Aval Consulting Group.

Noise Impact Assessment - Addendum

178B Royal College Street and Arches 7475 Randolph Street NW1 0SP

Client Name: Jacuna Kitchens

November 2022

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1. Introduction

1.1 Overview

Aval Consulting Group has been commissioned by Jacuna Kitchens (‘the client’) to carry out a Noise Impact Assessment for the existing development at 178B Royal College Street and Arches 7475 Randolph Street, Camden (‘the premises’). The development is a commercial kitchen and delivery centre consisting of 15 commercial kitchen units.

Camden Council requires a noise assessment carried out in accordance with the criteria of BS4142:2014, BS8233 and local noise policy, as presented in the following report.

This report is to support the response to the appeal to the refused planning application.

Detailed site drawings are presented in Appendix B.

1.2 Objective

Part of the refusal of the planning application was due to concerns about noise generated from traffic due to the delivery and collections. This report will justify that the traffic noise from vehicles for deliveries and collections will not have a detrimental impact on the nearest sensitive receptor (NSR), which was determined to be the residential flats to the rear of the site.

If deemed necessary, mitigation measures will be provided.

1.3 Site Location

Figure 1.1 shows the site location. The site is located under a railway line (Overground Tube Line), with entrances on Royal College Street, and Randolph Street. The extraction system has two exhausts which are located on the north wall of the premises, with flues running up the railway arches. When all kitchens are occupied, the site is in operation between 09:00 – 23:00.

The entrance path from Randolph Street was used to measure the noise from the traffic entering and exiting the site. A traffic survey was undertaken by the National Data Collection (NDC) to count the number of vehicles entering and exiting the site and vehicle types under the current operation conditions of the site (9 out of 15 operating kitchens). The predicted future trip generation was also provided by the traffic surveyors to predict the number of trip generations under a fully operational site. The traffic survey was undertaken between 28th September 2022 to 1st October 2022.

The traffic noise monitoring was undertaken for a total of 5 days to measure the traffic noise and to determine the noise levels at the NSR (BS8233). Detailed site drawings are attached in Appendix B.

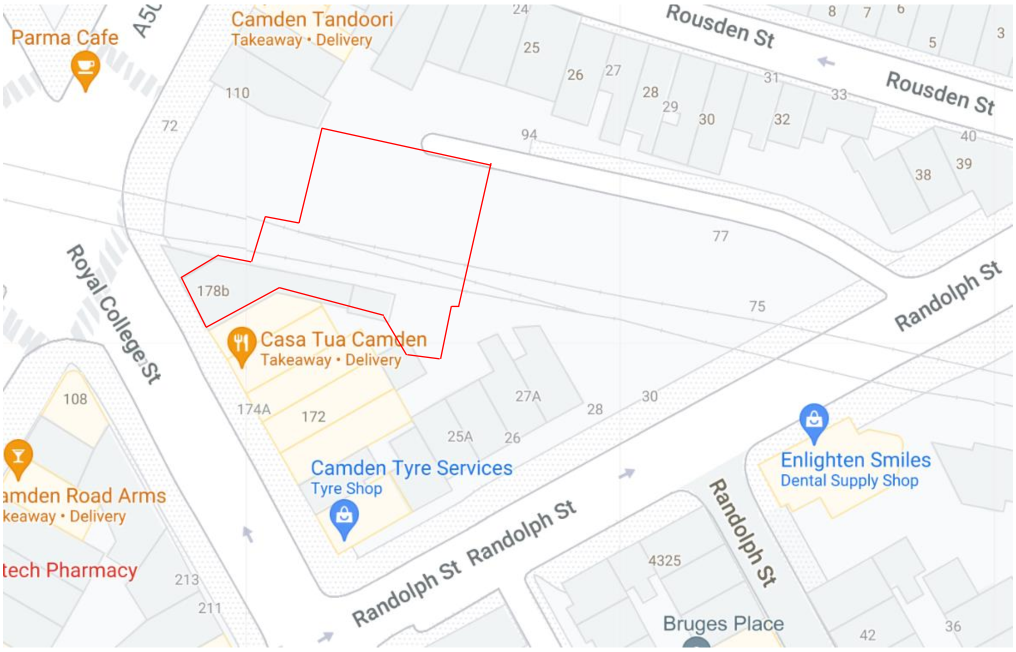


Figure 1.1: Proposed site location (image source: Google Maps)

2. Relevant Noise Standards

This section summarises all legislation, policy, statutory and non-statutory guidelines relevant to the proposed development. Furthermore, the latest regional and local planning policy guidance specifically applicable to the proposed development has been reviewed.

2.1 The 'National Planning Policy Framework (NPPF)

The updated 2021 version of the 'National Planning Policy Framework (NPPF)'[1] contains information and general guidance to Local Authorities in relation to considering and taking into account noise. The National Planning Policy Framework (NPPF) guidance reinforces that noise should be taken into account considering planning policies and decisions. Some of the guidance contained in the 'National Planning Policy Framework (NPPF)' includes the following:

- Paragraph 174e: "…*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*…"
- Paragraph 185a,b: "*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;…*"
- Paragraph 187: *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.*

In conjunction with the 'National Planning Policy Framework (NPPF)', 'The Noise Policy Statement for England (NPSE)'[2], dated March 2010, states the following regarding a long-term vision of government noise policy:

"Noise Policy Statement for England Aims:

- *The first aim of the NPSE:*

  Avoid significant adverse impacts on health and quality of life from environmental, neighbour, and neighbourhood noise within the context of Government policy on sustainable development.

[1] The National Planning Policy Framework (2018/19) https://www.gov.uk/guidance/national-planning-policy-framework
[2] Noise Policy Statement for England (NSPE) https://www.gov.uk/government/publications/noise-policy-statement-for-england

- *The second aim of the NPSE:*

  Mitigate and minimize adverse impacts on health and quality of life from environmental, neighbour, and neighbourhood noise within the context of Government policy on sustainable development.

- *The third aim of the NPSE:*

  Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour, and neighbourhood noise within the context of Government policy on sustainable development."

In terms of the NPSE, the impact of noise can be categorised by the following terms:

- NOEL – No Observed Effect Level – The level where no effect can be detected
- LOAEL – Lowest Observed Adverse Effect Level – The level where adverse effects on health and quality of life can be detected
- SOAEL – Significant Observed Adverse Effect Level – The level where significant adverse effects on health and quality of life may occur.

The NPSE further states that:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors, and at different times."

No specific guidance is detailed or given in the 'National Planning Policy Framework (NPPF)', or 'The Noise Policy Statement for England (NPSE)' in terms of acceptable acoustic criteria/noise criteria in order to achieve the 'NOEL, LOAEL, or SOAEL'. Therefore, it is considered necessary to refer to alternate national guidance, preferably standardised or regulated such as an appropriate British Standard (BS), or in the absence of this, alternate World Health Organisation (WHO) guidelines, etc.

The British Standard 8223: Sound Insulation and Noise Reduction for Buildings/Code of Practice BS 8223: Sound Insulation and Noise Reduction for Buildings/Code of Practice states that for different spaces, there might be a range of noise levels that are considered acceptable.

2.2 WHO 'Guidelines for Community Noise'

Where noise is assessed against the 'Absolute Level', then this can be split into separate daytime and night-time legislation. The WHO 'Guidelines for Community Noise' state in 4.2.7 "Annoyance Responses" that:

"During the daytime, few people are seriously annoyed by activities with L_{Aeq} levels below 55 dB; or moderately annoyed with L_{Aeq} levels below 50dB. Sound pressure levels during the evening and night should be 5-10 dB lower than during the day…."

The guidance goes on to provide a daytime[3] internal acoustic criteria relative to critical health effect(s) that of 35 dB $L_{Aeq,16\ hour}$, and a night-time[4] level of 30 dB $L_{Aeq,8\ hour}$ / 45 dB L_{AFmax} linked with dwelling indoors. Therefore, assuming a maximum external noise level of 50 dB $L_{Aeq,t}$

[3] daytime is typically between 07:00 h and 23:00 h.
[4] night-time is between 23:00 h and 07:00 h.

during the daytime, (considering a 15 dB reduction in noise via a partially open window) an internal noise level of 35 dB $L_{Aeq,t}$ should be achieved.

During the night-time periods, a further publication; WHO Night Noise Guidelines For Europe' published in 2009 states that:

"Below the level of 30 dB $L_{night,outside}$, no effects on sleep are observed except for a slight increase in the frequency of body movements during sleep due to night noise. There is no sufficient evidence that the biological effects observed at the level below 40 dB $L_{night,outside}$ are harmful to health. However, adverse health effects are observed at the level above 40 dB $L_{night,outside}$, such as self-reported sleep disturbance, environmental insomnia, and increased use of somnifacient drugs and sedatives. Therefore, 40 dB $L_{night,outside}$ is equivalent to the LOAEL for night noise….. The LOAEL of night noise, 40 dB $L_{night,outside}$, can be considered a health-based limit value of the night noise guidelines (NNG) necessary to protect the public, including most of the vulnerable groups such as children, the chronically ill and the elderly, from the adverse health effects of night noise."

Therefore, where absolute levels need to be referenced, a maximum daytime noise limit of 50 dB $L_{Aeq,t}$ can be considered, with the LOAEL for night of 40 dB $L_{night,outside}$ being considered.

2.3 IEMA (Institute of Environmental Management & Assessment)

IEMA also defines the sensitivity of receptors according to the table below

Table 2.1 Effect Descriptors (Guidelines For Environmental Noise Assessment, 2014)

Very Substantial	Greater than 10 dB LAeq change in sound level perceived at a receptor of great sensitivity to noise
Substantial	Greater than 5 dB LAeq change in sound level at a noise-sensitive receptor, or a 5 to 9.9 dB LAeq change in sound level at a receptor of great sensitivity to noise
Moderate	A 3 to 4.9 dB LAeq change in sound level at a sensitive or highly sensitive noise receptor, or a greater than 5 dB LAeq change in sound level at a receptor of some sensitivity
Slight	A 3 to 4.9 dB LAeq change in sound level at a receptor of some sensitivity
None/Not Significant	Less than 2.9 dB LAeq change in sound level and/or all receptors are of negligible sensitivity to noise or marginal to the zone of influence of the proposals

2.4 The British Standard 8223: Sound Insulation and Noise Reduction for Buildings/Code of Practice

BS 8223: Sound Insulation and Noise Reduction for Buildings/Code of Practice provides acceptable noise levels. Table 4 of British Standard BS 8223 reproduced below (Table 2.1) provides appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

Table 2.2: British Standard recommended indoor noise levels for dwellings (Source: British Standard BS: 8223)

Activity	Location	07:00 to 23:00 (Day Time)	23:00 to 07:00 (Night Time)
Resting	Living Room	35 dB $L_{Aeq, 16\ hour}$	-
Dinning	Dining Room/area	40 dB $L_{Aeq, 16\ hour}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq, 16\ hour}$	30 dB $L_{Aeq, 8\ hour}$

In addition, the WHO Guidelines 1999 recommends that to avoid sleep disturbance, indoor night-time guideline noise values of 30 dB L_{Aeq} for continuous noise and 45 dB L_{AFmax} for individual noise events should be applicable. It is to be noted that the WHO Night Noise Guidelines for Europe 2009 makes reference to research that indicates sleep disturbance from noise events at indoor levels as low as 42 dB L_{AFmax}. The number of individual noise events should also be taken into account and the WHO guidelines suggest that indoor noise levels from such events should not exceed approximately 45 dB L_{AFmax} more than 10 – 15 times per night. The WHO document recommends that steady, continuous noise levels should not exceed 55 dB L_{Aeq} on balconies, terraces, and outdoor living areas. It goes on to state that to protect the majority of individuals from moderate annoyance, external noise levels should not exceed 50 dB L_{Aeq}.

BS 8223 also states that the ambient noise levels in non-domestic buildings should not normally exceed the design ranges in the table below.

Table 2.2: Typical Noise levels in non-Domestic Buildings (Source: British Standard BS: 8223)

Activity	Location	Design Range dB $L_{Aeq,T}$
Speech or telephone communications	Department store, Cafeteria, canteen, Kitchen	50-55
	Concourse Corridor, circulation space	45-55
Study and work requiring concentration	Library, gallery, museum	40-50
	Staff/meeting room, training room	35-45
	Executive office	35-40
Listening	Place of worship, counselling, meditation, relaxation	30-35

2.5 BS 4142: 2014; Methods for rating and assessing industrial and commercial sound

In terms of industrial/commercial development, guidance is set out in BS 4142: 2014, 'Methods for rating and assessing industrial and commercial sound'. BS 4142 requires the noise from the process/equipment (in LA_{eq}) to be compared with the background sound level (LA_{90}) in conjunction with the new noise source.

BS 4142 states that if the rated noise level exceeds the LA_{90} background sound level by around +10 dB or more, then it is likely that the resultant noise may have a significant adverse impact, a difference of around +5 dB over the background sound level is likely to have an adverse impact, and where the rating level does not exceed the background sound level it is an indication that the resultant noise is likely to have a low adverse impact.

BS 4142: 2014 provides a method for assessing whether an industrial or commercial sound source (e.g. fixed mechanical plant) is likely to cause a disturbance to persons living near to the sound source.

The 2014 document introduces three main acoustic features:

- **Tonality:** Defined as more sound in the 1/3 octave band than those nearby 1/3 octave bands or more sound in a given frequency than in those nearby frequencies. The tonality feature correction +6dB and can be applied using subjective method or an objective method using 1/3 octave bands.
- **Impulsivity:** defined as sound that increases by a rate of at least 10dB per second, regardless of its duration. The impulsivity feature correction range from 0-9 dB and can be applied using a subjective method or an objective method using a sound level meter capable of sampling sound at either once every 0.01s interval or once every 0.025s interval.
- **Intermittency:** Defined as sound that can be identified as being on/off during the measurement period in which case the correction factor that is applied to the specific sound source (e.g. fume extraction system) is +3 DB.

BS 4142 assesses potential significant effect by comparing the source noise (extractor duct vent noise) with the measured background noise level (LA90). The standard provides a penalty (correction factor) for acoustic features for instance bangs or tonal qualities that can increase the likelihood of noise complaints and in these cases, the standard requires a correction to be added to the source noise level. The source noise level along with the correction factor is referred to as the ‘rating level’. The rating level is then compared with the background level (La90). BS 4142:2014 advocates the use of LAeq,T - a level, which is directly measurable and termed the Specific Sound Level.

- Subjectively the Specific Sound Level may be corrected as follows:

The Specific Sound Level is subject to a correction for tonality between 0dB to +6dB for sound ranging from not tonal to prominently tonal. Subjectively, this can be converted to a penalty of 2dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6dB where it is highly perceptible.

The Specific Sound Level may be also corrected to impulsivity. A correction of up to +9dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of +3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it is clearly perceptible, and 9dB where it is highly perceptible.

Other sound characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, can have a penalty of 3dB applied.

Where tonal and impulsive characteristics are present in the specific sound within the same reference period then these two corrections can both be taken into account. If one feature is dominant then it might be appropriate to apply a single correction. Where both features are likely to affect perception and response, the corrections ought normally to be added in a linear fashion.

Further corrections may be applied due to intermittency. When the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. This can necessitate measuring the specific sound over a number of shorter sampling periods that are in combination less than the reference time interval in total, and then calculating the specific sound level for the reference time interval allowing for time when the specific sound is not present. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied.

If the subjective method is not sufficient for assessing the audibility of tones in sound or the prominence of impulsive sounds, BS4142:2014 suggests using the one-third octave method and/or the reference methods, as appropriate.

The one-third octave method tests for the presence of a prominent, discrete-frequency spectral component (tone) typically compares the LZeq,T sound pressure level averaged over the time when the tone is present in a one-third-octave band with the time-average linear sound pressure levels in the adjacent one-third-octave bands. For a prominent, discrete tone to be identified as present, the time-averaged sound pressure level in the one-third-octave band of interest is required to exceed the time-averaged sound pressure levels of both adjacent one-third-octave bands by some constant level difference. The level differences between adjacent one-third-octave bands that identify a tone are:

• 15 dB in the low-frequency one-third-octave bands (25Hz to 125Hz);

• 8 dB in the middle-frequency one-third-octave bands (160Hz to 400Hz); and

• 5 dB in the high-frequency one-third-octave bands (500Hz to 10,000Hz).

- The reference (objective) method.

If the presence of audible tones is in dispute, a special measurement procedure can be used to verify their presence. Based on the prominence of the tones this procedure also provides recommended level adjustments. The aim of the reference method is to assess the prominence of tones in the same way as listeners do on average. The method is based on the psychoacoustic concept of critical bands, which are defined so that sound outside a critical band does not contribute significantly to the audibility of tones inside that critical band. The method includes procedures for steady and varying tones, narrow-band sound and low-frequency tones, and the result is a graduated 0dB to 6dB adjustment. It is known as the Joint Nordic Method 2 and is to be found in ISO 1996-2. The reference method is also described in BS4142:2014.

Specific Sound Level with (or without) added contentions is termed the Rating Level. When used to assess industrial or commercial sound, the Rating Level is determined and the LA90 background level is subtracted from it. Typically, the greater this difference, the greater the magnitude of the impact.

A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

In addition to above, based on the Guidance of Control of Odour and Noise from Commercial Kitchen Exhaust Systems (2018), there are two fundamental categories of noise source are of relevance. The first is the noise produced by the fan, which is a function of the type of fan (axial, centrifugal, mixed flow, etc), the rate of the airflow and the pressure drop. For these calculations, the octave band sound power from the fan is required. This can normally be obtained from the manufacturer.

The second category of noise is generated by turbulence as the air passes within the ducts or through the exit grille or louvre. In this case, the amount of noise is determined by the design of duct, grille, or louvre, the pressure drop across terminations, the velocity of the air (this can be variable across the duct, grille, or louvre) and the area of the duct or opening. The problem with this form of noise, especially at terminations, is that in most situations it can only be controlled at its source. For example, at the feature that is generating the noise as there is no further length of duct in which to install noise control equipment.

In some situations, a third source may need to be considered. This is where noise generated within the building breaks into the ductwork and is radiated from the outlet. The area of the duct walls, the acoustic properties of the duct walls, and the area of any inlets determine the amount of break-in noise. Once this noise has broken into the ducts it can be treated as if it were an additional component of the fan noise. However, the nature of this additional noise is such that it usually contains a relatively high level of low-frequency sound which can be difficult to attenuate.

The attenuation of fan noise (and break-in noise) provided by the ductwork is determined by the length of the ducts, the presence of any bends, changes in cross-section, the presence of any plenum chambers and termination effects (including sound-attenuating louvres if present and the attenuation provided by any change in cross-section). A balance has to be struck between the acoustic benefit of bends and louvres etc and the pressure drop that these create, possibly requiring a larger fan.

The sound energy components arising from fan noise, turbulence within the duct and at outlets, and from noise break-in, combine to produce an acoustic source at the outlet. The energy will then propagate away from the outlet in a manner determined by the nature and geometry of surrounding buildings and terrain. The nature, temporal characteristic and level of the resultant sound that reaches the ears of people in the vicinity (usually quantified by considering the noise at façades), and its level relative to the background noise, all contribute to its potential to cause disturbance and complaint. These factors should be taken into account at the planning stage as a matter of course. They form the basis of BS 4142 “Rating industrial noise affecting mixed residential and industrial areas” which is also used by Local Authority as support to the issue of a Noise Abatement Notice under the Environmental Protection Act.

2.6 Noise at Work 2005

For new premises or premises covered by planning conditions restricting the impact of noise the system shall be designed to prevent an acoustic impact on the external environment and therefore harm to the amenity, as well as ensuring that noise exposure of kitchen staff does not constitute an occupational noise problem (see Control of Noise at Work Regulations 2005).

The lower exposure action values are

(a) a daily or weekly personal noise exposure of 80 dB (A-weighted); and

(b) a peak sound pressure of 135 dB (C-weighted).

The upper exposure action values are

(a) a daily or weekly personal noise exposure of 85 dB (A-weighted); and

(b) a peak sound pressure of 137 dB (C-weighted).

The exposure limit values are

(a) a daily or weekly personal noise exposure of 87 dB (A-weighted); and

(b) a peak sound pressure of 140 dB (C-weighted).

Where the exposure of an employee to noise varies markedly from day to day, an employer may use weekly personal noise exposure in place of daily personal noise exposure for the purpose of compliance with these Regulations.

3. Noise Survey

3.1 Overview

This section provides the details of the methodological approach taken to assess the prevailing acoustic environment at the site where new noise-sensitive receptors (residential units) will be introduced. To establish the current acoustic environment and the monitoring of noise levels at the site, the key noise indicators namely $L_{Aeq\ 1min}$, L_{A90}, L_{Amax}, L_{den}, L_{night}, and $L_{evening}$ are used where applicable and are described in Appendix A.

3.2 Noise Monitoring Locations

Noise, for the specific site, was monitored at the locations shown in Figure 3.1. The location was deemed appropriate to measure the noise levels from all incoming traffic entering the delivery areas from Randolph Street. It should be noted that all measurements were carried out as per the requirements of BS7445.

As the monitoring was not carried out in free-field conditions, a façade correction factor (-3dB) will be applied as required by BS7445.

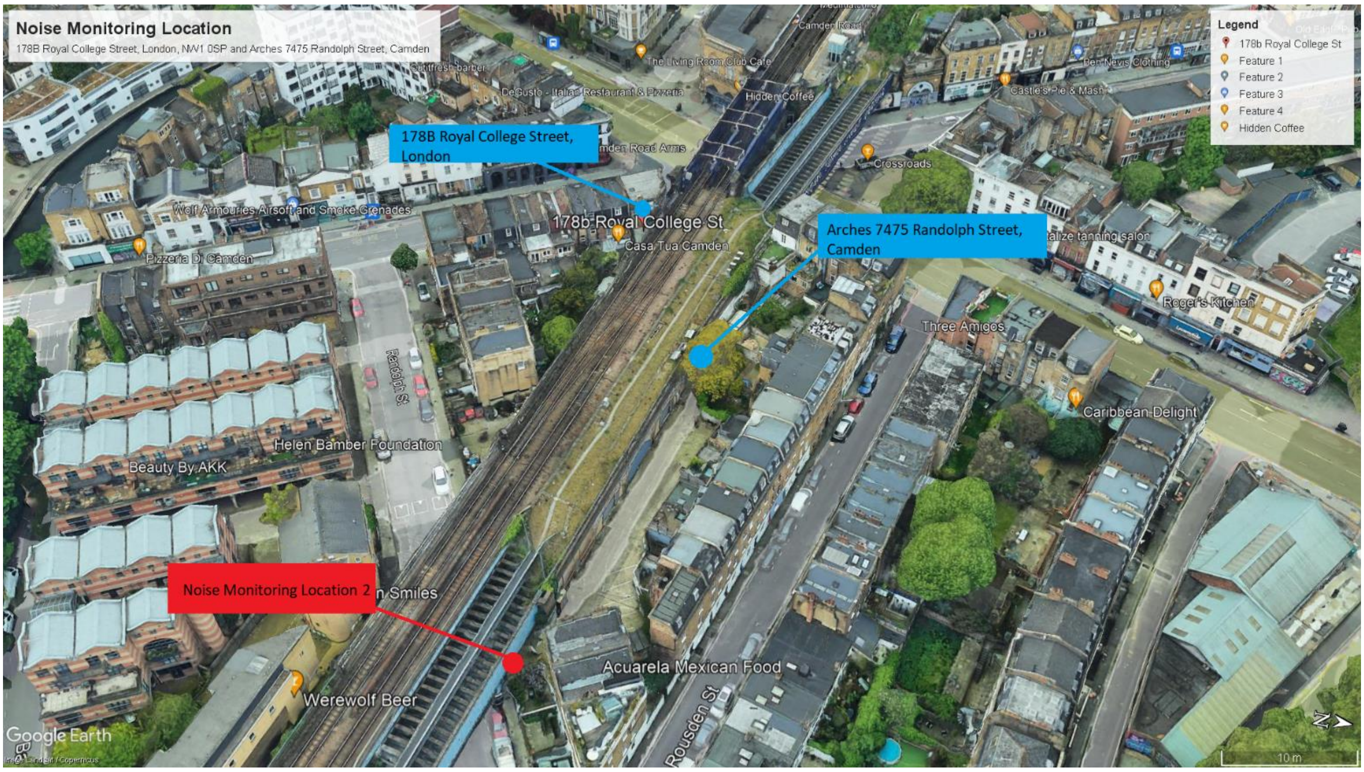


Figure 3.1 Noise Monitoring Location (Source: Google Earth Pro)

Figure 3.2 Noise Monitoring Location 2 (Source: Aval Consulting Group)

3.3 Noise Survey Periods

The details and noise survey periods have been tabulated below.

Table 3.2 Noise Survey Periods

Noise Monitoring Location	Start Date	Start Time	End Date	End Time
2	14/10/22	12:15	17/10/22	14:15
2	25/10/22	16:10	27/10/22	16:10

3.4 Details of Noise Monitoring Equipment

The details of the equipment used for the noise monitoring have been tabulated below. Please note that all equipment are class 1 monitors and have been calibrated before and after surveys.

Table 3.3 Noise Equipment Details

Equipment Details		Serial Number	Last Calibrated
Monitor	BSWA 308 Class 1	570134	25/10/21
Calibrator	BSWA Class 1 CA111 Calibrator	550282	23/07/21

3.5 Weather Conditions and Observations

Weather conditions during the survey periods were suitable for environmental noise monitoring and are not considered to significantly affect any of the results.

For the traffic noise monitoring (Location 2):

13th October to 17th October - The maximum wind speed was 6 m/s, with a total of 2.7mm of rain. Temperature was between 10 and 17 degrees Celsius.

25th October to 27th October - The maximum wind speed was 4 m/s, with a total of 0.3mm of rain. Temperature was between 12 and 16 degrees Celsius.

4. Noise Survey Results

4.1 Ambient noise Levels

A summary of the noise results as well as day-time and night-time representative of the noise results can be seen below. As stated above, the monitoring was not undertaken in free-field conditions and therefore a -3dB factor was included within the results.

Table 4.2 Summary of Average Noise Results at Noise Monitoring Location 2 (During Operational Hours)

Average Noise Levels During Operational Hours (10:00 to 23:00) between 14th October to 17th October and 26th October to 28th October	
Noise Measurement	Average Noise Levels in dB including façade correction factor of -3dB (10:00-23:00)
L_{Aeq}	55.2
L_{A90}	42.2
L_{A10}	57.6
L_{Amax}	94.6

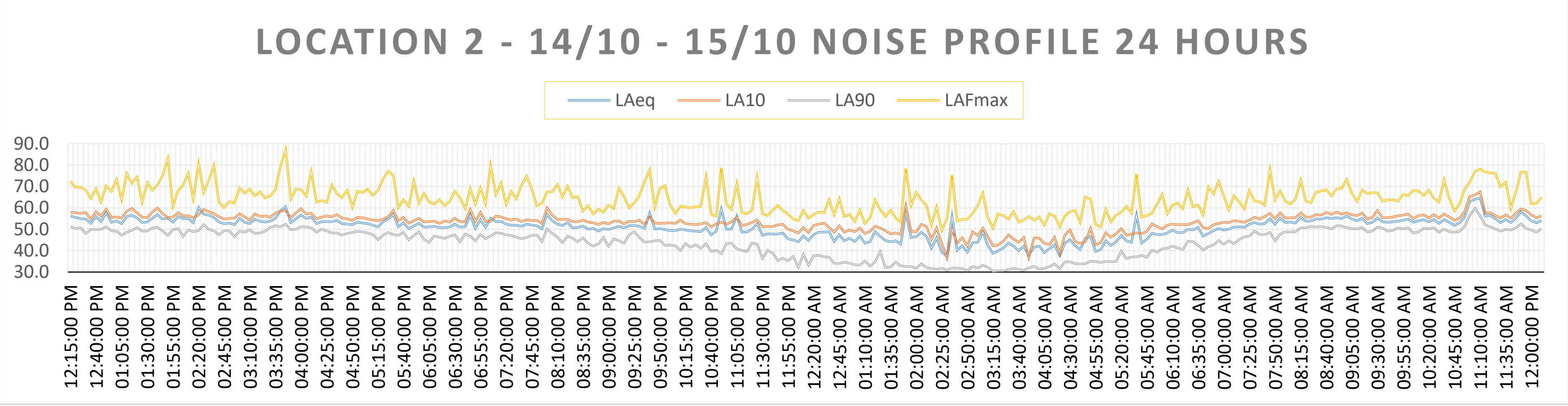
Table 4.3 Summary of Average Noise Results at Noise Monitoring Location 2 (Outside of Operational Hours, Daytime)

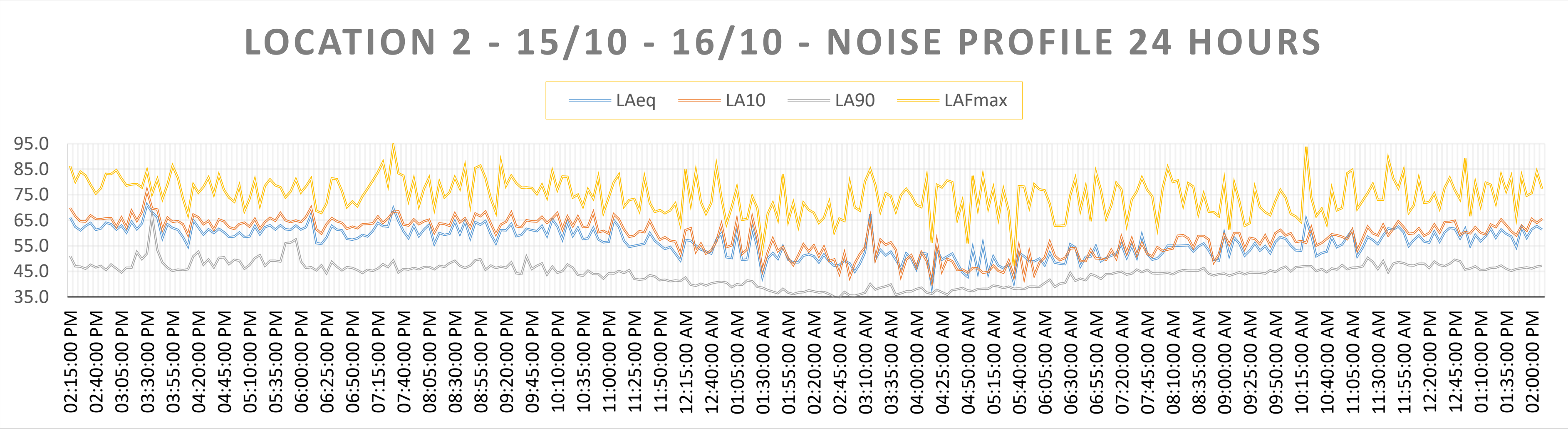
Average Noise Levels During Non-Operational Hours (07:00 to 10:00, Daytime) between 14th October to 17th October and 26th October to 28th October	
Noise Measurement	Average Noise Levels in dB including façade correction factor of -3dB (07:00-10:00)
L_{Aeq}	53.4
L_{A90}	41.8
L_{A10}	53.3
L_{Amax}	85.4

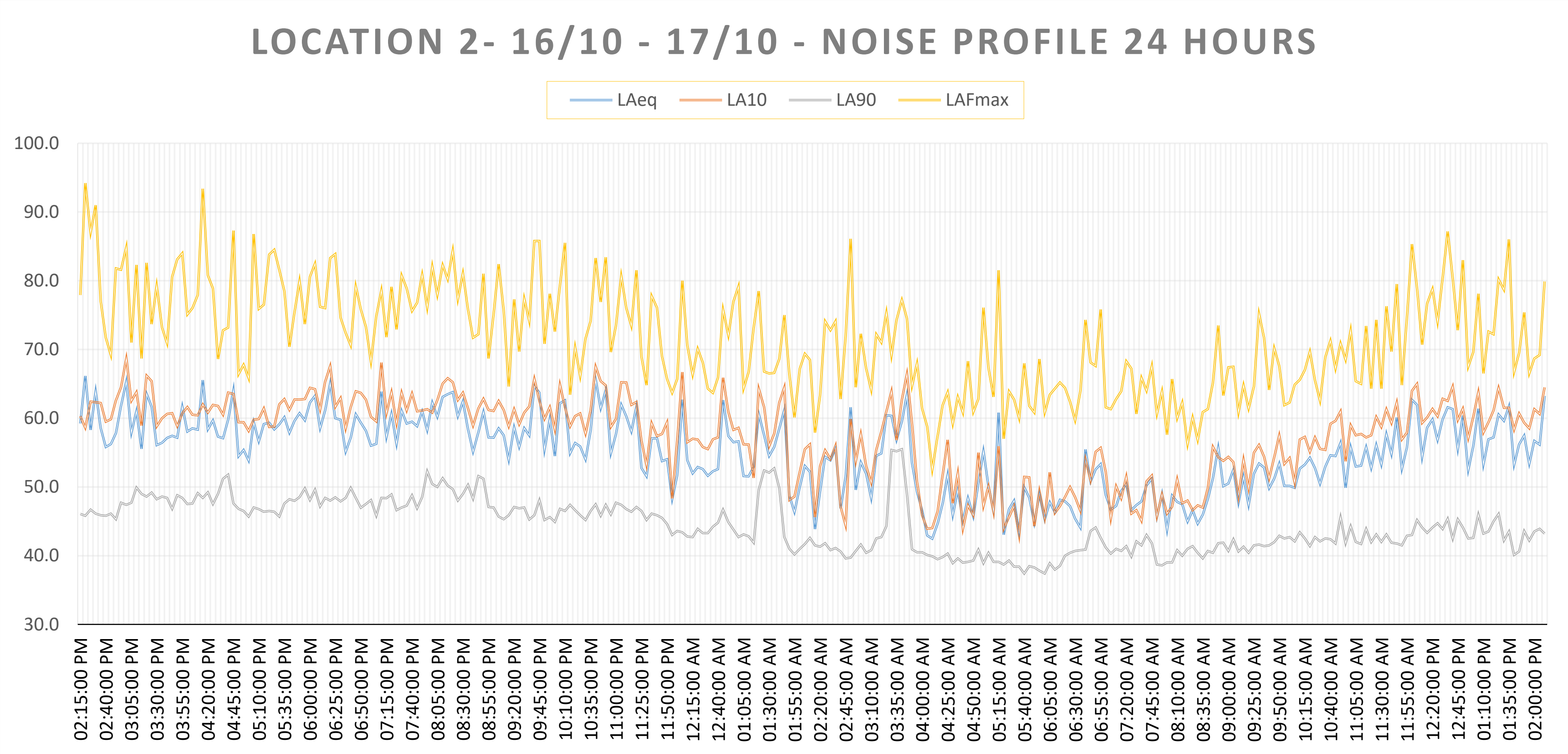
The values in the table above have been deemed as an accurate representation of the prevailing noise levels likely to be experienced on-site during the daytime. A 5-min interval noise graph showing the measured values has also been provided in the upcoming pages of this report.

It is to be noted that the noise levels between 19:00 and 20:00 from the 15th of September (Saturday) result in a slightly higher noise level compared to the same time on the other days. This corresponds to the higher number of deliveries on a Saturday from the traffic survey.

Graph 4.1 24 hr Noise Data measured at Monitoring location 2 (Correction factor not applied)






LOCATION 2- 16/10 - 17/10 - NOISE PROFILE 24 HOURS
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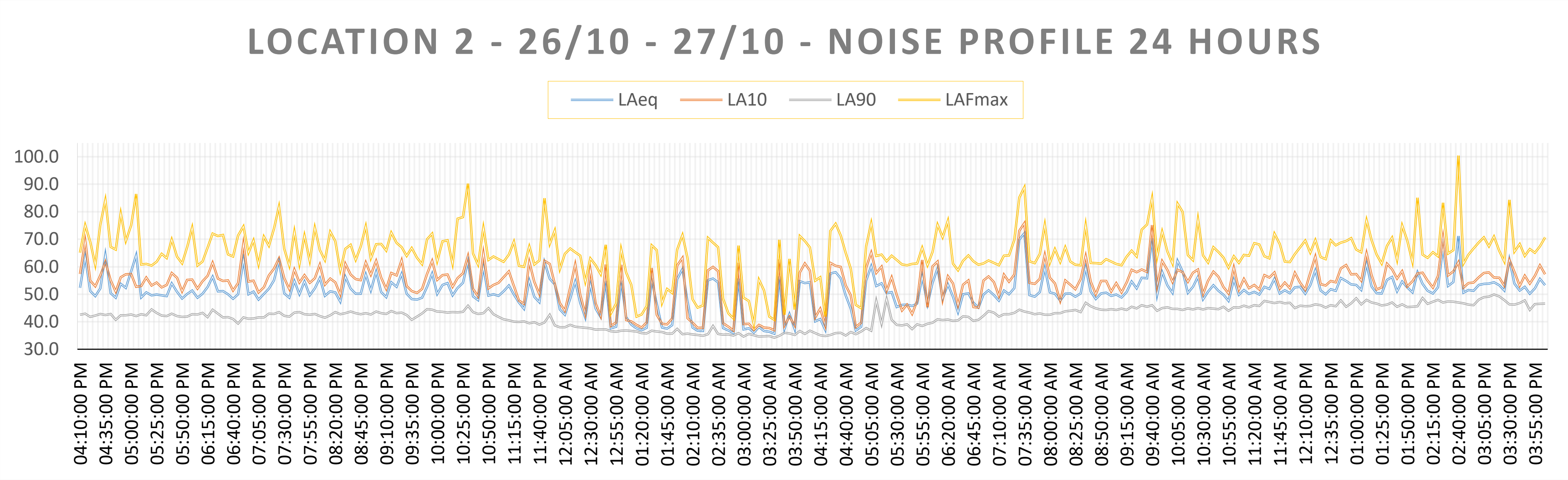
LOCATION 2 - 26/10 - 27/10 - NOISE PROFILE 24 HOURS
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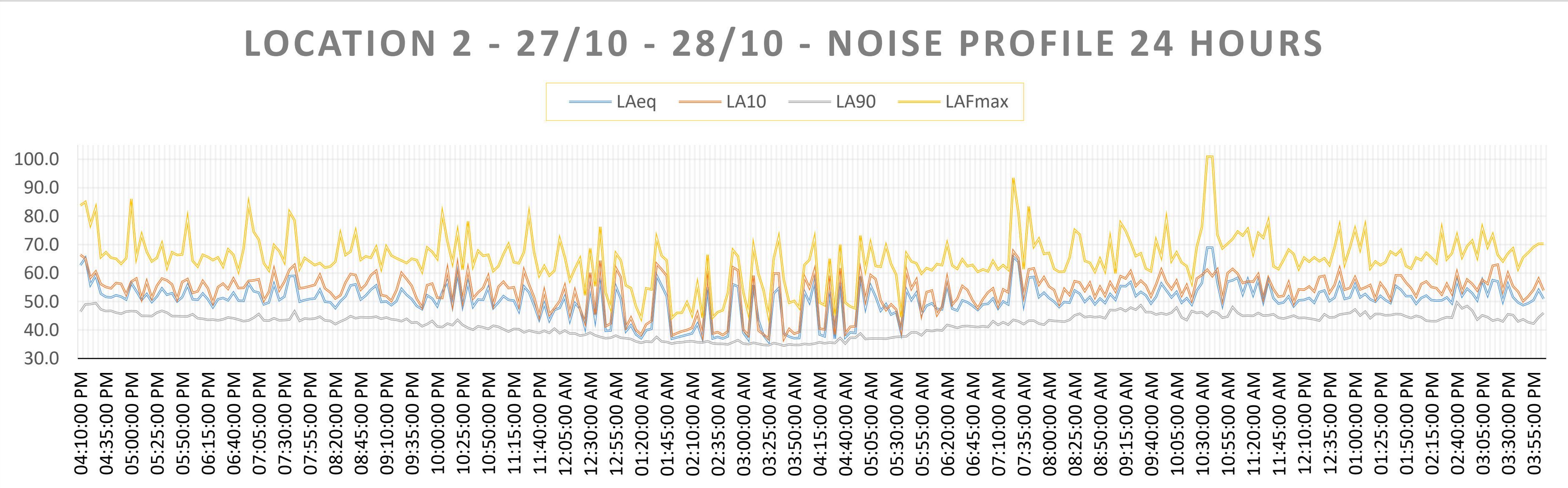
30.0
04:10:00 PM
03:55:00 PM


LOCATION 2 - 27/10 - 28/10 - NOISE PROFILE 24 HOURS
LAeq
LA10
LA90
LAFmax
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
04:10:00 PM
03:55:00 PM

5. Noise Impact Assessment

5.1 Noise Impact from Current Traffic Noise

Based on the nature of the delivery operations, the main source of noise would be from the scooter/moped drive-byes. Since all the deliveries and collections are carried on scooters/mopeds, there are no other sources of noise that need to be considered (noise from car doors being slammed, etc).

Noise from the delivery traffic flow have been derived from the average L_{A10} noise levels measured during the operational times of the development (from 10:00 to 23:00) over a period of 5 days (refer to Section 4). It should be noted that this has been confirmed by comparing the measurement hours to the traffic count survey which shows that no vehicle movements were recorded outside of the operational hours of 10:00 to 23:00.

The corresponding average L_{A10} noise level during the operational time of the development was measured as 57.6dB.

It should be noted that the above noise levels are from the current site operations, which only has 10 out of 15 kitchens in operation. To predict the noise level from traffic under a fully operational site (all 15 kitchens in operation) at peak hours, the predicted trip generation from the traffic survey was used.

Using the formula of predicted noise = 29 + 10log(Q), the predicted noise level during a fully operational site would be 63.7dB.

A distance correction factor (approximately 15m from the source of noise) has been applied to calculate the noise level at the NSR:

- 63.7 – 10log (15/1) = 52dB during daytime (rounded from 51.93dB)

Since the vehicle movements are intermittent in nature, it has been deemed appropriate to have an intermittency penalty of +3dB as per the guidance provided in BS4142 and therefore, the noise impact levels at the NSR were calculated to be **55dB.**

It was also considered that section Subclause 1.3 of BS4142 states that: "*Sound of an industrial and/or commercial nature does not include sound from the passage of vehicles on public roads and railway systems*". Therefore, it has been deemed appropriate to make reference to alternate guidances/standards and compare the noise impact levels to the prevailing ambient noise levels to ensure that the residential amenity of the NSRs is preserved. BS8233 states that outdoor amenity areas should have an upper limit of 55dB and the internal noise in sensitive areas such as bedrooms etc, should not exceed 35dB during the daytime.

It is also stated within the BS4142 Technical Note that "BS 4142 does not indicate how the initial estimate of impact should be adjusted when background and rating levels are low, only that the absolute levels may be more important than the difference between the two values. It is likely that where the background and rating levels are low, the absolute levels might suggest a more acceptable outcome than would otherwise be suggested by the difference between the values. For example, a situation might be considered acceptable where a rating level of 30dB is 10dB above a background sound level of 20dB, i.e. an initial estimate of a significant adverse impact is modified by the low rating and background sound levels."

Therefore, it was deemed appropriate to compare the noise impact levels at the NSR to the prevailing daytime ambient levels (L_{Aeq} 53.4dB). It was found that the noise impact levels are **1.6dB above** the prevailing background levels during the daytime. When compared to the IEMA significance criteria in Section 2 of this report, it can be concluded that the noise impact would be 'None/Not Significant'. This is classified as NOEL (No Observed Effect Level) as per NPSE criteria.

6. Proposed Mitigation Measures

6.1 Mitigation Measures for Traffic Flow

As stated in Section 5.1, the predicted future noise levels from traffic flows are the same as the prevailing background noise levels. Therefore, it is classified as 'None/Not Significant' impact and therefore, no mitigation measures are required for traffic flows.

However, it is advised that a noise management scheme should be in place to ensure that all staff involved should abide by a code of practice where it would not exceed a speed limit of 5mph within the designated delivery/collection areas.

Ideally, the engines would be switched off at the entrance if possible and the scooter wheeled in for the rest of the way in and out. Staff should also be aware of restrictions on the revving of engines within the compound.

7. Conclusions

A Noise Impact Assessment was undertaken for Jacuna Kitchens at 178B Royal College Street and Arches 7475 Randolph Street NW1 0SP. This is to analyse the impact of the noise levels from traffic in relation to the nearest sensitive receptors.

Noise monitoring for traffic noise was undertaken between 14th of October to 17th October and 28th October to 28th October. The noise levels were in line with the amount of traffic recorded during the traffic surveys.

Noise levels from the traffic flow show the impact to the NSR is classified as 'None/Not Significant' and therefore, no mitigation measures are required for noise from traffic flows.

It is however, advised that a noise management scheme should be in place to ensure that all staff involved should abide by a code of practice.

It can, therefore, be concluded that no mitigation measures are required to be put in place and therefore the proposed development will not conflict with any national, regional, or local noise planning policy.

Appendices

Appendix A: Noise Indicators and Acoustic Terminology

Decibel scale - dB

In practice, when sound intensity or sound pressure is measured, a logarithmic scale is used in which the unit is the 'decibel', dB. This is derived from the human auditory system, where the dynamic range of human hearing is so large, in the order of 10^{13} units, that only a logarithmic scale is the sensible solution for displaying such a range.

Decibel scale, 'A' weighted - dB(A)

The human ear is less sensitive at frequency extremes, below 125Hz and above 16Khz. A sound level meter models the ears variable sensitivity to sound at different frequencies. This is achieved by building a filter into the Sound Level Meter with a similar frequency response to that of the ear, an A-weighted filter where the unit is dB(A).

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 11 such octave bands whose centre frequencies are defined in accordance with international standards. These centre frequencies are: 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000 and 16000 Hertz.

Reference Time Interval, T

The specified time interval over which an equivalent continuous A-weighted sound pressure level is determined.

$L_{Aeq,T}$

The A-weighted equivalent continuous sound level. This is the sound level of a notionally steady sound having the same energy as the fluctuating sound over a specified measurement period, T.

$L_{A10,T}$

The A-weighted sound level exceeded for 10% of the specified measurement period, T.

L_{Amax}

The highest short duration A-weighted sound level recorded during a noise event.

L_{den}

The Lden (Day Evening Night Sound Level) or CNEL (Community Noise Equivalent Level) is the average sound level over a 24 hour period, with a penalty of 5 dB added for the evening hours or 19:00 to 22:00, and a penalty of 10 dB added for the nighttime hours of 22:00 to 07:00.

L_{night}

The A-weighted, Leq (equivalent noise level) over the 8 hour night period of 23:00 to 07:00 hours, also known as the night noise indicator.

L_{A90}

The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 % of a given time interval, T.

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than a single source and 4 sources produce a 6dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Hearing perception is highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud

Transmission path(s)

The transmission path is the path the sound takes from the source to the receiver. Where multiple paths exist in parallel, the reduction in each path should be calculated and summed at the receiving point. Outdoor barriers can block transmission paths, for example traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and construction.

Ground-borne vibration

In addition to airborne noise levels caused by transportation, construction, and industrial sources, there is also the generation of ground-borne vibration to consider. This can lead to structure-borne noise, perceptible vibration, or in rare cases, building damage.

Sound insulation - Absorption within porous materials

Upon encountering a porous material, sound energy is absorbed. Porous materials which are intended to absorb sound are known as absorbents, and usually absorb 50 to 90% of the energy and are frequency dependent. Some are designed to absorb low frequencies, some for high frequencies and more exotic designs being able to absorb very wide ranges of frequencies. The energy is converted into both mechanical movement and heat within the material; both the stiffness and mass of panels affect the sound insulation performance.

Appendix B: Site Drawings

Appendix C: Examples of Proposed Mitigation

Appendix D: Certificates