: *See actual values in **Environmental conditions** sections.*

SPECIFICATIONS

The Sound Level Meter Brüel & Kjær Type 2250 has been calibrated in accordance with the requirements as specified in IEC 61672-1:2013 class 1. Procedures from IEC 61672-3:2013 were used to perform the periodic tests. The accreditation assures the traceability to the international units system SI.

PROCEDURE

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System 3630 with application software type 7763 (version 8.0 - DB: 8.00) by using procedure B&K proc 2250, 4189 (IEC 61672:2013).

RESULTS

Calibration Mode: **Calibration as received.**

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of calibration: 2019-11-20

Date of issue: 2019-11-20

Lene Petersen
Calibration Technician

Jonas Johannessen
Approved Signatory

04 Jan 2021

NSAI

National Metrology Laboratory

Certificate of Calibration

Issued to	TMS Environment Limited 53 Broomhill Drive Tallaght Dublin 24
Attention of	Graham Adams

Certificate Number	204772
Item Calibrated	Bruel & Kjaer Type 4231 Sound Level Calibrator
Serial Number	2623773
ID Number	None
Order Number	D20750
Date Received	18 Dec 2020
NML Procedure Number	AP-NM-13
Method	The above calibrator was allowed to stabilize for a suitable period in laboratory conditions. It was then calibrated by measuring the sound pressure level generated in its measuring cavity (half-inch configuration). The calibrator's operating frequency was also measured.
Calibration Standards	Norsonic 1504A Calibration System incorporating: Agilent 34401A Multimeter, No. 0736 [Cal due: 24 Apr 2021] B & K 4134 Measuring Microphone, No. 0743 [Cal due: 27 May 2022] B & K 4228 Pistonphone, No. 0741 [Cal due: 26 May 2022]

Calibrated by	David Fleming	Approved by	Paul Hetherington
Date of Calibration	22 Dec 2020	Date of Issue	22 Dec 2020

CIPM MRA

This certificate is consistent with Calibration and Measurement Capabilities (CMC's) that are included in Appendix C of the Mutual Recognition Arrangement (MRA) drawn up by the International Committee for Weights and Measures. Under the MRA, all participating institutes recognize the validity of each other's calibration certificates and measurement reports for quantities, ranges and measurement uncertainties specified in Appendix C (for details see www.bipm.org)

Glas Naíon | Baile Átha Cliath 11 | Eire
Glasnevin | Dublin 11 | Ireland T+ 353 1 808 2609 | F+353 1 808 2603 | NSAI.ie

APPENDIX 10C

NOISE MONITORING SURVEY REPORTS.

UNATTENDED

tms environment ltd

Specialists in laboratory analysis, monitoring and environmental consultancy

TMS Environment Ltd
53 Broomhill Drive
Tallaght
Dublin 24

Phone: +353-1-4626710
Fax: +353-1-4626714
Web: www.tmsenv.ie

NOISE MONITORING SURVEY

AT

DEVELOPMENT SITE AT HEUSTON SOUTH QUARTER, MILITARY ROAD, KILMAINHAM

Report Ref.: 28172-3
Issued: 15 February 2021

Prepared by: Graham Adams
Senior Environmental Engineer

Approved by: Imelda Shanahan Date: 15 February 2021

Dr Imelda Shanahan
Technical Manager

CONTENTS PAGE

1.0 Scope

This report deals with completion of a baseline noise survey for a proposed development at Heuston South Quarter. The survey was carried out to assess the existing noise climate in the area. This report presents the results of a noise survey carried out between 03rd and 09th of February 2021. Measurements were carried out at one permanent noise monitoring location.

2.0 Regional environmental setting

The proposed site is L-shaped in shape. It is bordered to the north by the busy R148 regional road. To the east is existing HSQ commercial property. To the west are the gardens of the Royal Hospital, Kilmainham. The proposed commercial site borders a proposed residential site to the south.

3.0 Monitoring Locations

Noise measurements were completed at one fixed noise monitoring location. This location is shown on a map presented in Appendix I. A description of the monitoring location is presented in Table 1 below.

Table 1 Monitoring locations for noise survey at HSQ

Monitoring Location	Description
PN1	NW corner of residential site Ground Floor Coordinates: 53°20'39.5"N 6°17'51.5"W

4.0 Survey Protocol

4.1 Monitoring Locations

The noise monitoring location chosen for this survey was selected to assess the existing noise climate at the proposed site. Noise measurements were made to determine the existing noise climate at the noise location.

The noise monitoring locations were chosen per the guidelines in *ISO 1996 Acoustics - Description and Measurement of Environmental Noise* and in addition, with reference to the 2016 EPA publication, *"Guidance Note for Noise: Licence Applications in Relation to Scheduled Activities (NG4)"*. In all cases the sound level meter was located 1.5m above ground and at least 3.5m away from any sound reflecting objects. A foam windshield was placed on the microphone to reduce any wind interference during measurements. A description of the monitoring points is presented in Table 1.

4.2 Instrumentation and methodology

Noise measurements were made according to the requirements of *ISO 1996: Acoustics - Description and Measurement of Environmental Noise* and in addition, with reference to the 2016 EPA publication, *"Guidance Note for Noise: Licence Applications in Relation to Scheduled Activities (NG4)"*. The fixed noise measurements were using a Sonitus Systems EM 2010-O automated sound level monitor. The sound level meter was orientated towards the propose site and mounted on a tripod at 1.5m above ground level. This instrument is a Type 1 instrument in accordance with IEC 651 regulations. The Time Weighting used was fast and the Frequency Weighting was A-weighted as per IEC 651.

4.3 Glossary of terms used

L_{Aeq} : The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over a given period.

L_{A90}: The sound pressure level in dB(A) which is exceeded for 90% of the time.

L_{A10}: The sound pressure level in dB(A) which is exceeded for 10% of the time.

L_{ArT}: the sound pressure level in dB(A) with penalty adjustments added following the detection of tonal and/or impulsive noise.

$^1/_3$ Octave Band Analysis: Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one-third of an octave each. An octave is taken to be a frequency interval, the upper limit of which is twice the lower limit. (The unit of frequency is the Hertz, Hz).

4.4 Survey implementation

TMS Environment Ltd. personnel conducted the baseline noise survey on the between the 3rd of February and the 9th of February 2021. The main measurement parameter was the equivalent continuous A-weighted sound pressure level, $L_{Aeq,\ T}$. In accordance with the requirements set out in the EPA Environmental Noise Survey Guidance document day time noise monitoring was carried out between the hours of 07:00 – 19:00. The evening time survey was carried out between the stipulated times of 19:00 – 23:00. The night time noise survey was carried out between the stipulated times of 23:00 – 07:00.

5.0 Survey results

The fixed noise measurement results are reported in Table 2 to Table 5.

Table 2 Results for Fixed Noise Monitoring Location PN1

Monitoring Location: PN1					
Period	**Time**	**Average Noise Levels dB(A)**			
		L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
Daytime 1	17:00 – 19:00 03 February 2021	56	69	57	53
Evening – Time 1	19:00 – 23:00 03 February 2021	52	64	54	49
Night –Time 1	23:00 – 07:00 03 – 04 February 2021	52	59	54	49
Daytime 2	07:00 – 19:00 04 February 2021	57	69	58	54
Evening – Time 2	19:00 – 23:00 04 February 2021	54	66	55	49
Night –Time 2	23:00 – 07:00 04 – 05 February 2021	52	60	55	49
Daytime 3	07:00 – 19:00 05 February 2021	58	70	59	54
Evening – Time 3	19:00 – 23:00 05 February 2021	55	65	57	52
Night –Time 3	23:00 – 07:00 05 – 06 February 2021	51	60	54	47
Daytime 4	07:00 – 19:00 06 February 2021	55	68	57	51
Evening – Time 4	19:00 – 23:00 06 February 2021	53	66	55	49
Night –Time 4	23:00 – 07:00 06 – 07 February 2021	49	58	52	45
Daytime 5	07:00 – 19:00 07 February 2021	54	67	56	50
Evening – Time 5	19:00 – 23:00 07 February 2021	52	63	55	48
Night –Time 5	23:00 – 07:00 07 – 08 February 2021	50	59	53	46
Daytime 6	07:00 – 19:00 08 February 2021	57	69	58	52
Evening – Time 6	19:00 – 23:00 08 February 2021	53	62	55	49
Night –Time 6	23:00 – 07:00 08 – 09 February 2021	51	60	53	46
Daytime 7	07:00 – 19:00 09 February 2021	57	69	59	53
Evening – Time 7	19:00 – 23:00 09 February 2021	54	65	56	50
Night –Time 7	23:00 – 23:30 09 February 2021	53	63	56	50

Table 3 Average Daytime, Evening and Night time results over full monitoring period.

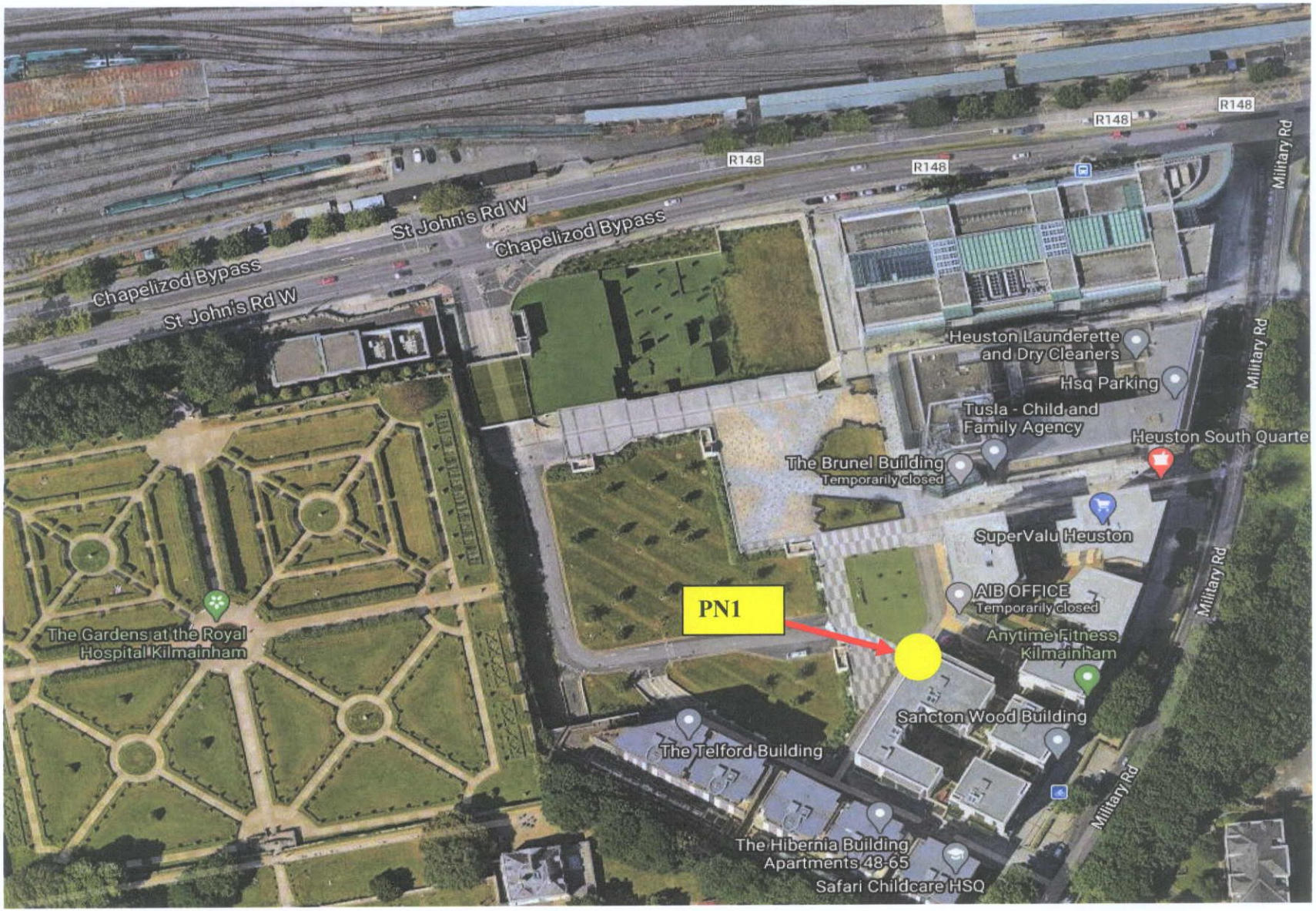
Monitoring Location: PN1					
Period	**Time**	**Average Noise Levels dB(A)**			
		L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
Daytime	07:00 – 19:00 03 -09 February 2021	56	69	58	52
Evening- Time	19:00 – 23:00 03 -09 February 2021	53	64	55	49
Night -Time	23:00 – 07:00 03 -09 February 2021	51	60	54	47

Table 4 Average Daytime, Evening and Night time results over full monitoring period.

Monitoring Location: PN1				
Date	**Average Noise Levels dB(A)**			
	Day Time L_{Aeq}	**Evening Time** L_{Aeq}	**Night-Time** L_{Aeq}	L_{den}
03 February 2021	56	52	52	59
04 February 2021	57	54	52	60
05 February 2021	58	55	51	60
06 February 2021	55	53	49	57
07 February 2021	54	52	50	57
08 February 2021	57	53	51	59
09 February 2021	57	54	53	60

APPENDIX I

MONITORING LOCATION


PN1
R148
R148
R148
R148
St John's Rd W
St John's Rd W
Chapelizod Bypass
Chapelizod Bypass
Military Rd
Military Rd
Military Rd
Military Rd
Heuston Launderette and Dry Cleaners
Hsq Parking
Tusla - Child and Family Agency
Heuston South Quarte
The Brunel Building
Temporarily closed
SuperValu Heuston
AIB OFFICE
Temporarily closed
Anytime Fitness Kilmainham
Sancton Wood Building
The Telford Building
The Hibernia Building Apartments 48-65
Safari Childcare HSQ
The Gardens at the Royal Hospital Kilmainham

APPENDIX II

CALIBRATION CERTIFICATES

SONITUS SYSTEMS

Statement of Calibration

Calibration Reference

2101213

Test Date: 01-02-2021

Equipment

Sound Level Monitor:	EM2030	**Serial Number:**	01213
Microphone Assembly:	377B02	**Serial Number:**	325989

Calibration Procedure

The sound level meter was calibrated by carrying out the verification tests detailed in IEC 61672-3 (2006), Periodic tests, specification of sound level meters. Tolerances for verification procedures are specified in IEC 61672-1 (2003).

Measurement Results

Test	Result
Self-generated noise	PASS
Frequency and Time Weightings	PASS
Frequency Weighting – A	PASS
Frequency Weighting – C	PASS
Level Linearity	PASS
Toneburst Response	PASS
Acoustical Tests of Frequency Weighting	PASS
Peak C Response	PASS
Overload Indication	PASS
Sensitivity Calibration	PASS

Signed on behalf of Sonitus Systems:

Unit 2, Goldenbridge Industrial Estate, Tyrconnell Rd, Inchicore, Dublin, D08 YY38
www.sonitussystems.com Email: info@sonitussystems.com

APPENDIX III

DETAILED MONITORING RESULTS

Table 5 Continuous noise monitoring results 03 February 2021, 17:00 - 19:00

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
03/02/2021	17:05:00	55.61	68.84	57.36	52.75
03/02/2021	17:10:00	56.67	69.08	58.98	53.44
03/02/2021	17:15:00	55.09	64.65	57.44	51.72
03/02/2021	17:20:00	57.3	75.79	56.37	52.37
03/02/2021	17:25:00	54.1	61.92	55.66	52.18
03/02/2021	17:30:00	54.65	70.3	56.15	52.42
03/02/2021	17:35:00	57.98	78.13	58.95	52.15
03/02/2021	17:40:00	55.26	77.71	56.57	51.54
03/02/2021	17:45:00	54.51	67.15	56.15	52.09
03/02/2021	17:50:00	54.58	61.91	56.36	51.72
03/02/2021	17:55:00	54.66	68.26	55.97	52.7
03/02/2021	18:00:00	54.43	65.98	56.33	52.04
03/02/2021	18:05:00	54.38	63.6	56.09	52.43
03/02/2021	18:10:00	56.25	67.98	57.73	53.1
03/02/2021	18:15:00	58	73.05	61.09	53.48
03/02/2021	18:20:00	61.09	88.33	59.03	53.05
03/02/2021	18:25:00	54.76	59.47	56.06	52.98
03/02/2021	18:30:00	56.05	70.43	57.6	53.45
03/02/2021	18:35:00	57.83	77.88	60.08	53.11
03/02/2021	18:40:00	54.85	61.42	56.41	52.78
03/02/2021	18:45:00	54.76	58.79	56.25	52.61
03/02/2021	18:50:00	55.9	69.97	57.45	53.24
03/02/2021	18:55:00	54.08	64.18	55.83	51.68
03/02/2021	19:00:00	54.18	61.71	56.2	51.89
	Average	**56**	**69**	**57**	**53**
	Max	**61**	**88**	**61**	**53**
	Min	**54**	**59**	**56**	**52**

Table 6 Continuous noise monitoring results 03 February 2021, 19:00 - 23:00

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
03/02/2021	19:05:00	62.59	75.99	67.4	52.39
03/02/2021	19:10:00	56.46	75.56	59.03	51.39
03/02/2021	19:15:00	57.22	73.77	59.02	52.36
03/02/2021	19:20:00	55.38	65.02	57.3	52.27
03/02/2021	19:25:00	53.65	65.99	55.05	51.25
03/02/2021	19:30:00	54.84	70.34	55.87	50.54
03/02/2021	19:35:00	53.72	67.94	55.38	50.49
03/02/2021	19:40:00	53	74.09	53.85	50.46
03/02/2021	19:45:00	53.06	63.56	54.84	50.58
03/02/2021	19:50:00	60.45	80	56.03	51.34
03/02/2021	19:55:00	56.2	78.6	55.17	50.98
03/02/2021	20:00:00	53.23	65.01	55.04	50.62
03/02/2021	20:05:00	53.4	74.92	54.05	49.44
03/02/2021	20:10:00	52.37	58.48	54.52	49.43
03/02/2021	20:15:00	53.35	70.01	55.22	49.4
03/02/2021	20:20:00	54.09	68.2	55.4	50.17
03/02/2021	20:25:00	51.87	67.49	53.18	49.93
03/02/2021	20:30:00	51.96	57.63	54.49	49.51
03/02/2021	20:35:00	51.26	58.71	53.79	48.63
03/02/2021	20:40:00	51.78	62.59	53.75	49.46
03/02/2021	20:45:00	50.36	56.26	52.27	47.92
03/02/2021	20:50:00	51.25	56.39	52.77	49.66
03/02/2021	20:55:00	52.83	74.12	54.21	49.71
03/02/2021	21:00:00	51.42	57.85	53.36	49.08
03/02/2021	21:05:00	54.19	68.78	57.78	49.18
03/02/2021	21:10:00	52.52	67.97	54.4	49.71
03/02/2021	21:15:00	52.5	65.05	54.44	49.18
03/02/2021	21:20:00	52.39	67.08	54.57	49.16
03/02/2021	21:25:00	52.1	69.3	53.45	48.68
03/02/2021	21:30:00	52.02	65.28	54.49	47.93
03/02/2021	21:35:00	50.86	59.47	53.26	47.43
03/02/2021	21:40:00	50.4	56.13	52.65	47.02
03/02/2021	21:45:00	50.52	63.37	52.73	47.31
03/02/2021	21:50:00	51.25	72.41	53.03	47.16
03/02/2021	21:55:00	50.99	72.3	51.73	46.63
03/02/2021	22:00:00	48.7	54.89	50.64	46.24
03/02/2021	22:05:00	50.45	57.44	52.54	47.97
03/02/2021	22:10:00	51.01	64.3	52.16	47.09
03/02/2021	22:15:00	49	54.22	51.29	45.75
03/02/2021	22:20:00	49.73	53.71	51.57	47.52
03/02/2021	22:25:00	49.7	59.51	52.36	45.88
03/02/2021	22:30:00	49.73	64.14	51.82	46.06
03/02/2021	22:35:00	49.43	54.1	51.26	46.91

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
03/02/2021	22:40:00	48.8	55.58	51.43	44.95
03/02/2021	22:45:00	50	57.36	52.05	46.68
03/02/2021	22:50:00	49.3	56.42	51.8	46.47
03/02/2021	22:55:00	48.69	57.37	51.33	43.5
03/02/2021	23:00:00	49.23	58.22	51.51	46.27
	Average	**52**	**64**	**54**	**49**
	Max	**63**	**80**	**67**	**52**
	Min	**49**	**54**	**51**	**44**

Table 7 Continuous noise monitoring results 03 & 04 February 2021, 23:00 - 07:00

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
03/02/2021	23:05:00	49.28	56.57	52.01	45.58
03/02/2021	23:10:00	50.46	57.88	52.67	47.26
03/02/2021	23:15:00	49.85	55.57	52.26	46.63
03/02/2021	23:20:00	50.17	58.34	51.92	48.17
03/02/2021	23:25:00	50.07	56.98	51.93	47.49
03/02/2021	23:30:00	49.31	55.29	51.25	46.15
03/02/2021	23:35:00	50.1	57.7	51.69	47.78
03/02/2021	23:40:00	49.86	59.65	52.46	45.47
03/02/2021	23:45:00	49.64	55.35	51.73	47.44
03/02/2021	23:50:00	49.22	56.18	51.76	45.96
03/02/2021	23:55:00	50.82	57.17	53.22	47.7
04/02/2021	00:05:00	49.85	58.27	52.27	47.15
04/02/2021	00:10:00	49.88	57.46	51.83	47.46
04/02/2021	00:15:00	51.12	60.04	53.32	47.32
04/02/2021	00:20:00	49.3	57.7	51.73	46.11
04/02/2021	00:25:00	50.2	56.52	52.61	47.72
04/02/2021	00:30:00	50.93	59.24	53.76	47.93
04/02/2021	00:35:00	49.15	56.66	51.51	46.39
04/02/2021	00:40:00	50.35	58.27	52.49	47.67
04/02/2021	00:45:00	50.86	61.38	53.93	47.4
04/02/2021	00:50:00	49.89	58.14	51.63	47.51
04/02/2021	00:55:00	47.86	55.27	49.76	45.59
04/02/2021	01:00:00	51	56.58	53.11	48.76
04/02/2021	01:05:00	50.65	58.88	52.84	47.78
04/02/2021	01:10:00	49.67	56.98	51.43	47.26
04/02/2021	01:15:00	49.34	54.79	51.32	47.16
04/02/2021	01:20:00	48.27	58.94	50.92	45.49
04/02/2021	01:25:00	50.08	58.49	51.69	47.75
04/02/2021	01:30:00	49.37	60.03	51.15	45.18
04/02/2021	01:35:00	49.71	54.58	51.64	47.31
04/02/2021	01:40:00	47.88	55.06	50.32	44.19
04/02/2021	01:45:00	50.44	57.04	52.68	46.82
04/02/2021	01:50:00	50.61	58.83	53.15	46.11
04/02/2021	01:55:00	49.71	56.77	51.46	47.36
04/02/2021	02:00:00	49.64	59.83	51.09	46.06
04/02/2021	02:05:00	49.44	56.73	51.47	46.5
04/02/2021	02:10:00	49.65	55.06	51.34	47.52
04/02/2021	02:15:00	49.67	54.65	51.73	46.88
04/02/2021	02:20:00	49.45	56.52	51.41	46.88
04/02/2021	02:25:00	48.12	56.3	50.19	45.28
04/02/2021	02:30:00	50.75	57.74	52.22	48.63
04/02/2021	02:35:00	50.47	59.39	52.04	48.2
04/02/2021	02:40:00	50.77	58.83	52.57	48.17
04/02/2021	02:45:00	48.83	52.54	49.93	47.47
04/02/2021	02:50:00	50.46	57.53	52.68	46.88

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
04/02/2021	02:55:00	51.01	59.68	52.49	48.18
04/02/2021	03:00:00	50.42	56.26	52.08	48.53
04/02/2021	03:05:00	51.55	58.49	53.4	48.86
04/02/2021	03:10:00	50.31	57.22	52.65	46.88
04/02/2021	03:15:00	50.46	57.99	52.1	48.42
04/02/2021	03:20:00	48.99	56.03	50.74	46.28
04/02/2021	03:25:00	51.15	55.62	53.1	48.39
04/02/2021	03:30:00	50.07	60.76	52.55	46.3
04/02/2021	03:35:00	51.29	56.7	53.43	48.63
04/02/2021	03:40:00	51.87	58.01	53.41	49.25
04/02/2021	03:45:00	53.04	61.26	55.52	49.2
04/02/2021	03:50:00	51.45	59.63	53.27	47.84
04/02/2021	03:55:00	50.49	54.7	52.41	48.09
04/02/2021	04:00:00	49.39	55.75	51.55	45.73
04/02/2021	04:05:00	50.94	57.73	53.6	46.37
04/02/2021	04:10:00	50.57	58.07	53.42	46.25
04/02/2021	04:15:00	52.16	58.83	55.04	47.7
04/02/2021	04:20:00	52.03	57.57	53.89	49.48
04/02/2021	04:25:00	53.01	60.93	55.23	49.31
04/02/2021	04:30:00	50.65	58.89	52.89	46.5
04/02/2021	04:35:00	53.71	61.97	55.86	49.9
04/02/2021	04:40:00	52.64	63.25	55.46	47.49
04/02/2021	04:45:00	53.5	60.12	56.31	49.83
04/02/2021	04:50:00	51.89	57.47	53.65	49.28
04/02/2021	04:55:00	50.45	56.01	52.48	47.89
04/02/2021	05:00:00	51.56	58.49	53.34	48.44
04/02/2021	05:05:00	52.6	60.24	54.43	49.66
04/02/2021	05:10:00	52.29	60.31	54.89	48.48
04/02/2021	05:15:00	52.1	58.35	54.56	48.95
04/02/2021	05:20:00	53.41	62.04	55.38	50.64
04/02/2021	05:25:00	53.63	61.87	55.86	50.29
04/02/2021	05:30:00	53.44	58.88	55.46	50.83
04/02/2021	05:35:00	53.73	59.32	55.42	51.34
04/02/2021	05:40:00	55.04	59.77	56.96	52.73
04/02/2021	05:45:00	54.34	59.44	55.9	52.56
04/02/2021	05:50:00	55.33	60.87	57.13	52.76
04/02/2021	05:55:00	55.97	63.75	57.9	52.74
04/02/2021	06:00:00	55.82	64.23	57.84	53.35
04/02/2021	06:05:00	56.18	64.39	57.99	53.49
04/02/2021	06:10:00	55.85	62.12	57.32	53.55
04/02/2021	06:15:00	56.32	64.04	58.16	54.13
04/02/2021	06:20:00	56.73	64.62	58.6	53.98
04/02/2021	06:25:00	56.7	61.36	58.25	54.52
04/02/2021	06:30:00	56.85	62.05	58.7	54.67
04/02/2021	06:35:00	57.31	64.28	58.92	55.23
04/02/2021	06:40:00	57.84	63.52	60.15	54.62

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
04/02/2021	06:45:00	58.25	68.32	59.5	55.47
04/02/2021	06:50:00	56.8	60.8	58.45	54.59
04/02/2021	06:55:00	60.35	74.49	60.86	56.15
04/02/2021	07:00:00	58.34	77.67	59.8	56.03
	Average	**52**	**59**	**54**	**49**
	Max	**60**	**78**	**61**	**56**
	Min	**48**	**53**	**50**	**44**

Table 8 Continuous noise monitoring results 04 February 2021, 07:00 - 19:00

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
04/02/2021	07:05:00	57.13	63.74	58.86	54.49
04/02/2021	07:10:00	56.73	62.22	58.78	54.27
04/02/2021	07:15:00	55.87	60.7	57.2	54.19
04/02/2021	07:20:00	56.35	64.64	58.27	54.15
04/02/2021	07:25:00	57.26	67.95	59.2	54.89
04/02/2021	07:30:00	57.08	66.78	58.53	54.79
04/02/2021	07:35:00	57.31	66.02	59.38	55.2
04/02/2021	07:40:00	57.76	68.89	59.55	55.35
04/02/2021	07:45:00	58.06	73.59	59.16	55.72
04/02/2021	07:50:00	58.31	66.78	59.78	56.29
04/02/2021	07:55:00	58.38	75.83	59.66	55.43
04/02/2021	08:00:00	58.38	75.84	59.29	55.5
04/02/2021	08:05:00	58.44	75.92	59.39	55.25
04/02/2021	08:10:00	58.81	76.18	60.22	55.51
04/02/2021	08:15:00	64.35	84.72	66.97	56.69
04/02/2021	08:20:00	66.3	75.13	70.91	57.96
04/02/2021	08:25:00	57.53	62.15	59.7	55.2
04/02/2021	08:30:00	57.87	69.5	59.74	54.74
04/02/2021	08:35:00	56.2	61.19	58	54.17
04/02/2021	08:40:00	55.86	61.56	56.96	54.4
04/02/2021	08:45:00	57.34	75.56	57.76	54.84
04/02/2021	08:50:00	58.45	77.15	58.67	54.61
04/02/2021	08:55:00	56.3	64.13	57.61	54.85
04/02/2021	09:00:00	56.48	64.26	57.96	54.71
04/02/2021	09:05:00	56.74	64.64	57.93	55
04/02/2021	09:10:00	57.08	68.44	58.83	55.06
04/02/2021	09:15:00	58.21	71.42	59.79	55.26
04/02/2021	09:20:00	57.85	71.77	59.04	53.99
04/02/2021	09:25:00	56.26	65.13	57.72	53.96
04/02/2021	09:30:00	55.95	71.53	57.17	54.27
04/02/2021	09:35:00	56.86	66.62	58.65	54.74
04/02/2021	09:40:00	58.21	74.26	60.42	55.2
04/02/2021	09:45:00	57.37	70.92	58.78	54.76
04/02/2021	09:50:00	55.85	70.99	57.33	53.96
04/02/2021	09:55:00	58.32	73	60.48	54.32
04/02/2021	10:00:00	56.43	72.75	57.99	54.04
04/02/2021	10:05:00	56.01	64.23	58.28	53.69
04/02/2021	10:10:00	55.59	62.2	57.26	53.6
04/02/2021	10:15:00	55.59	60.67	56.9	53.62
04/02/2021	10:20:00	56.05	65.22	57.65	54.35
04/02/2021	10:25:00	55.92	67.51	57.28	54.17
04/02/2021	10:30:00	56.1	68.6	57.54	53.57
04/02/2021	10:35:00	55.44	66.28	56.61	53.77
04/02/2021	10:40:00	55.81	70.7	57.42	53.46
04/02/2021	10:45:00	57.15	68.64	59.56	53.58

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
04/02/2021	10:50:00	56.17	71.68	57.22	54.51
04/02/2021	10:55:00	56.5	67.24	57.93	54.8
04/02/2021	11:00:00	56.25	68.82	57.5	54.66
04/02/2021	11:05:00	56.61	64.51	58.24	54.68
04/02/2021	11:10:00	55.5	60.23	57.28	53.56
04/02/2021	11:15:00	63.39	78.29	63.68	54.84
04/02/2021	11:20:00	61.89	70.39	65.13	58.54
04/02/2021	11:25:00	59.48	69.19	61.2	55.32
04/02/2021	11:30:00	55.55	65.73	57.1	53.56
04/02/2021	11:35:00	55.45	64.88	56.89	53.63
04/02/2021	11:40:00	56.44	71.45	57.51	53.54
04/02/2021	11:45:00	55.54	62.45	57.04	53.5
04/02/2021	11:50:00	55.61	60.92	56.98	54.13
04/02/2021	11:55:00	55.3	65.31	56.93	53.42
04/02/2021	12:00:00	55.59	59.56	57.2	53.96
04/02/2021	12:05:00	56.07	68.3	57.89	53.76
04/02/2021	12:10:00	56.28	67.98	57.56	54.16
04/02/2021	12:15:00	56.5	62.39	58.04	54.6
04/02/2021	12:20:00	56.47	66.65	58.03	54.45
04/02/2021	12:25:00	56.08	64.32	58.3	53.35
04/02/2021	12:30:00	55.11	64.77	56.46	53.27
04/02/2021	12:35:00	56.32	66.63	57.59	54.71
04/02/2021	12:40:00	55.34	78.3	56.16	52.87
04/02/2021	12:45:00	56.72	66.3	58.23	54.62
04/02/2021	12:50:00	69.27	91.24	58.71	53.08
04/02/2021	12:55:00	65.97	85.97	59.96	54.24
04/02/2021	13:00:00	64.39	84.94	61.37	54.18
04/02/2021	13:05:00	60.86	78.38	62.87	55.71
04/02/2021	13:10:00	55.22	65.79	56.86	52.75
04/02/2021	13:15:00	55.85	68.58	57.71	52.93
04/02/2021	13:20:00	56.82	72.42	58.27	54.12
04/02/2021	13:25:00	56.05	69.78	57.58	53.45
04/02/2021	13:30:00	56.92	70.89	58.04	54.14
04/02/2021	13:35:00	56.67	73.31	58.21	53.85
04/02/2021	13:40:00	56.24	71.85	57.31	53.59
04/02/2021	13:45:00	56.08	75	57.11	53.69
04/02/2021	13:50:00	54.67	61.66	56.15	53.01
04/02/2021	13:55:00	55.48	65.4	56.96	53.02
04/02/2021	14:00:00	55.13	64.66	56.76	53.03
04/02/2021	14:05:00	69.11	83.1	70.64	56.74
04/02/2021	14:10:00	57.27	65.47	59.87	53.56
04/02/2021	14:15:00	56.36	69.29	57.59	53.85
04/02/2021	14:20:00	59.77	80.07	58.81	54.04
04/02/2021	14:25:00	62.74	81.99	59.63	54.44
04/02/2021	14:30:00	55.84	63.03	57.36	54.26

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
04/02/2021	14:35:00	57.54	68	59.76	54.34
04/02/2021	14:40:00	56.97	70.68	58.67	53.43
04/02/2021	14:45:00	57.77	70.65	59.39	54.09
04/02/2021	14:50:00	69.44	82.84	74.52	53.52
04/02/2021	14:55:00	54.93	61.56	56.72	52.82
04/02/2021	15:00:00	54.76	61.29	56.58	52.47
04/02/2021	15:05:00	61.05	84.57	58.86	52.83
04/02/2021	15:10:00	55.48	63.4	56.98	53.32
04/02/2021	15:15:00	56.08	72.12	58.09	53.24
04/02/2021	15:20:00	54.85	61.5	56.68	52.41
04/02/2021	15:25:00	54.75	65.51	56.13	52.78
04/02/2021	15:30:00	55	64.1	57.02	51.91
04/02/2021	15:35:00	54.84	64.39	56.41	52.41
04/02/2021	15:40:00	54.63	64.95	56.26	52.4
04/02/2021	15:45:00	55.69	68.18	56.99	53.84
04/02/2021	15:50:00	56.28	67.41	58.5	54.03
04/02/2021	15:55:00	55.88	64.45	57.1	53.31
04/02/2021	16:00:00	56.4	64.43	58.22	53.51
04/02/2021	16:05:00	55.76	65.58	56.88	53.99
04/02/2021	16:10:00	55.62	69.84	57	53.53
04/02/2021	16:15:00	56.58	73.11	58.09	52.56
04/02/2021	16:20:00	61.84	77.84	64.35	54.94
04/02/2021	16:25:00	55.81	63.42	57.39	53.61
04/02/2021	16:30:00	58.38	69.18	62.6	53.94
04/02/2021	16:35:00	56.63	69.58	57.94	54.48
04/02/2021	16:40:00	55.27	64.14	56.73	52.91
04/02/2021	16:45:00	56.34	74.02	57.66	53.44
04/02/2021	16:50:00	55.83	73.12	56.08	51.99
04/02/2021	16:55:00	56.96	70.17	59.25	52.9
04/02/2021	17:00:00	58.86	75.53	60.68	54.96
04/02/2021	17:05:00	55.29	67.46	56.68	52.42
04/02/2021	17:10:00	57.98	74.42	59.42	53.7
04/02/2021	17:15:00	57.03	75.18	58.99	54.07
04/02/2021	17:20:00	58.96	79.97	57.83	53.51
04/02/2021	17:25:00	56.26	68.45	57.97	53.59
04/02/2021	17:30:00	56.27	67.98	57.83	53.9
04/02/2021	17:35:00	54.91	62.3	56.2	52.88
04/02/2021	17:40:00	54.63	69.87	56.35	50.96
04/02/2021	17:45:00	53.02	64.03	54.59	50.61
04/02/2021	17:50:00	54.47	65.33	56.4	51.9
04/02/2021	17:55:00	54.01	68.68	56.05	51.35
04/02/2021	18:00:00	53.31	64.65	55.1	50.69
04/02/2021	18:05:00	57.66	81.42	56.61	50.58
04/02/2021	18:10:00	53.17	61.49	55.42	50.58
04/02/2021	18:15:00	53.41	63.51	55.51	50.32

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
04/02/2021	18:20:00	53.88	61.21	55.92	51.11
04/02/2021	18:25:00	52.62	59	54.72	49.51
04/02/2021	18:30:00	52.65	65.66	54.58	49.64
04/02/2021	18:35:00	53.22	65.32	54.85	50.3
04/02/2021	18:40:00	52.55	57.87	54.69	49.33
04/02/2021	18:45:00	53.1	65.5	55.34	49.18
04/02/2021	18:50:00	52.13	59.01	54.22	49.31
04/02/2021	18:55:00	54.04	68.79	57.32	48.77
04/02/2021	19:00:00	52.3	65.26	54.03	49.36
	Average	**57**	**69**	**58**	**54**
	Max	**69**	**91**	**75**	**59**
	Min	**52**	**58**	**54**	**49**

Table 9 Continuous noise monitoring results 04 February 2021, 19:00 - 23:00

Date	Time	LAeq [dB(A)]	LAFmax [dB]	LA10 [dB(A)]	LA90 [dB(A)]
04/02/2021	19:05:00	52.45	64.21	54.83	48.44
04/02/2021	19:10:00	52.41	61.89	54.84	49.26
04/02/2021	19:15:00	52.08	58.59	54.52	48.37
04/02/2021	19:20:00	52.96	60.65	55.55	49.89
04/02/2021	19:25:00	52.68	59.9	54.92	49.69
04/02/2021	19:30:00	53.37	71.84	55.11	49.61
04/02/2021	19:35:00	52.28	60.76	53.7	49.87
04/02/2021	19:40:00	53.82	69.99	56.32	50.38
04/02/2021	19:45:00	52.89	60.87	55.1	49.88
04/02/2021	19:50:00	52.38	64.16	54.16	49.65
04/02/2021	19:55:00	52.32	63.91	54.89	49.19
04/02/2021	20:00:00	56.53	81.92	55.85	48.81
04/02/2021	20:05:00	52.42	67.06	54.54	47.97
04/02/2021	20:10:00	51.6	58.14	53.84	47.34
04/02/2021	20:15:00	59.52	83.21	54.81	48.77
04/02/2021	20:20:00	66.32	97.97	55.81	49.31
04/02/2021	20:25:00	54.23	70.24	55.69	48.93
04/02/2021	20:30:00	51.98	57.26	53.95	49.51
04/02/2021	20:35:00	52.58	69.61	54.11	49.48
04/02/2021	20:40:00	53.84	64.5	55.48	51.74
04/02/2021	20:45:00	52.78	58.06	54.83	50.72
04/02/2021	20:50:00	54.03	76.49	55.48	50.64
04/02/2021	20:55:00	52.14	59.02	54.32	49.75
04/02/2021	21:00:00	55.11	72.1	57.57	49.5
04/02/2021	21:05:00	52.6	64.48	54.69	49.23
04/02/2021	21:10:00	51.78	62.51	54.09	48.17
04/02/2021	21:15:00	51.3	56.04	53.39	48.4
04/02/2021	21:20:00	51.41	61.28	53.92	47.75
04/02/2021	21:25:00	59.15	84.15	60.08	48.93
04/02/2021	21:30:00	52.22	67.52	54.75	48.79
04/02/2021	21:35:00	51.18	59.72	53.42	48.5
04/02/2021	21:40:00	55.46	81.06	53.81	49.91
04/02/2021	21:45:00	51.9	61.12	53.32	49.51
04/02/2021	21:50:00	53.22	60.91	55.46	50.14
04/02/2021	21:55:00	53.12	59.18	54.9	50.43
04/02/2021	22:00:00	52.75	59.26	54.84	50.1
04/02/2021	22:05:00	55.18	73.36	56.51	50.44
04/02/2021	22:10:00	65.57	84.73	69.19	51.8
04/02/2021	22:15:00	54.77	75.37	56.78	49.98
04/02/2021	22:20:00	53.46	66.97	55.96	49.77
04/02/2021	22:25:00	52.32	56.96	54.24	49.98
04/02/2021	22:30:00	52.2	57.35	54.18	49.09
04/02/2021	22:35:00	51.06	60.49	53.89	47.49
04/02/2021	22:40:00	52.84	58.59	54.71	49.44
04/02/2021	22:45:00	52.97	57.68	55.27	49.24