



Architectural & Environmental Acousticians

Noise & Vibration Engineers

Noise Assessment

22-25 New Road, Gravesend

Noise Assessment

Project: 22-25 NEW ROAD, GRAVESEND

Report reference: RP01-21596-R1

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1. INTRODUCTION

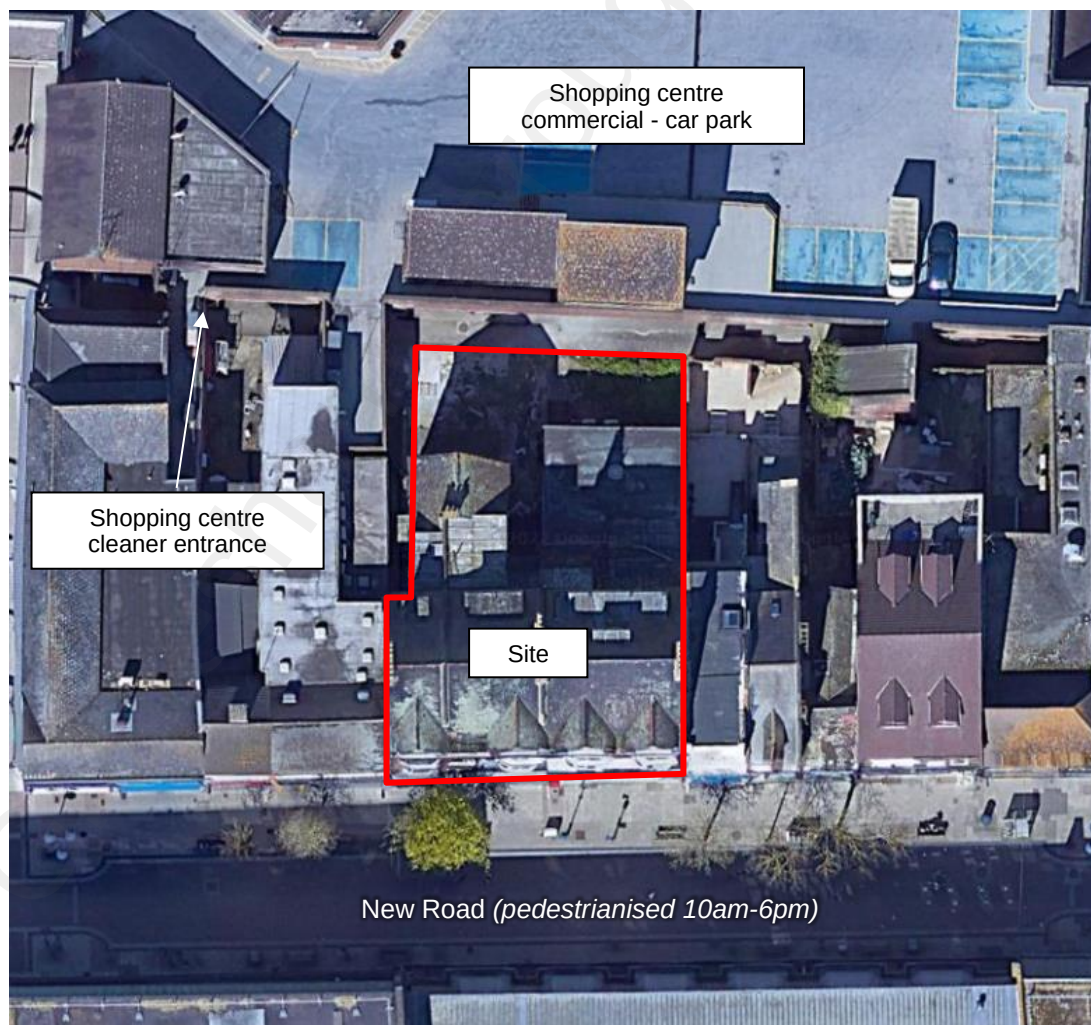
- 1.1 Cass Allen has been instructed by Lownie Investments to assess the noise impact associated with the conversion of a premises known as 22-25 New Road, Gravesend. Existing Class E(g) office and Class E(e) dentist would be converted to residential properties (Class C3) under Class MA of the Town and Country Planning (General Permitted Development) (England) Order 2015.
- 1.2 For Class MA conversions from office and dentist use to residential use, the Town and Country Planning (General Permitted Development) (England) Order 2015 requires that the future residents will not be adversely impacted by existing commercial noise sources and uses.
- 1.3 The aims of the assessment were therefore:
- To characterise existing commercial noise sources in the vicinity.
 - Where required, identify appropriate measures to optimise the acoustic design of the conversion to achieve acceptable commercial noise levels in habitable areas.

This report contains technical terminology; a glossary of terms can be found at www.cassallen.co.uk/glossary.

2. PROJECT DESCRIPTION

- 2.1 The existing building spans 6 floors (including basement) and currently has a mix of uses. The Class E(g) and E(e) office and dentist uses are located from the first to the fourth floor and are the focus of the permitted development planning application. The building also includes Class C3 (residential) use from the first to the third floor. The site includes a courtyard to the rear (north) of the building.
- 2.2 Potentially significant nearby commercial activities include the commercial car park to the north and ground floor delivery/miscellaneous commercial activity area associated with the shopping centre.
- 2.3 The site and surrounding area is shown in Figure 1 below.

Figure 1 Site and surrounding area



- 2.4 The proposal is to convert the existing office and dentist use into 8 residential units.

3. PLANNING POLICY

- 3.1 To comply with the requirements for Class MA permitted developments, it is necessary to ensure that new developments will not result in new residents being exposed to unacceptable levels of noise from existing commercial or industrial uses. This is to protect the wellbeing of residents and the interests of existing commercial and industrial uses.
- 3.2 The site is exposed to distant road traffic noise from surrounding town centre roads and the section of New Road adjacent to the site is pedestrianised from 10am to 6pm every day. The assessment of transportation sources is not required for a Class MA permitted development planning submission and therefore is not discussed in detail in this report. It should be noted that any noise mitigation proposed to reduce ingress of commercial noise will also reduce the ingress of road traffic noise.
- 3.3 The assessment of the identified commercial noise sources has been carried out in accordance with relevant national planning policy and guidance. Key excerpts of these are given below:

National Planning Policy Framework

- 3.4 Outline guidance for the assessment of noise affecting new developments is given in the National Planning Policy Framework (NPPF). Relevant sections in this case are highlighted below:

174. Planning policies and decisions should contribute to and enhance the natural and local environment by ... preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of ...noise pollution.

185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

186. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

4. COMMERCIAL NOISE AFFECTING THE DEVELOPMENT

Existing Noise Levels

- 4.1 A noise survey was carried out at the site from 14 to 19 January 2022 to determine the existing noise environment at the site. The full methodology and results of the noise survey are provided in Appendix 1.
- 4.2 Maximum (LAFmax) noise levels across the site were generally dictated by pedestrians passing on New Road and car horns and sirens from vehicle movements. Occasional maximum noise levels were dictated by commercial activities (such as deliveries) around the site.
- 4.3 Average (LAeq) and background noise levels (LA90) across the site were generally dictated by constant pedestrians and road traffic noise.
- 4.4 Noise from buskers was audible at the site during the attended and unattended survey. Gravesham Council confirmed there are no designated busking locations along New Road. Gravesham Council also stated that musicians are asked to cooperate with the Council by keeping noise levels and content reasonable and respecting council officials in moving on if complaints arise.
- 4.5 Noise from buskers is considered typical for the town centre location and we have been assured that musicians will work with the council to keep music noise to reasonable levels. Finally, if complaints were to arise, the lack of 'designated' busking locations would mean the performer could reasonably be expected to perform at a different location not affecting the site. As such, noise from this source has not been assessed further.
- 4.6 Very little continuous commercial noise was captured during the attended or unattended portion of the site noise survey. Most instances were fairly sporadic (e.g. deliveries to nearby commercial uses) however some static plant was identified associated with the shopping centre at the rear of the site. The relevant noise sources identified during the noise survey that have the potential for noise impact at the development include:
- Deliveries to commercial units along New Road and associated shopping centre to the rear of the site;
 - Miscellaneous minor commercial activities at the rear of the site below the shopping centre car park;
 - Shopping centre – commercial car park;
 - Static plant at the rear of the site.
- 4.7 These potentially significant noise sources are discussed in turn below.

Deliveries/ Miscellaneous commercial activities

- 4.8 Sporadic delivery noise and other miscellaneous minor commercial activity at the north and south of the site was captured during the site noise survey. This type of noise occurred at various times during the day and night however a delivery at 5:30am on a Saturday at the rear (north) of the site is considered 'worst case' and has been used for the purpose of the assessment. This source contained metal rolling cages rattling and goods being unloaded.
- 4.9 BS4142:2014 – *Methods for rating and assessing industrial and commercial sound* (BS4142) includes correction factors that can be applied when assessing tonal/irregular noise to account for the potential additional annoyance caused by this type of noise.
- 4.10 Noise from deliveries had perceptible tonal and impulsive characteristics during the period and as a result, a +4 dB correction has been applied for tonality and a +4 dB correction has been applied for impulsivity in line with BS4142 guidance. This assessment has included these corrections in the calculations of predicted noise levels at the nearest habitable room facade. Noise from deliveries is predicted to be up to 61 dB L_{Ar,Tr} during the 'worst case' period.
- 4.11 As a result, an assessment in line with the BS4142 methodology would rate the noise as "an indication of significant adverse impact". It will therefore be important to design the development to mitigate this noise. This is discussed below.
- 4.12 Where new noise sensitive receptors are introduced into existing commercial/ industrial noise environment BS4142 provides the following guidance:

8.5 Introduction of a new noise-sensitive receptor

Measure the background sound at the intended location of any new noise-sensitive receptor(s) in the absence of any specific sound.

NOTE Where a new noise-sensitive receptor is introduced and there is extant industrial and/or commercial sound, it should be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation.

- 4.13 The above guidance clearly allows for mitigation measures to be considered and alternative noise Standards to be applied. In the absence of other more relevant Standards, guidance contained within BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*' (BS8233) can be applied. Relevant criteria is given below in Table 1 below.

Table 1 BS8233:2014 Internal Noise Criteria

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB LAeq,16hour	-
Dining	Dining room/area	40 dB LAeq,16hour	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16hour	30 dB LAeq,8hour

- 4.14 The criteria presented in Table 1 above are taken from Table 4 of BS8233 which also contains the following related guidance:

7.7.1 Dwelling houses, flats and rooms in residential use (when unoccupied)

This subclause applies to external noise as it affects the internal acoustic environment from sources without a specific character, previously termed "anonymous noise". Occupants are usually more tolerant of noise without a specific character than, for example, that from neighbours which can trigger complex emotional reactions. For simplicity, only noise without character is considered in Table 4. For dwellings, the main considerations are:

- a) for bedrooms, the acoustic effect on sleep; and
- b) for other rooms, the acoustic effect on resting, listening and communicating.

NOTE Noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate.

- 4.15 It does not, however, provide guidance on how much lower the noise limits would appropriately be. It is considered in this instance that, provided the *rated* noise levels due to the commercial activity are at or below the levels given in Table 1 above then the noise will have been sufficiently mitigated taking into account both the level and character of the noise.
- 4.16 In order to mitigate against this risk of noise impact, the sound insulation for the facades will be upgraded via the installation of secondary glazing to the inside of the existing windows in all habitable room. Calculations were carried out to estimate the performance of a typical secondary glazing based on a worst case assumption of the existing glazing (assumed 4mm) and the addition of 6mm secondary glass panel forming a 100mm cavity. The calculations indicate that these acoustically upgraded windows would achieve a sound reduction of around 35 dB R_{w+Ctr} . The exact performance can be reviewed during the detailed design stage.
- 4.17 With a secondary glazing system installed, the commercial delivery noise discussed above would be reduced to negligible levels of around 18 dB $LA_{eq,T}$ within the proposed apartments. In addition, it was noted that the commercial noise was dictated by high frequency noise such as roller cages etc. and a secondary glazing system as described above will have a particularly high acoustic performance in the higher frequencies.
- 4.18 Although not strictly required, as a secondary effect the proposed glazing upgrades will also reduce any residual noise from surrounding roads and through traffic on New Road (during times when it is open to vehicles) and noise from buskers on New Road.

Shopping centre – commercial car park (north)

- 4.19 Noise was not audible from the rooftop commercial car park to the north of the site. This is likely due to the significant screening from the solid barrier and buildings between the car park and the north facade of the site as well as the limited use of the space (e.g. minimal car park spaces and difficult location to manoeuvre a HGV). Commercial noise from this source is therefore not considered further.

Static plant

- 4.20 A number of wall mounted condensers are situated at ground floor level on the wall of the shopping centre at the rear of the site. The exact models are not known however they are small-medium sized units and are expected to be relatively quiet based on measured noise levels on site and our experience of similar plant.
- 4.21 A reasonable worst case sound power level for this type of plant of 70 dBA has been assumed for this assessment. This level is slightly higher than was measured on site and compensates for the units potentially 'ramping up' with increased load.
- 4.22 Distance correction calculations were carried out to predict the worst case noise level from these units at the facade of the worst case habitable rooms. The calculations show that noise levels at the facades of the worst case habitable rooms will be approximately 38 dBA. This is anticipated to be barely audible in habitable rooms with windows open and a negligible noise level (not audible) with windows closed.
- 4.23 In summary, static plant noise is present at the site however it is not predicted to be audible within the habitable rooms of the development with the windows closed. The noise mitigation solution for delivery noise will be sufficient to reduce a worst case prediction of static plant noise to negligible levels.

Summary

- 4.24 In summary of the above commercial noise sources, noise levels from all identified commercial activity and measured road traffic noise levels would be reduced to levels compliant with BS8233 internal noise levels criteria inclusive of BS4142 ratings subject to the installation of the proposed secondary glazing systems to all habitable rooms of the development.

5. CONCLUSIONS

- 5.1 Cass Allen was instructed by Lownie Investments to assess the noise impact associated with the conversion of 22-25 New Road, Gravesend office and dentist uses E(g)/E(e) to residential properties (Class C3), in accordance with Class MA of the Town and Country Planning (General Permitted Development) (England) Order 2015.
- 5.2 Noise levels in the area are generally dictated by surrounding roads and pedestrians on New Road. However, there is a potential for surrounding commercial activities and static plant to contribute to the noise impact at the proposed development.
- 5.3 Secondary glazing will be installed to all habitable rooms exposed to significant potential commercial noise sources. It is calculated that this approach would reduce the commercial noise to BS8233 complaint levels within the proposed dwellings.
- 5.4 With the inclusion of the proposed secondary glazing, it is our view that the resultant noise impact of the surrounding commercial uses on the proposed apartments will therefore be minimised and noise levels will be suitable. The proposed conversion is therefore considered compliant with the Class MA requirements regarding noise.

Appendix 1 Survey Results

Survey Summary:

The survey comprised short-term operator attended noise measurements and longer-term unattended noise monitoring at the site. Noise levels at the site were generally dictated by road traffic on surrounding roads and noise from pedestrians on New Road.

Survey Period:

14/01/2022 to 19/01/2022

Survey Objectives:

- To identify commercial noise sources that contribute to ambient noise levels at the site;
- To measure noise levels around the site over a typical day and night-time period.

Equipment Used:

Type	Manufacturer	Model	Serial Number
Sound level meter ¹	NTi Audio	XL2	A2A-15506-E0
Calibrator	NTi Audio	600 000 388	15011
Sound level meter ¹ (noise logger)	Rion	NL-32	01213688
Calibrator	Rion	NC-74	34551703

Note 1: All sound level meters were calibrated before and after measurement periods and no significant drift in calibration was found to have occurred. The results of the measurements are therefore considered to be representative.

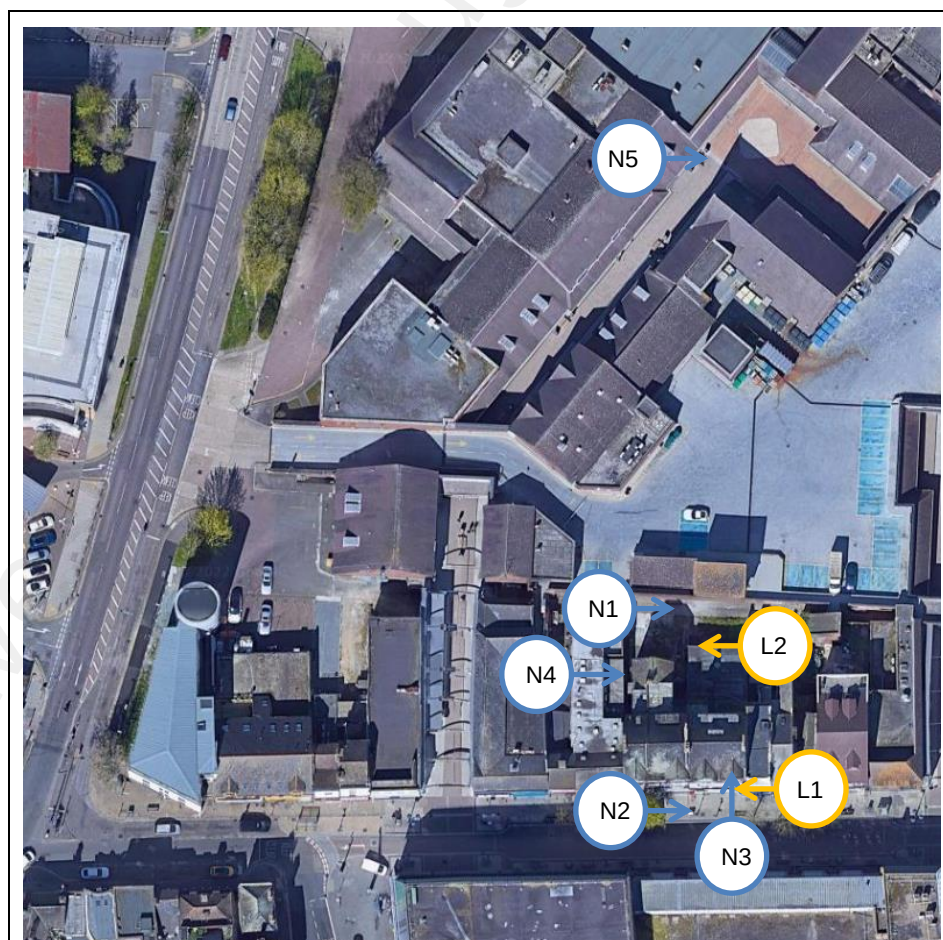
Weather Conditions:

The observed weather conditions were acceptable for acoustic measurement throughout the attended survey periods (low-medium wind speeds and no rain). Weather records for the area confirmed that weather conditions were also generally acceptable for acoustic measurement during the unattended monitoring.

Measurement Positions:

Position (refer plan below)	Description
N1	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to fans and plant behind site courtyard.
N2	Attended noise monitoring position. 1.5m above ground. Free-field. 2m from shopfront. Direct line of sight to pedestrianised shopping street.
N3	Attended noise monitoring position. 1.5m above ground. Internal noise measurement within habitable room.
N4	Attended noise monitoring position. 1.5m above ground. Inside 1m gap between adjacent buildings.
N5	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to pedestrianised shopping street.
L1	Unattended noise logging position. ~8m above ground level. 1m from building facade. Direct line of sight to New Road.
L2	Unattended noise logging position. ~8m above ground level. 1m from building facade. Direct line of sight to courtyard.

Site Plan showing Measurement Positions:



Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmx, dB	LA90, dB	Observations
14/01/2022	N1	12:03	5 mins	53	65	52	Noise dictated by plant from fan and plant room behind site, measured at large opening in wall, source approximately 5m further into the building.
	N2	12:10	1 min	72	80	70	Noise dictated by buskers (bagpipes) adjacent to the front of the site.
	N3	12:12	5 mins	45	63	35	Internal noise levels measurements predominantly dictated by buskers on New Road.
	N3	12:17	5 mins	41	54	32	
19/01/2022	N4	11:55	2 mins	64	68	64	Noise dictated by plant from adjacent rooftop. Measurement position between reflective surfaces, plant 4m above.
	N1	11:58	2 mins	58	63	56	Noise dictated by plant from fan and plant room behind site, measured at large opening in wall, source approximately 5m further into the building.
	N2	12:15	5 mins	56	70	54	Pedestrian noise at street level outside front with nearby shops open. 3m from shopfront.
	N2	12:20	5 mins	58	73	54	Levels are mostly dictated by road traffic noise from Bath Street
	N5	12:35	2 mins	56	67	53	Different shopping street representative of New Road, with pedestrian activity and chatting, but not dictated by road.

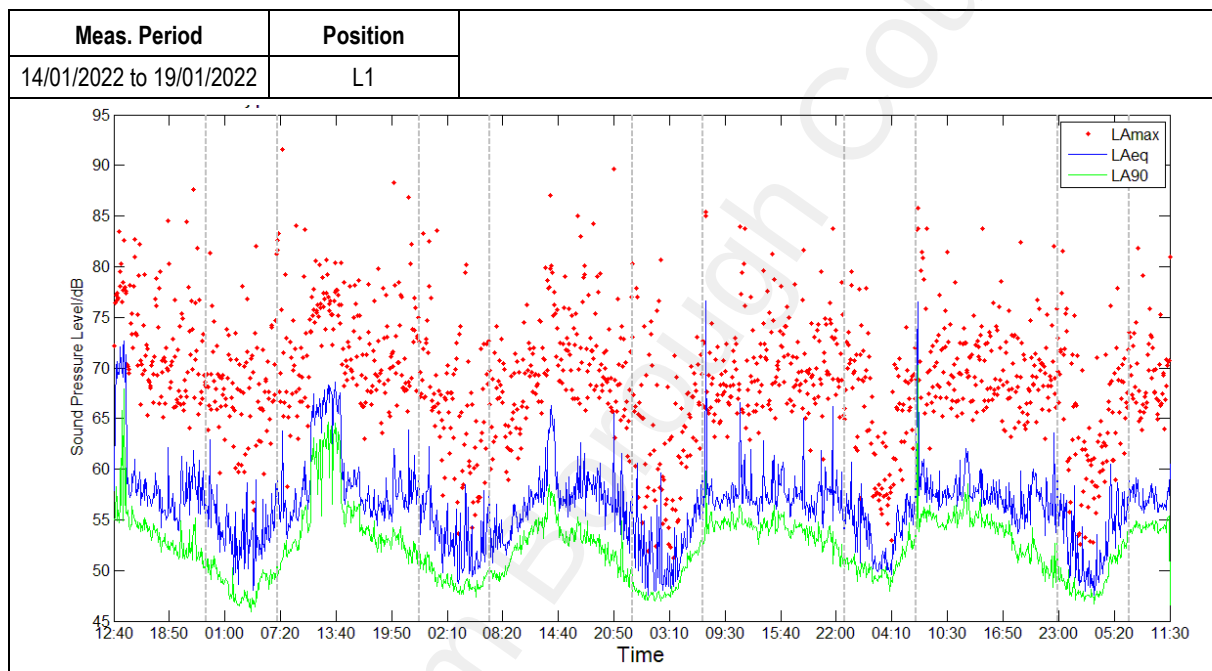
Unattended Noise Monitoring Results:

Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB ¹	LAeq,8hr, dB	LA90,5mins, dB ¹	LAmx, dB ²
14/01/2022 to 19/01/2022	L1	60	50	54	47	73

Note 1: Typical lowest measured during the period shown.

Note 2: Highest typical maximum noise level during the night-time (not exceeded more than 10-15 times per night).

Unattended Noise Monitoring Results:



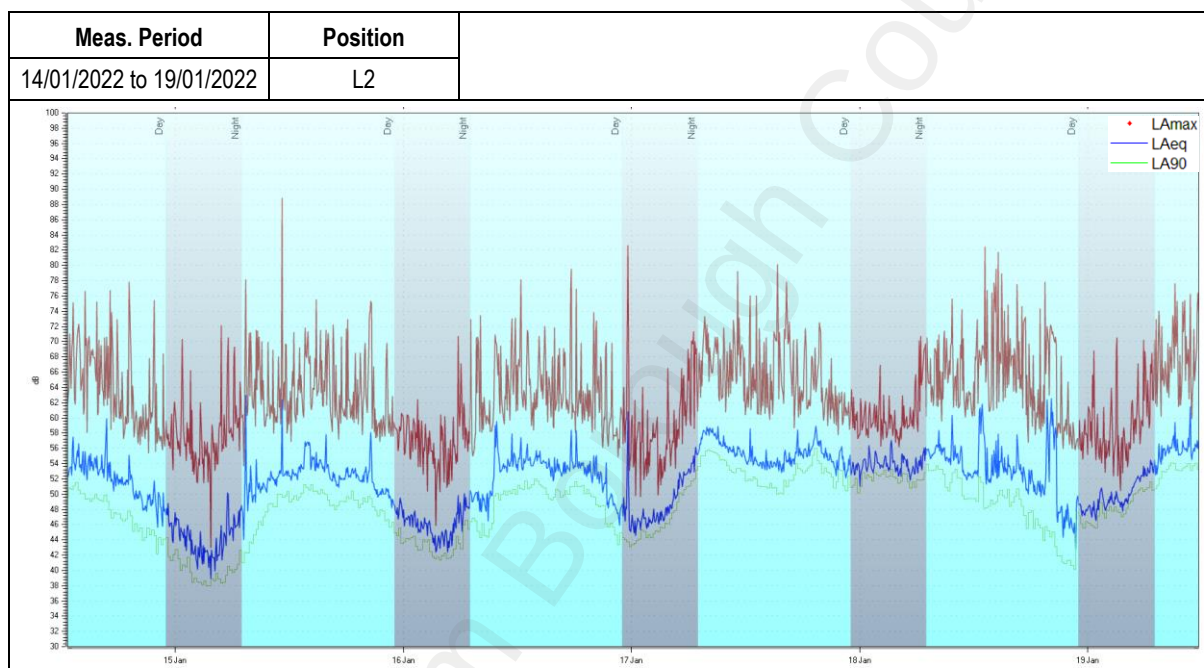
Unattended Noise Monitoring Results:

Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB ¹	LAeq,8hr, dB	LA90,5mins, dB ¹	LAmx, dB ²
14/01/2022 to 19/01/2022	L2	54	45	50	38	65

Note 1: Typical lowest measured during the period shown.

Note 2: Highest typical maximum noise level during the night-time (not exceeded more than 10-15 times per night).

Unattended Noise Monitoring Results:





Architectural & Environmental Acousticians Noise & Vibration Engineers

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