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Environmental Associates

Noise Assessment

Lane End, Kirkby in Ashfield

December 2024

McDonald's Restaurant Ltd



Noise Assessment

Lane End, Kirkby in Ashfield

Client: McDonald's Restaurant Ltd

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1 INTRODUCTION

1.1 Background

1.1.1 NJD Environmental Associates LTD was instructed by McDonald's Restaurant Ltd, to undertake a noise assessment to accompany a planning application for a proposed drive-thru restaurant on land off Lane End, Kirkby in Ashfield.

1.1.2 The proposed layout is provided at Drawing 1 below.



Drawing 1: Proposed Layout

1.1.3 The proposed opening hours have been assessed as 24/7. Deliveries will take place three to four times per week during the daytime period only.

- 1.1.4 This noise report has therefore been prepared to consider the potential noise impact associated with the proposed drive-thru with background noise measurements taken that are representative of the closest existing sensitive receptors (ESRs), calculations performed using noise modelling software in order to consider the sources of noise associated with the proposed development, and the results interpreted in accordance with the relevant standards.

2 PLANNING POLICY AND GUIDANCE

2.1 National Planning Policy Framework (NPPF)

- 2.1.1 The revised NPPF published in December 2024 provides the following with regards to noise, set out at paragraph 187 and 198:

'187: 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 solid, 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

"198: 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."*

2.1.2 It is clear that the NPPF seeks to limit the exposure of new development to unacceptable levels of noise, although the policy does not seek to prescribe what constitutes an unacceptable level of noise.

2.2 Noise Policy Statement for England (NPSE)

2.2.1 The Department for Environment, Food and Rural Affairs (DEFRA) published the NPSE in March 2010.

2.2.2 The explanatory note of NPSE defines the terms used in the NPPF:

“2.19 There are several key phrases within the NPSE aims and these are discussed below.

‘Significant adverse’ and ‘adverse;

2.20 *There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:*

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effect on health and quality of life can be detected.

2.21 *Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.*

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.”

2.2.3 The NPSE does not define the SOAEL numerically, stating at paragraph 2.22:

“2.22 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. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”

2.2.4 There is no local or national guidance on how the three terms should be defined numerically, it is for the assessor to collate and interpret appropriate guidance on noise, such as may be found in British Standards, and correlate the guidance with the concepts of NOEL, LOAEL and SOAEL.

2.3 Planning Practice Guidance: Noise (PPGN)

2.3.1 In March 2014, the Government released the PPG on noise. This document sets out a number of principles and reinforces the guidance set out in the NPPF and NPSE.

2.3.2 Paragraph 001 of PPGN notes that:

“Noise needs to be considered when new development may create additional noise and when new developments would be sensitive to the prevailing acoustic environment.”

2.3.3 It goes on to note in paragraph 003 that:

“Local planning authorities’ plan-making and decision taking 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.”*

2.3.4 The PPGN broadly repeats the NPSE definitions of the NOEL, LOAEL AND SOAEL and it provides a summary table to explain how the terms relate to each other and to typical human response to sound. The table is replicated below in Table 1.

| Table 1: PPGN Noise Exposure Hierarchy | | | |
|---|--|---|----------------------------------|
| Perception | Examples of Outcome | Increasing Effect Level | Action |
| Not present | No Effect | No Observed Effect | No specific measures required |
| Present 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 | |
| Present and intrusive | Noise can be heard and small changes in behaviour and/or attitude, e.g. turning up volume of televisions; 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 areas 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 | |
| Present 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 |
| Present and very disruptive | Extensive and regular changes in behaviour and/or 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 or non-auditory | Unacceptable Adverse Effect | Prevent |

2.3.5 The PPGN provides advice on how to mitigate the effects of noise, noting that there are options to reduce noise at source, to optimise site layouts and to use planning conditions.

3 ASSESSMENT METHODOLOGY

3.1 BS8233:2014 and WHO 1999 Guidance Levels

3.1.1 BS8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’ provides guidance for the control of noise in and around buildings. It applies to the design of new buildings, or refurbished buildings undergoing a change of use.

3.1.2 BS8233 refers to the World Health Organisation research and recommendations when defining acceptable and upper guidance noise levels within gardens during the day, and within habitable rooms in dwellings during the day and night-time periods as follows:

| Table 2: Summary of BS8233 and WHO Guidance Noise Levels | | | |
|--|-------------|---------------|--|
| Activity | Location | 0700 to 2300h | 2300 to 0700h |
| Resting | Living room | 35dB LAeq,16h | - |
| Relaxing | Gardens | 55dB LAeq,16h | - |
| Dining | Dining room | 40dB LAeq,16h | - |
| Sleeping (Daytime resting) | Bedroom | 35dB LAeq,16h | 30dB LAeq,8h 45dB LAm _{ax} |

3.2 IEMA Guidelines for Environmental Noise Impact Assessment (2014)

3.2.1 Noise associated with the car park and drive thru has been assessed with reference to the IEMA guidelines for environmental noise impact assessment.

3.2.2 The IEMA guidelines were introduced in 2014 and are intended to be applied to development of any scale, and include important principles for effective integration into the environmental impact assessment (EIA) process and other assessments.

3.2.3 The IEMA Guidelines for Environmental Noise Assessment address the key principles of noise impact assessment and are applicable to all development proposals where noise effects may occur. The guidelines set out key principles for noise impact assessment relevant to all types of projects, regardless of size.

3.2.4 The guidance provides advice with regards to the collection of baseline noise data, prediction of noise levels and how noise should be assessed. The guidance recognises that the effect associated with a noise impact will be dependent on a number of factors including, but not limited to, the sensitivity of the receptor, frequency and duration of the noise source and time of day.

- 3.2.5 The Guidelines accept that a simple change in noise levels using a single noise indicator may fail to adequately reveal the actual noise impact of the proposal.
- 3.2.6 Absolute levels such as those set out in WHO Guidelines are also considered and the Guidelines suggest that a change in noise levels in an area where the existing levels are above WHO Guidelines should be considered as having more of an adverse effect than a change in noise levels in an area where existing levels are well below.
- 3.2.7 The Guidelines stop short of providing specific assessment criteria which developments should achieve, but instead suggests that the methodology adopted should be selected on a site-by-site basis regarding relevant national and local standards. The Guidelines contain effect descriptors for changes in noise levels and for noise effect levels. These are summarised below:

| Table 3: IEMA Impact from the Change in Sound Levels | | |
|--|----------------------------------|-------------------------|
| Long-term Impact Classification | Short-term impact classification | Sound Level Change Plat |
| Negligible | Negligible | > 0 dB and < 1 dB |
| | Minor | > 1 dB and < 3 dB |
| Minor | Moderate | > 3 dB and < 5 dB |
| Moderate | Major | > 5 dB and < 10 dB |
| Major | | > 10 dB |

3.3 BS4142:2014+A1:2019 Industrial and Commercial Sound Guidance

- 3.3.1 Where industrial or commercial noise is present or proposed and likely to impact a residential receptor, the guidance contained within BS4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' should be followed. The guidance enables the effects of such noise on people nearby to be assessed and the associated risks to be minimised.
- 3.3.2 The guidance provides a methodology for determining an initial estimate of significance through subtracting the measured background noise level from the rating level (the specific sound level of the source with any corrections applied for distinctive acoustic characteristics).
- 3.3.3 Typically, the greater the 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 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.

3.3.4 The context, as defined within BS4142, relates to the following factors:

- The absolute level of sound.
- Character and level of the residual sound compared to the character and level of the specific sound.
- Acoustic design measures.

3.4 German Standard RLS 90 (Guideline for Noise Protection on Streets)

3.4.1 In the absence of other relevant standards, the calculation procedures for car park noise contained within German Standard RLS 90 have been adopted, as used by default in CadnaA environmental noise modelling software.

3.4.2 The standard is an effective calculation model that is able to determine the noise rating level of associated with movements within the proposed car park area.

4 NOISE SURVEY

4.1 Background Noise Levels

4.1.1 A continuous noise measurement was undertaken from Thursday 28th March to Tuesday 2nd April 2024, in order to determine background noise levels representative of the closest ESRs.

4.1.2 Measurements were taken using an Acoem 01dB Fusion sound level meter. The Class 1 instrument logged 1/3 octave levels throughout the measurements. The instrument was calibrated before and after the measurements to a reference level of 94dB, with no notable drift observed.

Monitoring Locations

4.1.3 Measurements were taken at ML1 and ML2, shown in Drawing 2 below.



Drawing 2: Noise Monitoring Locations

- 4.1.4 **ML1** was established in order to obtain background noise measurements representative of the closest ESRs to the east of the site on Erewash Street.
- The measurement took place during the following dates and times:
 - 1055h on the 28th March, to 1115h on the 2nd April 2024.
- 4.1.5 **ML2** was established in order to obtain background noise measurements representative of the closest ESRs to the north of the site on Millers Way.
- The measurement took place during the following dates and times:
 - 1100h on the 28th March, to 1110h on the 2nd April 2024.

- 4.1.6 Weather conditions throughout the survey were generally favourable; with windspeeds typically below 5m/s⁻¹. There were periods of increased wind gusts and rainfall recorded during Friday 29th March and Monday 1st April. These periods have been removed from further analysis.
- 4.1.7 Ambient noise levels were generally dominated by road traffic noise and industrial areas to the south of the site. Existing plant noise from APPH Nottingham was clearly audible during the set up and collection of ML1.
- 4.1.8 The measured noise levels are summarised in Tables 4 and 5 below. The data has been analysed and separated into daytime and night-time periods for both ML1 and ML2.

| Table 4: Measured Daytime Noise Levels (dBA) - ML1 | | | | |
|--|------------|------|-------------------|-------|
| Date | Time | LAeq | LAm _{ax} | LA90* |
| Daytime | | | | |
| Thursday 28/03/2024 | 0700-2300h | 55 | 75 | 50 |
| Friday 29/03/2024 | | 55 | 76 | 52 |
| Saturday 30/03/2024 | | 54 | 76 | 50 |
| Sunday 31/03/2024 | | 54 | 84 | 47 |
| Monday 01/04/2024 | | 55 | 73 | 50 |
| Tuesday 02/04/2024 | | 56 | 76 | 50 |
| Night-time | | | | |
| Date | Time | LAeq | LAm _{ax} | LA90* |
| Thursday 28/03/2024 | 2300-0700h | 53 | 70 | 46 |
| Friday 29/03/2024 | | 50 | 65 | 43 |
| Saturday 30/03/2024 | | 51 | 73 | 41 |
| Sunday 31/03/2024 | | 49 | 76 | 39 |
| Monday 01/04/2024 | | 49 | 71 | 43 |

*Modal Average Level

| Table 5: Measured Noise Levels (dBA) – ML2 | | | | |
|---|-------------|-------------|-------------------------|--------------|
| Date | Time | LAeq | LAm_{ax} | LA90* |
| Daytime | | | | |
| Thursday 28/03/2024 | 0700-2300h | 55 | 75 | 50 |
| Friday 29/03/2024 | | 55 | 76 | 50 |
| Saturday 30/03/2024 | | 55 | 85 | 48 |
| Sunday 31/03/2024 | | 55 | 79 | 48 |
| Monday 01/04/2024 | | 54 | 76 | 47 |
| Tuesday 02/04/2024 | | 56 | 80 | 47 |
| Night-time | | | | |
| Date | Time | LAeq | LAm_{ax} | LA90* |
| Thursday 28/03/2024 | 2300-0700h | 51 | 71 | 41 |
| Friday 29/03/2024 | | 49 | 68 | 38 |
| Saturday 30/03/2024 | | 50 | 75 | 34 |
| Sunday 31/03/2024 | | 48 | 73 | 33 |
| Monday 01/04/2024 | | 48 | 73 | 35 |
| *Modal Average Level | | | | |

4.1.9 Full details of the measurements are presented in Appendix 1.

5 CADNAA NOISE MODELS

5.1 Input Data

- 5.1.1 Topographic data of the site and surrounding land has been incorporated into the noise models, including a site layout of the proposed drive-thru restaurant.
- 5.1.2 For the purpose of these calculations, the ground absorption has been set to $G=0$ (acoustically hard and reflective), with two orders of reflection considered. The model input data used as part of the assessment is summarised within the sections below.
- 5.1.3 Sensitive receptors have been positioned at 1.5m high during the daytime scenarios (to represent living rooms) and 4.0m high during the night-time scenarios (to represent bedrooms).

Car Park

- 5.1.4 Traffic data has been provided by the project transport consultant, Andrew Moseley Associates. It was confirmed that during the daytime peak hour (1300h on Saturday) there will be 91 vehicles entering the site, and 29 vehicles entering the site during the night-time peak hour (0000h on Saturday), shown in Appendix 2.
- 5.1.5 During the daytime peak hour considered 60 vehicles will be using the drive-thru and 31 vehicles will use the car park. During the night-time peak hour considered, 12 vehicles will use the drive-thru and 17 vehicles will use the car park.
- 5.1.6 The car park has been modelled in accordance with Section 3.4 above, in the absence of other relevant standards.
- 5.1.7 The car parking area indicated on the site layout shows 36 no. car parking spaces.
- 5.1.8 Based on the data provided, it is therefore calculated that each space will be used 0.86 times during the daytime peak hour and 0.47 times during the night-time peak hour.

Drive-Thru Vehicles

- 5.1.9 Noise from vehicles idling when using the drive-thru have been included in the model, based on the model input data presented in Table 6 below. This has been derived from noise measurements undertaken at an existing drive-thru located on the A38 in Bristol. The engines have been represented as a point source for each car idling within the drive-thru, indicated on the architect's plans.
- 5.1.10 Based on information provided by the project team's transport consultant, the maximum queue length is nine vehicles, experienced on a Saturday. This has been considered in order to provide a robust assessment for the 1-hour daytime reference period. For the 15-minute night time reference period, the average number of five vehicles has been assumed.

| Table 6: Car Engine Drive Thru Sound Power Levels | | | | | | | | |
|---|-----------------|-----------------------------------|-----|-----|-----|----|----|----|
| Description | Overall Lw (dB) | Octave Centre Band Frequency (Hz) | | | | | | |
| | | 63 | 125 | 250 | 500 | 1K | 2K | 4K |
| Car Engine Drive Thru | 66 | 60 | 62 | 60 | 63 | 60 | 59 | 58 |

Customer Order Display (COD)

5.1.11 Noise from the two COD units has been included in the model, based on the model input data presented in Table 7 below. This has been derived from noise measurements undertaken at an existing drive-thru located on the A38 in Bristol. They have been represented as point sources and as a worst-case, have been modelled on the assumption of operation simultaneously with all other sources of noise. They are been positioned as per the architect's drawings.

| Table 7: Customer Order Display Sound Power Levels | | | | | | | | |
|---|------------------------|--|------------|------------|------------|-----------|-----------|-----------|
| Description | Overall Lw (dB) | Octave Centre Band Frequency (Hz) | | | | | | |
| | | 63 | 125 | 250 | 500 | 1K | 2K | 4K |
| Drive Thru Speakers | 72 | 56 | 58 | 63 | 67 | 69 | 65 | 61 |

Delivery Noise Source

5.1.12 The source noise levels for a delivery are presented within Table 8 below. This has been derived from noise measurements undertaken by Acoustic Associates South West Ltd at an existing McDonald's store in Bristol.

| Table 8: HGV Delivery Noise | | | |
|------------------------------------|--------------------------------|-----------------|--------------------------|
| Description | Sound Power Level (dBA) | On Time | Source Height (m) |
| Delivery Unloading (Point Source) | 89 | 50% in any hour | 1.5 |

5.1.13 The model has assumed a robust 50% on-time for a delivery during the one-hour reference period. This has been represented within the model as a point source within the delivery area, as indicated on the architect's plans.

5.1.14 Deliveries will take place three to four times per week during the daytime period only.

External Plant

5.1.15 Manufacturer's sound power data has been provided for all external plant associated with the proposed scheme. This is summarised within Table 9 below.

| Table 9: External Building Services Plant Sound Power Levels | | | |
|--|--------------|---------|------------|
| Description | No. of Units | Lw (dB) | Height (m) |
| Kitchen AHU: Weatherite IL200 S1 | 1 | 80 | 1.10 |
| Dining AHU: Weatherite IL200 S2 | 1 | 75 | 1.10 |
| AHU Condensers: Mitsubishi PUZ-ZM250YKA | 3 | 71 | 1.30 |
| AHU Condensers: Mitsubishi PUZ-ZM200YKA | 2 | 71 | 1.30 |
| Door Heatpump: Mitsubishi PUZ-ZM71VHA2 | 1 | 67 | 0.90 |
| Split Cassette AC Unit: Mitsubishi SUZ-M35VA | 1 | 59 | 0.55 |
| Split Cassette AC Unit: Mitsubishi SUZ-M25VA | 1 | 59 | 0.70 |
| Kitchen Extract: RHF BW10 500 | 1 | 72 | 0.50 |
| WC Extract: Systemair 250 EC | 1 | 70 | 0.30 |
| Change Rooms Extract: Systemair 125 EC | 1 | 63 | 0.30 |
| Coldroom Condensers: J&E Hall JEHS-0200 B2-M-1 | 1 | 61 | 0.65 |
| Coldroom Condensers: J&E Hall JEHS-0500 B3-M-3 | 1 | 66 | 0.90 |
| ABS Condenser: Manitowoc CVTD1200A Condensing Unit | 1 | 62 | 0.65 |

5.1.16 External plant has been represented as point sources within the model, operating at 100% capacity, simultaneously and located within the roof well. They have been positioned as per the architect's drawings.

5.2 Results

5.2.1 The results are shown in Figures 1 to 4 and summarised below in Table 10.

| Table 10: Summary of Predicted Noise levels (dBA) | | | | |
|---|---|------|------|------|
| Figure | Noise Source | ESR1 | ESR2 | ESR3 |
| 1 | Car Park, Drive-thru Engines and COD Units (daytime) | 27 | 45 | 46 |
| 2 | Car Park, Drive-thru Engines and COD Units (night-time) | 27 | 44 | 45 |
| 3 | Deliveries and External Plant (daytime) | 30 | 42 | 42 |
| 3 | External Plant (night-time) | 28 | 28 | 29 |

6 IMPACT ASSESSMENT

6.1 Baseline and Background Noise Levels

6.1.1 To derive appropriate baseline and background noise levels at the ESRs considered, noise measurements taken from ML1 have been used for those receptors to the east. For ESRs to the north, measurements taken from ML2 have been used.

6.1.2 Following analysis of the measurements, the following levels have been adopted for use within the assessments:

| Table 11: Summary of Measured Noise Levels (dBA) | | | | |
|--|------------|------|-----------------|------|
| Assessment Period | ESR | | | |
| | ESR1 (ML2) | | ESR2/ESR3 (ML1) | |
| | LAeq | LA90 | LAeq | LA90 |
| 0700 - 2300h | 54 | 47 | 54 | 47 |
| 2300 - 0700h | 49 | 40 | 48 | 35 |

6.1.3 As the measurements were taken over a bank holiday weekend, the selected levels are considered worst case, representative of those experienced at the closest ESRs to the east and north of the site.

6.1.4 It is accepted that there are lower and higher background noise levels measured during the monitoring survey. However, in accordance with BS4142, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods.

6.2 Car Park and Drive Thru Noise Assessment

6.2.1 The modelled noise levels during daytime peak use of the car park and drive thru are shown in Figure 1 and summarised in Table 12 below, and night-time peak use are shown in Figure 2 and Table 13 below.

6.2.2 The predicted levels from these scenarios have been compared with the lowest measured baseline noise levels.

6.2.3 The data from Table 11 indicates that the baseline noise levels can be expected to be 54dB LAeq,T during the daytime period (0700 – 2300) and 48-49dB LAeq,T during the night-time period (2300 – 0700)

6.2.4 Assuming the lower figure for the baseline noise level and the highest predicted noise level for peak car park noise, i.e., at ESR3, for the purpose of a robust assessment, the IEMA process has been conducted as follows:

| Table 12: Summary of IEMA Assessment | |
|--|------------|
| Daytime | |
| Description | ESR3 |
| Measured Baseline (dB LAeq) | 54 |
| Operational Noise (i.e., Noise from peak use of car park) (dB LAeq) | 46 |
| With Development (i.e., Baseline and operational noise log addition) (dB LAeq) | 55 |
| Predicted Resultant Increase over Baseline Noise Level (dB LAeq) | +1 |
| IEMA Significance of Impact (short term) | Minor |
| IEMA Significance of Impact (long term) | Negligible |

| Table 13: Summary of IEMA Assessment | |
|--|------------|
| Night-time | |
| Description | ESR3 |
| Measured Baseline (dB LAeq) | 48 |
| Operational Noise (i.e., Noise from peak use of car park) (dB LAeq) | 45 |
| With Development (i.e., Baseline and operational noise log addition) (dB LAeq) | 50 |
| Predicted Resultant Increase over Baseline Noise Level (dB LAeq) | +2 |
| IEMA Significance of Impact (short term) | Minor |
| IEMA Significance of Impact (long term) | Negligible |

6.2.5 With reference to the IEMA criteria, the results from Tables 12 and 13 suggest that the significance of the impact is likely to be **Minor** in the short term and **Negligible** in the long term.

6.2.6 However, as noted in the guidance, a basic comparison of 'baseline' and 'with development' noise levels is not sufficient to adequately define the overall significance of any particular development.

6.2.7 It is therefore important to consider other pertinent factors, including:

- **Spectral Characteristics:** Noise from the proposed car park is unlikely to be different to that associated with the baseline environment, which is dominated by road traffic noise. Noise from vehicle movement within the car park will therefore not be in any stark contrast to what is typical for the area.
- **Frequency of Occurrence:** The frequency of occurrence will depend ultimately on customer demand. The scenario modelled assumes worst-case peak use of the car park, for both daytime and night-time. This represents a robust assessment, with car park and drive thru usage being less during the remaining hours of the day and night.

6.2.8 Taking into consideration the factors set out above, the impact from the proposed car park is likely to be **Negligible**.

6.3 BS4142 Assessment

6.3.1 Tables 14 and 15 below present the findings of the BS4142 assessment for the deliveries and external plant during the daytime and night-time periods.

6.3.2 To ensure a robust assessment, the highest specific noise level from the assessed receptors has been used in the BS4142 assessments.

6.3.3 The assessment assumes all sources are operating simultaneously. In reality this is very unlikely to occur however presents a worst-case assessment.

| Table 14: BS4142 Assessment – Daytime (07:00 – 23:00) | | |
|---|-----------------------------------|---|
| Results | ESR location and noise level (dB) | Commentary |
| | ESR3 | |
| Specific sound level | 42 | Based on the calculated levels from Figure 3. |
| Acoustic feature correction | +3 | <p>Due to the prevailing road traffic noise, intermittency of delivery vehicles is highly unlikely to be distinctive against the residual acoustic environment.</p> <p>However, a +3 dB correction has been included to account for any impulsivity associated with a delivery event.</p> <p>There are no tonal characteristics that would be perceptible at the ESRs and therefore no corrections are required.</p> |
| Rating level | 45 | Specific noise level corrected for acoustic features |
| Background sound level | 47 | Reference Table 11 |
| Excess of rating over background sound level | -2 | Rating level minus background level |
| Initial assessment of impact | L | Negligible (N); Low (L); Minor Adverse (M/A); Adverse (A); Significant Adverse (S/A) |
| Assessment of Context | | <p>The initial assessment indicates that noise associated with a delivery and operation of external plant simultaneously during the daytime will result in a low impact, depending on the context. The context is assessed below:</p> <p>The specific noise level is well below the residual noise level (54dB) at the receptor locations and will therefore not likely contribute significantly to the ambient noise due to the dominance of road traffic noise.</p> <p>The specific noise level is below the BS8233 guidance level of 35dB LAeq,16h in bedrooms, assuming 15dB of attenuation for a partially open window.</p> <p>Noise associated with deliveries has the potential to have impulsive features. This is unlikely to be distinctive due to the residual noise level and location next to a main road and existing industry facilities and is therefore unlikely to cause any changes in behaviour and/or attitude.</p> <p>Without mitigation, the resulting impact is likely to be NOAEL in accordance with PPGN.</p> |
| Conclusion | | <p>It is concluded that noise from the proposed development should not be of a level that causes any change in behaviour or attitude to the receptor.</p> <p>On balance, the noise impact during the daytime period when a delivery is taking place is considered to be Negligible.</p> |

| Table 15: BS4142 Assessment – Night-time (23:00 – 07:00) | | |
|--|-----------------------------------|--|
| Results | ESR location and noise level (dB) | Commentary |
| | ESR3 | |
| Specific sound level | 29 | Based on the calculated levels from Figure 4. |
| Acoustic feature correction | 0 | There are no tonal or impulsive characteristics that would be perceptible at the ESRs and therefore no corrections are required. No deliveries will occur during the night time period. |
| Rating level | 29 | Specific noise level corrected for acoustic features |
| Background sound level | 35 | Reference Table 11 |
| Excess of rating over background sound level | -6 | Rating level minus background level |
| Initial assessment of impact | L | Negligible (N); Low (L); Minor Adverse (M/A); Adverse (A); Significant Adverse (S/A) |
| Assessment of Context | | <p>The initial assessment indicates that noise associated with operation of external plant during the night-time will result in a low impact, depending on the context. The context is assessed below:</p> <p>The specific noise level is significantly lower than the residual noise level (48dB) at the receptor locations and will therefore not likely contribute significantly to the ambient noise due to the dominance of road traffic noise.</p> <p>The specific noise level is below the BS8233 guidance level of 30dB LAeq,16h in bedrooms assuming 15dB of attenuation for a partially open window.</p> <p>Noise associated with development is unlikely to be distinctive due to the residual noise level and location next to a main road and is therefore unlikely to cause any changes in behaviour and/or attitude.</p> <p>Without mitigation, the resulting impact is likely to be NOAEL in accordance with PPGN.</p> |
| Conclusion | | <p>It is concluded that noise from the proposed development should not be of a level that causes any change in behaviour or attitude to the receptor.</p> <p>On balance, the noise impact during the night time period is considered to be Negligible.</p> |

6.4 Summary

- 6.4.1 Noise from deliveries and external plant has been assessed in accordance with BS4142:2014+A1:2019.
- 6.4.2 During the daytime and night time periods, noise associated with the proposed development is predicted to give rise to a **Negligible** impact at the closest ESRs.

6.4.3 The above assessment takes into consideration the measured background noise levels over a bank holiday period as a worst case, alongside all sources operating simultaneously and therefore presents a highly robust assessment.

7 CONCLUSIONS

7.1.1 NJD Environmental Associates has undertaken a noise assessment for a proposed drive-thru restaurant on land off Lane End, Kirkby in Ashfield.

7.2 Car Park and Drive Thru Noise

7.2.1 An assessment of noise associated with the use of the proposed car park and drive thru has been conducted with reference to IEMA guidelines.

7.2.2 The assessment found that noise from a worst-case scenario, i.e., full occupation of the car park and drive thru during peak use during daytime and night-time, is likely to result in an overall **Negligible** impact when assessed against the respective worst case measured baseline noise levels.

7.1 BS4142 Assessment

7.1.1 The BS4142 assessment found that during the daytime and night-time periods, noise from the proposed development would not give rise to an adverse impact at the closest ESRs.

7.1.2 It is concluded that noise should not be a prohibitive factor in the determination of this planning application.



Environmental Associates

NJD Environmental Associates LTD

www.njdenvironmental.co.uk

Company Registration No 10956987



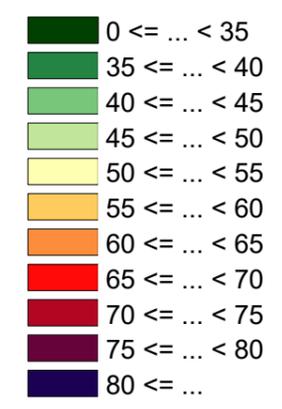


Client:
McDonald's Restaurant Ltd

Job Title:
NJD24-0084
Lane End, Kirkby in Ashfield

Figure 1:
Daytime Car Park and Drive Thru Noise Contour Plot
(1.5m receptor height)

Drawn By:
S Griffith



Date:
December 2024

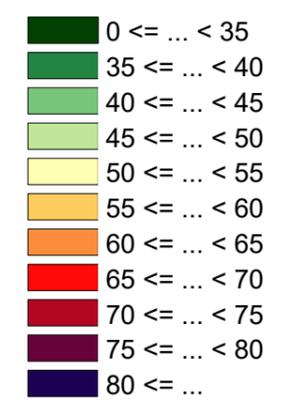


Client:
McDonald's Restaurant Ltd

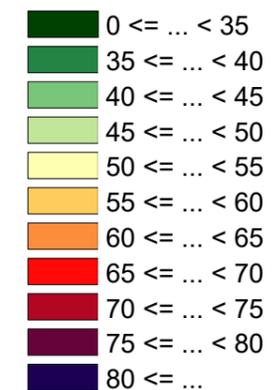
Job Title:
NJD24-0084
Lane End, Kirkby in Ashfield

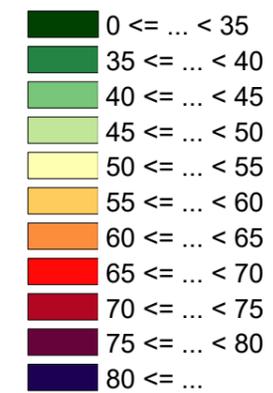
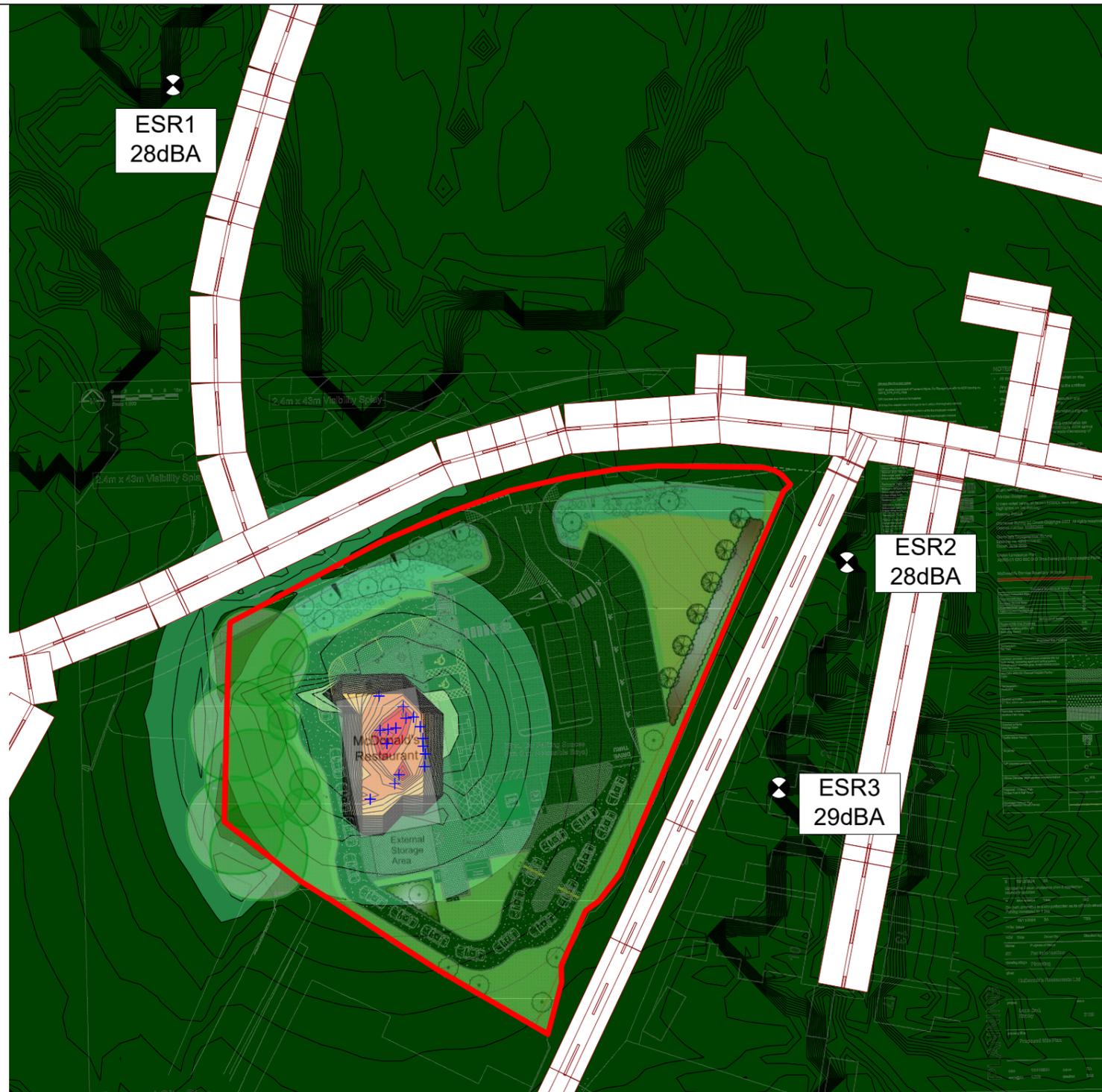
Figure 2:
Night-time Car Park and Drive Thru Noise Contour Plot
(4.0m receptor height)

Drawn By:
S Griffith



Date:
December 2024



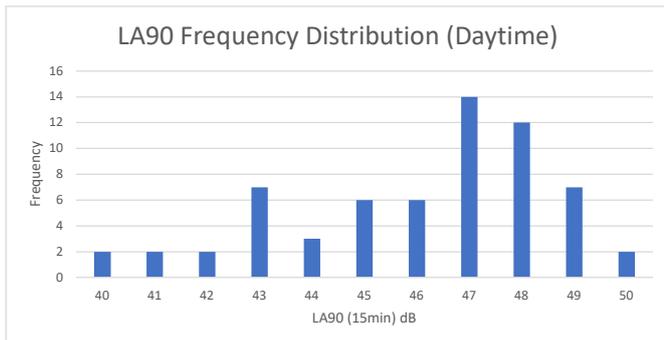


APPENDIX 1 – NOISE MEASUREMENTS

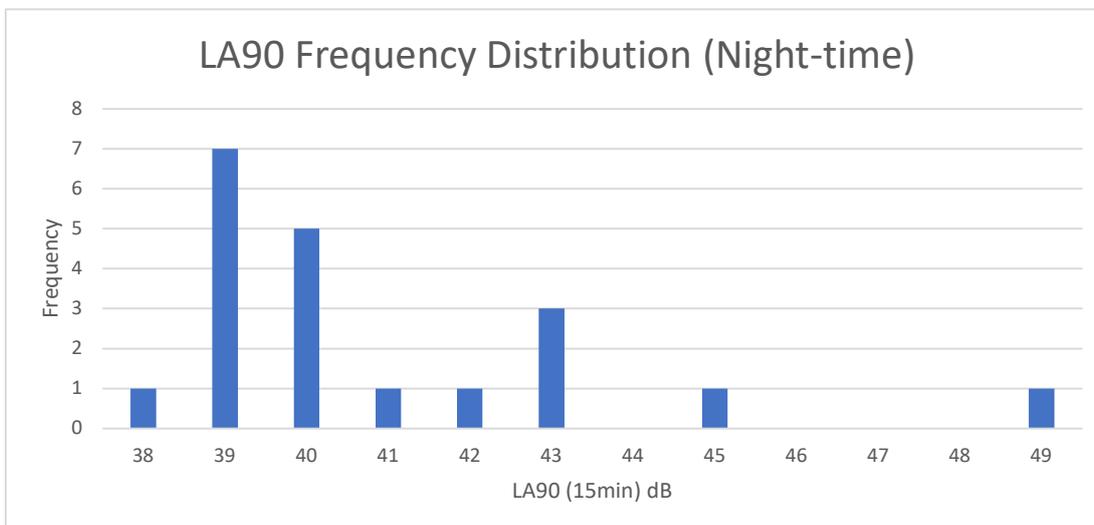
| | | | | | | | | | | | | |
|----------------|------------------------------|-----------|------------|-----------|------------|-----|-----------|-----|-----------|-----|-----|--|
| File | 20240328_105651_000000_1.CMG | | | | | | | | | | | |
| Location | ML1 | | | | | | | | | | | |
| Data type | Leq | | | | | | | | | | | |
| Weighting | A | | | | | | | | | | | |
| Unit | dB | | | | | | | | | | | |
| Start | 28/03/2024 00:00:00 | | | | | | | | | | | |
| End | 03/04/2024 00:00:00 | | | | | | | | | | | |
| Period | Daytime (LAeq) | | | | | | | | | | | |
| Time slots | LAeq,16h | 07:00 | 23:00 | K = 0 dBA | Mon | Tue | Wed | Thu | Fri | Sat | Sun | |
| Day | LAeq dB | Leq dB | Lmin dB | | Lmax dB | | L90 dB | | L10 dB | | | |
| Thu 28/03/2024 | 54.5 | 54.5 | 43.8 | | 74.8 | | 49.4 | | 56.7 | | | |
| Fri 29/03/2024 | 54.9 | 54.9 | 43.7 | | 76.1 | | 49.0 | | 57.2 | | | |
| Sat 30/03/2024 | 54.4 | 54.4 | 41.7 | | 76.2 | | 47.8 | | 56.6 | | | |
| Sun 31/03/2024 | 53.9 | 53.9 | 37.1 | | 84.3 | | 45.1 | | 56.3 | | | |
| Mon 01/04/2024 | 54.9 | 54.9 | 40.2 | | 72.7 | | 47.2 | | 57.5 | | | |
| Tue 02/04/2024 | 56.4 | 56.4 | 45.5 | | 76.0 | | 50.4 | | 58.7 | | | |
| Period | Night-time (LAeq) | | | | | | | | | | | |
| Time slots | LAeq,8h | 23:00 | 07:00 | K = 0 dBA | Mon | Tue | Wed | Thu | Fri | Sat | Sun | |
| Day | LAeq dB | Leq dB | Lmin dB | | Lmax dB | | L90 dB | | L10 dB | | | |
| Thu 28/03/2024 | 52.8 | 52.8 | 43.8 | | 69.8 | | 47.3 | | 55.4 | | | |
| Fri 29/03/2024 | 49.9 | 49.9 | 42.1 | | 65.2 | | 45.5 | | 52.8 | | | |
| Sat 30/03/2024 | 50.5 | 50.5 | 40.4 | | 73.2 | | 43.5 | | 53.0 | | | |
| Sun 31/03/2024 | 48.8 | 48.8 | 37.3 | | 75.7 | | 41.1 | | 51.7 | | | |
| Mon 01/04/2024 | 49.0 | 49.0 | 35.3 | | 70.9 | | 39.5 | | 51.7 | | | |
| Tue 02/04/2024 | 52.4 | 52.4 | 40.4 | | 75.3 | | 42.6 | | 55.3 | | | |

| | | | | | | | | | | | | |
|----------------|------------------------------|-----------|------------|------------|-----------|-----------|-----|-----|-----|-----|-----|--|
| File | 20240328_111605_111622_1.CMG | | | | | | | | | | | |
| Location | ML2 | | | | | | | | | | | |
| Data type | Leq | | | | | | | | | | | |
| Weighting | A | | | | | | | | | | | |
| Unit | dB | | | | | | | | | | | |
| Start | 28/03/2024 00:00:00 | | | | | | | | | | | |
| End | 03/04/2024 00:00:00 | | | | | | | | | | | |
| Period | Daytime (LAeq) | | | | | | | | | | | |
| Time slots | LAeq,16h | 07:00 | 23:00 | K = 0 dBA | Mon | Tue | Wed | Thu | Fri | Sat | Sun | |
| Day | LAeq dB | Leq dB | Lmin dB | Lmax dB | L90 dB | L10 dB | | | | | | |
| Thu 28/03/2024 | 54.6 | 54.6 | 41.8 | 74.9 | 47.6 | 57.2 | | | | | | |
| Fri 29/03/2024 | 55.0 | 55.0 | 39.2 | 76.3 | 46.7 | 57.7 | | | | | | |
| Sat 30/03/2024 | 54.7 | 54.7 | 38.3 | 84.9 | 45.7 | 57.0 | | | | | | |
| Sun 31/03/2024 | 55.0 | 55.0 | 33.7 | 79.1 | 43.7 | 58.1 | | | | | | |
| Mon 01/04/2024 | 54.1 | 54.1 | 34.9 | 75.9 | 42.8 | 57.3 | | | | | | |
| Tue 02/04/2024 | 56.1 | 56.1 | 38.2 | 80.4 | 47.8 | 58.1 | | | | | | |
| Period | Night-time (LAeq) | | | | | | | | | | | |
| Time slots | LAeq,8h | 23:00 | 07:00 | K = 0 dBA | Mon | Tue | Wed | Thu | Fri | Sat | Sun | |
| Day | LAeq dB | Leq dB | Lmin dB | Lmax dB | L90 dB | L10 dB | | | | | | |
| Thu 28/03/2024 | 51.2 | 51.2 | 40.1 | 71.4 | 43.6 | 54.2 | | | | | | |
| Fri 29/03/2024 | 48.7 | 48.7 | 37.5 | 67.9 | 40.8 | 52.7 | | | | | | |
| Sat 30/03/2024 | 49.5 | 49.5 | 35.3 | 75.2 | 38.5 | 52.5 | | | | | | |
| Sun 31/03/2024 | 48.1 | 48.1 | 31.8 | 73.3 | 35.1 | 52.1 | | | | | | |
| Mon 01/04/2024 | 47.5 | 47.5 | 30.0 | 72.6 | 34.3 | 51.4 | | | | | | |
| Tue 02/04/2024 | 49.9 | 49.9 | 33.1 | 77.6 | 35.5 | 54.2 | | | | | | |

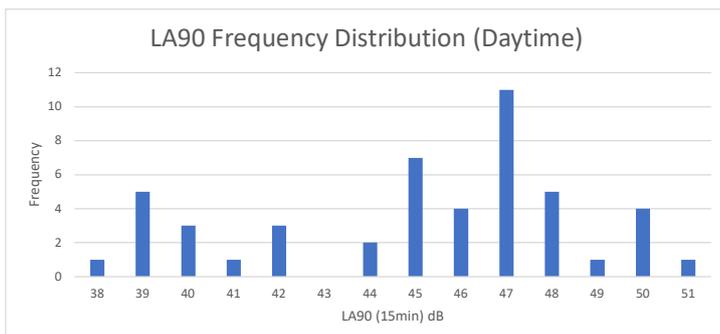
| ML1 | Date/Time | P1 (A, Lin) | |
|----------------------|------------------|-------------|---------|
| | | LA90 | Rounded |
| | 31/03/2024 08:00 | 42.9 | 43 |
| | 31/03/2024 08:15 | 44.7 | 45 |
| | 31/03/2024 08:30 | 44.8 | 45 |
| | 31/03/2024 08:45 | 43.2 | 43 |
| | 31/03/2024 09:00 | 45.3 | 45 |
| | 31/03/2024 09:15 | 45.1 | 45 |
| | 31/03/2024 09:30 | 46.2 | 46 |
| | 31/03/2024 09:45 | 47.4 | 47 |
| | 31/03/2024 10:00 | 47.2 | 47 |
| | 31/03/2024 10:15 | 47.5 | 48 |
| | 31/03/2024 10:30 | 46.7 | 47 |
| | 31/03/2024 10:45 | 49.4 | 49 |
| | 31/03/2024 11:00 | 48.5 | 49 |
| | 31/03/2024 11:15 | 48.5 | 49 |
| | 31/03/2024 11:30 | 47.9 | 48 |
| | 31/03/2024 11:45 | 48.1 | 48 |
| | 31/03/2024 12:00 | 47.6 | 48 |
| | 31/03/2024 12:15 | 50.2 | 50 |
| | 31/03/2024 12:30 | 49.2 | 49 |
| | 31/03/2024 12:45 | 48.4 | 48 |
| | 31/03/2024 13:00 | 49.2 | 49 |
| | 31/03/2024 13:15 | 48.8 | 49 |
| | 31/03/2024 13:30 | 49.4 | 49 |
| | 31/03/2024 13:45 | 48.1 | 48 |
| | 31/03/2024 14:00 | 47.9 | 48 |
| | 31/03/2024 14:15 | 47.3 | 47 |
| | 31/03/2024 14:30 | 48 | 48 |
| | 31/03/2024 14:45 | 46.4 | 46 |
| | 31/03/2024 15:00 | 48.3 | 48 |
| | 31/03/2024 15:15 | 47 | 47 |
| | 31/03/2024 15:30 | 47.3 | 47 |
| | 31/03/2024 15:45 | 47.6 | 48 |
| | 31/03/2024 16:00 | 50.3 | 50 |
| | 31/03/2024 16:15 | 46.6 | 47 |
| | 31/03/2024 16:30 | 46.5 | 47 |
| | 31/03/2024 16:45 | 46.7 | 47 |
| | 31/03/2024 17:00 | 47.3 | 47 |
| | 31/03/2024 17:15 | 45.5 | 46 |
| | 31/03/2024 17:30 | 48.4 | 48 |
| | 31/03/2024 17:45 | 45.7 | 46 |
| | 31/03/2024 18:00 | 46.8 | 47 |
| | 31/03/2024 18:15 | 46 | 46 |
| | 31/03/2024 18:30 | 46.9 | 47 |
| | 31/03/2024 18:45 | 47.8 | 48 |
| | 31/03/2024 19:00 | 46.6 | 47 |
| | 31/03/2024 19:15 | 46.1 | 46 |
| | 31/03/2024 19:30 | | |
| | 31/03/2024 19:45 | 46.9 | 47 |
| | 31/03/2024 20:00 | 44.5 | 45 |
| | 31/03/2024 20:15 | 45.2 | 45 |
| | 31/03/2024 20:30 | 44.2 | 44 |
| | 31/03/2024 20:45 | 43.5 | 44 |
| | 31/03/2024 21:00 | 42.6 | 43 |
| | 31/03/2024 21:15 | 41.9 | 42 |
| | 31/03/2024 21:30 | 43 | 43 |
| | 31/03/2024 21:45 | 42.6 | 43 |
| | 31/03/2024 22:00 | 43.6 | 44 |
| | 31/03/2024 22:15 | 43.3 | 43 |
| | 31/03/2024 22:30 | 42.8 | 43 |
| | 31/03/2024 22:45 | 41.3 | 41 |
| | 31/03/2024 23:00 | 42.1 | 42 |
| | 31/03/2024 23:15 | 41.2 | 41 |
| | 31/03/2024 23:30 | 40 | 40 |
| | 31/03/2024 23:45 | 40.1 | 40 |
| Period Count | 63 | | |
| Log Averages | | 47 | |
| Modal Average | | 47 | |



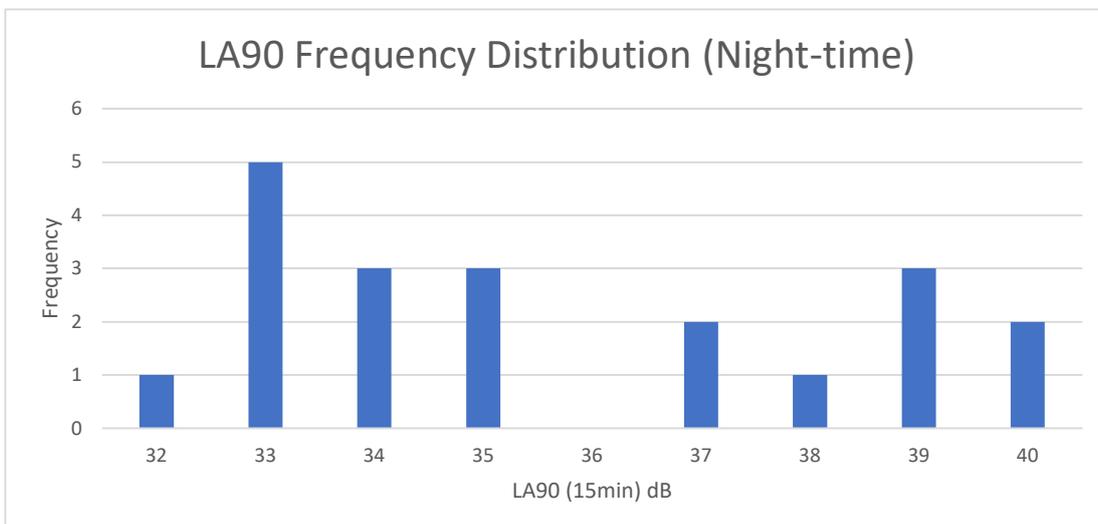
| ML1 | Date/Time | P1 (A, Lin) | |
|----------------------|------------------|-------------|---------|
| | | LA90 | Rounded |
| | 01/04/2024 00:00 | | |
| | 01/04/2024 00:15 | | |
| | 01/04/2024 00:30 | | |
| | 01/04/2024 00:45 | | |
| | 01/04/2024 01:00 | | |
| | 01/04/2024 01:15 | | |
| | 01/04/2024 01:30 | 39.7 | 40 |
| | 01/04/2024 01:45 | 38.7 | 39 |
| | 01/04/2024 02:00 | 38.9 | 39 |
| | 01/04/2024 02:15 | 38.4 | 38 |
| | 01/04/2024 02:30 | 39.6 | 40 |
| | 01/04/2024 02:45 | 39.1 | 39 |
| | 01/04/2024 03:00 | 39.7 | 40 |
| | 01/04/2024 03:15 | 38.9 | 39 |
| | 01/04/2024 03:30 | 38.7 | 39 |
| | 01/04/2024 03:45 | 38.6 | 39 |
| | 01/04/2024 04:00 | 39 | 39 |
| | 01/04/2024 04:15 | 39.9 | 40 |
| | 01/04/2024 04:30 | 40.1 | 40 |
| | 01/04/2024 04:45 | 40.6 | 41 |
| | 01/04/2024 05:00 | | |
| | 01/04/2024 05:15 | | |
| | 01/04/2024 05:30 | | |
| | 01/04/2024 05:45 | | |
| | 01/04/2024 06:00 | | |
| | 01/04/2024 06:15 | 45 | 45 |
| | 01/04/2024 06:30 | 43 | 43 |
| | 01/04/2024 06:45 | 42.7 | 43 |
| | 01/04/2024 07:00 | 42.4 | 42 |
| | 01/04/2024 07:15 | 49.1 | 49 |
| | 01/04/2024 07:30 | 43.4 | 43 |
| | 01/04/2024 07:45 | | |
| Period Count | 20 | | |
| Log Averages | | 40 | |
| Modal Average | | 39 | |



| ML2 | Date/Time | P1 (A, Lin) | |
|----------------------|------------------|-------------|---------|
| | | LA90 | Rounded |
| | 01/04/2024 07:00 | 38.7 | 39 |
| | 01/04/2024 07:15 | 39.3 | 39 |
| | 01/04/2024 07:30 | 39.3 | 39 |
| | 01/04/2024 07:45 | 40 | 40 |
| | 01/04/2024 08:00 | | |
| | 01/04/2024 08:15 | | |
| | 01/04/2024 08:30 | | |
| | 01/04/2024 08:45 | | |
| | 01/04/2024 09:00 | | |
| | 01/04/2024 09:15 | | |
| | 01/04/2024 09:30 | | |
| | 01/04/2024 09:45 | | |
| | 01/04/2024 10:00 | | |
| | 01/04/2024 10:15 | | |
| | 01/04/2024 10:30 | | |
| | 01/04/2024 10:45 | | |
| | 01/04/2024 11:00 | | |
| | 01/04/2024 11:15 | | |
| | 01/04/2024 11:30 | | |
| | 01/04/2024 11:45 | 50.8 | 51 |
| | 01/04/2024 12:00 | 50.3 | 50 |
| | 01/04/2024 12:15 | 49.8 | 50 |
| | 01/04/2024 12:30 | 49.5 | 50 |
| | 01/04/2024 12:45 | 48.2 | 48 |
| | 01/04/2024 13:00 | 49.3 | 49 |
| | 01/04/2024 13:15 | 48.2 | 48 |
| | 01/04/2024 13:30 | 46.7 | 47 |
| | 01/04/2024 13:45 | 49.5 | 50 |
| | 01/04/2024 14:00 | 47.9 | 48 |
| | 01/04/2024 14:15 | 48.3 | 48 |
| | 01/04/2024 14:30 | 46.9 | 47 |
| | 01/04/2024 14:45 | 45.7 | 46 |
| | 01/04/2024 15:00 | 47.4 | 47 |
| | 01/04/2024 15:15 | 47.4 | 47 |
| | 01/04/2024 15:30 | 46.9 | 47 |
| | 01/04/2024 15:45 | 46 | 46 |
| | 01/04/2024 16:00 | 46.8 | 47 |
| | 01/04/2024 16:15 | 46.9 | 47 |
| | 01/04/2024 16:30 | 44.6 | 45 |
| | 01/04/2024 16:45 | 44.5 | 45 |
| | 01/04/2024 17:00 | 44.5 | 45 |
| | 01/04/2024 17:15 | 47.9 | 48 |
| | 01/04/2024 17:30 | 46.5 | 47 |
| | 01/04/2024 17:45 | 47.2 | 47 |
| | 01/04/2024 18:00 | 46.1 | 46 |
| | 01/04/2024 18:15 | 47.2 | 47 |
| | 01/04/2024 18:30 | 44.9 | 45 |
| | 01/04/2024 18:45 | 45.8 | 46 |
| | 01/04/2024 19:00 | | |
| | 01/04/2024 19:15 | 46.8 | 47 |
| | 01/04/2024 19:30 | 45 | 45 |
| | 01/04/2024 19:45 | 44.7 | 45 |
| | 01/04/2024 20:00 | 43.6 | 44 |
| | 01/04/2024 20:15 | 44.9 | 45 |
| | 01/04/2024 20:30 | 44.3 | 44 |
| | 01/04/2024 20:45 | 41.8 | 42 |
| | 01/04/2024 21:00 | 42.1 | 42 |
| | 01/04/2024 21:15 | 42.1 | 42 |
| | 01/04/2024 21:30 | 41.2 | 41 |
| | 01/04/2024 21:45 | 39.5 | 40 |
| | 01/04/2024 22:00 | 39.9 | 40 |
| | 01/04/2024 22:15 | 38.2 | 38 |
| | 01/04/2024 22:30 | 39.1 | 39 |
| | 01/04/2024 22:45 | 39.1 | 39 |
| Period Count | 48 | | |
| Log Averages | | 45 | |
| Modal Average | | 47 | |



| ML2 | Date/Time | P1 (A, Lin) | |
|----------------------|------------------|-------------|---------|
| | | LA90 | Rounded |
| | 01/04/2024 00:00 | | |
| | 01/04/2024 00:15 | | |
| | 01/04/2024 00:30 | | |
| | 01/04/2024 00:45 | | |
| | 01/04/2024 01:00 | | |
| | 01/04/2024 01:15 | | |
| | 01/04/2024 01:30 | 33 | 33 |
| | 01/04/2024 01:45 | 33 | 33 |
| | 01/04/2024 02:00 | 33.7 | 34 |
| | 01/04/2024 02:15 | 33.4 | 33 |
| | 01/04/2024 02:30 | 32.3 | 32 |
| | 01/04/2024 02:45 | 32.6 | 33 |
| | 01/04/2024 03:00 | 32.6 | 33 |
| | 01/04/2024 03:15 | 33.8 | 34 |
| | 01/04/2024 03:30 | 34.7 | 35 |
| | 01/04/2024 03:45 | 34.7 | 35 |
| | 01/04/2024 04:00 | 34 | 34 |
| | 01/04/2024 04:15 | 34.5 | 35 |
| | 01/04/2024 04:30 | 36.6 | 37 |
| | 01/04/2024 04:45 | 37.2 | 37 |
| | 01/04/2024 05:00 | | |
| | 01/04/2024 05:15 | | |
| | 01/04/2024 05:30 | | |
| | 01/04/2024 05:45 | | |
| | 01/04/2024 06:00 | | |
| | 01/04/2024 06:15 | 38.3 | 38 |
| | 01/04/2024 06:30 | 39.7 | 40 |
| | 01/04/2024 06:45 | 40.3 | 40 |
| | 01/04/2024 07:00 | 38.7 | 39 |
| | 01/04/2024 07:15 | 39.3 | 39 |
| | 01/04/2024 07:30 | 39.3 | 39 |
| | 01/04/2024 07:45 | 40 | |
| Period Count | 21 | | |
| Log Averages | | 35 | |
| Modal Average | | 33 | |



APPENDIX 2 – TRAFFIC DATA

Friday

| Hour Beginning | Vehicles Enter And: | | Total In |
|----------------|---------------------|------------|-------------|
| | Eat In | Drive Thru | |
| 00:00 | 9 | 4 | 13 |
| 01:00 | 2 | 2 | 4 |
| 02:00 | 1 | 3 | 4 |
| 03:00 | 2 | 3 | 5 |
| 04:00 | 1 | 2 | 3 |
| 05:00 | 6 | 10 | 16 |
| 06:00 | 10 | 17 | 27 |
| 07:00 | 16 | 30 | 46 |
| 08:00 | 19 | 29 | 48 |
| 09:00 | 24 | 29 | 53 |
| 10:00 | 20 | 23 | 43 |
| 11:00 | 24 | 19 | 43 |
| 12:00 | 38 | 36 | 74 |
| 13:00 | 38 | 36 | 74 |
| 14:00 | 29 | 26 | 55 |
| 15:00 | 35 | 36 | 71 |
| 16:00 | 28 | 47 | 75 |
| 17:00 | 23 | 57 | 80 |
| 18:00 | 24 | 56 | 80 |
| 19:00 | 27 | 40 | 67 |
| 20:00 | 22 | 32 | 54 |
| 21:00 | 17 | 25 | 42 |
| 22:00 | 17 | 22 | 39 |
| 23:00 | 10 | 12 | 22 |
| Total | 442 | 596 | 1038 |

Saturday

| Hour Beginning | Vehicles Enter And: | | Total In |
|----------------|---------------------|------------|-------------|
| | Eat In | Drive Thru | |
| 00:00 | 17 | 12 | 29 |
| 01:00 | 10 | 9 | 19 |
| 02:00 | 5 | 6 | 11 |
| 03:00 | 3 | 3 | 6 |
| 04:00 | 4 | 4 | 8 |
| 05:00 | 5 | 6 | 11 |
| 06:00 | 7 | 15 | 22 |
| 07:00 | 10 | 21 | 31 |
| 08:00 | 17 | 38 | 55 |
| 09:00 | 30 | 39 | 69 |
| 10:00 | 26 | 35 | 61 |
| 11:00 | 16 | 42 | 58 |
| 12:00 | 22 | 65 | 87 |
| 13:00 | 31 | 60 | 91 |
| 14:00 | 31 | 59 | 90 |
| 15:00 | 35 | 43 | 78 |
| 16:00 | 33 | 35 | 68 |
| 17:00 | 35 | 42 | 77 |
| 18:00 | 25 | 40 | 65 |
| 19:00 | 21 | 37 | 58 |
| 20:00 | 15 | 29 | 44 |
| 21:00 | 11 | 22 | 33 |
| 22:00 | 10 | 21 | 31 |
| 23:00 | 10 | 16 | 26 |
| Total | 429 | 699 | 1128 |