Sunlight House Manchester

Noise Impact Assessment

Aberdeen Asset Management

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Principal author: Michael Pimlott

Signed by: Pimlott, Michael

07/08/2020

X pp

Checked by: Alex Lees

Signed by: Pimlott, Michael

07/08/2020

X pp

Verified by: Robert Turner

Signed by: Pimlott, Michael

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1.0

Introduction

1.0 Introduction

Proposals are for the change of use of a ground floor office space into a new café and/or bar (A3/A4 use class) at Sunlight House, central Manchester.

The unit is located in the former entrance on the corner of Little Quay Street and Atkinson Street.

It is understood the A3/A4 unit will potentially operate until 02:30 hours.

Cundall has been commissioned by Aberdeen Asset Management to assess the potential noise impact from the bar at nearby noise sensitive receptors (NSR).

The purpose of this report is:

- To document the survey methodology and the measured noise levels around the site;
- To set limiting entertainment noise levels at nearby noise-sensitive receptors in accordance with Local Authority policy;
- To carry out a quantitative assessment of noise break-out from amplified music.
- To calculate the proposed limiting noise level for amplified music within the unit; and
- To identify the requirement for the installation of an Automatic Gain Control (AGC) device within any future PA system signal chain.

It should be noted that there are no proposals for any new items of noise generating ancillary plant associated with the scheme.

2.0

Assessment criteria

2.0 Assessment criteria

This section of the report outlines the key legislation and guidance relevant to the assessment of noise for a development of this type.

2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was published in March 2012 and amended in 2019. The NPPF is part of government reform to make the planning system less complex and more accessible, and to promote sustainable growth. It replaces existing national planning policies such as Planning Policy Guidance PPG24: Planning and Noise.

The NPPF states:

"170 - Planning policies and decisions should contribute to and enhance the natural and local environment by; […]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; […]"

and

"180 - 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; […]"

and

"182 - 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."

2.2 Planning Practice Guidance

In March 2014 Planning Practice Guidance for noise was published. This online document advises on how planning can manage potential noise impacts in new development.

2.3 Local Authority noise policy guidance

2.3.1 Noise limits for internal noise break-out

Section 3.6.1.2 of MCC's noise policy guidance presents the following noise criteria for internal noise break-out when measured at nearby noise-sensitive receptors that are structurally detached.

Entertainment noise (L_{Aeq}) should be controlled to 10dB below the background noise level (L_{A90}) without the entertainment noise present, in each octave band at the nearest noise sensitive location.

2.3.2 Previous application

The above conditions for entertainment noise were adopted in Condition 4 of an approved decision notice for a previous application which referred to potential A3 use only (Planning Ref: 119650/FO/2018).

3.0

Site context

3.0 Site context

The proposed A3/A4 unit will be located on the ground floor of the Sunlight House building in Central Manchester, in the location of the former entrance on the corner of Little Quay Street and Atkinson Street.

The site is bounded by Atkinson Street to the north, Little Quay Street to the east, Quay Street to the south and the adjoining Manchester Opera House building to the west.

The nearest existing noise-sensitive office receptor is at 196 Deansgate, directly opposite the proposed development on the façade overlooking Little Quay Street. This lies approximately 15 m to the east of the site.

To the north of the site on the opposite side of Atkinson Street, conditional planning approval has been granted (application ref: 116164/FO/2017) for the "redevelopment of Invicta House for Use Class C1 hotel development comprising 145 guestrooms, with ground floor ancillary facilities".

The nearest residential receptors are considerably further than this from the proposed development, understood to be located at the Artillery House, Byrom Street, approximately 150 m to the south west of the proposed development.

The surrounding area is primarily made up of commercial and office spaces. The rear elevation of the existing Manahatta bar is located on the opposite side of Little Quay Street to the front elevation of the proposed site. The opening hours for the Manahatta bar[1] are as follows:

- Sunday – Tuesday: 12pm - 12am
- Wednesday: 12pm - 1am
- Thursday: 12pm - 2am
- Friday – Saturday: 11am - 3am

The proposals also include an area for external seating outside of the A3/A4 unit. No music will be played in this area.

An aerial photograph indicating the Sunlight House ownership boundary (blue), proposed A4 bar unit location (red), nearest office facades (yellow), nearest existing residential noise-sensitive receptors (green) and proposed new hotel receptor (pink) is presented in Figure 1 overleaf.

There are no proposals for any new items of noise generating plant associated with the scheme.

[1] Correct based on website information available at the time of writing

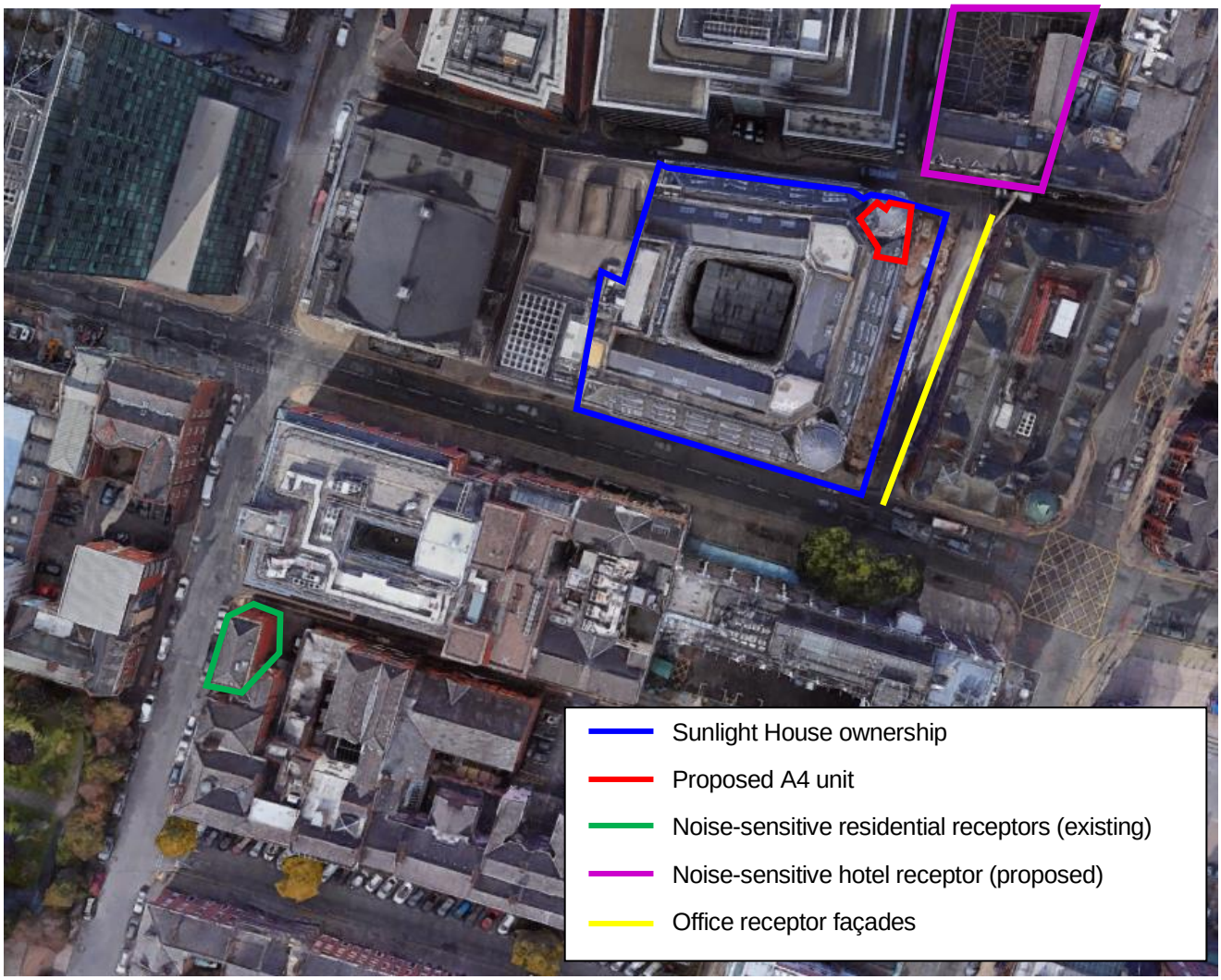


Figure 1 – Site and receptor locations

4.0

Environmental noise surveys

4.0 Environmental noise surveys

4.1 Cundall noise survey

In order to assess the prevailing levels of environmental noise affecting the nearest noise-sensitive receptors, attended evening and night-time noise measurements have been undertaken. The timing of noise measurements is summarised in Table 1 below:

Position reference	Date	Period	Comments
MP1	7 November 2018	18:00 to 20:30 hours	This position was selected in order to establish representative background levels at the façade of 196 Deansgate facing Little Quay Street (i.e. the closest office receptor to the proposed A4 unit). Timing of measurements was chosen to be representative of late evening periods when the proposed bar may be busy and surrounding offices could still be occupied.
MP2	3 December 2019	01:30 to 02:30 hours	This position was selected in order to establish representative background levels at the nearest residential receptors at Artillery House apartments. Timing of measurements was chosen to be representative of late-night bar operations when surrounding background levels will be at their quietest. Measurements were undertaken on a Monday to be representative of a potential scenario whereby the proposed A4 is open until 2:30 am but the adjacent Manahatta bar has closed at 12:00 am

Table 1 – Noise measurement positions

The approximate measurement locations are shown in Figure 2 below.

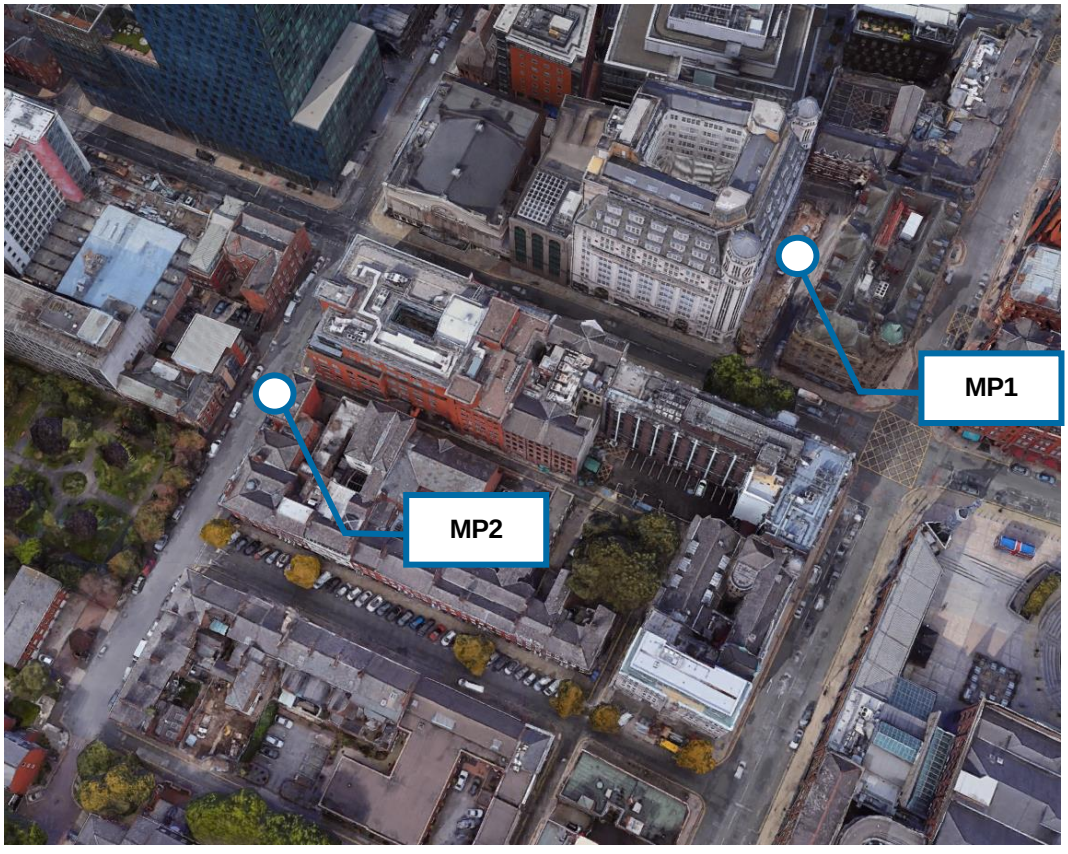


Figure 2 – Approximate location of noise monitoring positions

The weather conditions during both surveys were calm and dry with wind speeds below 5 m/s.

Monitoring equipment was set up by competently trained Cundall staff and all measurement have been reported for free-field conditions.

Subjective impressions during the evening survey were that the noise climate was generally dictated by surrounding road traffic, mainly from Quay street, and by existing plant associated with 196 Deansgate.

During the night-time survey the noise climate was generally dictated by surrounding road traffic, mainly from Deansgate, with background levels dictated by plant noise audible on the rooftop of Direct Line House (located on the intersection of Quay Street and Byrom Street).

4.1.1 Summary

A summary of the average ambient noise levels recorded is detailed within Table 2. The values are the logarithmically averaged $L_{Aeq,15min}$, the maximum $L_{AFmax,15min}$ and the range of $L_{A90,15min}$ values measured. All values have been rounded to the nearest integer value (as fractions of a decibel are imperceptible) and are given in dBA.

Measurement position	Period	Average $L_{Aeq,15min}$ (dB)	Highest $L_{AFMax,15min}$ (dB)	Range $L_{A90,15min}$ (dB)
MP1	Late evening (18:00 – 20:15)	62	89	58 – 59
MP2	Night-time (01:30 – 02:30)	53	92* (77)	47 - 48
* L_{AFmax} *value of 92 dB is attributable to car door slamming near the sound level meter. Value in parenthesis is the next highest* L_{AFmax} *value*				

Table 2 – Noise measurement results

4.1.2 Discussion of results

It can be seen from Table 2 above that as would be generally expected levels were higher at position MP1 during evening hours than MP2 during night-time hours. In line with the subjective impressions of both positions with respect to items of plant significantly contributing to the background levels of the noise climate noise climate, the background noise levels $L_{A90,15min}$ were a narrow range for both positions during the time on site, reaching lows of 58 dB $L_{A90,15min}$ at position MP1 and 47 dB $L_{A90,15min}$ at position MP2.

4.2 Sandy Brown noise survey

A long-term unattended noise survey was undertaken at the façade of the proposed Invicta House redevelopment by Sandy Brown Associates (ref:116164/FO/2017). The results of the survey are detailed in report ref: 17090-R01-A dated April 2017, available on the MCC Planning Portal.

Table extracts from this report detailing the proposed plant noise limits and amplified music noise limits are reproduced below in Table 3 and Table 4

Note: whilst these limits were originally proposed for premises surrounding the proposed Invicta House redevelopment, it is considered that they should be equally applicable for the Invicta House development itself.

Table 4 Plant noise limits at 1 m from the nearest noise sensitive premises

Location	Maximum sound pressure level at 1 m from noise sensitive premises ($L_{Aeq,15min}$ dB)		
	Daytime 07:00-19:00	Evening 19:00-23:00	Night 23:00-07:00
Nearby noise sensitive locations	53	57	56

Table 3 – Sandy Brown plant noise limits

Table 5 Octave band amplified music limits at 1m from the nearest noise sensitive premises

Time of day	Maximum sound pressure level at 1 m from noise sensitive premises, L_{eq} (dB) Octave-band centre frequency (Hz)						
	63	125	250	500	1000	2000	4000
Daytime (07:00 – 19:00)	55	52	49	45	43	39	32
Evening (19:00 – 23:00)	57	53	50	49	47	43	37
Night-time (23:00 – 07:00)	58	52	49	47	47	42	35

Table 4 – Sandy Brown amplified music limits

5.0

Entertainment noise break-out assessment

5.0 Entertainment noise break-out assessment

5.1 Entertainment noise limiting criterion

To meet the requirements of MCC Planning Policy for entertainment noise, sound levels attributable to amplified music should limited to 10 dB below the background noise level (L_{A90}) at nearby sensitive receptors.

Based on the measured prevailing background levels, the following noise limits are proposed which are not to be exceeded at 1 m from the façade of the noise sensitive receptors:

Receptor		Octave band centre frequency (Hz)						
		63	125	250	500	1k	2k	4k
Daytime & Evening (07:00 – 23:00)								
Offices at 196 Deansgate	Existing background level, dB	65	61	58	55	52	47	41
	MCC noise limits, dB	**55**	**51**	**48**	**45**	**42**	**37**	**31**
Proposed Invicta House Hotel	Existing background level, dB	65	62	59	55	53	49	42
	MCC noise limits, dB	**55**	**52**	**49**	**45**	**43**	**39**	**32**
Night-time (23:00 – 23:00)								
Dwellings at Artillery House	Existing background level, dB	56	51	49	44	42	34	27
	MCC noise limits, dB	**46**	**41**	**39**	**34**	**32**	**24**	**17**
Proposed Invicta House Hotel	Existing background level, dB	68	62	59	57	57	42	45
	MCC noise limits, dB	**58**	**52**	**49**	**47**	**47**	**42**	**35**

Table 5 – Limiting entertainment noise levels

5.2 Noise impact assessment

In order to predict the sound level from the A3/A4 unit at the nearest noise-sensitive office receptor during daytime and night-time, a model has been produced using SoundPLAN 8.1 acoustic modelling software. This model is capable of accurately determining sound propagation by considering variations in topography, barrier attenuation provided by existing landscaping and buildings, and distance attenuation.

5.2.1 Building fabric

To assess the level of noise break-out from the bar, the sound attenuation provided by the existing external façade has been estimated. The façade of the building comprises brick / block external wall and assumed 'standard' double-glazing. The assumed sound reduction indices for this external glazing are provided in Table 6, below.

Element	Octave band centre frequency (Hz)							
	63*	125	250	500	1K	2k	4K	R_w
6 mm / 6 to 20 mm / 4 mm double glazing** (as rated in BS 12354)	18*	21	20	26	38	37	39	**32**
Values at 63Hz are not given in the respective standards quoted – values given are worst case expectations* * As the exact glazing specification of the existing windows is not known, a 6 /12/4 specification has been assumed as the worst-case probable build-up.* ***Note**: Breakout via brick/block elements of the external wall will be insignificant in comparison to noise break-out via the external glazing and open doorway.*								

Table 6 – Assumed sound reduction indices for façade elements

As the small size of the unit precludes the possibilities of lobbied entrance doors, it has been assumed that the entrance doorway could potentially be left permanently open (i.e. offering no sound reduction).

This is an absolute worse-case scenario as in practice the door will remain closed during all periods when not being used by Patrons.

5.2.2 Internal noise limits

In order to assess any potential adverse noise impact on nearby noise sensitive premises, an assessment of noise break-out from the proposed A3/A4 unit has been undertaken based on an assumed amplified music noise limit within the bar.

Based on the MCC entertainment noise criteria presented in Table 5, an iterative noise modelling process has determined that the following internal music noise level limits should be maintained within the proposed A3/A4 to see that compliance with the MCC criteria is achievable.

	Sound pressure level L_{eq} (dB) at Octave band centre frequency (Hz)							A-weighted sound pressure level (dB)
	63	125	250	500	1k	2k	4k	
Proposed internal noise limit for amplified music	80	80	77	75	73	70	64	78 dBA

Table 7 – Proposed internal noise limit for amplified music

It has been confirmed that the above limit is in line with the general aspiration of the proposed Tenant for the unit.

In addition, it should be noted that the following operational measures have not been considered within the 3D noise model but will be adopted to further mitigate against increased entertainment noise impacts:

- Ensuring loudspeakers are positioned so that none are directed towards the doorway
- The noise model assumes the worst-case scenario that the entrance doorway to the unit is permanently open. By ensuring the door is fitted with an appropriate closer mechanism, external music noise impacts at nearby receptors reduced and internal music limits may potentially be increased accordingly.

As it is not possible at this stage to review full details of finalised loudspeaker positions or patron movements in/out of the Unit, it is instead advised that a further assessment will be needed to define the PA System noise limiter threshold values once the bar has been fitted out by the Tenant.

Guidance on the specification of the noise limiter devise is outline in the following Section.

5.3 Noise limiter device

To see that amplified music noise levels do not exceed the MMC criteria at the nearest sensitive receptors, it will be necessary to install a suitable limiter within the amplified music system.

It is assumed due to the size of the bar that most music will be played via the venue owned sound system, rather than though audio equipment brought to the venue by DJs / bands.

For this scenario, Automatic Gain Control (AGC) devices are the most common type of active limiter. Once the unit is set to a pre-determined threshold, it then continually monitors the audio signal entering the amplifier stage. If the output of the programme material exceeds the threshold, the limiter automatically cuts in and gradually reduces the gain of the audio signal entering the amplifier stage until the programme output level returns below the threshold. The advantage of this type of limiter is that no break in the music ensues, should the threshold be exceeded.

It is advised that the determined threshold limits for the PA System should be calibrated by a suitably qualified sound technician / acoustician, prior to operation of the bar. This calibration process should include external noise measurements at the nearest noise-sensitive receptors to see that the MCC noise limits (as defined in Section 6.1) are not exceeded.

These limits should then be re-calibrated (if needed) once the bar is operational, and when the impacts of open door / patron noise can be assessed in further detail.

5.4 Outdoor seating

Proposals are for an external seating area to be located immediately outside of the A3/A4 unit at Little Quay Street. There will be no amplified music within this seating area.

This area was previously used for outdoor seating by The Old Grapes public house which operated at the site until August 2016. A Google Street View image showing the previous seating arrangement is reproduced in Figure 3 below for context:



Figure 3 – Previous Little Quay Street external seating area for The Old Grapes (*© Google*)

Considering the lack of amplified music, the significant distance to the nearest residential uses, and the previous use of this space up until 2016, it is not expected that the introduction of a new seating area will result in significant adverse noise impacts to surrounding receptors.

To further minimise the potential of noise disturbance, it is advised that any future tenants of the A3/A4 unit should adopt a noise management plan (NMP) to see that managerial and operational practices help keep patron noise to satisfactory levels.

6.0 Conclusions

Prevailing noise levels in the vicinity of the site of a proposed retail unit at Sunlight House in central Manchester have been measured.

To see that amplified music noise levels do not exceed the MCC criteria at the nearest sensitive receptors, it will be necessary to install a suitable limiter device within any future amplified music system.

A calculation of internal noise break-out has been undertaken, utilising onerous assumptions of internal entertainment noise levels within a bar and considering sound reduction indices afforded by differing elements of the façade construction.

This assessment has identified internal amplified music noise limits within the bar which are predicted to see compliance with the MCC criteria at nearby sensitive receptors. This assessment has assumed the worst-case scenario that the unlobbied entrance doorway could potentially remain permanently open during operation.

It is advised that the PA system noise limiter values are checked and re-calibrated once the Unit is operational to see that compliant music levels at maintained.

Appendices

Appendix I Noise survey data

MP1 - 7 November 2018

Measurement start time	$L_{Aeq,15min}$ (dB)	$L_{AFMax,15min}$ (dB)	$L_{A90,15min}$ (dB)
18:00	62	80	58
18:15	62	85	58
18:30	61	85	58
18:45	62	78	58
19:00	63	85	58
19:15	61	84	58
19:30	63	86	58
19:45	60	81	58
20:00	61	82	58
20:15	63	89	59

MP2 – 3 December 2019

Measurement start time	$L_{Aeq,15min}$ (dB)	$L_{AFMax,15min}$ (dB)	$L_{A90,15min}$ (dB)
01:30	52	77	48
01:45	54	92	48
02:00	50	73	47
02:15	54	93	47

Cundall Johnston & Partners LLP
10th Floor Manchester One Portland Street
Manchester M1 3LD United Kingdom
Tel:+44 (0)161 244 5660
Asia Australia Europe MENA UK and Ireland
www.cundall.com

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