PIZZA EXPRESS, DIDSBURY

Noise Assessment Report

Reference: 9884.RP01.NAR.1
Prepared: 17 December 2019
Revision Number: 1

PizzaExpress (Restaurants) Ltd
95 Lapwing Lane
Didsbury
Manchester
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Noise Assessment Report

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Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	17 December 2019	Suzy Everett	Callum Brewer
1	Minor amendments	17 December 2019	Suzy Everett	Callum Brewer

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The recommendations within this report relate to acoustics performance only and will need to be integrated within the overall design by the lead designer to incorporate all other design disciplines such as fire, structural integrity, setting-out, etc. Similarly, any sketches appended to this report illustrate acoustic principles only and again will need to be developed in to full working drawings by the lead designer to incorporate all other design disciplines.

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1.0 INTRODUCTION

The extension of the opening hours of the outdoor patron seating area belonging to Pizza Express Didsbury has been proposed. The opening hours of the outdoor seating area are currently from 11:00-20:00 hours (Sunday to Thursday) and 11:00-21:00 hours (Friday and Saturday). The proposal is to extend the opening hours to 08:00-23:00 hours (7 days a week).

RBA Acoustics has been commissioned to undertake a noise impact assessment of extending of the operating hours of the front outdoor seating area, to be used in support of the application.

Noise associated with patrons using the front outdoor seating area has been assessed and compared with the measured existing noise levels at the site. This report presents the results of the noise assessment.

2.0 SITE DESCRIPTION

Pizza Express Didsbury is located on Lapwing Lane, at the junction of Palatine Road. It has an outside seating area located at the front of the building capable of seating 44 patrons. Currently the outdoor seating area can be used between 11:00-20:00 hours (Sunday to Thursday) and 11:00-21:00 hours (Friday and Saturday). Site Plan drawing showing the site layout is attached in Figure 1.

The premises proposes to extend the opening hours of the outdoor seating area to 08:00-23:00 hours (7 days a week) to allow for greater flexibility of use.

The closest noise sensitive residential properties are understood to be located 15m to the south of the premises, at First Floor level above the West Didsbury Post Office, 99 Lapwing Lane.

The neighbouring premises to the south of site is a public house (Wine and Wallop) which has an outdoor seating area that is open to its customers from 09:00 to 23:00, with three more premises further along the bank of shops also having outdoor seating areas.

3.0 PLANNING GUIDANCE

The scope of this report is to provide satisfactory evidence that noise will not impact on local residencies as a result of the extended opening hours of the outdoor seating area.

The following standards and guidance contain relevant criteria for our noise impact assessment of patrons using the outdoor seating area.

3.1 Noise Policy Statement for England (NPSE)

The NPSE seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The statement applies to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise.

The statement sets out the long-term vision of the government's noise policy, which is to "promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development".

This long term vision is supported by three aims:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life; and
- Where possible, contribute to the improvements of health and quality of life.

The long-term policy vision and aims are designed to enable decisions to be made regarding what is an acceptable noise burden to place on society.

The Explanatory Note within the NPSE provides further guidance on defining "significant adverse effects" and "adverse effects" using the following concepts:

- No Observed Effect Level (NOEL) – the level below which no effect can be detected. Below this level no detectable effect on health and quality of life due to noise can be established;
- Lowest Observable Adverse Effect Level (LOAEL) – the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) – the level above which significant adverse effects on health and quality of life occur.

The three aims can therefore be interpreted as follows:

- The first aim is to avoid noise levels above the SOAEL;
- The second aim considers situations where noise levels are between the LOAEL and SOAEL. In such circumstances, all reasonable steps should be taken to mitigate and minimise the effects. However this does not mean that such adverse effects cannot occur; and
- The third aim considers situations where noise levels are between the LOAEL and NOEL. In these circumstances, where possible, reductions in noise levels should be sought through the pro-active management of noise.

The NPSE recognises that it is not possible to have single objective noise-based measures which define the SOAEL, LOAEL and NOEL and that are applicable to all sources of noise in all situations. The levels are likely to be different for different noise sources, receptors and at different times of the day.

3.2 Planning Practice Guidance (2014)

The national Planning Practice Guidance (PPG) "advises on how planning can manage potential noise impacts in new development" and provides guidelines that are in line with the NPPF.

The PPG states that local planning authorities should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

This guidance introduced the additional concepts of NOAEL (No Observed Adverse Effect Level), and UAEL (Unacceptable Adverse Effect Level) which can be seen in Table 1 below.

Factors to be considered in determining whether noise is a concern are identified including the absolute noise level of the source, the existing ambient noise climate, time of day, frequency of occurrence, duration, character of the noise and cumulative effects.

With particular regard to mitigating noise effects on residential development the PPG highlights that effects may be partially off-set if residents have access to a relatively quiet façade as part of their dwelling or a relatively quiet amenity space (private, shared or public).

Table 1 – Planning Practice Guidance

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not noticeable	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid through use of appropriate mitigation whilst taking into account the social and economic benefit
Unacceptable Observed Adverse Effect Level			
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent through use of appropriate mitigation

3.3 Institute of Environment Management & Assessment (IEMA) and Institute of Acoustics Guidelines on Noise Impact Assessment

When assessing the subjective impact of any development it is important to consider the specific circumstances of the site. The characteristics of the various sources must therefore be considered in addition to factors common to all noise impact assessments such as existing background noise level comparisons.

The Institute of Environmental Management and Assessment (IEMA) document "Guidelines on Noise Impact Assessment" gives guidance as to how basic noise changes may be categorised.

Table 2 has been adopted to categorise the difference between the measured levels as identified in the guidelines published jointly by the IOA and IEMA. This identifies the impact of different levels of noise above the prevailing background noise.

Table 2 - Significance of Noise Level Change

Noise Change (dBA)	Category
0	No Impact
0.1-2.9	Slight Impact
3.0 – 4.9	Moderate Impact
5.0 – 9.9	Substantial Impact
10.0 and above	Severe Impact

3.4 Subjective Impact

In addition to the comparison of the difference in background noise levels in line with the above guidelines, it is important to understand the potential subjective effect of such changes in the noise level. Table 3 compares the generally accepted subjective response of typical subjects to variations in sound pressure level.

Table 3 – Subjective Response to Noise Levels

Change in Sound Level (dB)	Change in Power		Apparent Change in Loudness
	Decrease	Increase	
3	1/2	2	Just Perceptible
5	1/3	3	Clearly Noticeable
10	1/10	10	Half or Twice as Loud
20	1/100	100	Much Quieter or Louder

3.5 Summary

Based on the above guidance, we consider it appropriate that the following increases of the existing measured background noise levels caused by patron speech noise will fall in the following effect level categories.

Table 4 – NPSE Effect Level Categories

Background Noise Level Increase $L_{eq,T}$ (dBA)	Increasing Effect Level
0	No Observed Effect
0.1 – 2.9	No Observed Adverse Effect
3.0 – 4.9	Lowest Observed Adverse Effect
5.0 – 9.9	Significant Observed Adverse Effect
10.0 and above	Unacceptable Adverse Effect

4.0 ENVIRONMENTAL NOISE SURVEY

4.1 General

Attended monitoring of the prevailing background noise was undertaken over the following periods:

08:00hours to 11:00hours on Monday 9th December 2019
20:00hours to 23:00hours on Monday 9th December 2019

The weather was generally considered suitable for obtaining representative noise measurements, it being predominantly dry with little wind.

Measurements were made of the L_{A90}, L_{Amax} and L_{Aeq} noise levels over sample periods of 15-minutes duration.

4.2 Measurement Location

To determine the existing noise climate around the site measurements were taken 1m from the Pizza Express façade on Lapwing Lane. The microphone was positioned on a tripod 1.2m above ground level. The results at this measurement location are considered to be subject to façade reflection effects. The measurement position is also illustrated on the attached Site Plan shown in Figure 1.

Whilst on site, it was noted the prevailing noise climate mainly consisted of road traffic movements the junction of Lapwing Lane and Palatine Road, tram movements from West Didsbury Metrolink Station, as well patrons from the nearby pubs and restaurants.

4.3 Instrumentation

For information regarding the equipment used for the measurements please refer to Appendix B.

The sound level meter was calibrated both prior to and on completion of the survey with no calibration drift observed.

4.4 Results

The measured L_{Aeq}, L_{A90} and L_{Amax} 1-hour period levels are shown as time-histories on the attached Graphs 1-2. The averaged hourly L_{Aeq} noise levels are summarised in Table 5 below.

Table 5 – Measured $L_{Aeq, 1hour}$ Noise Levels

Measurement Period	Average $L_{Aeq, 1hour}$ Noise Level (dB)
08:00 – 09:00	63.3
09:00 – 10:00	63.4
10:00 – 11:00	61.7
20:00 – 21:00	63.5
21:00 – 22:00	61.3
22:00 – 23:00	58.9

*Measurements are subject to façade reflections therefore the levels shown include a 3dB correction subtracted from the measured level, these corrected values have also been used in our analysis.

5.0 ASSESSMENT OF OUTDOOR SEATING AREA

5.1 Assumptions Used in Assessment

Our noise assessment has assumed the following:

Number of Guests Using Outdoor Seating Area

As a worst-case assumption, we have assumed the maximum capacity of the outdoor seating area is 44. Our assessment assumes that when at maximum capacity, half of the customers using the outdoor seating area will be talking at any one time using a "raised" voice, i.e. 22 people speaking simultaneously. This is based on the assumption that two people would typically be speaking at any one time, on each table, during a conversation.

Nearest Noise Sensitive Receptors

The nearest noise-sensitive receptor is understood to be the First Floor residential windows above the West Didsbury Post Office at 99 Lapwing Lane, approximately 15m to the nearest point of the Pizza Express outdoor seating area.

Operational Hours of Outdoor Seating Area

Our assessment assumes the outdoor seating area will be used between the proposed hours of 08:00 – 23:00.

Noise Level Data Used in Assessment

The speech noise levels used in the acoustic model are based on a single person speaking at a normal conversation level. This level has then been extrapolated for multiple people speaking simultaneously using the 10Log(N) formula, where "N" is the maximum number of people simultaneously speaking. Distance loss attenuation has also been considered.

The source of the noise data is also presented below. It should be noted, the speech noise data used correlates well with noise data published in other documents and is widely used for these type of assessments. In addition, we would note the data used in our assessment is in accordance with speech noise levels previously measured by RBA Acoustics.

Table 6 – Noise Data of Speech Used in Acoustic Model

Parameter	Sound Power Level (dB) at Octave Band Centre Frequency (Hz)								Overall dBA
	63	125	250	500	1k	2k	4k	8k	
1No. person speaking at raised conversation level [1]	48	59	70	75	72	64	57	48	**75**

REFERENCE USED FOR NOISE DATA:

[1] ANSI 3.5-1997 (1997). American National Standard – Methods for Calculation of the Speech Intelligibility Index

5.2 Results

Based on 22 people speaking simultaneously using a raised voice, we have predicted the following noise levels at the nearest noise sensitive receptors.

Table 7 – Predicted Noise Increase at Nearest Noise Sensitive Receptors

Noise Sensitive Receptor	Lowest Measured Existing Hourly $L_{Aeq,1h}$ (dB) (08:00 – 11:00 and 20:00 – 23:00 hours)	Predicted $L_{Aeq,1h}$ from guest speech noise (dB)	Resultant $L_{Aeq,1h}$ (dB)	Worst-case Hourly Noise Level Increase (dB)
First Floor residential windows of 99 Lapwing Lane	58.4	54.2	59.8	1.4

5.3 Discussion of Results

Significance of Noise Level Change and Noise Policy Statement for England Effect Level

When comparing the increase in noise level change to the IEMA guidelines summarised in Table 2 of this report, the worst-case subjective significance of the worst-case 1.4 dBA is considered a "Slight Impact".

With reference to the NPSE categories referred to in Table 4, such an increase would be considered "No Observed Adverse Effect".

Subjective Response to Apparent Change of Loudness

When assessing the worst-case 1.4 dBA noise level increase to the subjective response of the apparent change of loudness, as shown in Table 3 of this report, the change in loudness should not be discernible.

It should be noted that this assessment is based on worst-case assumptions of exactly half the maximum number of patrons talking simultaneously *using raised voices*, and that typical *use will result in even less impact.*

6.0 CONCLUSION

RBA Acoustics have undertaken noise monitoring at Pizza Express, Didsbury. The measured noise levels are presented herein.

A noise impact assessment has been carried out which shows that the extended operating hours of the outdoor seating area will not have an adverse impact on the nearest noise sensitive receptor.

As such, it is considered that the extension of the opening hours of the outdoor seating area should not be refused on the basis of noise.

Appendix A - Acoustic Terminology

dB	Decibel - Used as a measurement of sound pressure level. It is the logarithmic ratio of the noise being assessed to a standard reference level.
dB(A)	The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dB(A) level. Because of being a logarithmic scale noise levels in dB(A) do not have a linear relationship to each other. For similar noises, a change in noise level of 10dB(A) represents a doubling or halving of subjective loudness. A change of 3dB(A) is just perceptible.
L_{eq}	L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (1 hour).
L_{Aeq}	The level of notional steady sound which, over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measured over that period.
L_{An} (e.g L_{A10}, L_{A90})	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the average minimum level and is often used to describe the background noise.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during the measurement period, T. It is commonly used to measure the effect of very short duration bursts of noise, such as for example sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the general level of, say, traffic noise, but because of their very short duration, maybe only a very small fraction of a second, may not have any effect on the L_{eq} value.

Appendix B - Instrumentation

The following equipment was used for the measurements

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Expiry Date
Norsonic Type 1 Sound Level Meter	Nor140	1406007	U28864	26 June 2020
Norsonic Pre Amplifier	1209	20043		
Norsonic ½“ Microphone	1225	208146	28863	26 June 2020
Norsonic Sound Calibrator	1251	34127	U28862	26 June 2020

Appendix C – Graphs and Site Plans

Pizza Express, Didsbury

L_{Aeq} Time History

Measurement Position 1 - Monday 9th December

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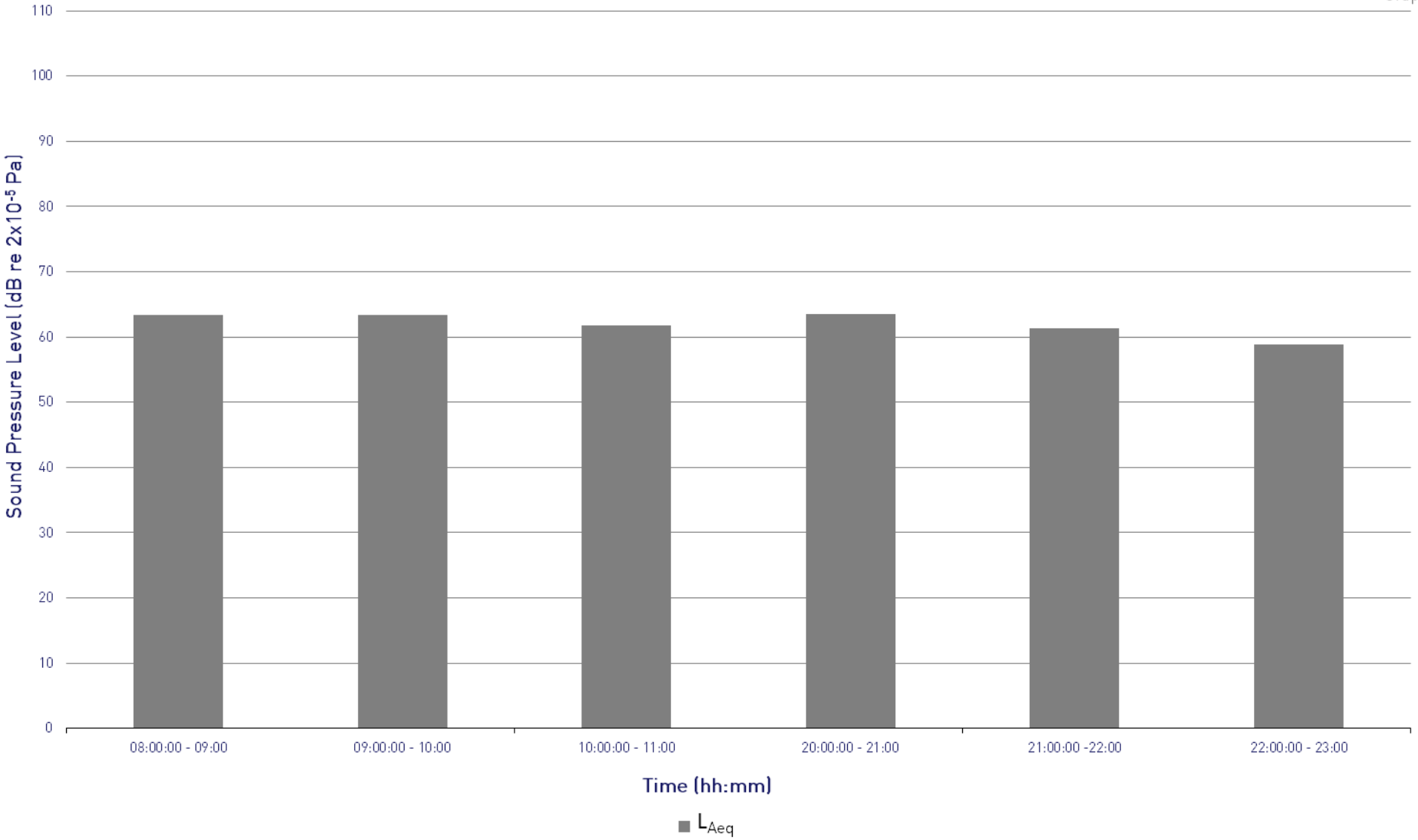
Graph 1



Pizza Express, Didsbury

$L_{Amax,f}$ and L_{A90} Time History

Measurement Position 1 - Monday 9th December

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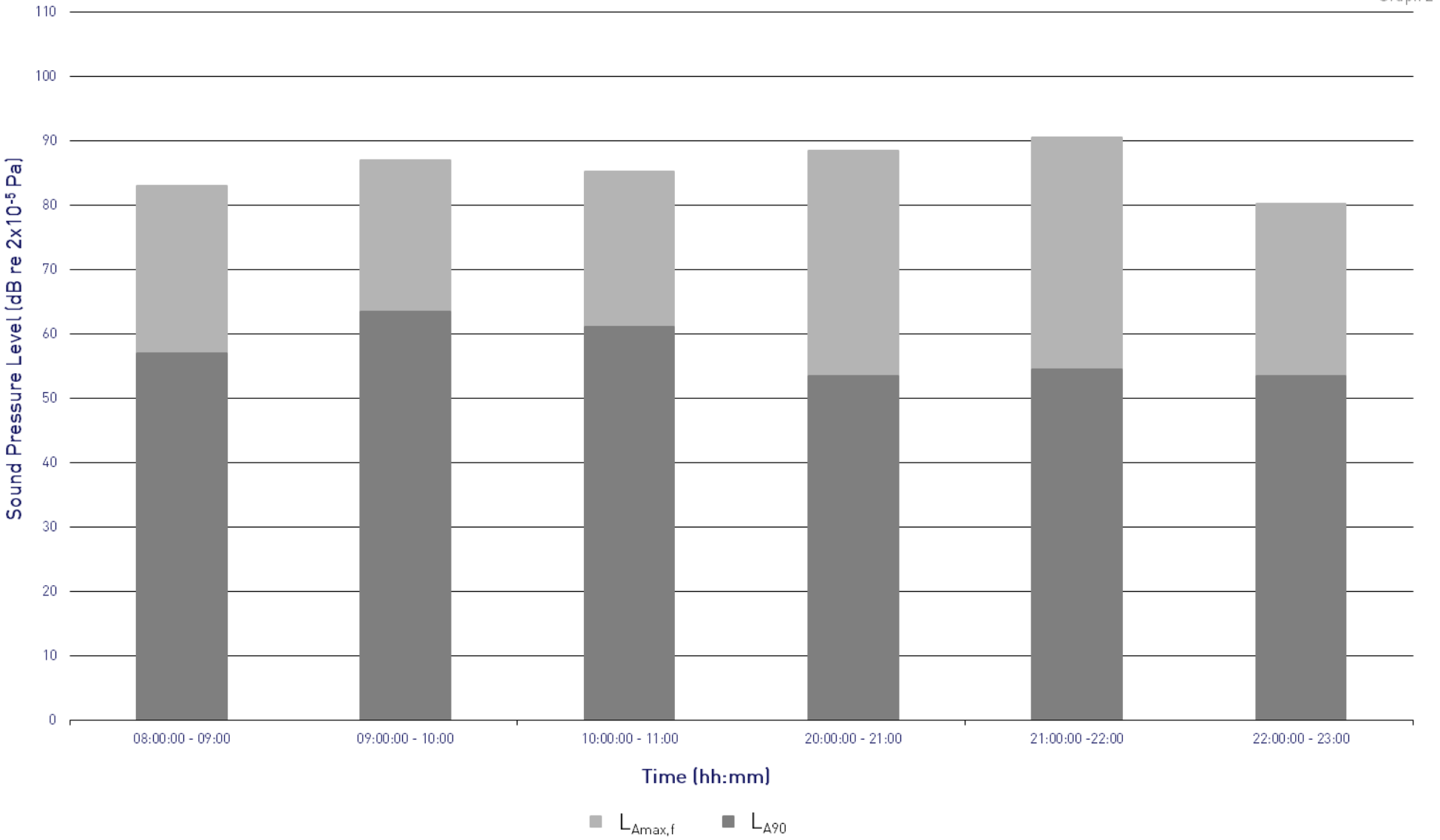
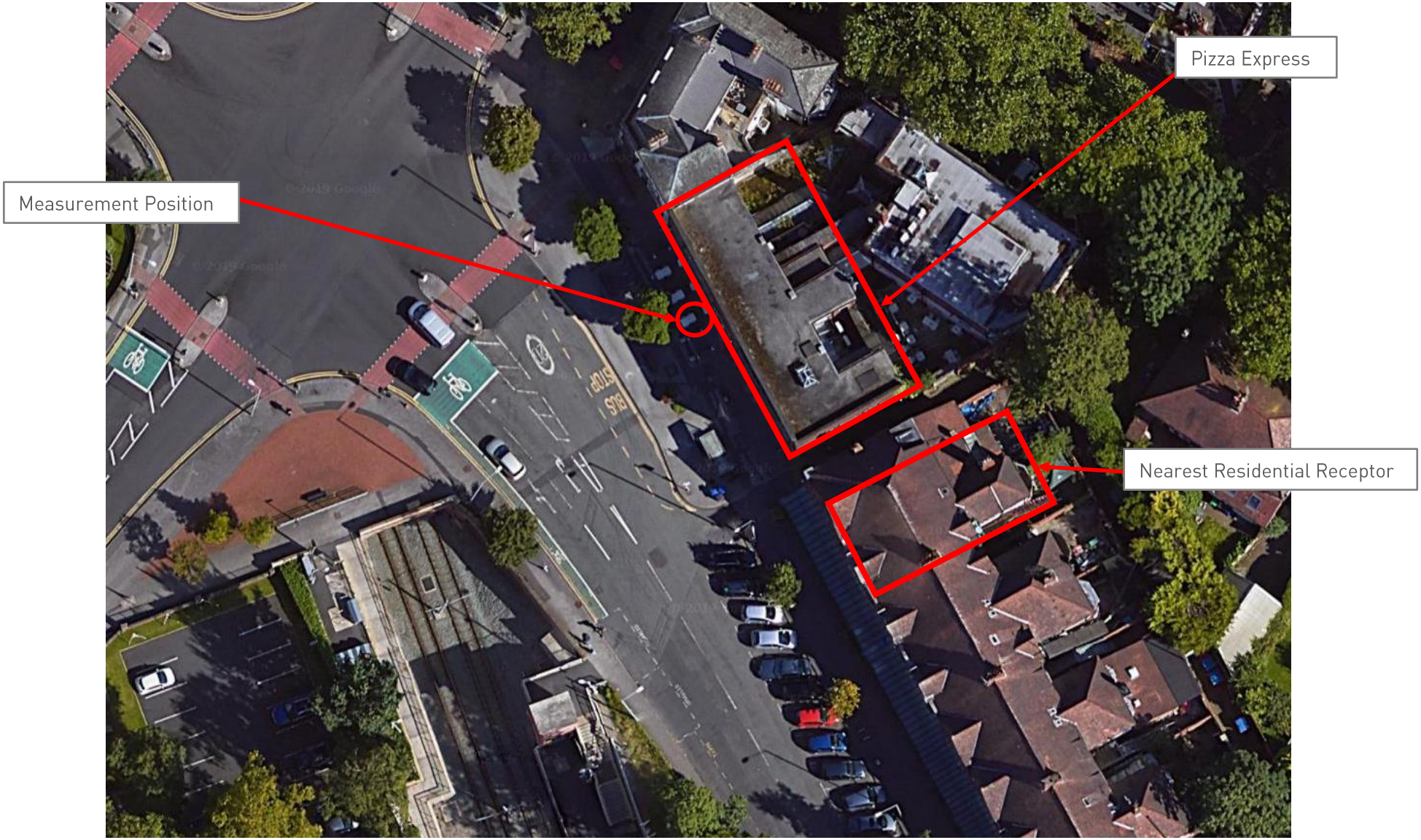
Graph 2





Pizza Express, Didsbury
Site Plan
Project 9884

Figure 1
17 December 2019
Not to Scale

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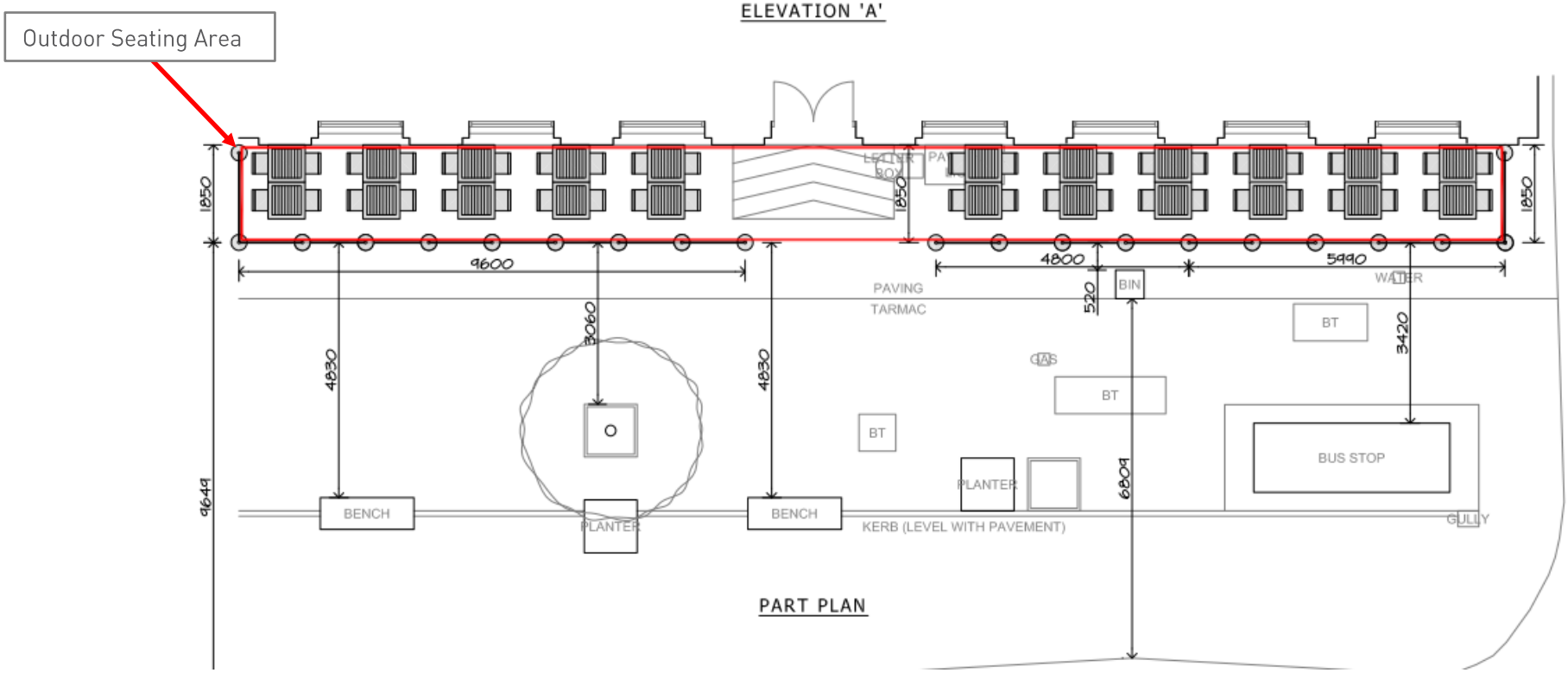
ELEVATION 'A'



PART PLAN

Pizza Express, Didsbury
Site Plan Showing Outdoor Seating Area
Boundary Acoustic Lining

Figure 3
17 December 2019
Not to Scale

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