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Acoustic review of the impact of noise and vibration from SIAC Quarry and Traffic Noise,

At

Proposed strategic residential development site Blocks A, B, C & D, – Dolcain House, Monastery Road, Clondalkin, Dublin 22.

Revision:	DHBDAR3 1.1 (Issue)
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1. 0 INTRODUCTION

Dalton Acoustics Ltd. have been commissioned by Randelswood Holdings Limited to carry out a noise and vibration survey to accompany a Strategic Housing Development (SHD) Application to An Bord Pleanala for a proposed residential development, comprising a total of 130 no. residential units, at the site of the existing Dolcain House, Monastery Road, Dublin 22. This assessment has also been undertaken in response to refusal reason No. 2 of the previous applications pertaining to the subject site under Reg. Refs. SD19A/0324, SD19A/0327 and SD19A/0328, which related to potential noise disturbance as further described within the Environmental Health Officers report on the above-noted applications.

The subject site is located at Dolcain House, Monastery Road, Clondalkin, Dublin 22 and consists of 3 existing vacant office blocks and an atrium servicing two of the blocks together with associated car parking. The site is irregular in shape and 0.81 hectares in area. The site is located between Monastery Road and Knockmeenagh Lane and is approx. 0.7km Southeast of Clondalkin Village, circa 1km Southwest of Park West and Cherry Orchard and approximately 8 kilometres Southwest of Dublin City Centre with access to both the N7 and M50. The site is also bounded to the Southwest by Round Towers GAA Club with Bushelloaf Park to the adjoining the club.

Proposed Development Description:

The proposed residential development will consist of the change of use of the existing Blocks A, B and C at Dolcain House from office use to residential use which range in height from 4-5 storeys over basement, together with construction of a new block known as Block D. The development will principally consist of 130 no. residential units over four blocks located at Dolcain House, Monastery Road, Clondalkin, Dublin 22

The proposed development will keep the structural elements of the existing commercial buildings on this site; thus, the existing Southernmost Elevation of Block C (adjacent Block B) will be the closest existing elevation to the SIAC Quarry, the N7 Roadway and M50 Motorway. The proposed new block D will also be in relative proximity to the SIAC Quarry along the SIAC site boundary. An Airborne Noise and Vibration measurement assessment has been commissioned to ascertain the suitability of the proposed development and determine what, if any mitigating measures may be needed. Existing Block C and

proposed Block D will be buildings most exposed to these noise sources and are the locations for measurement assessment carried out on a phased measurement basis.

Measurement was carried out at 2 locations along the rear elevation of Block C. Noise Monitoring Location 1 (NML1) situated at the Southeast corner of the existing building at second floor level consists of both vibration and airborne noise measurement, being the closest point in the direction of the SIAC quarry and N7 traffic. NML2 was located at the Southwest corner of Block C in the direction of Round Towers Club House, Round Towers Electricity Generator and N7 Traffic. See **Figure 1** below for the positioning of noise monitoring positions and layout of site generally. Measurement commenced on 08/01/2020 and ceased on 10/01/2020 (pre covid19 period) in order to gain normal diurnal cycles for day and night.

Figure 1: Noise Monitoring Locations and general site location layout.

Measurement was carried out at 1 location adjacent the nearest elevation of the proposed Block D. Noise Monitoring Location 3 (NML3) situated at the Southern elevation of the proposed building for both vibration and airborne noise measurement, being the closest point in the direction of the SIAC quarry and N7 traffic. See **Figure 1** above for the positioning of noise monitoring positions and layout of site generally. Measurement commenced on

09/11/21 and ceased on 11/11/21(after covid19 period) in order to gain normal diurnal cycles for day and night.

Guidelines for acoustic considerations shall be taken from Acoustic Standards and Guidelines such as **BS8233: 2014 "Guidance on sound insulation and noise reduction for buildings", WHO 2000 "Community Noise" Guidelines.** These Standards and Guidelines provide external suggested levels of airborne noise along with internal recommended levels for within domestic dwellings. They consider both day and night-time, also **WHO 2000** takes into account maximum levels which may occur at night.

BS 6472-1:2008 (6) "Guide to evaluation of human exposure to vibration in buildings". Vibration sources other than blasting provides guidance on predicting the human response to vibration in buildings within the frequency range 0.5 Hz to 80 Hz. This British Standard state's that the human response to vibration within buildings is best evaluated using the Vibration Dose Value (VDV). The VDV can be used to estimate the probability of adverse comment which might be expected from human beings experiencing vibration in buildings.

British Standard 7385-2:1993 "Evaluation and Measurement for Vibration in Buildings – Part 2: Guide to Damage Levels from Ground borne Vibration", gives guidance on vibration limits to prevent building damage. It is however applicable to blasting associated with mineral extraction. **BS 7385-2: 1993** provides guidance on vibration levels likely to result in cosmetic damage and is referenced in **BS 5228-2:2009+A1:2014.**

2.0 SURVEY DETAILS.

2.1 Base line noise measurements

2.1.1 Airborne Sound Measurement

Airborne Ambient Sound Measurement was conducted using 3 No. NTI XL2 Class 1 sound level meter monitoring positions located at the opposing ends of the existing Southern elevation of Block C and standalone position for Block D. The microphone positions for both NML positions 1 & 2 was at 1 metre from the elevation at 2nd. floor level of the building. See **Figures 2 and 3** for positioning of NML1 and **Figures 4 and 5** for positioning of NML2.

Fig 2: NML1 Mic out through window

Fig 3: NML1 Mic at SFL

Fig 4: NML2 in direction of GAA

Fig 5: View from NML2 at SFL

NML3 was situated to approximate the nearest elevation of proposed Block D to the SIAC works. However due to existing buildings on site which will not exist in the event of this development proceeding the intended position of NML3 was moved in order to avoid partial height barrier effect from existing buildings. The proximity toward SIAC quarry was attempted to be maintained at the revised position. The microphone and preamplifier were situated onto a 4-metre-high extension in order to gain representative noises level emissions. See **Figure 6** for positioning of NML3.

Fig 6: Block D NML3 airborne setup

During the measurement process, the 3 No. NTI XL2 Sound Level Meters (Class 1 Type) were set up as follows.
The microphone and pre-amplifier were placed onto ranging poles and were located inside a weather shield and the settings for same accordingly selected on the sound level meter. An extension cable was run from the mic / preamp to the NTI XL2 SLMs located within a tamper / weather-proof pelitor. This allowed for all weather monitoring and unmanned measurement to occur right throughout the process, as the SLMs were set to record audio and noise measurement parameters simultaneously.

The noise source intended for measurement on the 8th. to 10th. January 2020 and 9th. to 11th. November 2021 is the existing levels of ambient / background noise in the absence of the proposed development.

The existing ambient noisescape is dominated by the presence of SIAC Quarry operations with the hum of machinery / plant, general vehicle movements with reversing sirens, personnel on site, a speaker system. Other sources consist of traffic noise, dogs barking locally, aircraft movements and Round Towers GAA Club electricity generator. All of the above happening at various times during a normal diurnal cycle.

2.1.2 Vibration Measurement

Vibration measurement was carried out at the site using a SVANTEK SV958A. The Svantek SV84 triaxial accelerometer was fixed onto the weighted mounting metal base plate. At NML1 this base plate was rested onto a raised access floor.

Figure 6: SVC958A in Room C.2.05

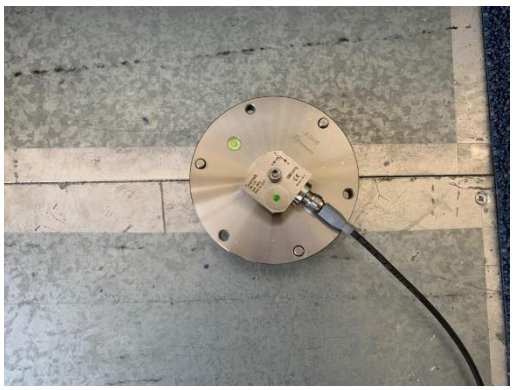


Fig 7: Direction of Triaxial Acc. on plate

At NML3 the Svantek SV84 triaxial accelerometer was fixed onto the weighted mounting metal base plate and seated onto concrete waffle paving detail. See **figures 8 and 9** for NML3 monitoring station setup for vibration.

Fig 8: NML3 Vibration setup

Fig 9: Direction of Triaxial Acc. on plate

During the measurement process the SVANTEK SV958A was set up as follows; The accelerometer was secured mechanically onto the top of the Svantek metal mounting base plate. The 3-dimensional sensor (X, Y & Z) on the structure to be monitored, displays the current vibration values of the 3 directions including frequency, the maxima, besides date, time, remaining battery capacity, available memory. The X axis on the accelerometer was set in the direction of the SIAC Quarry for reference purposes. In addition, every minute a full measuring signal of the numerous relative vibration measurement parameters is stored for post analysis on Svan PC++ software. The extension cable was run back to the SV958A located in a secure pelitor for weather protection. The Ground Borne Vibration module installed in Svan PC++ allows for exact calculation of VDV and PPV as the 2 most relative parameters for consideration in this instance.

The intended vibration source for measurement is that of the SIAC Quarry in operation. During the measurement process the location was unattended and the position of NML1 is considered relevant to the nearest position within the

existing structure, as the proposed new development (Blocks A, B & C) is to be contained within this existing structure. Note the building was unoccupied. NML3 was located externally to approximate the location of the Block D nearest elevation toward SIAC Quarry.

2.2 Survey Period

The periods of measurement were unmanned with full audio recording facilities running concurrently with the logging of data. There was a pre covid19 assessment carried out at Block C which commenced at 10:53 hours 08/01/20 and ceased at 13:24 hours on 10/01/20. There was a post Covid 19 restrictions measurement carried out at proposed Block D , commencing at 13:06 hours on 09/11/21 and ceased at 14:12 hours on 11/11/21.

1 second LAeq logging was used on the XL2 SLMs for the complete period so that analysis of the measurement samples could be carried out on PC Data Explorer. Post analysis of the measured parameters was subsequently examined in NTI PC Data Explorer software for the full measurement period. The use of full audio recording on the XL2 makes it possible to listen back to events, assessing times, periods / durations and noise levels simultaneously. This time sync between the NTI XL2 SLMs and the Svantek 958A allows for cross checking of noise which may have caused a vibration disturbance also at NML1 and NML3.

2.3 Weather during measurement on site for airborne measurements only.

8th. January 2020

Windspeed:	between 2 and 18 Knots < 5M/Sec.
Precipitation:	none up to 23:00 hrs & between 1 – 2mm 23:00 to 00:00 hrs
Temperature:	between 8 to 4 Degrees Centigrade
Observation:	No temperature inversion conditions, mainly dry with some cloud at times. Sufficiently good weather conditions for valid acoustic measurement sample.

9th. January 2020

Windspeed:	between 4 and 14 Knots < 5M/Sec.
Precipitation:	Up to 3mm 00:00 to 05:00 hrs – no precipitation afterwards
Temperature:	between 2 to 6 Degrees Centigrade

Observation:	No temperature inversion conditions, mainly dry with some cloud at times. Sufficiently good weather conditions for valid acoustic measurement sample.

10th. January 2020

Windspeed:	between 10 and 18 Knots < 5M/Sec.
Precipitation:	none up to 14:00 hrs (completion of measurement sample)
Temperature:	between 0 to 8 Degrees Centigrade
Observation:	No temperature inversion conditions, mainly dry with some cloud at times. Sufficiently good weather conditions for valid acoustic measurement sample.

9th. November 2021

Windspeed:	between 10 and 6 Knots < 5M/Sec.
Precipitation:	none after to 13:300 hrs (start of measurement sample)
Temperature:	between 14 to 8 Degrees Centigrade
Observation:	No temperature inversion conditions, mainly dry with some cloud at times. Sufficiently good weather conditions for valid acoustic measurement sample.

10th. November 2021

Windspeed:	between 5 and 3 Knots < 5M/Sec.
Precipitation:	none
Temperature:	between 11 to 6 Degrees Centigrade
Observation:	No temperature inversion conditions, mainly dry with some cloud at times. Sufficiently good weather conditions for valid acoustic measurement sample.

11th. November 2021

Windspeed:	between 1 and 15 Knots < 5M/Sec.
Precipitation:	none up to 14:00 hrs (completion of measurement sample)
Temperature:	between 6 to 14 Degrees Centigrade
Observation:	No temperature inversion conditions, mainly dry with some cloud at times. Sufficiently good weather conditions for valid acoustic measurement sample.

2.4 Personnel & Instrumentation

Ted Dalton (Dalton Acoustics Ltd.) commenced the acoustic measurement for the survey period intended, along with the setup of all measurement equipment.

Statement of Authority:

- BSc Surv. (Hons) 1995 – Trinity College
- Diploma (Hons) in Acoustics & Noise Control 1999 (Institute of Acoustics).
- MSc (Hons) in Applied Acoustics 2016 (University of Derby).
- Member of Institute of Acoustics (MIOA) & Member of Irish branch committee (IOA).
- Secretary and Member of the Association of Acoustic Consultants of Ireland (MAACI).
- Diploma in Environmental Noise Measurement & Assessment (IOA).
- 2014 to present: Principal at Dalton Acoustics Ltd.

2.4.1 Instrument (Sound Level Meter)

NTI XL2 Class 1 Integrating Sound Level Meter & Audio Analyser,
Serial No. A2A-14622-EO Calibration Cert FL-18-046 & Cert SLM200097
Calibration Certificate Dated: 20/06/18 (2-year calibration)
Calibration Certificate Dated: 17/06/20 (2-year calibration)
NTI Capsule 7569
NTI Microphone M2230 Serial No. A15943

NTI XL2 Class 1 Integrating Sound Level Meter & Audio Analyser,
Serial No. A2A-16360-EO Calibration Cert FL-19-195
Calibration Certificate Dated: 31/07/19 (2-year calibration)
NTI Capsule 8569
NTI Microphone M2230 Serial No. A17385

2.4.2 Field Calibration

Using the Rion NC74 Sound Level Calibrator, which produces a sound level of 94.0dB (re. $2x10^{-5}$) at a frequency of 1Khz. The instrument was calibrated before and after measurement with a recorded maximum deviation of -0.1dB.

Calibrator Rion NC 74 with serial No. 34551704

Calibration Cert AC190073 & AC2000109

Dated: 13/11/2019 & 17/11/21

Valid for 1 year

2.4.3 Vibration Monitor & Accelerometer

Svantek SV258A Pro with serial No. 81105 – cert date 15/10/19 & 04/11/21

Calibration Cert No. 14014059-1 & 1501293-1a

Certification valid for 2 years.

2.5 Topography of measurement location

The subject site is located at Dolcain House, Monastery Road, Clondalkin, Dublin 22 and consists of 3 vacant office blocks and an atrium servicing two of the blocks together with associated car parking. The site is located between Monastery Road and Knockmeenagh Lane and is also bounded to the Southwest by Round Towers GAA Club with Bushelloaf Park adjoining the club.

. See **figure 10** below which provides a perspective view of the existing site, its existing buildings and proximity to surrounding SIAC Quarry and Round Towers GAA.

Figure 10: Indicates the site location topography of surrounding area.

3.0 MEASUREMENT PROCEDURE

The following readings were taken for airborne sound at the SLM microphone positions – Unmanned Measurement of 15 minute 1/3rd. Octave and Broadband samples for LAeq, LAfmax, LA10 & LA90 at the microphone positions as stated previously. The SLM measurements were taken using "Fast" time weighting and "A" Frequency Weighting. The 3 No. XL2 monitoring locations were also set to record all audio simultaneously in compressed format, so that events can be examined in PC Data Explorer for their relevance / suitability and inclusion within the measurement samples. PC Data Explorer allows for the reconfiguration of measurement data obtained into multiple additional formats of relevant parameters by post processing of the raw data obtained.

Note: The 2 no. microphones at each of the measurement positions NML1 and NML2 were located at 1 metre from the rear elevation of Block C in both cases. This was done to place the microphones at a known reflective location whereby all results are 3 dB higher than a free-field position. Therefore, NML1 & NML2 measurement results should be adjusted downward by 3dB(A) for actual levels. NML3 measurement results are free-field and require no adjustment.

The explanation for the most important descriptors is provided below;

ISO 1996-1:2016 (Standard for this measurement data gathering)
Acoustics *- Description, measurement and assessment of environmental noise*
Part 1: *Basic quantities and assessment procedures*

Where;

LAeq,T This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T).

LAFmax The maximum RMS A-weighted sound pressure level occurring within a specified time period. Measured using the "Fast" time weighting.

LAF90 Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval; it is the level which is exceeded for 90% of the measurement period. Measured using the "Fast" time weighting.

LAF10 Refers to those A-weighted noise levels in the top 10 percentile of the sampling interval; it is the level which is exceeded for 10% of the measurement period. Measured using the "Fast" time weighting

The "A" suffix denotes the fact that, the sound levels have been A-Weighted in order to account for the non-linear nature of human hearing ie. LAeq, LAfMax, LA90 & LA10

Decibel. The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro pascals (20 uPa).

The following readings were taken for vibration at the accelerometer positions NML1 & NML3 as previously stated. 1-minute logged X, Y and Z axis information for velocity, acceleration and displacement in order to facilitate VDV and PPV calculation.

The explanation for the most important descriptors is provided below;
BS 6472-1:2008 *Guide to evaluation of human exposure to vibration in buildings -Vibration sources other than blasting.*

Where;

Velocity Unit - M/S, cm/s & mm/s, with symbol V or v. Refers to the maximum speed reached by a vibrating object during the vibration cycle in the direction of motion. Defined by the rate of change of displacement per unit time. Velocity may be measured directly but is often derived from a measurement of acceleration and may also be, derived from measuring displacement with respect to time.

Acceleration Unit - M/S^2, cm/s^2, mm/s^2, with symbol A or a. Refers to the rate at which the velocity of an object changes per unit time. Acceleration is often measured

directly and may also be derived from measuring velocity, or displacement (with respect to time).

Displacement Unit - M, mm, um, with symbol D, s. Refers to the distance a vibrating object is displaced from a reference position (normally, the stationery position).

PPV Peak Particle Velocity, is the greatest instantaneous particle velocity during a given time interval. If measurements are made in 3-axis then the resultant PPV is the vector sum i.e. the square root of the summed squares of the maximum velocities, regardless of when in the time history those occur.

VDV Vibration Dose is a parameter that combines the magnitude of vibration and the time for which it occurs. Vibration Dose Value (VDV) is typically expressed in a cumulative measurement of the vibration level received over an 8-hour or 16-hour period. VDV is the vibration dose value in $m/s^{1.75}$

4.0 NOISE IMPACT ASSESSMENT

4.1 South Dublin County Council Noise Action Plan 2018 to 2023 States:

Desirable Low Sound levels

< 50 dB(A) Lnight

< 55 dB(A) Lday

Undesirable High Sound levels

> 55 dB(A) Lnight

> 70 dB(A) Lday

The measurement results from 8th. to 10th. January 2020 are below both the Lnight and Lday "Desirable Low Sound Levels" of South Dublin County Councils Noise Action plan for 2018 to 2023 at NML1 and NML2.

The measurement results from 9th. to 11th. November 2021 are at the threshold for "Desirable Low Sound Levels" of South Dublin County Councils Noise Action plan

for 2018 to 2023 at NML3. With results for 16 Hour LAeq typically at 55dB and night-time being slightly above recommended at 51dB to 52dB LAeq 8 hour.

Section 2.7 Quarries and Ancillary Activities

EPA Guidance on Quarries and Ancillary Activities contain a discussion of the primary sources of noise associated with quarrying and offers guidance in relation to the correct approach to be followed in respect of assessment and mitigation. Suggested noise limit values are 55dB LAeq,1hr and 45dB LAeq,15min for daytime and night-time respectively, although it suggests that more onerous values may be considered appropriate in areas with low levels of pre-existing background noise. EPA guidance also states that that 'blasting should not give rise to air overpressure values at the nearest occupied dwelling in excess of 125 dB(Lin) maximum peak with a 95% confidence limit'

Note: No EPA Licence has been located by the Author for the adjacent SIAC Quarry

4.2 Derivation of Building Envelope Noise Levels

The results of the environmental noise survey of the existing ambient noise conditions, shall be used as the LAeq 16hr. day period (07:00 to 23:00) and LAeq 8hr. night-time period (23:00 to 07:00), for airborne noise incident across the proposed domestic developments nearest elevation.

The resultant LAeq 16hr. calculation is 53dB for NML1, 53dB for NML2 and 55dB for NML3. This 16Hr. evaluation includes all noise occurrences except Round Towers Generator for Lighting pitches but does not seek to evaluate peak / maximum levels. However, these peak levels are included in the LAeq(T) calculations.

The resultant LAeq 8hr. calculation is 49dB for NML1, 49dB for NML2 and 52dB for NML3. This 8Hr. evaluation includes all noise occurrences but does not seek to evaluate peak / maximum levels. However, these peak levels are included in the LAeq(T) calculations.

Note: The resultant measurement levels quoted above for daytime and night-time are adjusted downward accordingly for elevation reflection by 3dB(A) at NML1 &

NML2. Measurement data at NML2 has excluded levels of noise measured from Round Towers Generator located at the rear of their clubhouse used to create an electricity supply for their pitch lighting. When in operation this generator creates levels of noise that may be attenuated at the boundary of Round Towers to farther reduce noise levels. When in use during acoustic daytime this generator can raise levels at the receiver by up to 6dB(A). However, the presence of the Round Towers generator in the ambient noisescape does not create an undesirable scenario for domestic dwelling development as per BS8233: 2014. The 16-hour daytime LAeq including the Round Towers Electricity Generator is 57dB. Block B will be in acoustic shade from this source with levels expected to circa 10dB(A) lower again.

The proposed Block D will be subject to the presence of additional traffic noise from the Monastery Road and is closer to trucks entering and exiting the SIAC Quarry site.

4.3 BS 8233: 2014 – 'Guidance on Sound Insulation and Noise Reduction for Buildings' Suggests specific internal room noise criteria for bedrooms at Ne. 30dB LAeq over 8 Hours at night from 23.00 to 07.00 Hours. This guidance does not have provision for maximum levels and only suggests the steady state level.

BS8233: 2014 Section 7.7 "Specific Types of Building" Table 4 provides recommended maximum levels for indoor ambient noise levels inside dwellings.

BS8233: 2014 - Table 4 is replicated below.

Activity	Location	07:00 to 23:00 Hrs.	23:00 to 07:00 Hrs.
Resting	**Living Room**	**35dB LAeq 16 Hour**	----------
Dining	**Dining Room / Area**	**40dB LAeq 16 Hour**	----------
Sleeping (daytime resting)	**Bedroom**	**35dB LAeq 16 Hour**	**30dB LAeq 8 hour**

Table 4 Indoor ambient noise levels for dwellings

These values are derived by assuming that the noise reduction from outside to inside with a window partly open is 15 dB". Thus, the optimal desired external level is circa 45dB LAeq (8-hour) which is 5dB(A) below SDCoCo 2018 – 2023 and the measured resultant level at NML1 and NML2 is 49dB LAeq (8-hour), being 4dB above the optimal level, but in compliance with SDCoCo metrics. The measured levels at

NML3 are circa 6 – 7dB(A) above BS8233: 2014 and fall between desirable and undesirable levels of SDCoCo 2018 Noise Action Plan.

However; **Section 7.7 Specific types of building**

7.7.2 Internal ambient noise levels for dwellings

NOTE 7 states

Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

This is in line with South Dublin County Councils metrics for Desirable Low Sound Levels at LAeq 8-hour night-time < 50dB(A).

4.4 WHO 2000 "Community Noise Guidelines"

World Health Organisation (Residential) 2000 – Community Noise Guidelines

Table 1 offers values for acoustic comfort in residential living areas and bedrooms; However, it does not offer daytime and night-time comparisons. ***"Guideline values for community noise in specific environments"***

Table 1 - Guideline values for community noise in specific environments

Specific Environ	Critical Health effect(s)	Leq [dBA]	Time Based Hrs.	LAfmax dB
Dwelling, Indoors	**Speech intelligibility and moderate annoyance, daytime & evening**	**35**	**16**	**-------**
Inside Bedrooms	**Sleep disturbance, night-time**	**30**	**8**	**45**

This standard allows for; "At night, sound pressure levels at the outside façades of the living spaces should not exceed 45 dB LAeq and 60 dB LAmax, so that people may sleep with bedroom windows open. These values have been obtained by assuming that the noise reduction from outside to inside with the window partly open is 15 dB"

The measured LAeq daytime levels are within the limits of the relaxed levels and SDCoCo desirable levels. The measured LAeq night-time levels are within the limits

of the relaxed levels and SDCoCo desirable levels for NML1 and NML2 but slightly over for NML3.

Note: Both **WHO: 2000 and BS8233: 2014** concentrate on average noise levels with some mention of LAfmax by WHO: 2000. The maximum level occurrences at night-time are typically below 60dB in line with WHO 2000 suggested level occurrences.

4.5 BS 6472-1:2008 'Guide to evaluation of human exposure to vibration in buildings -Vibration sources other than blasting'

BS 6472-1 (6) provides guidance on predicting the human response to vibration in buildings within the frequency range 0.5 Hz to 80 Hz. This British Standard state's that the human response to vibration within buildings is best evaluated using the Vibration Dose Value (VDV). The VDV can be used to estimate the probability of adverse comment which might be expected from human beings experiencing vibration in buildings.

BS 6472 provides a method for measuring the VDV over a 16-hour daytime period (07:00 to 23:00) or 8-hour night period (23:00 to 07:00) and a method for estimating the VDV (eVDV) from the measurements of vibration acceleration as a weighted frequency component (Wb in the vertical axis, Wd in the horizontal axis). This is used to assess the severity of vibration from a series of events. **Table 1 of BS 6472** provides vibration dose value ranges which might result in various probabilities of adverse comment within residential buildings.

Table 1 **Vibration dose value ranges which might result in various probabilities of adverse comment within residential buildings**

Place and time	Low probability of adverse comment $m \cdot s^{-1.75}$ 1)	Adverse comment possible $m \cdot s^{-1.75}$	Adverse comment probable $m \cdot s^{-1.75}$ 2)
Residential buildings 16 h day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8 h night	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

NOTE For offices and workshops, multiplying factors of 2 and 4 respectively should be applied to the above vibration dose value ranges for a 16 h day.

Based on the measurement data taken from 8th. to 10th. January 2020 and 9th. to 11th. November 2021 the following values for VDV have been calculated.

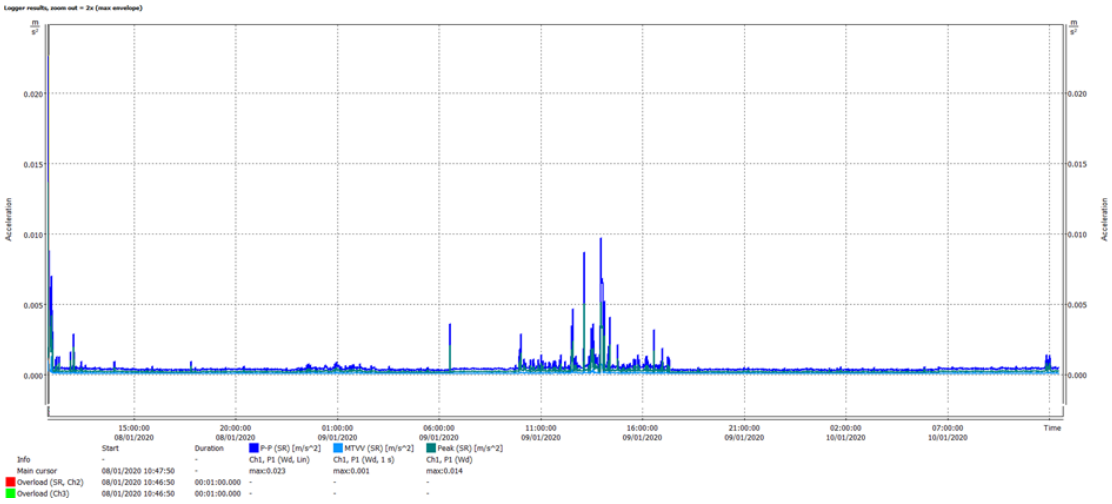


Fig 11: indicating results of Vibration dose logged from 8th. to 10th. January 2020

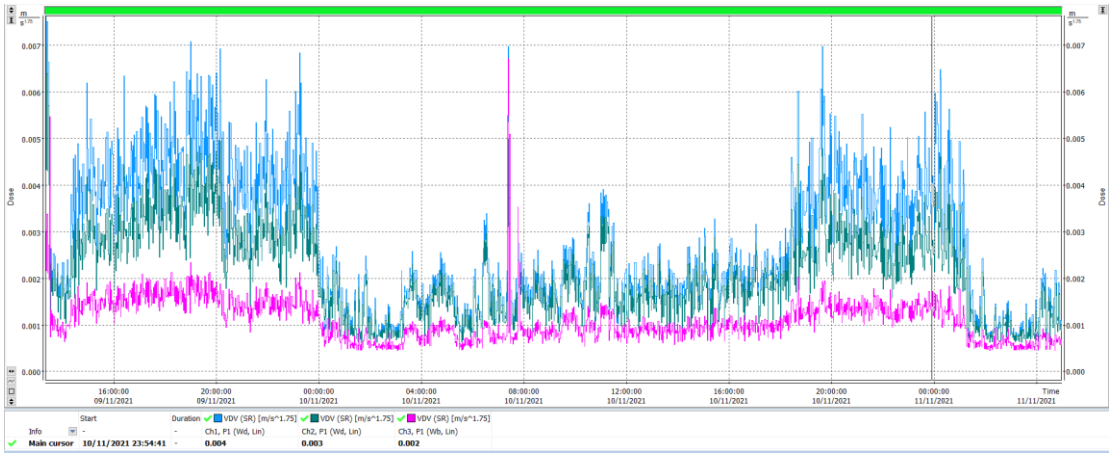


Fig 12: indicating results of Vibration dose logged from 9th. to 11th. November 2021

Using Measurement data contained in the Appendix the average for daytime and night-time VDV can be obtained as;

			Ch1 (VLM) VDV [m/s^1.75]	Ch1 (VLM) VDV [m/s^1.75]	Ch1 (VLM) VDV [m/s^1.75]	Ch1 (VLM) VDV [m/s^1.75]	Ch1 (VLM) VDV [m/s^1.75]
No.	Start date & time	Name					
1	08/01/2020 12:00:49	8 Hour Night	0.001				
2	08/01/2020 23:00:49	8 Hour Night		0.002			
3	09/01/2020 07:00:49	16 Hour Day			0.002		
4	09/01/2020 23:00:49	8 Hour Night				0.001	
5	10/01/2020 07:00:12	16 Hour Day					0.001

				Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)
				VDV	VDV	VDV	VDV	VDV
				[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time		Name					
1	08/01/2020 12:00:49		8 Hour Night	0.001				
2	08/01/2020 23:00:49		8 Hour Night		0.004			
3	09/01/2020 07:00:49		16 Hour Day			0.003		
4	09/01/2020 23:00:49		8 Hour Night				0.001	
5	10/01/2020 07:00:12		16 Hour Day					0.001
				Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)
				VDV	VDV	VDV	VDV	VDV
				[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time		Name					
1	08/01/2020 12:00:49		8 Hour Night	0.005				
2	08/01/2020 23:00:49		8 Hour Night		0.004			
3	09/01/2020 07:00:49		16 Hour Day			0.053		
4	09/01/2020 23:00:49		8 Hour Night				0.005	
5	10/01/2020 07:00:12		16 Hour Day					0.010

Table 1: VDV Calculated results for 8th. to 10th. January 2020 at SFL Block C.

The results of vibration measurement taken from 8th. to 10th. January 2020 suggests that the VDV experienced at the proposed development location (as indicated above) would be contained well below the category of "Low Probability" of adverse comment.

Note: The proposed developments existing buildings, will use all of the existing buildings structural elements with only internal layout changes from office to domestic along with change of building fabric for the external cladding. Structural transmission is expected to be represented by the existing in situ. Block D will be a completely newly constructed standalone building.

				Ch1 (VLM)	Ch1 (VLM)	Ch1 (VLM)	Ch1 (VLM)	Ch1 (VLM)
				VDV	VDV	VDV	VDV	VDV
				[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time	Duration	Name					
1	09/11/2021 13:19:41	09:40:00.000	16 Hour	0.020				
2	09/11/2021 22:59:41	08:00:00.000	8 Hour		0.012			
3	10/11/2021 06:59:41	16:00:00.000	16 Hour			0.016		
4	10/11/2021 22:59:41	06:00:00.000	8 Hour				0.013	0.013
				Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)
				VDV	VDV	VDV	VDV	VDV
				[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time	Duration	Name					
1	09/11/2021 13:19:41	09:40:00.000	16 Hour	0.015				
2	09/11/2021 22:59:41	08:00:00.000	8 Hour		0.009			
3	10/11/2021 06:59:41	16:00:00.000	16 Hour			0.012		
4	10/11/2021 22:59:41	06:00:00.000	8 Hour				0.009	0.009
				Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)
				VDV	VDV	VDV	VDV	VDV
				[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time	Duration	Name					
1	09/11/2021 13:19:41	09:40:00.000	16 Hour	0.008				
2	09/11/2021 22:59:41	08:00:00.000	8 Hour		0.004			
3	10/11/2021 06:59:41	16:00:00.000	16 Hour			0.008		
4	10/11/2021 22:59:41	06:00:00.000	8 Hour				0.004	0.004

Table 2: VDV Calculated results for 9th. to 11th. November 2021 at NML3.

4.5.1 Peak Particle Velocity

For human response to construction related vibration, it is considered more appropriate to measure Peak Particle Velocity (PPV mm/s), as suggested in **'BS 5228-2:2009+ A1:2014 Code of practice for noise and vibration control on construction and open sites Part 2: Vibration'.**

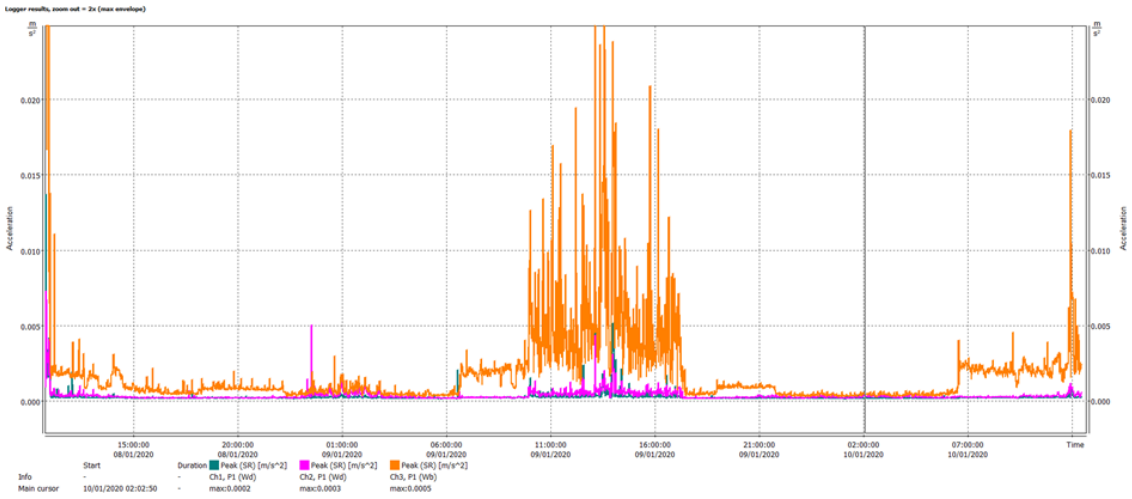


Fig 13: Vibration Logged period indicating peaks from 8th. to 10th. January 2020

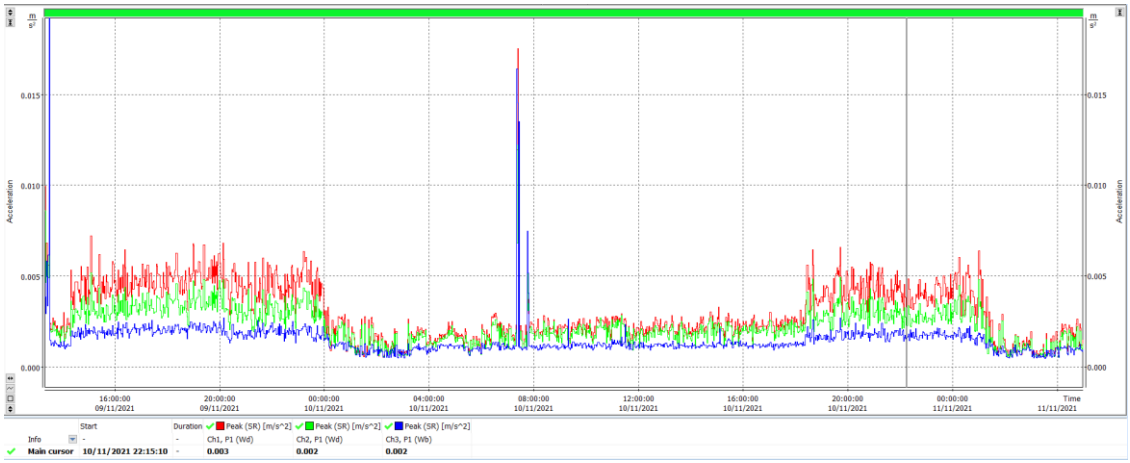


Fig 14: Vibration Logged period indicating peaks from 9th. to 11th. November 2021

People are very poor at determining relative magnitudes of vibration, for example, the difference between 4.0 mm/sec ppv and 6.0 mm/sec ppv is unlikely to be distinguishable by an individual person. Even though vibration levels between 0.6 mm/sec ppv and 50.0 mm/sec ppv are routinely experienced in everyday life within a property and are considered wholly safe, when similar levels are experienced through other operations, it is not unusual for such a level to give rise to subjective concern. The limit of human perception to vibration is between about 0.15 mms-1 and 0.3 mms-1 PPV. The sensitivity of the human body also varies according to different frequencies of vibration, with perception generally possible between 1Hz to 80Hz. The listing below provides examples of vibration levels routinely generated in a property from domestic occurrences.

Vibration Levels Generated by Everyday Activities

Activity	**Vibration Level (PPV, mm/sec)**
Walking measured on a wooden floor	1.0 to 2.5
Door slam measured on a wooden floor	2.0 to 5.0
Door slam measured over the doorway	12.0 to 35.0
Foot stamps measured on a wooden floor	5.0 to 50.0

With regard to physical damage to properties, extensive research has been carried out around the world, the most prominent being undertaken by the United States Bureau of Mines (USBM). Damage to a structure could occur if the dynamic stresses induced in a structure exceed the allowable design stress for the specific building material.

Classifications of building damage range from very fine plaster cracking up to major cracking of structural elements. In particular, when defining damage to buildings, the following classification is used:

Cosmetic – the formation of hairline cracks or the growth of existing cracks in plaster, dry wall surfaces or mortar joints.

Minor – the formation of large cracks or loosening or falling of plaster on dry wall surfaces, or cracks through bricks/concrete blocks.

Major or Structural – damage to structural elements of the building

Studies by USBM concluded that vibration levels in excess of 50 mm/sec ppv are required to cause structural damage. The onset of cosmetic damage can be associated with lower levels. Vibration levels between 19 mm/sec ppv and 50 mm/sec ppv are generally considered safe. It should be noted that these limits are for the worst-case structure conditions.

British Standard 7385-2:1993 Evaluation and Measurement for Vibration in Buildings – Part 2: Guide to Damage Levels from Ground borne Vibration gives guidance on vibration limits to prevent building damage. It is however applicable to blasting associated with mineral extraction.

BS 7385-2: 1993 provides guidance on vibration levels likely to result in cosmetic damage and is referenced in **BS 5228-2:2009+A1:2014**. Guide values for transient vibration, above which cosmetic damage could occur, are suggested in **Table 12.2.6.**

Table 12.2.6 Transient Vibration Guide Values for Cosmetic Damage

Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
	4Hz to 15Hz	15Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	50mms^{-1} at 4Hz and above	
Unreinforced or light framed structures Residential or light commercial buildings	15mms^{-1} at 4Hz increasing to 20mms^{-1} at 15Hz	20mms^{-1} at 15Hz increasing to 50mms^{-1} at 40Hz and above
NOTE 1: Values referred to are at the base of the building. NOTE 2: For un-reinforced or light framed structures and residential or light commercial buildings, a maximum displacement of 0.6mm (zero to peak) is not to be exceeded.		

Table 12.2.6 Transient Vibration Guide Values for Cosmetic Damage.

BS7385-2:1993 states that the probability of building damage tends to zero for transient vibration levels less than 12.5 mms-1 PPV. For continuous vibration the threshold is considerably less at around half this value. It is also noted that these values refer to the likelihood of cosmetic damage. **ISO 4866:2010** defines three different categories of building damage: These are similar to United States Bureau of Mines (USBM) listed above.

BS 7385-2:1993 defines that minor damage occurs at a vibration level twice that of cosmetic damage and major damage occurs at a vibration level twice that of minor damage. Therefore, this guidance can be used to define the magnitude of impact identified in Table 12.2.7. Table 12.2.7 Magnitude of Change for Building Vibration Continuous Vibration Level PPV mms-1 Damage Risk Magnitude of change.

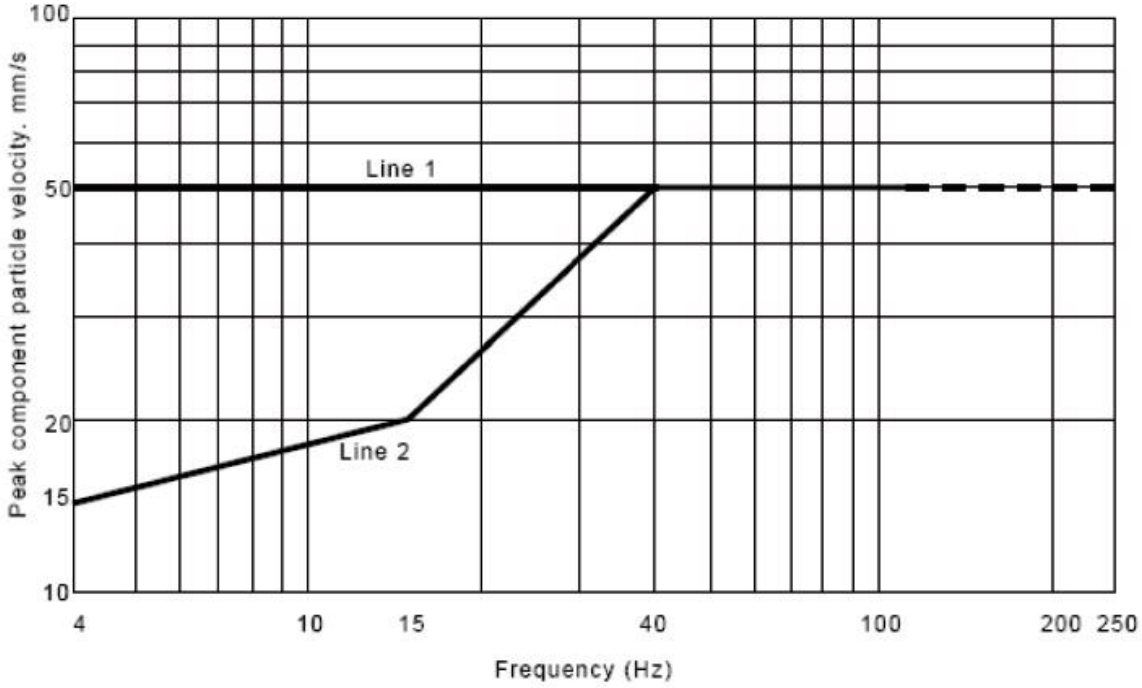


Fig 15: Line 2 in graph above indicates safe levels for domestic non-reinforced buildings.

German Standard DIN 4150–3:1999–02 ***Vibration in buildings—Part 3: effects on structures*** provides recommended maximum levels of vibration that reduce the likelihood of building damage caused by vibration. These levels are 'safe limits', up to which no damage due to vibration effects have been observed for the particular class of building. 'Damage' is defined by DIN 4150 to include even minor non-structural effects such as superficial cracking in cement render, the enlargement of

cracks already present, and the separation of partitions or intermediate walls from load bearing walls. If such damage is observed without vibration exceeding the 'safe limits' it can be attributed to other causes. DIN 4150 also states that when vibrations higher than the 'safe limits' are present; it does not necessarily follow that damage will occur.

Table 4.4 Vibration standards for buildings, DIN 4150–3

Group	Type of structure	Peak vibration velocity, mm/s			
		At foundation at a frequency of			Plane of uppermost storey
		Less than 10 Hz	10 Hz to 50 Hz	to 100 Hz	All frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	2 to 8	8 to 10	8

Source: DIN 4150–3:1999–02 *Vibration in buildings—Part 3: effects on structures*

The highest PPV during unmanned measurement was 1.2 mm/s which occurred at 13:29:33 on 09/11/21 and is substantially below all of the recommended levels as per DIN 4150-3.

See below **plots** of the entire measurement period with PPV versus the suggested levels of PPV for various Building Types as per **BS 7385-2: 1993** and **Din 4150-3: 1999.** All measured levels during the sampling period are well below levels of concern.

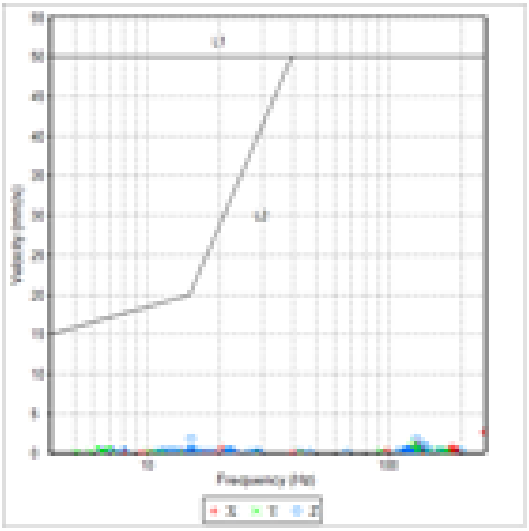


Fig 16: BS 7385-2:1993 PPV Plot of NML 1 Results

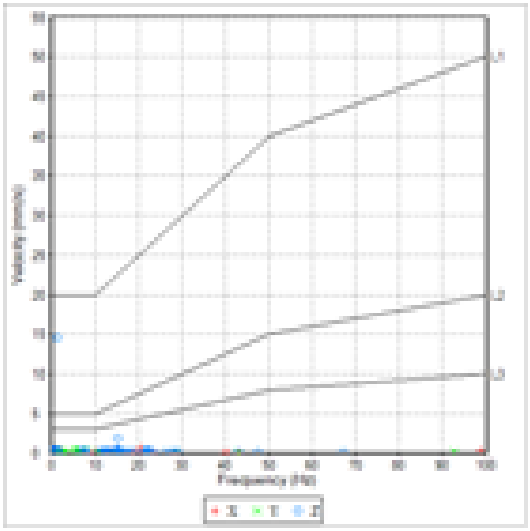


Fig 17: DIN 4150–3:1999 PPV Plot of NML 1 Results

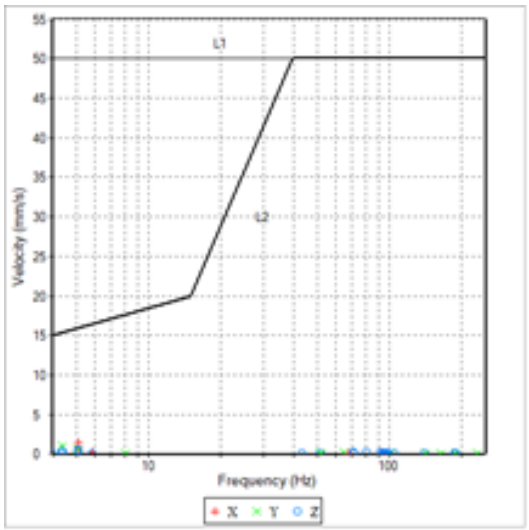


Fig 18: BS 7385-2:1993 PPV Plot of NML 1 Results

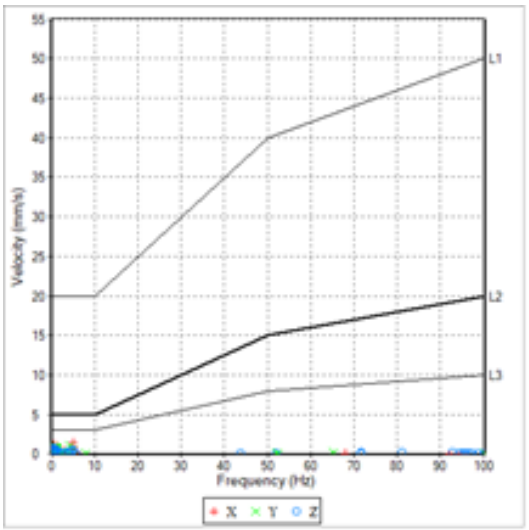


Fig 19: DIN 4150–3:1999 PPV Plot of NML 1 Results

5.0 THE PROPOSED DEVELOPMENT

The Planning Application consists of; Change of use from office use to residential use, with modifications to the existing block known as Block B and construction of a new Block D. The proposed development will keep the structural elements of the existing commercial buildings on this site.

As stated in **Section 4.2** LAeq day and night levels experienced at the most relevant existing elevation (Block C) are favourable with those recommended by WHO 2000 and BS8233: 2014 for bedrooms and attenuation provided by a naturally ventilated window will suffice to achieve comfortable internal levels, based on time average levels (LAeq,T). Measurement data at the location of proposed new Block D is favourable for the most part with the levels contained in the South Dublin Co. Co. Noise Action Plan 2018 to 2023. (levels are just outside the desirable lower levels for night-time).

5.1 Recommendations for Mitigation of Noise Levels

5.1.1 Airborne Noise

There are no recommendations for mitigating measures to be undertaken under this planning application for existing Blocks. Measurements obtained at Block C comply with the favourable levels suggested by South Dublin County Council Noise Action plan 2018 – 2023 as well as various acoustic guidelines and standards such as **WHO 2000 and BS 4142: 2014**. Note as the measurement location was at the elevation of the nearest existing Block C, it is expected that additional airborne noise shading will be achieved for Block B relating to the noise sources of concern previously mentioned. Block D measurement data indicates that there is no mitigation required for vibration transmission. The daytime level for airborne noise it at the limit of commonly used acoustic guidelines and standards mentioned previously as well as the desired daytime low levels as per South Dublin Co. Co. Noise Action plan 2018 – 2023. However, the levels at night-time are located between the desired low levels and undesired levels 50dB – 55dB Lnight. Standard double-glazed windows, when closed will be capable of providing suitable internal levels within noise sensitive rooms internally within Block D. Should it be deemed necessary a specification for a higher performing acoustic glazing detail may be introduced for Block D.

5.1.2 Vibration Transmission

Measurement carried out from 8th. to 10th. January 2020 and again on 9th. to 11th. November 2021 indicates that the 2 most important parameters to assess the effects from the nearby SIAC Quarry (VDV & PPV) are negligible when compared to the relevant standards indicated above. Therefore, there are no mitigating measures suggested for the treatment of vibration. Note, as the measurement location was at the corner of Block C and elevation of proposed Block D as the nearest existing and

proposed buildings in the direction of the SIAC Quarry, vibration transmission (which is already negligible) will be further reduced in the remaining blocks.

6.0 CONCLUSION

The results of measurement sampling carried out between 8th. January and 10th. January 2020 (pre-covid19) and 9th. to 11th. November 2021(after covid19 main restriction period) have provided the following information.

Traffic noise is negligible at the nearest elevation of Block C to N7 roadway and M50 motorway, as traffic is not the dominant source at this location. Traffic noise from Monastery Road along with trucks coming and going to the SIAC quarry is dominant on proposed Block D. Noise sources at the location have been identified as; SIAC Quarry operations with the low hum of machinery / plant, general vehicle movements with reversing sirens, personnel on site, a speaker system. Other sources consist of dogs barking locally, aircraft movements and Round Towers GAA Club electricity generator. Traffic noise is distant but more intermittent from local roads rather than the N7 or M50. Traffic noise and trucks from SIAC is the dominant source at the proposed Block D. All of the above happening at various times during a normal diurnal cycle.

The NML1 & NML2 cumulative measurement of all noises present at the proposed development location are 53dB LAeq (16-hour) daytime (excl. Round Towers Elec. Generator) and 49dB LAeq (8-hour) night-time. These levels are within the South Dublin County Council Noise Action plan for desirable low levels. There were no continuous tones present at the location which would warrant a tonal frequency analysis during the measurement sampling period. The NML3 position indicated that daytime 16-hour LAeq levels are at 55dB and night-time 8-hour LAeq circa 52dB. These levels are at the limit and slight exceedance of South Dublin Co. Co. desirable low levels.

There are no mitigating measures to be introduced as the development would broadly comply with relevant acoustic standards / guidelines as well as the current noise criteria adopted by South Dublin County Council and the Dublin Agglomeration Noise Action Plan 2018 – 2023.

The results of vibration analysis for both PPV and VDV indicate that these are negligible at the proposed site and there are therefore no mitigation measures required for same. Such levels as measured would be deemed fully acceptable.

A full copy of the raw data obtained for airborne noise during the sampling period is included in the Appendix of this report incl. LAeq (15-min), LAfmax, LAfmin, LA90, LA10 all in 15-minute format. Additionally, a partial log of the highest PPV values obtained for vibration measurement is included, as the full log would have too many samples being unnecessary in this instance. VDV Calculated exposure is also contained for reference.

We trust you find the above satisfactory and look forward to being of service in the future,

Yours sincerely,

Ted Dalton B.Sc., MIOA. MInstSCE
(Senior Acoustic Consultant)

7.0 LIMITATIONS

Dalton Acoustics Ltd, Unit A3, JFK Trading Centre, JFK Industrial Estate, D12, have prepared this report for the sole use of Randelswood Holdings. in accordance with the agreement, under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this report or any other services provided by Dalton Acoustics Ltd to any other third parties, regardless of any action taken upon the contents of this report.

The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by Dalton Acoustics Ltd. has not been independently verified by Dalton Acoustics Ltd, unless otherwise stated in the report.

The methodology adopted and the sources of information used by Dalton Acoustics Ltd. in providing its services are outlined in this report. The work described in this report was undertaken between January 2020 and November 2021 (measurement) and 17/11/21 (report issue) and is based on the conditions encountered and the information available during the said period of time. There has been a limited time for suitable measurement to be obtained on site (covid19) and Dalton Acoustics Ltd. accept no liability which may accrue on the basis of a more elongated period of measurement into the future, affording different results to those used for this report. The scope of this report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

Dalton Acoustics Ltd. disclaim any undertaking or obligation to advise any person of any change in any matter affecting the report, which may come or be brought to Dalton Acoustics Ltd.'s attention after the date of the report.

Certain statements made in the report that are not historical facts may constitute estimates, calculations, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted / calculated. Dalton Acoustics Ltd specifically does not guarantee or warrant any calculated parameter or projections contained in this report.

Where field investigations have been carried out, these have been restricted to a level of detail required to meet the stated objectives of the services and required timelines. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made before commencement of the development or after any significant delay in issuing this report. Restriction in the available measurement positions may cause results to differ somewhat to those measured and quoted in this report, such measurements are purely indicative in nature and do not warrant against, changes in transmission paths, or changes of source noise levels.

Measurement data and subsequent calculations are based purely on the measurement period monitored on site as stated in this report. Dalton Acoustics Ltd. accept no liability for measurement data which may be measured outside of these measurement dates and predictions / calculations contained within this report are solely based on measurement data obtained for the purposes of this report. No other use of measurement data is warranted or permitted for any other third party use.

APPENDIX:

Instrumentation Calibration Certs.

Raw Data

SONITUS SYSTEMS

Certificate of Calibration

Issued to:	Certificate Number
Dalton Acoustics Ltd Unit A3 JFK Trading Centre JFK Road JFK Industrial Estate Dublin 12	AC190073

Test Date: 13/11/2019

Equipment Information

Item Calibrated:	Acoustic Calibrator	**Model:**	NC-74
Make:	Rion	**Serial Number:**	34551704

Calibration Procedure

The above calibrator was verified in line with the requirements of BS EN 60942:2003. The calibrator was allowed to stablize for a suitable period, as described in the manufacturer's instruction manual, in laboratory conditions. The sound pressure level in the cavity (half-inch). The operating frequency and signal distortion were also measured.

Calibration Standards

Description	Serial Number
National Instruments PXI-4461	19C91D2
GRAS 42AA Pistonphone	227947
GRAS 46A0 Pressure Field Microphone	228216

The standards used in this calibration are traceable to NIST and/or other National Measurement Institutes (NMI's) that are signatories of the International Committee of Weights and Measures (CIPM) mutual recognition agreement (MRA).

Signed on behalf of Sonitus Systems:

Manufacturer Calibration Certificate

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3. All tests are traceable in accordance with ISO/IEC 17025.

This model of sound level meter submitted for periodic testing successfully completed the applicable pattern-evaluation tests given in IEC 61672-2. The pattern approval certificate is available at www.nti-audio.com/XL2.

Sound Level Meter

Manufacturer	NTi Audio		
Type	XL2-TA	S/N	A2A-14622-E0
Firmware	V3.11		
Reference Level Range	mid		
Microphone Model	M2230		
Preamplifier	MA220	S/N	7569
Microphone Capsule	MC230A	S/N	A15943
Performance class	Class 1		
Customer Inventory Nr.			

Customer

Date 20 June 2018

Certificate FL-18-046

Results **PASSED**
(for detailed report see next pages)

Operator

Markus Frick

NTi Audio AG • Im alten Riet 102 • 9494 Schaan • Liechtenstein
• www.nti-audio.com

Manufacturer Calibration Certificate

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3. All tests are traceable in accordance with ISO/IEC 17025.

No pattern approval is available for this sound level meter configuration.

Sound Level Meter

Manufacturer	NTi Audio		
Type	XL2	S/N	A2A-16360-E0
Firmware	V4.20		
Reference Level Range	mid		
Microphone Model	M2230		
Preamplifier	MA220	S/N	8569
Microphone Capsule	MC230A	S/N	A17385
Performance class	Class 1		
Customer Inventory Nr.			

Customer

Date 31 July 2019

Certificate FL-19-195

Results **PASSED**
(for detailed report see next pages)

Operator
Markus Frick

NTi Audio AG • Im alten Riet 102, 9494 Schaan • Liechtenstein
info@nti-audio.com • www.nti-audio.com

CALIBRATION CERTIFICATE

Date of issue: 15-10-2019 **Certificate No:** 14014059-1 **Page:** 1/8

OBJECT OF CALIBRATION	Manufacturer:	**SVANTEK**	
	Model:	**SV958A**	
	Serial No.:	81105	
	Description:	Sound Level Meter (Channel 4)	
SENSOR	Manufacturer:	**MTG**	**Svantek**
	Model:	**MK255**	**SV12L**
	Serial No.:	12742	49917
	Description:	Microphone	Preamplifier
APPLICANT	-		
	-		
ENVIRONMENTAL CONDITIONS	Temperature:	21.1 – 22.5	°C
	Humidity:	55 – 57	%
	Pressure:	99.3 – 99.4	hPa
DATE OF CALIBRATION	15-10-2019		
APPROVED BY	B. Hunt		

AcSoft
sound & vibration

AcSoft Calibration | Bedford Technology Park
Thurleigh | Bedford | MK44 2YA

+44 (0) 1234 639550

www.acsoft.co.uk

SONITUS SYSTEMS

Statement of Calibration

Issued to:	Calibration Reference
Dalton Acoustics Unit A3 JFK Trading Centre JFK Road Dublin 12	SLM200097

Test Date: 17/06/2020
Procedure: TP-SLM-1

Equipment

Item Calibrated:	Sound Level Meter	**Model**	XL2-TA
Make:	Nti-Audio	**Serial Number:**	A2A-14622-E0

Calibration Procedure

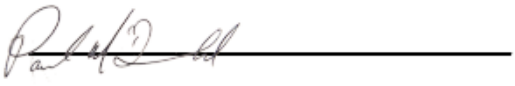
The sound level meter was allowed to stabilize for a suitable period, as described in the manufacturer's instruction manual, in laboratory conditions. The sound level meter was calibrated by carrying out the verification tests detailed in IEC 61672-3 (2006), Periodic tests, specification of sound level meters. Tolerances for verification procedures are specified in IEC 61672-1 (2003).

Calibration Standards

Description	Serial Number
National Instruments PXI-4461	19C91D2
Stanford Research DS360	123803

The standards used in this calibration are traceable to NIST and/or other National Measurement Institutes (NMI's) that are signatories of the International Committee of Weights and Measures (CIPM) mutual recognition agreement (MRA).

Signed on behalf of Sonitus Systems:



AcSoft
Noise, Vibration & Air Quality

CALIBRATION CERTIFICATE

Issued by AcSoft Calibration

Date of Issue: 2021-11-04 **Certificate No.:** 1501293-1a

OBJECT OF CALIBRATION

Meter:

Manufacturer:	Svantek
Model:	SVAN 958A
Serial No.:	81105
Description:	Sound & Vibration Meter Channel 1 - 3

Accelerometer:

Manufacturer:	Svantek
Model:	SV84
Serial No.:	J9816
Description:	Triaxial Accelerometer

APPLICANT

Name:	Dalton Acoustics -

ENVIRONMENTAL CONDITIONS

Temperature:	21.9 - 22.4	°C
Relative Humidity:	42.4 - 42.8	%
Ambient Pressure:	1004.5 - 1004.8	hPa

CALIBRATION DETAILS

Date of Calibration:	2021-11-04
Calibration Specialist:	B. Hunt

AcSoft
Noise, Vibration & Air Quality

AcSoft Calibration | Bedford Technology Park
Thurleigh | Bedford | MK44 2YA
+44 (0) 1234 639550
www.acsoft.co.uk

VDV Calculation Totals

			Ch1 (VLM)	Ch1 (VLM)	Ch1 (VLM)	Ch1 (VLM)	Ch1 (VLM)
			VDV	VDV	VDV	VDV	VDV
			[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time	Name					
1	08/01/2020 12:00:49	8 Hour Night	0.001				
2	08/01/2020 23:00:49	8 Hour Night		0.002			
3	09/01/2020 07:00:49	16 Hour Day			0.002		
4	09/01/2020 23:00:49	8 Hour Night				0.001	
5	10/01/2020 07:00:12	16 Hour Day					0.001
			Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)
			VDV	VDV	VDV	VDV	VDV
			[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time	Name					
1	08/01/2020 12:00:49	8 Hour Night	0.001				
2	08/01/2020 23:00:49	8 Hour Night		0.004			
3	09/01/2020 07:00:49	16 Hour Day			0.003		
4	09/01/2020 23:00:49	8 Hour Night				0.001	
5	10/01/2020 07:00:12	16 Hour Day					0.001
			Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)
			VDV	VDV	VDV	VDV	VDV
			[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time	Name					
1	08/01/2020 12:00:49	8 Hour Night	0.005				
2	08/01/2020 23:00:49	8 Hour Night		0.004			
3	09/01/2020 07:00:49	16 Hour Day			0.053		
4	09/01/2020 23:00:49	8 Hour Night				0.005	
5	10/01/2020 07:00:12	16 Hour Day					0.010

				Ch1 (VLM)	Ch1 (VLM)	Ch1 (VLM)	Ch1 (VLM)	Ch1 (VLM)
				VDV	VDV	VDV	VDV	VDV
				[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time	Duration	Name					
1	09/11/2021 13:19:41	09:40:00.000	16 Hour	0.020				
2	09/11/2021 22:59:41	08:00:00.000	8 Hour		0.012			
3	10/11/2021 06:59:41	16:00:00.000	16 Hour			0.016		
4	10/11/2021 22:59:41	06:00:00.000	8 Hour				0.013	0.013
				Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)	Ch2 (VLM)
				VDV	VDV	VDV	VDV	VDV
				[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time	Duration	Name					
1	09/11/2021 13:19:41	09:40:00.000	16 Hour	0.015				
2	09/11/2021 22:59:41	08:00:00.000	8 Hour		0.009			
3	10/11/2021 06:59:41	16:00:00.000	16 Hour			0.012		
4	10/11/2021 22:59:41	06:00:00.000	8 Hour				0.009	0.009
				Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)	Ch3 (VLM)
				VDV	VDV	VDV	VDV	VDV
				[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]	[m/s^1.75]
No.	Start date & time	Duration	Name					
1	09/11/2021 13:19:41	09:40:00.000	16 Hour	0.008				
2	09/11/2021 22:59:41	08:00:00.000	8 Hour		0.004			
3	10/11/2021 06:59:41	16:00:00.000	16 Hour			0.008		
4	10/11/2021 22:59:41	06:00:00.000	8 Hour				0.004	0.004

Maximum PPV Values experienced: Jan 2020

Time	Freq (X, Hz)	PPV (X, mm/s)	Time	Freq (Y, Hz)	PPV (Y, mm/s)	Time	Freq (Z, Hz)	PPV (Z, mm/s)
08/01/2020 10:46:54.441	249.023	2.63	08/01/2020 10:46:54.441	130.371	1.33	08/01/2020 22:46:52.284	0.732	0.02
09/01/2020 13:57:28.030	131.104	1.11	08/01/2020 10:49:13.067	125.977	0.91	08/01/2020 22:53:00.404	1.465	0.02
09/01/2020 13:59:08.202	188.232	0.79	08/01/2020 10:48:28.873	132.568	0.69	09/01/2020 05:19:36.610	0.732	0.02
09/01/2020 13:58:49.206	131.104	0.79	08/01/2020 23:32:37.665	0.732	0.65	09/01/2020 05:45:28.875	0.732	0.02
09/01/2020 14:00:15.162	180.176	0.68	09/01/2020 13:57:28.030	131.104	0.53	09/01/2020 06:01:47.240	0.732	0.02
08/01/2020 10:49:13.067	131.836	0.67	08/01/2020 10:46:05.756	124.512	0.47	09/01/2020 06:32:36.355	1.465	0.02
09/01/2020 14:00:52.664	187.500	0.66	09/01/2020 13:58:49.206	131.104	0.44	09/01/2020 18:25:52.396	1.465	0.02
09/01/2020 13:07:26.380	20.508	0.58	08/01/2020 10:55:27.273	0.732	0.41	09/01/2020 18:36:13.222	0.732	0.02
09/01/2020 14:07:38.226	188.965	0.56	08/01/2020 10:52:59.400	147.217	0.41	09/01/2020 22:08:19.956	0.732	0.02
08/01/2020 10:48:28.873	127.441	0.49	09/01/2020 13:59:08.202	131.104	0.41	09/01/2020 22:19:00.793	0.732	0.02
08/01/2020 10:46:05.756	125.244	0.40	09/01/2020 13:07:26.380	6.592	0.40	09/01/2020 22:37:53.012	1.465	0.02
09/01/2020 14:24:12.030	189.697	0.39	08/01/2020 10:51:14.369	2.197	0.38	09/01/2020 22:56:38.694	1.465	0.02
08/01/2020 10:55:27.273	1.465	0.38	09/01/2020 14:00:52.664	169.189	0.38	09/01/2020 23:05:31.374	0.732	0.02
09/01/2020 13:56:18.184	138.428	0.37	09/01/2020 14:00:15.162	131.836	0.36	09/01/2020 23:28:47.024	1.465	0.02

09/01/2020 12:34:41.863	123.047	0.37	08/01/2020 10:54:02.848	161.133	0.35	09/01/2020 23:33:37.477	1.465	0.02
08/01/2020 10:51:14.369	2.197	0.36	09/01/2020 14:07:38.226	137.695	0.33	10/01/2020 01:17:40.968	1.465	0.02
09/01/2020 10:01:00.502	177.979	0.35	08/01/2020 10:52:25.492	2.197	0.33	10/01/2020 01:38:03.999	1.465	0.02
08/01/2020 10:52:25.492	130.371	0.35	09/01/2020 13:30:13.174	171.387	0.27	10/01/2020 01:51:56.196	1.465	0.02
08/01/2020 10:56:57.040	98.877	0.34	08/01/2020 10:56:57.040	93.018	0.26	10/01/2020 02:22:13.933	0.732	0.02
09/01/2020 06:32:36.355	0.732	0.33	09/01/2020 13:33:29.996	128.906	0.25	10/01/2020 03:23:11.423	1.465	0.02
09/01/2020 13:30:13.174	185.303	0.32	08/01/2020 10:55:55.051	131.104	0.24	10/01/2020 03:31:40.085	1.465	0.02
09/01/2020 16:32:54.740	131.104	0.31	09/01/2020 14:24:12.030	130.371	0.24	10/01/2020 03:32:44.167	1.465	0.02
09/01/2020 13:33:29.996	131.836	0.30	09/01/2020 12:32:28.327	128.906	0.22	10/01/2020 03:44:08.752	0.732	0.02
09/01/2020 12:32:28.327	131.104	0.27	09/01/2020 12:34:41.863	123.047	0.21	10/01/2020 03:44:59.336	1.465	0.02
08/01/2020 12:02:49.586	1.465	0.25	09/01/2020 13:56:18.184	170.654	0.21	10/01/2020 03:47:51.847	1.465	0.02
08/01/2020 10:55:55.051	131.104	0.25	09/01/2020 10:01:00.502	170.654	0.19	10/01/2020 04:06:29.349	1.465	0.02
08/01/2020 10:52:59.400	131.104	0.25	08/01/2020 23:18:58.264	0.732	0.19	10/01/2020 04:41:50.611	0.732	0.02
08/01/2020 10:54:02.848	131.104	0.25	09/01/2020 13:36:11.365	2.930	0.19	10/01/2020 05:02:49.139	0.732	0.02
08/01/2020 10:49:59.368	125.977	0.25	09/01/2020 16:32:54.740	130.371	0.18	10/01/2020 05:06:36.362	1.465	0.02
08/01/2020 12:02:47.371	0.732	0.24	08/01/2020 10:49:59.368	2.197	0.18	08/01/2020 17:42:13.715	1.465	0.02

09/01/2020 14:20:05.426	190.430	0.20	08/01/2020 11:00:26.875	133.301	0.16	09/01/2020 03:46:38.852	1.465	0.02
09/01/2020 10:00:19.706	130.371	0.20	08/01/2020 12:36:09.489	167.725	0.16	09/01/2020 05:00:53.548	0.732	0.02
09/01/2020 13:29:03.630	131.836	0.20	09/01/2020 13:06:48.948	6.592	0.16	09/01/2020 05:46:45.944	1.465	0.02
09/01/2020 13:36:11.365	128.174	0.19	09/01/2020 10:00:19.706	129.639	0.14	09/01/2020 18:31:53.872	0.732	0.02
09/01/2020 16:57:43.400	134.766	0.19	09/01/2020 13:29:03.630	2.930	0.13	10/01/2020 00:29:02.996	1.465	0.02
08/01/2020 11:00:26.875	134.766	0.18	08/01/2020 11:59:24.936	0.732	0.13	10/01/2020 01:04:16.563	0.732	0.02
08/01/2020 10:45:16.547	131.836	0.18	09/01/2020 00:57:47.053	2.197	0.13	10/01/2020 01:05:13.049	1.465	0.02
09/01/2020 09:58:27.606	139.893	0.17	09/01/2020 14:45:04.208	131.104	0.12	10/01/2020 02:57:58.556	1.465	0.02
09/01/2020 14:45:04.208	131.104	0.17	09/01/2020 12:31:21.324	122.314	0.12	10/01/2020 03:20:00.612	0.732	0.02
09/01/2020 13:28:47.727	131.836	0.14	09/01/2020 14:20:05.426	0.732	0.12	10/01/2020 03:34:39.104	0.732	0.02
09/01/2020 12:31:21.324	128.906	0.13	09/01/2020 16:57:43.400	171.387	0.12	10/01/2020 05:29:05.965	0.732	0.02
09/01/2020 13:06:48.948	130.371	0.13	08/01/2020 17:40:40.528	0.732	0.12	10/01/2020 05:35:45.700	1.465	0.02
09/01/2020 14:18:42.413	0.732	0.13	09/01/2020 13:54:36.536	2.930	0.11	08/01/2020 17:52:25.187	1.465	0.02
08/01/2020 11:52:07.368	0.732	0.12	08/01/2020 10:45:16.547	126.709	0.11	08/01/2020 22:36:59.187	0.732	0.02
09/01/2020 13:31:17.192	128.906	0.12	08/01/2020 11:08:52.675	0.732	0.11	08/01/2020 22:37:58.567	1.465	0.02
09/01/2020 16:12:44.195	178.711	0.12	09/01/2020 13:31:17.192	2.197	0.11	09/01/2020 18:09:31.566	0.732	0.02

Maximum PPV Values experienced: Nov 2021

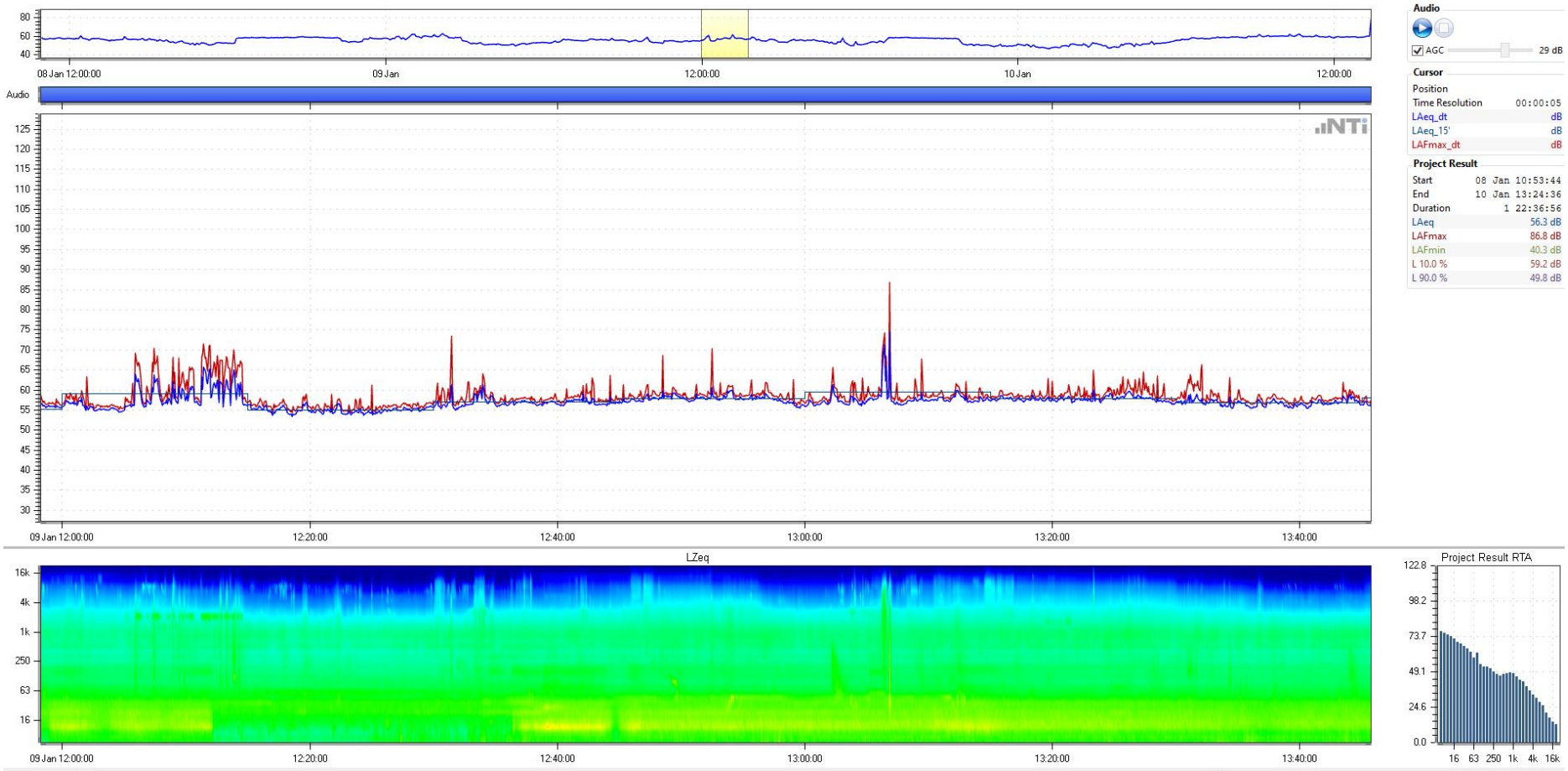
Time	Freq (X, Hz)	PPV (X, mm/s)	Time	Freq (Y, Hz)	PPV (Y, mm/s)	Time	Freq (Z, Hz)	PPV (Z, mm/s)
09/11/2021 13:29:23.308	0.732	1.216	09/11/2021 13:29:23.308	0.732	1.072	09/11/2021 13:19:42.834	0.732	0.692
09/11/2021 23:12:46.134	0.732	1.072	09/11/2021 13:19:42.834	1.465	0.841	09/11/2021 13:23:20.754	1.465	0.457
09/11/2021 19:01:18.443	1.465	1.059	09/11/2021 13:24:25.140	1.465	0.841	09/11/2021 13:26:05.202	1.465	0.447
09/11/2021 19:24:17.604	1.465	1.035	09/11/2021 13:23:20.754	1.465	0.804	09/11/2021 13:24:25.140	0.732	0.442
09/11/2021 14:57:41.639	1.465	1.023	09/11/2021 13:27:09.920	1.465	0.785	09/11/2021 13:27:09.920	1.465	0.427
09/11/2021 15:05:19.687	1.465	1.000	09/11/2021 13:24:04.526	1.465	0.776	09/11/2021 13:27:16.294	0.732	0.427
09/11/2021 19:41:15.030	1.465	1.000	09/11/2021 19:24:17.604	1.465	0.750	09/11/2021 19:24:17.604	1.465	0.427
09/11/2021 13:24:25.140	1.465	0.989	09/11/2021 13:25:30.183	1.465	0.741	09/11/2021 13:29:23.308	0.732	0.398
09/11/2021 20:08:21.130	1.465	0.977	09/11/2021 15:05:19.687	1.465	0.741	09/11/2021 13:24:04.526	1.465	0.389
09/11/2021 16:23:22.324	1.465	0.955	09/11/2021 23:12:46.134	0.732	0.741	09/11/2021 13:25:06.952	1.465	0.389
09/11/2021 13:23:20.754	1.465	0.933	09/11/2021 19:41:15.030	1.465	0.724	09/11/2021 15:05:19.687	1.465	0.389
09/11/2021 19:58:46.412	1.465	0.933	09/11/2021 19:01:18.443	1.465	0.716	09/11/2021 13:20:51.102	0.732	0.385
09/11/2021 20:10:06.828	1.465	0.933	09/11/2021 13:26:05.202	1.465	0.700	09/11/2021 13:27:46.568	1.465	0.363
09/11/2021 18:20:50.794	1.465	0.923	09/11/2021 20:08:21.130	1.465	0.700	09/11/2021 16:22:59.159	1.465	0.363

09/11/2021 13:19:42.834	0.732	0.912	09/11/2021 13:20:51.102	1.465	0.692	09/11/2021 16:23:22.324	1.465	0.363
09/11/2021 19:58:16.808	1.465	0.912	09/11/2021 13:21:39.092	0.732	0.684	09/11/2021 17:15:29.440	1.465	0.363
09/11/2021 21:53:32.982	1.465	0.912	09/11/2021 13:25:06.952	0.732	0.684	09/11/2021 19:58:16.808	1.465	0.363
09/11/2021 17:50:36.900	1.465	0.881	09/11/2021 13:27:46.568	1.465	0.684	09/11/2021 21:04:49.423	1.465	0.363
09/11/2021 17:58:14.858	1.465	0.881	09/11/2021 16:23:22.324	1.465	0.684	09/11/2021 21:53:32.982	1.465	0.363
09/11/2021 19:11:55.262	1.465	0.881	09/11/2021 18:20:50.794	1.465	0.684	09/11/2021 23:12:46.134	0.732	0.363
09/11/2021 13:27:09.920	0.732	0.871	09/11/2021 13:20:32.599	1.465	0.676	09/11/2021 17:50:36.900	1.465	0.359
09/11/2021 14:56:56.367	1.465	0.871	09/11/2021 19:23:45.622	1.465	0.676	09/11/2021 19:01:18.443	1.465	0.359
09/11/2021 15:23:45.674	1.465	0.871	09/11/2021 19:58:16.808	1.465	0.676	09/11/2021 19:23:45.622	1.465	0.359
09/11/2021 15:55:14.347	1.465	0.871	09/11/2021 20:10:06.828	1.465	0.676	09/11/2021 20:10:06.828	1.465	0.359
09/11/2021 16:22:59.159	1.465	0.871	09/11/2021 17:58:14.858	1.465	0.668	09/11/2021 13:25:30.183	0.732	0.355
09/11/2021 18:03:47.315	1.465	0.871	09/11/2021 13:27:16.294	0.732	0.661	09/11/2021 18:03:47.315	1.465	0.355
09/11/2021 18:20:35.856	1.465	0.871	09/11/2021 19:58:46.412	1.465	0.661	09/11/2021 18:20:50.794	1.465	0.355
09/11/2021 18:49:56.067	1.465	0.871	09/11/2021 21:53:32.982	1.465	0.646	09/11/2021 19:41:15.030	0.732	0.355
09/11/2021 18:59:24.900	1.465	0.871	09/11/2021 19:11:55.262	1.465	0.638	09/11/2021 20:02:37.818	1.465	0.355
09/11/2021 19:23:45.622	1.465	0.871	09/11/2021 19:47:13.852	1.465	0.638	09/11/2021 20:08:21.130	1.465	0.355

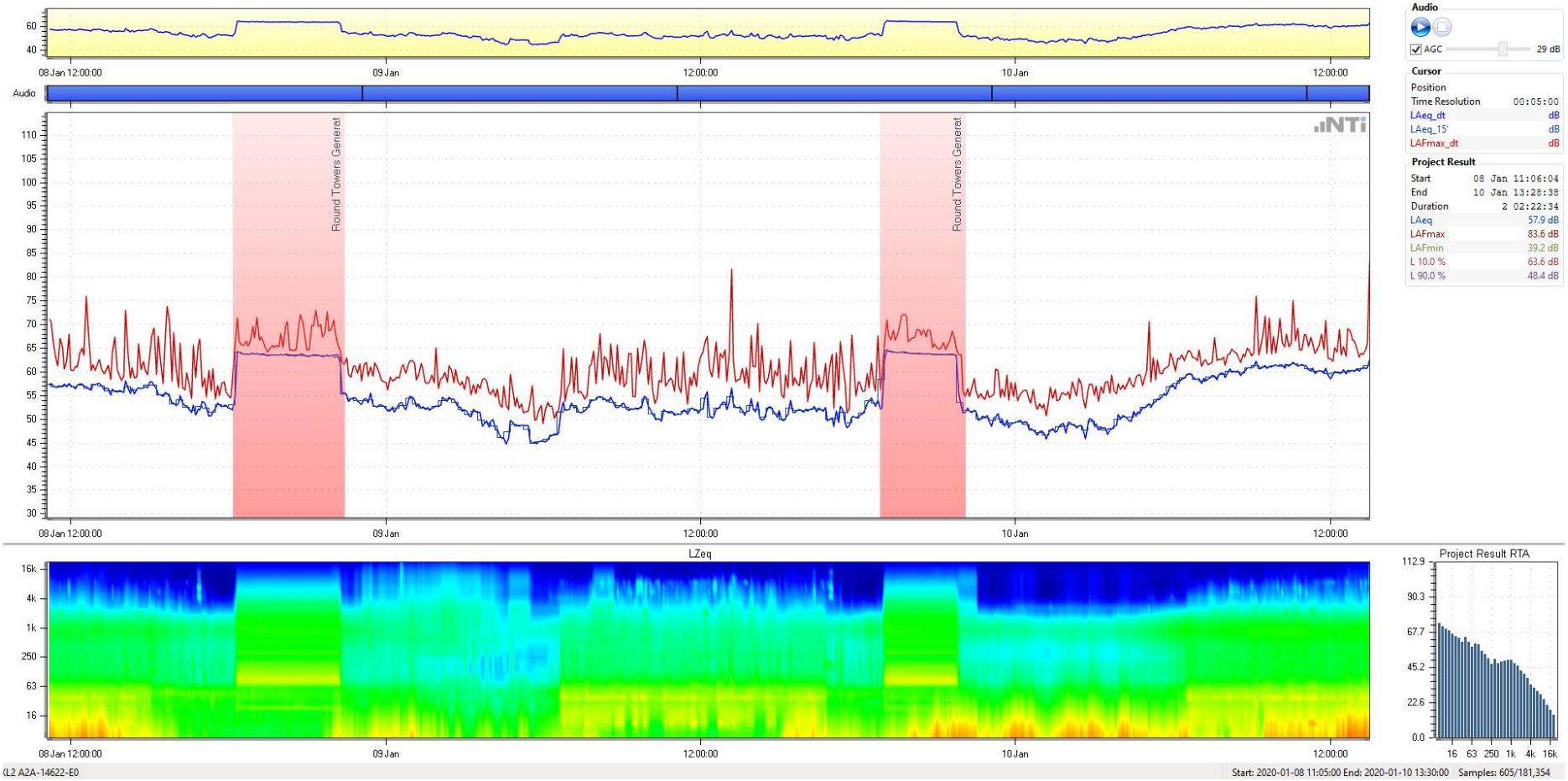
09/11/2021 21:50:35.238	1.465	0.871	09/11/2021 14:57:41.639	1.465	0.631	09/11/2021 13:21:39.092	0.732	0.347
09/11/2021 21:56:25.180	1.465	0.871	09/11/2021 15:23:45.674	1.465	0.617	09/11/2021 13:22:37.922	0.732	0.347
09/11/2021 23:11:25.748	1.465	0.871	09/11/2021 21:04:49.423	1.465	0.617	09/11/2021 13:26:32.012	0.732	0.347
09/11/2021 13:22:37.922	0.732	0.861	09/11/2021 17:50:36.900	1.465	0.610	09/11/2021 18:20:35.856	0.732	0.343
09/11/2021 19:56:36.679	1.465	0.861	09/11/2021 13:26:32.012	0.732	0.603	09/11/2021 18:58:57.302	1.465	0.343
09/11/2021 13:24:04.526	1.465	0.851	09/11/2021 16:22:59.159	1.465	0.603	09/11/2021 19:58:46.412	0.732	0.343
09/11/2021 13:26:05.202	1.465	0.851	09/11/2021 18:20:35.856	0.732	0.603	09/11/2021 19:11:55.262	1.465	0.335
09/11/2021 13:27:16.294	0.732	0.851	09/11/2021 13:22:37.922	0.732	0.596	09/11/2021 15:08:12.288	1.465	0.313
09/11/2021 19:00:32.140	0.732	0.851	09/11/2021 21:40:22.563	1.465	0.596	09/11/2021 18:24:04.843	0.732	0.305
09/11/2021 22:09:59.403	1.465	0.851	09/11/2021 17:15:29.440	1.465	0.589	09/11/2021 14:56:56.367	0.732	0.295
09/11/2021 23:13:55.623	1.465	0.851	09/11/2021 18:51:45.202	0.732	0.589	09/11/2021 15:23:45.674	1.465	0.295
09/11/2021 19:06:33.768	0.732	0.832	09/11/2021 19:00:32.140	0.732	0.589	09/11/2021 15:53:02.498	1.465	0.295
09/11/2021 19:14:26.942	0.732	0.832	09/11/2021 19:56:36.679	0.732	0.589	09/11/2021 17:09:47.312	0.732	0.295
09/11/2021 13:25:06.952	1.465	0.822	09/11/2021 22:59:21.247	1.465	0.589	09/11/2021 17:11:52.858	1.465	0.295
09/11/2021 16:19:26.975	1.465	0.822	09/11/2021 16:19:26.975	1.465	0.582	09/11/2021 17:20:54.380	1.465	0.295
09/11/2021 17:15:29.440	1.465	0.822	09/11/2021 17:35:32.834	1.465	0.582	09/11/2021 17:30:17.343	1.465	0.295

09/11/2021 18:58:57.302	1.465	0.822	09/11/2021 18:18:25.639	1.465	0.582	09/11/2021 17:35:32.834	1.465	0.295
09/11/2021 20:07:45.087	1.465	0.822	09/11/2021 18:49:56.067	1.465	0.582	09/11/2021 17:35:48.568	0.732	0.295
09/11/2021 21:04:49.423	1.465	0.822	09/11/2021 18:59:24.900	1.465	0.582	09/11/2021 17:39:39.134	1.465	0.295

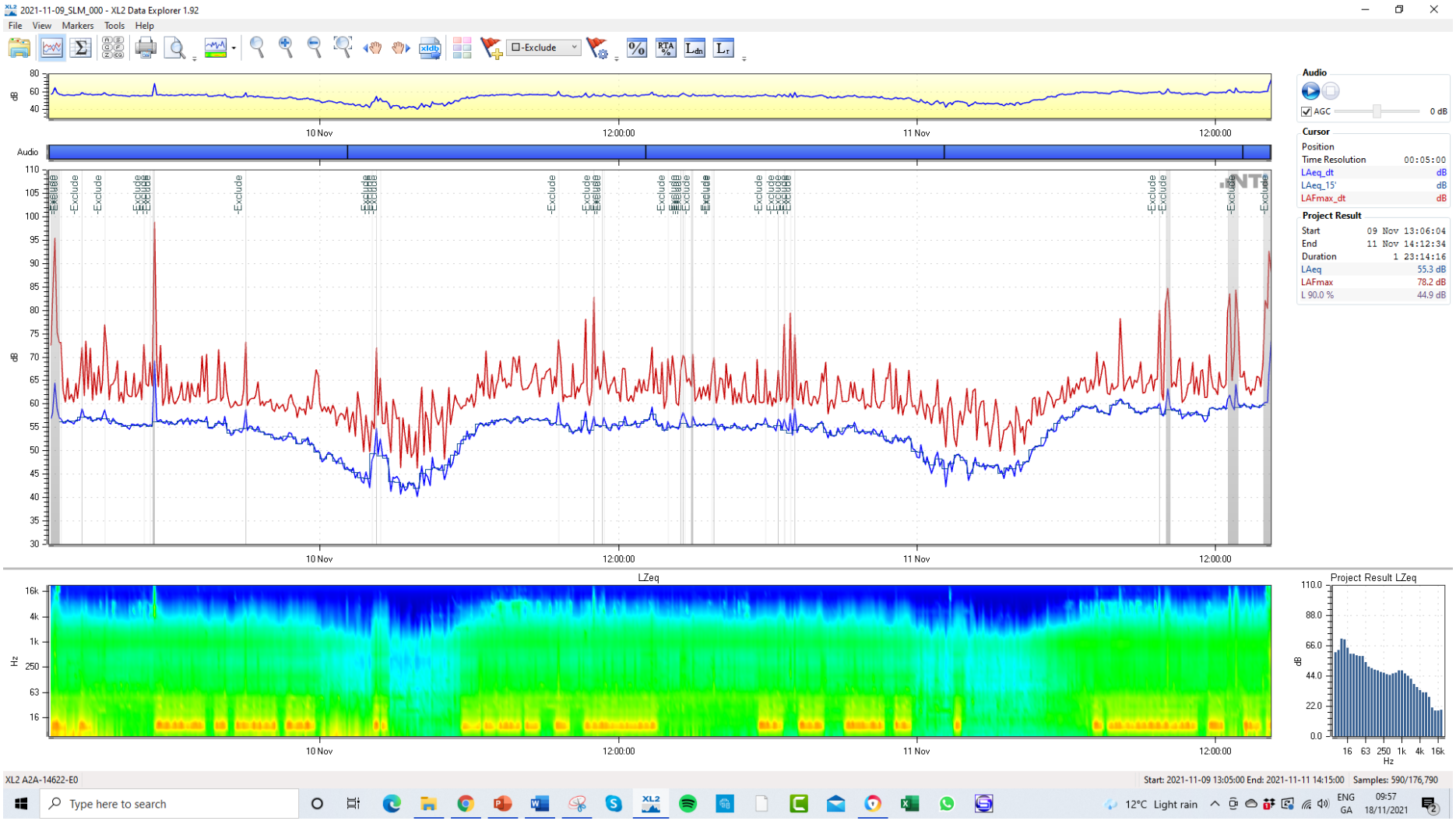
Airborne Sound History Trace: NML1



Airborne Sound History Trace: NML2



Airborne Sound History Trace: NML3



RAW DATA: NML1

Project Name:	NML1 To Quarry
Device Info:	XL2, SNo. A2A-16360-E0, FW4.21 Type Approved
Mic Type:	NTi Audio M2230, SNo. 6029, User calibrated 2020-01-08 10:51
Mic Sensitivity:	49.5 mV/Pa
Range:	20 - 120 dB
Ln based on:	LAeq_dt

Results

Type	Start Date and Time	Duration	LAeq	LAFmax	LAFmin	L 10.0 %	L 90.0 %
Recorded		**2:2:30:52**	**57.7**	**100.2**	**37.3**		
-Exclude (1)		**0:04:56**	**79**	**100.2**	**37.3**	**68**	**39.6**
-Exclude	10/01/2020 13:19	0:04:56	79	100.2	37.3		
-Rainfall (1)		**3:49:00**	**59.1**	**74.7**	**51.3**	**61.6**	**55.6**
-Rainfall	08/01/2020 23:03	3:49:00	59.1	74.7	51.3		
-Overload (1)		**0:00:01**	**92.7**	**95.6**	**86.4**	**92.8**	**92.8**
-Overload	10/01/2020 13:24	0:00:01	92.7	95.6	86.4		
Project Result		**1:22:36:56**	**56.3**	**86.8**	**40.3**	**59.2**	**49.8**

Audit Intervals

Type	Start Date and Time	Duration	LAeq	LAFmax	LAFmin	L 10.0 %	L 90.0 %
15'	**08/01/2020 10:45**	**0:06:16**	**57.4**	**69.1**	**55.3**	**58.5**	**56.4**
15'	**08/01/2020 11:00**	**0:15:00**	**57.2**	**70.4**	**55**	**58.1**	**56.2**
15'	**08/01/2020 11:15**	**0:15:00**	**57.4**	**70.7**	**54.5**	**58.7**	**56.2**
15'	**08/01/2020 11:30**	**0:15:00**	**57.8**	**71.3**	**55.3**	**58.6**	**56.5**
15'	**08/01/2020 11:45**	**0:15:00**	**57.6**	**73.4**	**54.9**	**58.9**	**56.4**
15'	**08/01/2020 12:00**	**0:15:00**	**57.3**	**61.7**	**54.9**	**58.3**	**56.4**
15'	**08/01/2020 12:15**	**0:15:00**	**58.8**	**76.3**	**55.3**	**59.6**	**56.7**
15'	**08/01/2020 12:30**	**0:15:00**	**56.6**	**67.9**	**53.4**	**58**	**54.9**
15'	**08/01/2020 12:45**	**0:15:00**	**57.4**	**63**	**54.9**	**58.3**	**56.6**
15'	**08/01/2020 13:00**	**0:15:00**	**57.2**	**66**	**54.4**	**58.3**	**56**
15'	**08/01/2020 13:15**	**0:15:00**	**55.7**	**62.6**	**52.3**	**56.9**	**54.3**
15'	**08/01/2020 13:30**	**0:15:00**	**55.8**	**69.5**	**52.4**	**57**	**54.4**
15'	**08/01/2020 13:45**	**0:15:00**	**56.3**	**60.9**	**53.9**	**57.2**	**55.5**
15'	**08/01/2020 14:00**	**0:15:00**	**57.9**	**75.3**	**54.3**	**58**	**55.8**
15'	**08/01/2020 14:15**	**0:15:00**	**56.7**	**61.8**	**54.3**	**57.7**	**55.9**
15'	**08/01/2020 14:30**	**0:15:00**	**56.8**	**68**	**53.7**	**58.2**	**55.1**
15'	**08/01/2020 14:45**	**0:15:00**	**56.4**	**63.6**	**53.5**	**57.8**	**55.1**
15'	**08/01/2020 15:00**	**0:15:00**	**56.2**	**68.8**	**52.2**	**57.4**	**54.2**
15'	**08/01/2020 15:15**	**0:15:00**	**55.4**	**78.1**	**51.6**	**56**	**53.6**
15'	**08/01/2020 15:30**	**0:15:00**	**55**	**78.8**	**51.1**	**56.3**	**52.8**
15'	**08/01/2020 15:45**	**0:15:00**	**53.3**	**74.1**	**50.6**	**54.3**	**52.1**
15'	**08/01/2020 16:00**	**0:15:00**	**54.2**	**64.2**	**51.4**	**55.2**	**53**
15'	**08/01/2020 16:15**	**0:15:00**	**52.6**	**60.3**	**49.6**	**53.6**	**51.5**
15'	**08/01/2020 16:30**	**0:15:00**	**51.3**	**65.2**	**47.8**	**52.4**	**49.8**
15'	**08/01/2020 16:45**	**0:15:00**	**52.2**	**63.2**	**48.8**	**53.9**	**50.5**
15'	**08/01/2020 17:00**	**0:15:00**	**51.8**	**59.8**	**48.4**	**53**	**50.2**
15'	**08/01/2020 17:15**	**0:15:00**	**51**	**61.3**	**48.3**	**52.2**	**49.7**
15'	**08/01/2020 17:30**	**0:15:00**	**52.9**	**57.7**	**50.4**	**53.7**	**52.1**
15'	**08/01/2020 17:45**	**0:15:00**	**52.5**	**58.7**	**49.9**	**53.4**	**51.6**
15'	**08/01/2020 18:00**	**0:15:00**	**52.3**	**54.3**	**50**	**53**	**51.8**

15'	08/01/2020 18:15	0:15:00	57.9	67.7	51.6	58.5	57.7
15'	08/01/2020 18:30	0:15:00	58.3	65	57	58.8	58
15'	08/01/2020 18:45	0:15:00	58.5	64.9	57.1	59.1	58
15'	08/01/2020 19:00	0:15:00	58.4	63.8	56.9	59.1	57.9
15'	08/01/2020 19:15	0:15:00	58.5	64	57.2	59.2	58.1
15'	08/01/2020 19:30	0:15:00	58.3	64	56.9	58.8	58
15'	08/01/2020 19:45	0:15:00	58.5	65.9	57.1	58.8	58.1
15'	08/01/2020 20:00	0:15:00	58.7	66.9	57.3	59.4	58.2
15'	08/01/2020 20:15	0:15:00	58.6	61.8	57.3	59.1	58.3
15'	08/01/2020 20:30	0:15:00	59	66.8	57.2	59.7	58.5
15'	08/01/2020 20:45	0:15:00	59.2	67	57.5	60	58.6
15'	08/01/2020 21:00	0:15:00	58.8	66.7	57.2	59.5	58.3
15'	08/01/2020 21:15	0:15:00	58.9	68.7	57	59.9	58.1
15'	08/01/2020 21:30	0:15:00	58.5	65.7	56.8	59.4	57.8
15'	08/01/2020 21:45	0:15:00	58.1	65.5	56.5	59	57.5
15'	08/01/2020 22:00	0:15:00	58.2	71.5	52.6	58.9	57.4
15'	08/01/2020 22:15	0:15:00	54.7	61.2	51.5	56.2	53.4
15'	08/01/2020 22:30	0:15:00	53.8	59.5	49.5	55.3	52.3
15'	08/01/2020 22:45	0:15:00	53.8	61.1	49.3	55.3	51.9
15'	08/01/2020 23:00	0:03:00	53.8	58.9	50.3	55.2	52.2
15'	08/01/2020 23:15	0:00:00					
15'	08/01/2020 23:30	0:00:00					
15'	08/01/2020 23:45	0:00:00					
15'	09/01/2020	0:00:00					
15'	09/01/2020 00:15	0:00:00					
15'	09/01/2020 00:30	0:00:00					
15'	09/01/2020 00:45	0:00:00					
15'	09/01/2020 01:00	0:00:00					
15'	09/01/2020 01:15	0:00:00					
15'	09/01/2020 01:30	0:00:00					
15'	09/01/2020 01:45	0:00:00					
15'	09/01/2020 02:00	0:00:00					
15'	09/01/2020 02:15	0:00:00					
15'	09/01/2020 02:30	0:00:00					
15'	09/01/2020 02:45	0:08:00	54.9	63.2	50.4	56.3	53.3
15'	09/01/2020 03:00	0:15:00	52.9	61.3	46.8	54.8	50.9
15'	09/01/2020 03:15	0:15:00	52.2	60	48	53.7	50.8
15'	09/01/2020 03:30	0:15:00	51.7	60.6	46.9	53.3	49.6
15'	09/01/2020 03:45	0:15:00	50.9	58.5	47	52.3	49.6
15'	09/01/2020 04:00	0:15:00	51.4	59.1	46.4	53	49.7
15'	09/01/2020 04:15	0:15:00	50.6	55.9	45.4	52.2	48.7
15'	09/01/2020 04:30	0:15:00	50.7	58.7	46.4	52.3	49
15'	09/01/2020 04:45	0:15:00	50.5	57	45.1	52.2	48.1
15'	09/01/2020 05:00	0:15:00	51.9	58.4	45.2	53.6	49.6
15'	09/01/2020 05:15	0:15:00	51.7	59.8	46.6	53.3	49.8
15'	09/01/2020 05:30	0:15:00	52.8	58.7	48.6	54.2	51.4
15'	09/01/2020 05:45	0:15:00	53.2	58.2	48.7	54.7	51.4
15'	09/01/2020 06:00	0:15:00	52.7	59	48.8	54.1	51.2
15'	09/01/2020 06:15	0:15:00	54	58.2	49.3	55.8	52.3
15'	09/01/2020 06:30	0:15:00	55.5	65.2	50.6	57	53
15'	09/01/2020 06:45	0:15:00	56.2	74.5	53.7	56.4	55
15'	09/01/2020 07:00	0:15:00	55.5	63.8	53.3	56.7	54.5
15'	09/01/2020 07:15	0:15:00	55.1	60.8	53.1	56	54.4
15'	09/01/2020 07:30	0:15:00	55.9	63.6	53.3	57	54.8

15'	09/01/2020 07:45	0:15:00	56.5	60.6	54.1	57.5	55.5
15'	09/01/2020 08:00	0:15:00	56.2	74.7	54.1	57.3	55.3
15'	09/01/2020 08:15	0:15:00	55.9	62.1	53.2	56.7	55.1
15'	09/01/2020 08:30	0:15:00	56.5	69.3	53.5	57.8	54.8
15'	09/01/2020 08:45	0:15:00	55.8	67.2	53.6	56.6	55
15'	09/01/2020 09:00	0:15:00	54.8	61.8	51.5	55.8	53.6
15'	09/01/2020 09:15	0:15:00	55.2	64.3	51.4	56.2	53
15'	09/01/2020 09:30	0:15:00	54.4	62.5	52.5	55.5	53.6
15'	09/01/2020 09:45	0:15:00	57	71.5	52.5	60	54.2
15'	09/01/2020 10:00	0:15:00	53.4	60.9	51.2	54.1	52.6
15'	09/01/2020 10:15	0:15:00	52.6	58.8	49.7	53.6	51.9
15'	09/01/2020 10:30	0:15:00	54.9	71	51.4	56.1	53.9
15'	09/01/2020 10:45	0:15:00	54.9	65.2	52.1	55.7	53.8
15'	09/01/2020 11:00	0:15:00	53.9	61.6	52.2	54.5	53.4
15'	09/01/2020 11:15	0:15:00	54.6	71	52	55.8	53.3
15'	09/01/2020 11:30	0:15:00	54.9	60.4	52.3	55.8	53.8
15'	09/01/2020 11:45	0:15:00	55.2	67.1	52.5	56.3	54.3
15'	09/01/2020 12:00	0:15:00	59	71.5	53.7	62.3	55.2
15'	09/01/2020 12:15	0:15:00	55	61.2	52.3	56	54.1
15'	09/01/2020 12:30	0:15:00	57	73.4	53.7	57.9	56
15'	09/01/2020 12:45	0:15:00	57.9	70.3	54.4	58.8	56.9
15'	09/01/2020 13:00	0:15:00	59.4	86.8	55.1	58.8	56.5
15'	09/01/2020 13:15	0:15:00	57.8	64.9	55.5	58.7	57.1
15'	09/01/2020 13:30	0:15:00	56.8	66.3	54.3	58	55.8
15'	09/01/2020 13:45	0:15:00	58.1	71.7	54.5	59.3	56.2
15'	09/01/2020 14:00	0:15:00	55.8	67.7	52.7	57.3	54.5
15'	09/01/2020 14:15	0:15:00	55	70.8	52.5	56	54
15'	09/01/2020 14:30	0:15:00	56.5	66.6	54.4	57.2	55.9
15'	09/01/2020 14:45	0:15:00	54.3	64.5	50.7	55.9	52.6
15'	09/01/2020 15:00	0:15:00	53.5	61.7	51.6	54.2	52.7
15'	09/01/2020 15:15	0:15:00	55.8	66.9	52	56.8	53.9
15'	09/01/2020 15:30	0:15:00	55.7	62.1	53.4	56.6	54.8
15'	09/01/2020 15:45	0:15:00	55.6	69.7	53.3	56.5	54.6
15'	09/01/2020 16:00	0:15:00	55.8	63.3	53.4	56.6	54.9
15'	09/01/2020 16:15	0:15:00	54.9	68.7	52.9	55.9	54.1
15'	09/01/2020 16:30	0:15:00	54.3	62.8	50.3	55.3	52.8
15'	09/01/2020 16:45	0:15:00	52.7	73.1	47.6	53.9	49.9
15'	09/01/2020 17:00	0:15:00	53.2	70.9	47.4	54.2	49.4
15'	09/01/2020 17:15	0:15:00	55.5	81	48.5	56.4	50.5
15'	09/01/2020 17:30	0:15:00	49.9	61.9	46.7	51.1	48.8
15'	09/01/2020 17:45	0:15:00	52.3	78.4	48.2	51.9	49.9
15'	09/01/2020 18:00	0:15:00	51.4	61.4	47.9	52.7	50
15'	09/01/2020 18:15	0:15:00	53.5	65.1	49.8	54.5	52.2
15'	09/01/2020 18:30	0:15:00	53.9	74.5	50.6	54.4	52.1
15'	09/01/2020 18:45	0:15:00	54.4	68.6	50.3	58.1	51.9
15'	09/01/2020 19:00	0:15:00	58.4	67.3	56.9	58.9	57.9
15'	09/01/2020 19:15	0:15:00	58.4	66.7	57.1	59	57.9
15'	09/01/2020 19:30	0:15:00	58.7	66.8	56.8	59.7	58
15'	09/01/2020 19:45	0:15:00	58.3	68.9	56.9	59	57.8
15'	09/01/2020 20:00	0:15:00	58	64.3	56.7	58.5	57.6
15'	09/01/2020 20:15	0:15:00	58.1	65.2	56.6	58.8	57.6
15'	09/01/2020 20:30	0:15:00	57.9	64.8	56.5	58.6	57.4
15'	09/01/2020 20:45	0:15:00	57.7	63.6	56.4	58.3	57.3
15'	09/01/2020 21:00	0:15:00	57.6	69.8	56.2	58.1	57.2

15'	09/01/2020 21:15	0:15:00	57.5	62.8	56.2	58.1	57.1
15'	09/01/2020 21:30	0:15:00	57.4	63.5	55.4	58	56.8
15'	09/01/2020 21:45	0:15:00	52.2	57.8	47.2	55.9	49.8
15'	09/01/2020 22:00	0:15:00	51	58.1	47.2	52.6	49.3
15'	09/01/2020 22:15	0:15:00	50.6	58	45.4	52.3	48.4
15'	09/01/2020 22:30	0:15:00	50.1	55.8	46.1	51.7	48.5
15'	09/01/2020 22:45	0:15:00	50.1	56.1	45.7	51.9	48.1
15'	09/01/2020 23:00	0:15:00	49.2	58	43.8	51.1	46.9
15'	09/01/2020 23:15	0:15:00	50	57.2	44.6	52.1	47.4
15'	09/01/2020 23:30	0:15:00	49.2	59	43.8	51.1	47.1
15'	09/01/2020 23:45	0:15:00	50.5	61.2	44	52.5	47.4
15'	10/01/2020	0:15:00	50.3	58.6	45.2	52.5	47.7
15'	10/01/2020 00:15	0:15:00	49.9	59.5	43.9	52	47.2
15'	10/01/2020 00:30	0:15:00	49.1	61.4	43.7	51.4	46.3
15'	10/01/2020 00:45	0:15:00	47.7	56.3	42.3	49.3	45.7
15'	10/01/2020 01:00	0:15:00	46.9	52.7	41.3	48.7	44.6
15'	10/01/2020 01:15	0:15:00	48	54.4	42.4	49.9	45.7
15'	10/01/2020 01:30	0:15:00	48.9	55.9	42.8	51.1	45.9
15'	10/01/2020 01:45	0:15:00	50	61.8	41.7	52.6	45.7
15'	10/01/2020 02:00	0:15:00	51.1	60.8	44	53.3	47.9
15'	10/01/2020 02:15	0:15:00	50.8	61.2	42.5	53.5	47
15'	10/01/2020 02:30	0:15:00	49.4	58.5	40.5	51.8	45.5
15'	10/01/2020 02:45	0:15:00	52.4	63.9	43.9	55.1	48.5
15'	10/01/2020 03:00	0:15:00	50.5	62.6	42.7	52.9	46.9
15'	10/01/2020 03:15	0:15:00	48.2	60.4	40.3	50.6	44.9
15'	10/01/2020 03:30	0:15:00	48.3	57	41.1	50.3	45.9
15'	10/01/2020 03:45	0:15:00	49.9	58.5	40.9	52.6	45.6
15'	10/01/2020 04:00	0:15:00	52	62.8	45	54.3	48.8
15'	10/01/2020 04:15	0:15:00	50.7	59.4	43.9	53.2	47.3
15'	10/01/2020 04:30	0:15:00	50.8	57.2	45.2	53	48.5
15'	10/01/2020 04:45	0:15:00	51.7	62.5	46	53.4	49.6
15'	10/01/2020 05:00	0:15:00	52.8	73.8	46	53.3	49.2
15'	10/01/2020 05:15	0:15:00	52.4	58.9	48.3	54	50.6
15'	10/01/2020 05:30	0:15:00	53.1	58.9	48.7	54.8	51.3
15'	10/01/2020 05:45	0:15:00	54.7	60.9	50.6	56.3	53.1
15'	10/01/2020 06:00	0:15:00	56.1	67.2	51.2	57.5	53.8
15'	10/01/2020 06:15	0:15:00	56.5	62.9	53.1	57.8	55.4
15'	10/01/2020 06:30	0:15:00	58.1	65.1	55.9	59.1	57.3
15'	10/01/2020 06:45	0:15:00	57.7	63.8	55.1	58.7	56.7
15'	10/01/2020 07:00	0:15:00	57.2	61.7	55.1	58.1	56.4
15'	10/01/2020 07:15	0:15:00	58	62	56	58.9	57.2
15'	10/01/2020 07:30	0:15:00	58.8	72	55.9	60	57.4
15'	10/01/2020 07:45	0:15:00	58.6	63.5	56.5	59.5	57.9
15'	10/01/2020 08:00	0:15:00	59.1	66.3	56.9	60	58.2
15'	10/01/2020 08:15	0:15:00	59	68.6	56.4	60.2	57.9
15'	10/01/2020 08:30	0:15:00	59	70.2	56.2	60	57.6
15'	10/01/2020 08:45	0:15:00	59.6	67.6	57.1	60.7	58.6
15'	10/01/2020 09:00	0:15:00	60.6	73.4	57.4	61.3	59
15'	10/01/2020 09:15	0:15:00	60.1	76.8	57.6	60.9	58.9
15'	10/01/2020 09:30	0:15:00	59.9	67.3	56.9	61	58.9
15'	10/01/2020 09:45	0:15:00	60.2	65.1	57.6	61.3	59.2
15'	10/01/2020 10:00	0:15:00	60.1	70.3	57.2	61.2	59
15'	10/01/2020 10:15	0:15:00	60.8	71.4	57.2	63.1	59
15'	10/01/2020 10:30	0:15:00	61.4	74	57.9	63.2	59.2

15'	**10/01/2020 10:45**	**0:15:00**	**59.6**	**65.1**	**57.3**	**60.4**	**58.9**
15'	**10/01/2020 11:00**	**0:15:00**	**59.7**	**70.2**	**57**	**60.7**	**58.5**
15'	**10/01/2020 11:15**	**0:15:00**	**60.1**	**71.7**	**57.1**	**62.1**	**58.5**
15'	**10/01/2020 11:30**	**0:15:00**	**59.2**	**72.3**	**55.8**	**60.4**	**58.1**
15'	**10/01/2020 11:45**	**0:15:00**	**59**	**68.5**	**56.4**	**60.4**	**57.8**
15'	**10/01/2020 12:00**	**0:15:00**	**59.2**	**63.5**	**56.5**	**60.3**	**58.2**
15'	**10/01/2020 12:15**	**0:15:00**	**59.2**	**68.2**	**56.7**	**60.3**	**58.3**
15'	**10/01/2020 12:30**	**0:15:00**	**59.3**	**66.1**	**56.7**	**60.4**	**58.3**
15'	**10/01/2020 12:45**	**0:15:00**	**59**	**70**	**55.9**	**60.1**	**57.7**
15'	**10/01/2020 13:00**	**0:15:00**	**59.4**	**65.8**	**56.5**	**60.7**	**58.1**
15'	**10/01/2020 13:15**	**0:04:40**	**60.1**	**68.6**	**57.5**	**61.1**	**59.1**

RAW DATA: NML2

Project Name:	NML2 To Round Towers
Device Info:	XL2, SNo. A2A-14622-E0, FW4.20
Mic Type:	NTi Audio M2230, SNo. 8569, User calibrated 2020-01-08 11:02
Mic Sensitivity:	42.1 mV/Pa
Range:	20 - 120 dB
Ln based on:	LAeq_dt

Results

Type	Start Date and Time	Duration	LAeq	LAFmax	LAFmin	L 10.0 %	L 90.0 %
Recorded		**2:2:22:34**	**57.9**	**83.6**	**39.2**		
Project Result		**2:2:22:34**	**57.9**	**83.6**	**39.2**	**63.6**	**48.4**

Markers

Type	Start Date and Time	Duration	LAeq	LAFmax	LAFmin	L 10.0 %	L 90.0 %
Round Towers Generat (2)		**7:30:00**	**63.4**	**73**	**48.6**	**64.3**	**62.7**
Round Towers Generat	08/01/2020 18:10	4:15:00	63.4	73	50.5		
Round Towers Generat	09/01/2020 18:50	3:15:00	63.3	72.2	48.6		

Audit Intervals

Type	Start Date and Time	Duration	LAeq	LAFmax	LAFmin	L 10.0 %	L 90.0 %
15'	**08/01/2020 11:00**	**0:08:56**	**57.4**	**71.2**	**53.4**	**58.4**	**55.7**
15'	**08/01/2020 11:15**	**0:15:00**	**56.9**	**65.7**	**53.7**	**58**	**55.6**
15'	**08/01/2020 11:30**	**0:15:00**	**57.1**	**67.1**	**53.9**	**58.3**	**55.9**
15'	**08/01/2020 11:45**	**0:15:00**	**57.2**	**68**	**54**	**58.5**	**56**
15'	**08/01/2020 12:00**	**0:15:00**	**56.8**	**61.2**	**54**	**58**	**55.7**
15'	**08/01/2020 12:15**	**0:15:00**	**57.3**	**65**	**54.2**	**58.3**	**56**
15'	**08/01/2020 12:30**	**0:15:00**	**56.5**	**76**	**53.2**	**57.7**	**55.1**
15'	**08/01/2020 12:45**	**0:15:00**	**57.4**	**61.8**	**53.7**	**58.6**	**56.1**
15'	**08/01/2020 13:00**	**0:15:00**	**57**	**62.6**	**53.5**	**58.4**	**55.3**
15'	**08/01/2020 13:15**	**0:15:00**	**56.1**	**61.4**	**51.9**	**57.5**	**54.7**
15'	**08/01/2020 13:30**	**0:15:00**	**56**	**67.3**	**52.8**	**57**	**54.8**

15'	08/01/2020 13:45	0:15:00	55.9	59.5	53.4	57	54.8
15'	08/01/2020 14:00	0:15:00	56.9	73	53.2	57.9	55.1
15'	08/01/2020 14:15	0:15:00	56.1	60.9	53.1	57.4	54.9
15'	08/01/2020 14:30	0:15:00	56.6	65.9	53.6	58	55.3
15'	08/01/2020 14:45	0:15:00	57.2	64	53.9	58.6	55.8
15'	08/01/2020 15:00	0:15:00	57.2	69.3	53	57.9	55.2
15'	08/01/2020 15:15	0:15:00	55.1	67.6	51.6	56.2	54
15'	08/01/2020 15:30	0:15:00	55.3	73.8	50.9	56.3	53
15'	08/01/2020 15:45	0:15:00	53.2	68.3	50.6	54.1	52.3
15'	08/01/2020 16:00	0:15:00	54	66.1	50.9	54.6	52.5
15'	08/01/2020 16:15	0:15:00	52.6	59.8	49.3	53.6	51.5
15'	08/01/2020 16:30	0:15:00	51.9	65.6	48.5	53.1	50.2
15'	08/01/2020 16:45	0:15:00	52.7	66.9	48.5	54.5	50.4
15'	08/01/2020 17:00	0:15:00	52.3	60.3	48.8	53.7	50.4
15'	08/01/2020 17:15	0:15:00	51.5	60.7	48.7	52.8	50.2
15'	08/01/2020 17:30	0:15:00	53.1	57.6	50.7	54.1	52.1
15'	08/01/2020 17:45	0:15:00	52.8	57.9	50.2	53.7	51.9
15'	08/01/2020 18:00	0:15:00	53	65.6	49.5	53.1	51.6
15'	08/01/2020 18:15	0:15:00	64.1	71.4	63.1	64.6	63.9
15'	08/01/2020 18:30	0:15:00	63.8	66.5	62.8	64.1	63.7
15'	08/01/2020 18:45	0:15:00	63.8	69.6	62.8	64.2	63.7
15'	08/01/2020 19:00	0:15:00	63.8	71.5	62.8	64.2	63.6
15'	08/01/2020 19:15	0:15:00	63.6	66.2	62.7	64	63.5
15'	08/01/2020 19:30	0:15:00	63.6	65.6	62.6	63.9	63.5
15'	08/01/2020 19:45	0:15:00	63.6	68.1	62.5	63.9	63.5
15'	08/01/2020 20:00	0:15:00	63.7	70.6	62.7	64.1	63.5
15'	08/01/2020 20:15	0:15:00	63.5	64.7	62.5	63.8	63.4
15'	08/01/2020 20:30	0:15:00	63.6	72.1	62.5	64	63.3
15'	08/01/2020 20:45	0:15:00	63.5	70.6	62.4	63.9	63.3
15'	08/01/2020 21:00	0:15:00	63.5	69.9	62.5	63.9	63.2
15'	08/01/2020 21:15	0:15:00	63.5	73	62.4	64	63.2
15'	08/01/2020 21:30	0:15:00	63.4	72.7	62.3	63.9	63.1
15'	08/01/2020 21:45	0:15:00	63.4	71	62.3	63.9	63.2
15'	08/01/2020 22:00	0:15:00	63.1	68.1	53	63.9	62.5
15'	08/01/2020 22:15	0:15:00	55.4	62.9	51.2	57.2	53.5
15'	08/01/2020 22:30	0:15:00	54.2	61.2	49.3	56.1	52.2
15'	08/01/2020 22:45	0:15:00	54	61.7	49	55.9	51.7
15'	08/01/2020 23:00	0:15:00	53.9	62	49.5	55.5	52.2
15'	08/01/2020 23:15	0:15:00	54.1	61.1	49.2	56.3	51.7
15'	08/01/2020 23:30	0:15:00	52.8	61.9	46.5	54.7	50.4
15'	08/01/2020 23:45	0:15:00	52.7	58.3	49	54.3	51
15'	09/01/2020	0:15:00	52.1	58.9	48.2	53.6	50.3
15'	09/01/2020 00:15	0:15:00	52.4	58.9	46.7	54.4	50
15'	09/01/2020 00:30	0:15:00	52.8	61.5	47.2	55.5	49.9
15'	09/01/2020 00:45	0:15:00	54.4	62.4	49.1	56.6	52
15'	09/01/2020 01:00	0:15:00	53.3	61.8	48.2	55.2	51.3
15'	09/01/2020 01:15	0:15:00	52.3	61.8	48.2	53.9	50.7
15'	09/01/2020 01:30	0:15:00	52.2	59.3	47.6	53.9	50.5
15'	09/01/2020 01:45	0:15:00	52.7	65.1	48.6	54	51.3
15'	09/01/2020 02:00	0:15:00	54	59.9	50	55.4	52.3
15'	09/01/2020 02:15	0:15:00	54.2	61.3	51.4	55.2	53.3
15'	09/01/2020 02:30	0:15:00	53.6	60.5	49.9	54.9	52
15'	09/01/2020 02:45	0:15:00	52.1	58	49.6	53.1	51.1
15'	09/01/2020 03:00	0:15:00	51	59	48.8	52.1	50.2

15'	09/01/2020 03:15	0:15:00	51.7	57.4	49.5	52.8	50.9
15'	09/01/2020 03:30	0:15:00	49.8	58.6	45.4	51.9	47.8
15'	09/01/2020 03:45	0:15:00	49.2	58.1	44.7	50.6	47.9
15'	09/01/2020 04:00	0:15:00	48.6	56.4	44	50.4	46.8
15'	09/01/2020 04:15	0:15:00	46.2	57	41.8	47.5	44.8
15'	09/01/2020 04:30	0:15:00	47.4	59.5	40.9	49.5	43.8
15'	09/01/2020 04:45	0:15:00	48.9	56.2	47.3	49.5	48.4
15'	09/01/2020 05:00	0:15:00	48.7	53.2	47.3	49.2	48.3
15'	09/01/2020 05:15	0:15:00	47.9	53.6	41.7	49.1	44
15'	09/01/2020 05:30	0:15:00	45	57.1	42.6	45.8	44.3
15'	09/01/2020 05:45	0:15:00	45.3	52.9	42.6	46.1	44.7
15'	09/01/2020 06:00	0:15:00	45.8	53.6	43.5	46.7	44.8
15'	09/01/2020 06:15	0:15:00	46.7	52.7	43.8	47.6	45.9
15'	09/01/2020 06:30	0:15:00	51.6	64.9	44.7	52.9	46.6
15'	09/01/2020 06:45	0:15:00	52	57.7	50.3	52.6	51.6
15'	09/01/2020 07:00	0:15:00	52.9	63.1	50.6	54	51.7
15'	09/01/2020 07:15	0:15:00	51.5	55.9	49.9	52.2	51.1
15'	09/01/2020 07:30	0:15:00	52.5	61.3	50.1	53.5	51.6
15'	09/01/2020 07:45	0:15:00	54	64.4	52.3	54.8	53.4
15'	09/01/2020 08:00	0:15:00	54.7	68.1	52.7	55.6	54
15'	09/01/2020 08:15	0:15:00	54.1	63.2	52.2	54.8	53.4
15'	09/01/2020 08:30	0:15:00	53.7	65.9	51	54.5	52.2
15'	09/01/2020 08:45	0:15:00	52.8	65.7	50.7	53.6	52.1
15'	09/01/2020 09:00	0:15:00	52.5	63.9	49.8	53.7	51.4
15'	09/01/2020 09:15	0:15:00	52.2	63.8	49.9	52.8	51.5
15'	09/01/2020 09:30	0:15:00	52.4	65	50.1	53.8	51.4
15'	09/01/2020 09:45	0:15:00	54.2	66.7	50.6	56.4	52.5
15'	09/01/2020 10:00	0:15:00	51.2	63.1	48.5	52.2	50.2
15'	09/01/2020 10:15	0:15:00	49.9	58.2	47.7	50.7	49.3
15'	09/01/2020 10:30	0:15:00	51.7	64.1	48.8	52.6	50.9
15'	09/01/2020 10:45	0:15:00	51.4	58.7	49.4	52	50.8
15'	09/01/2020 11:00	0:15:00	51.1	63.1	49.3	51.6	50.6
15'	09/01/2020 11:15	0:15:00	51.6	64.2	49.3	52.8	50.8
15'	09/01/2020 11:30	0:15:00	52.2	59.9	50.1	53	51.3
15'	09/01/2020 11:45	0:15:00	51.8	63.2	49.4	52.9	51
15'	09/01/2020 12:00	0:15:00	54.4	67.5	49.1	57.5	50.8
15'	09/01/2020 12:15	0:15:00	50.5	61.7	48.2	51.5	49.6
15'	09/01/2020 12:30	0:15:00	52.4	66.3	49.1	53.3	51
15'	09/01/2020 12:45	0:15:00	53.1	64.7	50.4	54.2	51.6
15'	09/01/2020 13:00	0:15:00	54.7	81.7	50.4	54.7	51.9
15'	09/01/2020 13:15	0:15:00	52.5	58.4	50.8	53.2	52.1
15'	09/01/2020 13:30	0:15:00	51.5	60.9	49	52.8	50.5
15'	09/01/2020 13:45	0:15:00	53	67.7	49.2	54.1	51.1
15'	09/01/2020 14:00	0:15:00	52.1	70.2	48.5	53.4	50
15'	09/01/2020 14:15	0:15:00	50.5	65.5	47.7	51.6	49.2
15'	09/01/2020 14:30	0:15:00	52.4	62.5	50	53.4	51.6
15'	09/01/2020 14:45	0:15:00	51.2	62.8	47.9	52.5	49.3
15'	09/01/2020 15:00	0:15:00	50	59.4	48.1	50.9	49.4
15'	09/01/2020 15:15	0:15:00	52.4	66.6	48.6	53	50.1
15'	09/01/2020 15:30	0:15:00	51.8	58.8	49.6	52.8	51
15'	09/01/2020 15:45	0:15:00	51.8	63.2	49.5	52.6	51.2
15'	09/01/2020 16:00	0:15:00	52	58.5	49.9	52.6	51.3
15'	09/01/2020 16:15	0:15:00	52.2	66.2	49.7	52.8	51.3
15'	09/01/2020 16:30	0:15:00	52.1	61.8	47.2	53.1	49.8

15'	09/01/2020 16:45	0:15:00	50	63.7	45.7	51.8	47.9
15'	09/01/2020 17:00	0:15:00	50.1	64	46	50.3	47.9
15'	09/01/2020 17:15	0:15:00	51.5	66.4	46.6	52.6	48.5
15'	09/01/2020 17:30	0:15:00	49.2	67.8	45.9	50.1	47.6
15'	09/01/2020 17:45	0:15:00	50.4	62.7	47.3	51.6	49.3
15'	09/01/2020 18:00	0:15:00	51.3	57.7	47.8	52.8	50
15'	09/01/2020 18:15	0:15:00	53.9	61.9	51	55.2	52.6
15'	09/01/2020 18:30	0:15:00	53.4	67.6	50.4	54.3	52
15'	09/01/2020 18:45	0:15:00	58.4	65.9	49.7	64.7	51.5
15'	09/01/2020 19:00	0:15:00	64.5	71	63.1	64.9	64.1
15'	09/01/2020 19:15	0:15:00	64.1	68.8	63	64.5	63.9
15'	09/01/2020 19:30	0:15:00	64.2	72.2	62.9	64.7	63.9
15'	09/01/2020 19:45	0:15:00	64	71.8	62.8	64.4	63.8
15'	09/01/2020 20:00	0:15:00	63.9	69	62.7	64.3	63.7
15'	09/01/2020 20:15	0:15:00	63.8	68.9	62.7	64.2	63.6
15'	09/01/2020 20:30	0:15:00	63.8	68.9	62.5	64.2	63.6
15'	09/01/2020 20:45	0:15:00	63.7	65.9	62.5	64.1	63.5
15'	09/01/2020 21:00	0:15:00	63.7	66.2	62.6	64	63.5
15'	09/01/2020 21:15	0:15:00	63.7	66.6	62.5	64.1	63.5
15'	09/01/2020 21:30	0:15:00	63.5	68.6	61.7	64.1	62.9
15'	09/01/2020 21:45	0:15:00	53.5	63.6	48.6	54	50.6
15'	09/01/2020 22:00	0:15:00	51.9	56.5	48.5	53.2	50.6
15'	09/01/2020 22:15	0:15:00	51.7	58.6	47.6	53	50.2
15'	09/01/2020 22:30	0:15:00	50.2	55.4	45.7	51.7	48.5
15'	09/01/2020 22:45	0:15:00	50.3	56.1	46.2	52	48.3
15'	09/01/2020 23:00	0:15:00	49.8	60.6	44.5	52.1	46.9
15'	09/01/2020 23:15	0:15:00	50.2	60.3	44.2	52.3	47.5
15'	09/01/2020 23:30	0:15:00	48.9	59.3	44.5	50.6	46.9
15'	09/01/2020 23:45	0:15:00	49.2	57.8	43.2	50.9	47
15'	10/01/2020	0:15:00	49.5	55.9	44.2	51.2	47.6
15'	10/01/2020 00:15	0:15:00	49	56.1	43.1	50.9	46.7
15'	10/01/2020 00:30	0:15:00	47.7	56.3	42.8	49.2	45.8
15'	10/01/2020 00:45	0:15:00	47.2	53.3	42.2	49.2	44.6
15'	10/01/2020 01:00	0:15:00	46.7	53.9	40.7	48.8	44.1
15'	10/01/2020 01:15	0:15:00	47.7	56.8	41.4	49.5	45.2
15'	10/01/2020 01:30	0:15:00	48.3	55.6	41.7	50.5	44.9
15'	10/01/2020 01:45	0:15:00	48.6	55.8	42	51.1	45.2
15'	10/01/2020 02:00	0:15:00	49	57.9	41.9	51	46.2
15'	10/01/2020 02:15	0:15:00	48.5	58.6	41	50.9	44.8
15'	10/01/2020 02:30	0:15:00	47.7	56	39.2	50.3	43.2
15'	10/01/2020 02:45	0:15:00	49.6	57.4	42.3	51.9	46.6
15'	10/01/2020 03:00	0:15:00	48.4	57	41	50.8	44.6
15'	10/01/2020 03:15	0:15:00	47.8	58	39.6	50.4	44
15'	10/01/2020 03:30	0:15:00	48.1	59.3	40.1	50.4	44.2
15'	10/01/2020 03:45	0:15:00	50	57.5	42.3	52.6	46.4
15'	10/01/2020 04:00	0:15:00	50.5	57.4	43.7	52.7	47.4
15'	10/01/2020 04:15	0:15:00	50.4	58.8	42.9	52.9	47
15'	10/01/2020 04:30	0:15:00	51.2	59.4	45.4	53.3	48.6
15'	10/01/2020 04:45	0:15:00	52.5	60.1	46.8	54.6	50.2
15'	10/01/2020 05:00	0:15:00	53.1	70.6	45.5	54.5	50.3
15'	10/01/2020 05:15	0:15:00	54.1	62.5	48.1	56	52
15'	10/01/2020 05:30	0:15:00	55.1	60.9	49.4	56.9	53
15'	10/01/2020 05:45	0:15:00	56.8	64	52.8	58.4	55
15'	10/01/2020 06:00	0:15:00	57.6	62.9	52.1	59.3	55.5

15'	**10/01/2020 06:15**	**0:15:00**	**58.8**	**63.6**	**54.5**	**60.4**	**57.3**
15'	**10/01/2020 06:30**	**0:15:00**	**59.4**	**64.5**	**56.6**	**60.7**	**58.3**
15'	**10/01/2020 06:45**	**0:15:00**	**58.5**	**64.6**	**56**	**59.7**	**57.4**
15'	**10/01/2020 07:00**	**0:15:00**	**58.1**	**62.6**	**55.1**	**59.6**	**56.7**
15'	**10/01/2020 07:15**	**0:15:00**	**58.9**	**62**	**55.6**	**60.1**	**57.6**
15'	**10/01/2020 07:30**	**0:15:00**	**59**	**67.2**	**56.1**	**60.2**	**57.5**
15'	**10/01/2020 07:45**	**0:15:00**	**59.4**	**63.1**	**56.7**	**60.6**	**58.4**
15'	**10/01/2020 08:00**	**0:15:00**	**60.1**	**64.8**	**57**	**61.3**	**58.9**
15'	**10/01/2020 08:15**	**0:15:00**	**60.1**	**64.3**	**56.9**	**61.3**	**58.9**
15'	**10/01/2020 08:30**	**0:15:00**	**59.8**	**63.7**	**57.2**	**61**	**58.7**
15'	**10/01/2020 08:45**	**0:15:00**	**60.8**	**65**	**58.2**	**62.1**	**59.7**
15'	**10/01/2020 09:00**	**0:15:00**	**61.4**	**76**	**57.7**	**62**	**59.7**
15'	**10/01/2020 09:15**	**0:15:00**	**61**	**71.8**	**57.8**	**62.3**	**59.8**
15'	**10/01/2020 09:30**	**0:15:00**	**61**	**71.4**	**57.2**	**62.2**	**59.9**
15'	**10/01/2020 09:45**	**0:15:00**	**61.3**	**67.8**	**58.1**	**62.5**	**60.1**
15'	**10/01/2020 10:00**	**0:15:00**	**61.3**	**71.3**	**58.1**	**62.4**	**59.9**
15'	**10/01/2020 10:15**	**0:15:00**	**61.5**	**68**	**58.5**	**62.7**	**60.2**
15'	**10/01/2020 10:30**	**0:15:00**	**61.6**	**75.1**	**58.4**	**62.7**	**60.4**
15'	**10/01/2020 10:45**	**0:15:00**	**61.4**	**67.9**	**58.9**	**62.5**	**60.4**
15'	**10/01/2020 11:00**	**0:15:00**	**60.7**	**67.8**	**56.8**	**62**	**59.5**
15'	**10/01/2020 11:15**	**0:15:00**	**60.2**	**66**	**57**	**61.6**	**58.8**
15'	**10/01/2020 11:30**	**0:15:00**	**60.1**	**68**	**57**	**61.3**	**58.8**
15'	**10/01/2020 11:45**	**0:15:00**	**59.6**	**70.9**	**56.4**	**61**	**58.2**
15'	**10/01/2020 12:00**	**0:15:00**	**59.8**	**65.1**	**57.3**	**60.9**	**58.8**
15'	**10/01/2020 12:15**	**0:15:00**	**60**	**69**	**57**	**61.3**	**58.8**
15'	**10/01/2020 12:30**	**0:15:00**	**60.1**	**69.1**	**57.3**	**61.4**	**58.8**
15'	**10/01/2020 12:45**	**0:15:00**	**60.4**	**66.7**	**57.1**	**61.7**	**59**
15'	**10/01/2020 13:00**	**0:15:00**	**60.6**	**63.9**	**57.5**	**61.8**	**59.4**
15'	**10/01/2020 13:15**	**0:13:38**	**61.4**	**83.6**	**52.3**	**62.1**	**59.5**

RAW DATA: NML3

Project Name: 15 Min Raw Data
Device Info: XL2, SNo. A2A-14622-E0, FW4.50
Mic Type: NTi Audio M2230, SNo. 6029, User calibrated 2021-11-09 13:03, WP30(h)
Mic Sensitivity: 49.1 mV/Pa
Range: 20 - 120 dB
Ln based on: LAeq_dt

Results

Type	Start	Duration	LAeq [dB]	LAFmax [dB]	LAFmin [dB]	L 10.0 % [dB]	L 90.0 % [dB]
Recorded	**09/11/2021 13:06**	**2:1:06:30**	**56.1**	**98.8**	**35.6**		
-Exclude (32)		**1:52:14**	**63.4**	**98.8**	**41**	**62.4**	**54.7**
-Exclude	09/11/2021 13:06	0:23:56	60.3	95.4	51.3		
-Exclude	09/11/2021 13:34	0:00:05	64	73.1	55.3		
-Exclude	09/11/2021 14:22	0:00:30	64.7	72.1	54.6		
-Exclude	09/11/2021 15:17	0:00:40	62.2	76.9	54		
-Exclude	09/11/2021 16:53	0:00:04	63.2	72.7	53.5		
-Exclude	09/11/2021 17:06	0:00:19	58.7	68.9	51		
-Exclude	09/11/2021 17:14	0:04:39	69.5	98.8	49.6		

-Exclude	09/11/2021 20:56	0:01:00	63.5	73.2	52.9		
-Exclude	10/11/2021 02:01	0:00:30	46.6	53.2	41		
-Exclude	10/11/2021 02:12	0:01:03	60	72	49.8		
-Exclude	10/11/2021 02:21	0:01:45	55.8	65.5	45.4		
-Exclude	10/11/2021 09:33	0:01:20	64.9	73.7	53.1		
-Exclude	10/11/2021 10:57	0:01:29	60.9	82.8	50.1		
-Exclude	10/11/2021 11:16	0:00:35	58.4	65.3	52.8		
-Exclude	10/11/2021 11:20	0:02:00	58.4	71.3	49.9		
-Exclude	10/11/2021 13:57	0:00:55	60.3	69.7	49.7		
-Exclude	10/11/2021 14:25	0:01:15	58.9	67.5	49.7		
-Exclude	10/11/2021 14:32	0:00:50	62.4	70.4	51.7		
-Exclude	10/11/2021 14:36	0:01:30	60.6	69.7	50		
-Exclude	10/11/2021 14:53	0:06:05	57.2	70.6	50.6		
-Exclude	10/11/2021 15:43	0:00:25	59.1	66.5	52.1		
-Exclude	10/11/2021 15:47	0:00:28	60.3	69.9	50.8		
-Exclude	10/11/2021 17:53	0:00:58	60	67.4	53.3		
-Exclude	10/11/2021 18:21	0:00:45	60.5	67.2	52.9		
-Exclude	10/11/2021 18:35	0:01:09	58.8	64.1	52.4		
-Exclude	10/11/2021 18:37	0:00:14	64.8	77	50.8		
-Exclude	10/11/2021 18:50	0:00:36	65.5	79.4	49.9		
-Exclude	10/11/2021 19:01	0:01:35	62.9	74.8	49.4		
-Exclude	11/11/2021 09:42	0:00:50	64.1	80	56.2		
-Exclude	11/11/2021 09:58	0:09:30	62	84.7	55.6		
-Exclude	11/11/2021 12:27	0:27:40	61.5	84.3	55.1		
-Exclude	11/11/2021 13:55	0:17:34	67.2	92.6	50.5		
Project Result		**1:23:14:16**	**55.3**	**78.2**	**35.6**	**58.7**	**44.9**

Audit Intervals

Type	Start	Duration	LAeq [dB]	LAFmax [dB]	LAFmin [dB]	L 10.0 % [dB]	L 90.0 % [dB]
15'	**09/11/2021 13:00**	**0:00:00**					
15'	**09/11/2021 13:15**	**0:00:00**					
15'	**09/11/2021 13:30**	**0:14:55**	**56.1**	**64.2**	**51.2**	**58.2**	**53.6**
15'	**09/11/2021 13:45**	**0:15:00**	**56.3**	**65.5**	**50.5**	**58.3**	**53.4**
15'	**09/11/2021 14:00**	**0:15:00**	**56.3**	**64.4**	**51.7**	**58.2**	**53.6**
15'	**09/11/2021 14:15**	**0:14:30**	**57.1**	**65.7**	**52**	**58.9**	**54.6**
15'	**09/11/2021 14:30**	**0:15:00**	**57.1**	**73.4**	**52.1**	**58.7**	**54.3**
15'	**09/11/2021 14:45**	**0:15:00**	**56.5**	**66.7**	**52.2**	**58.1**	**54.2**
15'	**09/11/2021 15:00**	**0:15:00**	**56.9**	**68.1**	**51**	**58.8**	**54**
15'	**09/11/2021 15:15**	**0:14:20**	**56.8**	**71**	**50.9**	**58.9**	**53.6**
15'	**09/11/2021 15:30**	**0:15:00**	**56.3**	**65.4**	**49.8**	**58.3**	**53.3**
15'	**09/11/2021 15:45**	**0:15:00**	**55.8**	**69.2**	**50.3**	**57.6**	**53**
15'	**09/11/2021 16:00**	**0:15:00**	**55.2**	**67**	**49.8**	**57.5**	**51.9**
15'	**09/11/2021 16:15**	**0:15:00**	**55.3**	**66.6**	**49**	**57.6**	**51.7**
15'	**09/11/2021 16:30**	**0:15:00**	**55.4**	**64.7**	**49.4**	**57.5**	**52.4**
15'	**09/11/2021 16:45**	**0:14:56**	**55.5**	**64.2**	**49.4**	**57.7**	**52.2**
15'	**09/11/2021 17:00**	**0:14:01**	**55.2**	**63.8**	**49**	**57.4**	**51.5**
15'	**09/11/2021 17:15**	**0:11:01**	**56.2**	**69**	**50.3**	**57.8**	**53.8**
15'	**09/11/2021 17:30**	**0:15:00**	**56.2**	**72.5**	**51.5**	**57.8**	**53.7**
15'	**09/11/2021 17:45**	**0:15:00**	**56.1**	**68.5**	**51**	**57.9**	**53.5**
15'	**09/11/2021 18:00**	**0:15:00**	**55.8**	**60.8**	**51.3**	**57.4**	**53.5**
15'	**09/11/2021 18:15**	**0:15:00**	**56.3**	**64.6**	**52**	**58.1**	**54**
15'	**09/11/2021 18:30**	**0:15:00**	**56.4**	**64.7**	**52.3**	**58.1**	**54.1**

15'	09/11/2021 18:45	0:15:00	56.3	64.4	51.4	58	53.9
15'	09/11/2021 19:00	0:15:00	56.5	70.2	52.7	58.1	54.3
15'	09/11/2021 19:15	0:15:00	56.3	70.6	50.6	58	53.1
15'	09/11/2021 19:30	0:15:00	55.1	60.9	50	57	52.5
15'	09/11/2021 19:45	0:15:00	55.9	71.6	51.4	57.4	53.4
15'	09/11/2021 20:00	0:15:00	55.9	68.9	49.9	57.5	52.9
15'	09/11/2021 20:15	0:15:00	53.8	60.1	49.1	55.9	51.4
15'	09/11/2021 20:30	0:15:00	54.4	60.6	50.3	56.7	51.9
15'	09/11/2021 20:45	0:14:00	54.8	63.4	50	57	52.2
15'	09/11/2021 21:00	0:15:00	55	61.2	50.3	57.1	52.6
15'	09/11/2021 21:15	0:15:00	54.6	64.7	50.3	57	52.2
15'	09/11/2021 21:30	0:15:00	54	60.6	50.1	56.1	51.9
15'	09/11/2021 21:45	0:15:00	53.5	61	49.6	55.8	51.2
15'	09/11/2021 22:00	0:15:00	52.8	60.1	48.4	54.9	50.6
15'	09/11/2021 22:15	0:15:00	52.6	59.9	48	54.8	50.2
15'	09/11/2021 22:30	0:15:00	53.1	61.1	48.7	55.3	50.9
15'	09/11/2021 22:45	0:15:00	53	62	49.8	54.9	51.1
15'	09/11/2021 23:00	0:15:00	51.5	59.3	48.1	53.1	49.9
15'	09/11/2021 23:15	0:15:00	52.4	61.7	49.6	53.9	50.8
15'	09/11/2021 23:30	0:15:00	51.3	63.3	48.1	52.7	49.4
15'	09/11/2021 23:45	0:15:00	49.7	67.3	43.8	51.5	47.4
15'	10/11/2021	0:15:00	48.3	59.4	42.9	50.5	45.2
15'	10/11/2021 00:15	0:15:00	49.3	59.7	42.4	52.1	45.3
15'	10/11/2021 00:30	0:15:00	47.8	58.6	39.3	50.8	43.5
15'	10/11/2021 00:45	0:15:00	47.3	58	40	50.4	42.8
15'	10/11/2021 01:00	0:15:00	46	59.3	38	48.1	41.3
15'	10/11/2021 01:15	0:15:00	45.3	62.6	38	47.9	40.4
15'	10/11/2021 01:30	0:15:00	44.2	59.2	38.4	45.5	40.8
15'	10/11/2021 01:45	0:15:00	44	57.6	37.4	46.4	40.1
15'	10/11/2021 02:00	0:13:27	49.3	60.3	38.6	50.4	45.4
15'	10/11/2021 02:15	0:13:15	49	57.6	44.9	49.8	47.8
15'	10/11/2021 02:30	0:15:00	48.4	60.4	41.6	49.5	45.9
15'	10/11/2021 02:45	0:15:00	43.5	61	35.6	44.3	38.4
15'	10/11/2021 03:00	0:15:00	43.3	57.1	35.8	45.3	38
15'	10/11/2021 03:15	0:15:00	42.2	57	36.1	44	38.7
15'	10/11/2021 03:30	0:15:00	43.1	55.6	38.5	45	40.2
15'	10/11/2021 03:45	0:15:00	41.9	56.9	35.8	44	38.2
15'	10/11/2021 04:00	0:15:00	45.1	63.6	36.9	45.8	40
15'	10/11/2021 04:15	0:15:00	46	63	37.6	47.3	40.3
15'	10/11/2021 04:30	0:15:00	46.3	60.7	39.1	49	41.7
15'	10/11/2021 04:45	0:15:00	45.9	59.4	39.8	46.7	42.2
15'	10/11/2021 05:00	0:15:00	47	63.5	40.7	48.4	43.4
15'	10/11/2021 05:15	0:15:00	49.1	61.9	42.4	52.2	44.8
15'	10/11/2021 05:30	0:15:00	51.5	59.9	44.2	54.4	47.1
15'	10/11/2021 05:45	0:15:00	53.1	61.3	48.8	55.9	50.5
15'	10/11/2021 06:00	0:15:00	53.5	62.1	49.5	55.6	51.3
15'	10/11/2021 06:15	0:15:00	55.6	66.4	50.2	58.4	52.2
15'	10/11/2021 06:30	0:15:00	55.5	71.3	51.3	57.7	52.7
15'	10/11/2021 06:45	0:15:00	55.9	66.3	50.8	58.4	52.7
15'	10/11/2021 07:00	0:15:00	56.5	69.2	51.1	58.7	53.2
15'	10/11/2021 07:15	0:15:00	56.7	65.5	51.1	59.3	53.3
15'	10/11/2021 07:30	0:15:00	56.3	70	50.9	58.3	52.8
15'	10/11/2021 07:45	0:15:00	57.1	70.2	49.7	59.1	53.4
15'	10/11/2021 08:00	0:15:00	56.2	64.2	49.7	58.3	52.7

15'	10/11/2021 08:15	0:15:00	56.8	64.7	51.4	58.4	54.3
15'	10/11/2021 08:30	0:15:00	56.7	68.7	51.7	58.6	53.7
15'	10/11/2021 08:45	0:15:00	56.5	65.5	49.9	58.4	53.4
15'	10/11/2021 09:00	0:15:00	56.5	67.6	50.4	58.7	52.8
15'	10/11/2021 09:15	0:15:00	55.8	65.9	50.5	57.9	52.7
15'	10/11/2021 09:30	0:13:40	55.5	68.8	49.8	57.4	51.7
15'	10/11/2021 09:45	0:15:00	55.4	62	50	57.8	51.7
15'	10/11/2021 10:00	0:15:00	54.1	68.6	47.7	56.7	49.8
15'	10/11/2021 10:15	0:15:00	54.5	64.2	47.8	56.9	50.3
15'	10/11/2021 10:30	0:15:00	56.6	78.1	48.1	57.7	51
15'	10/11/2021 10:45	0:13:31	54.4	62.6	48.7	56.7	50.9
15'	10/11/2021 11:00	0:15:00	55.4	68	49.3	57.6	51.3
15'	10/11/2021 11:15	0:12:25	55.4	65.8	50	57.6	52.3
15'	10/11/2021 11:30	0:15:00	54.9	64.5	50	57.2	51.5
15'	10/11/2021 11:45	0:15:00	55.3	65.8	50.3	57.7	52
15'	10/11/2021 12:00	0:15:00	56.1	67.6	50.3	58.1	52.9
15'	10/11/2021 12:15	0:15:00	55.4	61.8	50.1	57.6	52.5
15'	10/11/2021 12:30	0:15:00	55.7	63.8	48.7	57.7	52.4
15'	10/11/2021 12:45	0:15:00	55.8	65.3	49.4	58.1	52.3
15'	10/11/2021 13:00	0:15:00	56.7	66.5	52	58.5	53.9
15'	10/11/2021 13:15	0:15:00	57.8	72.1	50.6	59.5	53.9
15'	10/11/2021 13:30	0:15:00	55.5	68.9	48.8	57.4	51.7
15'	10/11/2021 13:45	0:14:05	54.5	61	48.3	56.7	51.3
15'	10/11/2021 14:00	0:15:00	55.1	70.3	47.3	57.3	51.4
15'	10/11/2021 14:15	0:13:45	55	64.6	47.6	57.3	51.6
15'	10/11/2021 14:30	0:12:40	55.8	65.3	49.1	58.2	51.9
15'	10/11/2021 14:45	0:08:55	55	65.5	48.6	56.9	51.5
15'	10/11/2021 15:00	0:15:00	55.6	63.5	49.3	57.6	52.4
15'	10/11/2021 15:15	0:15:00	55.5	63.7	48.2	57.5	52
15'	10/11/2021 15:30	0:14:35	55.5	64.1	47	57.6	52.2
15'	10/11/2021 15:45	0:14:32	55.6	64.3	45.9	57.9	51
15'	10/11/2021 16:00	0:15:00	55.2	65.6	47.3	57.5	51.3
15'	10/11/2021 16:15	0:15:00	54.9	68.6	47.7	57.1	50.9
15'	10/11/2021 16:30	0:15:00	55.3	63.4	48.9	57.4	51.8
15'	10/11/2021 16:45	0:15:00	54.7	64.5	47.4	57	50.1
15'	10/11/2021 17:00	0:15:00	55	66.8	47.1	57.1	51.4
15'	10/11/2021 17:15	0:15:00	54.7	62	47.7	56.9	50.5
15'	10/11/2021 17:30	0:15:00	55.7	69.5	51	57.7	52.6
15'	10/11/2021 17:45	0:14:02	55.7	60.4	51	57.4	53.1
15'	10/11/2021 18:00	0:15:00	55.1	62.7	50.2	57	52.2
15'	10/11/2021 18:15	0:14:15	55.3	62.5	49.8	57.3	52.3
15'	10/11/2021 18:30	0:13:37	54.5	62	48.4	56.8	51.3
15'	10/11/2021 18:45	0:14:24	53.7	62.7	45.8	56.3	48.7
15'	10/11/2021 19:00	0:13:25	54.4	69.1	46.3	56.5	49.8
15'	10/11/2021 19:15	0:15:00	55.3	64.7	50.2	57.2	52.5
15'	10/11/2021 19:30	0:15:00	54.6	64.9	50.3	56.5	51.9
15'	10/11/2021 19:45	0:15:00	54.9	61.6	50	57.1	51.9
15'	10/11/2021 20:00	0:15:00	55.8	66.6	49.5	57.8	52.5
15'	10/11/2021 20:15	0:15:00	53.9	68.9	48.7	55.9	50.6
15'	10/11/2021 20:30	0:15:00	53.3	62	48.6	55.9	50.4
15'	10/11/2021 20:45	0:15:00	54.1	66	48.7	56.7	50.8
15'	10/11/2021 21:00	0:15:00	54.9	60.7	50.7	56.9	52.5
15'	10/11/2021 21:15	0:15:00	55.4	64.7	51.3	57.5	52.8
15'	10/11/2021 21:30	0:15:00	54.1	61.2	50.4	56	51.8

15'	10/11/2021 21:45	0:15:00	54	63.3	50.2	55.7	52
15'	10/11/2021 22:00	0:15:00	54.1	67.5	50.8	55.5	52.3
15'	10/11/2021 22:15	0:15:00	53.6	60.7	49.6	55.6	51.3
15'	10/11/2021 22:30	0:15:00	53.1	65.6	47.9	55.6	50.2
15'	10/11/2021 22:45	0:15:00	51.9	68.8	47.1	53.9	49.4
15'	10/11/2021 23:00	0:15:00	52.7	67.5	49.1	54.7	50.6
15'	10/11/2021 23:15	0:15:00	52.2	61.8	48.9	53.9	50.4
15'	10/11/2021 23:30	0:15:00	52.6	67.2	47.4	54.9	50.1
15'	10/11/2021 23:45	0:15:00	49.8	59.7	44.5	52.2	46.6
15'	11/11/2021	0:15:00	49.7	62.9	41.9	52.5	44.3
15'	11/11/2021 00:15	0:15:00	47.6	60	40.6	50.6	43.6
15'	11/11/2021 00:30	0:15:00	47	59.7	40.4	49	43.6
15'	11/11/2021 00:45	0:15:00	48.3	65.2	40.2	50.5	42.8
15'	11/11/2021 01:00	0:15:00	46.2	59.6	37.4	49.4	39
15'	11/11/2021 01:15	0:15:00	47.3	61.5	38.3	49	42
15'	11/11/2021 01:30	0:15:00	49	58.5	45.7	49.5	47.9
15'	11/11/2021 01:45	0:15:00	47.9	63.3	40.1	50.1	42.9
15'	11/11/2021 02:00	0:15:00	45.2	62.8	38.1	46.8	40.3
15'	11/11/2021 02:15	0:15:00	47.5	63.2	40.1	48.9	43.2
15'	11/11/2021 02:30	0:15:00	46.6	60.7	39.7	48.1	42.9
15'	11/11/2021 02:45	0:15:00	46.7	56.1	40	48.6	43.7
15'	11/11/2021 03:00	0:15:00	46.8	61	38.4	48.3	43.1
15'	11/11/2021 03:15	0:15:00	45.1	54.4	39.1	47	42.6
15'	11/11/2021 03:30	0:15:00	46.4	56.4	40.7	48	43.3
15'	11/11/2021 03:45	0:15:00	46.1	59.5	39.3	48.2	42.7
15'	11/11/2021 04:00	0:15:00	46.9	57.6	40.9	48.9	43.8
15'	11/11/2021 04:15	0:15:00	47.6	56.7	42.1	49.1	45.5
15'	11/11/2021 04:30	0:15:00	50.2	61.4	44.2	52.3	47.2
15'	11/11/2021 04:45	0:15:00	51	61.4	45.1	52.6	48.4
15'	11/11/2021 05:00	0:15:00	52.8	62.7	46.4	55	49.2
15'	11/11/2021 05:15	0:15:00	54.3	62.1	49.2	56.3	52.1
15'	11/11/2021 05:30	0:15:00	55.8	61.1	50.3	57.7	52.7
15'	11/11/2021 05:45	0:15:00	56.9	63.9	53.2	58.4	55.4
15'	11/11/2021 06:00	0:15:00	57.2	65.8	52.9	58.7	55.5
15'	11/11/2021 06:15	0:15:00	58.5	64.4	54.9	60	56.8
15'	11/11/2021 06:30	0:15:00	59.5	65.7	55.9	60.7	58.2
15'	11/11/2021 06:45	0:15:00	59.2	65.2	55.8	60.5	57.7
15'	11/11/2021 07:00	0:15:00	59.4	71.1	55.4	60.6	57.8
15'	11/11/2021 07:15	0:15:00	58.3	69.1	54.2	59.9	56.3
15'	11/11/2021 07:30	0:15:00	57.9	67.6	54.6	59.5	56
15'	11/11/2021 07:45	0:15:00	59.8	64.4	56.9	60.9	58.5
15'	11/11/2021 08:00	0:15:00	60.8	78.2	57.8	61.6	59.5
15'	11/11/2021 08:15	0:15:00	60.1	65.4	57.5	60.9	59.1
15'	11/11/2021 08:30	0:15:00	59	65.9	55.3	60.4	57.5
15'	11/11/2021 08:45	0:15:00	58.1	69	54.8	59.4	56.5
15'	11/11/2021 09:00	0:15:00	58.3	64.1	55	59.5	56.7
15'	11/11/2021 09:15	0:15:00	59.2	66.3	56.3	60.3	57.8
15'	11/11/2021 09:30	0:14:10	59.1	65.3	56.5	60.3	57.9
15'	11/11/2021 09:45	0:13:10	57.8	70.3	54.6	59.2	56.3
15'	11/11/2021 10:00	0:07:20	58.8	63.8	56	60.1	57.4
15'	11/11/2021 10:15	0:15:00	58.7	69.1	54.4	60	56.9
15'	11/11/2021 10:30	0:15:00	57.8	69.8	53.5	59	55.5
15'	11/11/2021 10:45	0:15:00	57.7	64.5	54.6	59.2	56.1
15'	11/11/2021 11:00	0:15:00	58	68.9	54.4	59.2	56.5

15'	11/11/2021 11:15	0:15:00	57.6	67.3	53.4	59	55.8
15'	11/11/2021 11:30	0:15:00	57.4	70.5	52.9	58.5	54.9
15'	11/11/2021 11:45	0:15:00	59.1	66.2	55.6	60.3	57.5
15'	11/11/2021 12:00	0:15:00	58.9	66.8	55.4	60	57.6
15'	11/11/2021 12:15	0:12:00	59	64.2	54.5	60.3	57.3
15'	11/11/2021 12:30	0:00:00					
15'	11/11/2021 12:45	0:05:20	59.2	65.8	56.2	60.2	57.9
15'	11/11/2021 13:00	0:15:00	59.7	67	56.7	60.8	58.5
15'	11/11/2021 13:15	0:15:00	59.4	63.6	56.1	60.6	58
15'	11/11/2021 13:30	0:15:00	59.4	65.9	56.4	60.6	58
15'	11/11/2021 13:45	0:10:00	59.7	68.8	56.5	60.9	58.1
15'	11/11/2021 14:00	0:00:00					