

INFINITY ACOUSTICS

NOISE IMPACT ASSESSMENT

**MFG BP Petrol Filling Station,
Hertford Road,
Marlborough,
SN8 4AW**



Project Description:

Noise Impact Assessment for Proposed Extension of Operational Hours

Project Reference Number:

A492MF

Version Number	Date of Version	Amendment
001	24.08.2026	Original Version
002	08.09.2026	2 nd Issue, Updated Proposed Operational Hours, Updated Model and Mitigation

Report Authored By:

Principal Acoustic Consultant - Jamie Barratt-Gibson, *MSc, MIOA, MIET*

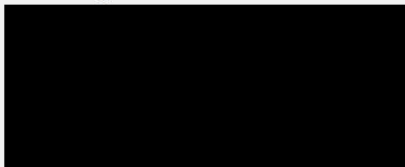
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Signature:


Company Details:

Infinity Acoustics Ltd


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1. Introduction

- 1.1 Infinity Acoustics Ltd has been appointed to undertake a noise assessment to assess the potential noise impact on nearby residential dwellings due to the proposed extension of operational hours at the petrol filling station located at MFG BP Petrol Filling Station, Hertford Road, Marlborough, SN8 4AW.
- 1.2 As part of the application process, the client will be submitting a planning application for the development to the Local Planning Authority (LPA), Wiltshire Council. It is proposed that the fuelling facilities operate 24 hours a day, Monday to Sunday.
- 1.3 The existing hours of operation of the site were approved in a previous application from 2012 and are noted as 06:00 – 23:00 Monday to Saturday and 06:30 – 22:30 on Sundays. Given this, the proposal represents an additional 7 hours of trading Monday to Saturday and an additional 8 hours on Sundays.
- 1.4 It is understood that the proposed application will be for the extension of the fuelling activities and all other services and operations at the site will remain with the same operational times.
- 1.5 The aim of the noise survey and assessment below is to provide the relevant information to assist the client and local planning authority in approving the application, specifically in relation to the noise information required to satisfy any noise concerns the LPA may have. The noise levels at the site will be measured and assessed according to the relevant standards, and noise control measures will be provided where necessary to ensure the amenity of the nearby residents can be protected from any potential noise impact caused by the development. Before the installation of any noise control measures or sound

insulation works, the contents of this report should be fully approved by the local authority.

- 1.6 The following noise assessment will be undertaken with reference to the National Planning Policy Framework 2024 and the Noise Policy Statement for England 2010, as well as the following standards.

1.7 **BS4142:2014+A1:2019 - Methods for Rating and Assessing Industrial and Commercial Sound.**

BS4142 is a British Standard that provides guidance and a standardised methodology for assessing industrial and commercial noise sources. BS4142 outlines methods for defining specific sound levels from a given development and/or noise source. Rating penalties are then applied to account for the acoustic characteristics of the noise source. Rating penalties can be applied for the following:

- Tonality
- Impulsivity
- Intermittency

Using the subjective method, the penalties vary in magnitude depending on how perceptible the acoustic characteristic is to the human ear. The rating noise level is then compared to the underlying L_{A90} background sound level of the area without the source under assessment operating to assess the likely noise impact. The level by which the rating noise level exceeds the background L_{A90} defines the potential for noise impact. The table below outlines the relevant criteria bandings described in BS4142.

Description	Impact Rating
Rating noise levels +10 dB above the background	Significant adverse impact, depending on the context.
Rating noise levels +5 dB above the background	Adverse impact, depending on the context.
Where the rating level does not exceed the background	Low impact dependent on context

Table 1.0 – BS4142 Noise Criteria

This methodology will be used to assess the operational noise associated with the PFS in the proposed hours of extended operation. Given the site is already a feature of the acoustic environment, it is concluded that if rating noise levels from the development fall equal to or lower than the background sound level this would indicate low impact and 'No Observed Effect Level' when assessed in accordance with the NPPF and NPSE, and should noise from the development site fall below the level at which BS4142 states adverse impact would occur (Less than 5 dB above the background sound level) this would indicate the 'Lowest Observed Adverse Effect Level' when assessed in accordance with the NPPF and NPSE.

1.8 WHO Guidelines on Community Noise

The general noise criteria used in the assessment will be obtained from the World Health Organisation Guidelines on Community Noise. This document outlines specific absolute noise criteria at which community noise incident on a residential receiver could be considered to cause annoyance and potentially be detrimental to health. The W.H.O Guidelines define community noise as noise emitted from all sources in the community other than that within the industrial workplace. Given this, it is deemed that these criteria are appropriate to assess the noise from the petrol filling station. An overview of the criteria is outlined below:

Location	Criteria	Description
Inside Dwellings Night	>30 dB $L_{Aeq, 8hours}$	Adverse effects on speech intelligibility and moderate annoyance. Sleep disturbance
	>45 dB $L_{Amax,t}$	
Inside Dwellings Day	>35 dB $L_{Aeq, 8hours}$	Adverse effects on speech intelligibility and moderate annoyance

Table 2.0 – W.H.O Noise Criteria

The criteria above will be utilised as supplementary noise criteria to provide further context to the BS4142 Assessment.

1.9 IEMA Guidelines for Noise Impact Assessments

The IEMA Guidelines for Noise Impact Assessment specify general methods for assessing noise and the potential for noise impact. Specifically, this guidance can be used to assess the potential impact of noise sources for which there are no specifically designed standards or guidance, or to provide further context to a noise assessment. In order to assess the potential for noise impact, these guidelines outline an approach whereby the increase or change in noise levels in the assessment area due to the operation of the new source or development is calculated. The magnitude by which the ambient acoustic environment increases directly relates to the potential for noise impact. The table below indicates the significance of changes in noise levels in incremental intervals.

IEMA Guidelines for Noise Impact Assessment Criteria	
Effect Description	Definition
None / Not Significant	Less than 2.9dB L_{Aeq} change in sound level and/or all receptors are of negligible sensitivity to noise.
Slight	A 3dB to 4.9dB L_{Aeq} change in sound level at a receptor of some sensitivity.
Moderate	A 3dB to 4.9dB L_{Aeq} change in sound level at a sensitive or highly sensitive receptor, or a greater than 5dB L_{Aeq} change in sound level at a receptor of some sensitivity.
Substantial	Greater than 5dB L_{Aeq} change in sound level at a noise-sensitive receptor, or a 5dB to 9.9dB L_{Aeq} change in sound level at a receptor of high sensitivity to noise.
Severe	Greater than 10dB L_{Aeq} change in sound level at a receptor of high sensitivity to noise.

Table 3.0 – IEMA Guidelines on Noise Impact Assessment Criteria

The methodology will also be utilised to provide a supplementary assessment of the PFS to provide further context to the primary BS4142 assessment.

2. Site & Surroundings

2.1 The site is located in South Marlborough, approximately 900m south of Marlborough town centre. The area surrounding the site is a mixture of commercial units and residential dwellings. In general, the area surrounding the site could be considered suburban.

2.2 To the west of the site is Salisbury Road, which facilitates moderate to high levels of road traffic flow. To the east of the site is Hertford Road, which facilitates low levels of road traffic flow.

2.3 In addition to the petrol filling station, the area includes several commercial establishments such as Fulcrum Commercial Kitchens Ltd, which operates between the hours of 09:00 – 17:00 from Monday to Friday, Toolstation Marlborough, which operates between the hours of 07:00 – 18:00 from Monday to Saturday and 09:00 – 16:00 on Sundays, and The Savernake Dental Practice, which operates between the hours of 08:30 – 17:30 Monday to Friday and 08:30 – 12:00 on Saturdays.

2.4 The petrol station itself has no.4 petrol pumps, facilitating up to 8 cars to fill at any one time. During the site visit, the fuel pumps were noted as Tokheim Quantum T units.

2.5 To the rear of the kiosk building along the southern perimeter of the site, there are no.2 Panasonic Chiller unit condensers. These units activate depending on the temperature of the internal fridge units and therefore are assumed to already operate 24 hours a day and will not be included in the subsequent assessment. However, there were also a number of AC units noted. Given the nature of the AC units, it is assumed that these units could operate in the proposed period of extended operation and as such, they will be included in the subsequent assessment. The following AC units were identified on site

- No.2 Toshiba SM1103AT-E1 – 71 dB LwA

- No.2 Toshiba RAV-SM564SDT-E – 65 dB LwA

- No.1 Toshiba RAV-SM1104ATP-E1 – 71 dB LwA.

2.6 To the rear of the site, there is also a small extract vent that is associated with the Subway. However, it is understood that the Subway section of the kiosk will not operate during the proposed extended periods of operation at the site. Therefore, this will not be included in the subsequent assessment.

2.7 Along the northern perimeter of the site, there are no.4 covered Washtec Jet wash bays. It is understood these have replaced the jet wash bays to the rear of the site which were approved in 2012. It is understood that the jet washes are restricted from operating outside of the hours of 07:00 – 18:00 daily and these hours will remain the same.

2.8 There are several residential dwellings in the vicinity of the development site, the closest of which is the property located along the southern perimeter of the site. Given the proximity of these dwellings to the development site, they will be considered the Noise Sensitive Receptors (NSRs) in the subsequent assessment.

2.9 The figure below indicates the location of the nearest dwellings in relation to the development site as well as the noise survey measurement locations.

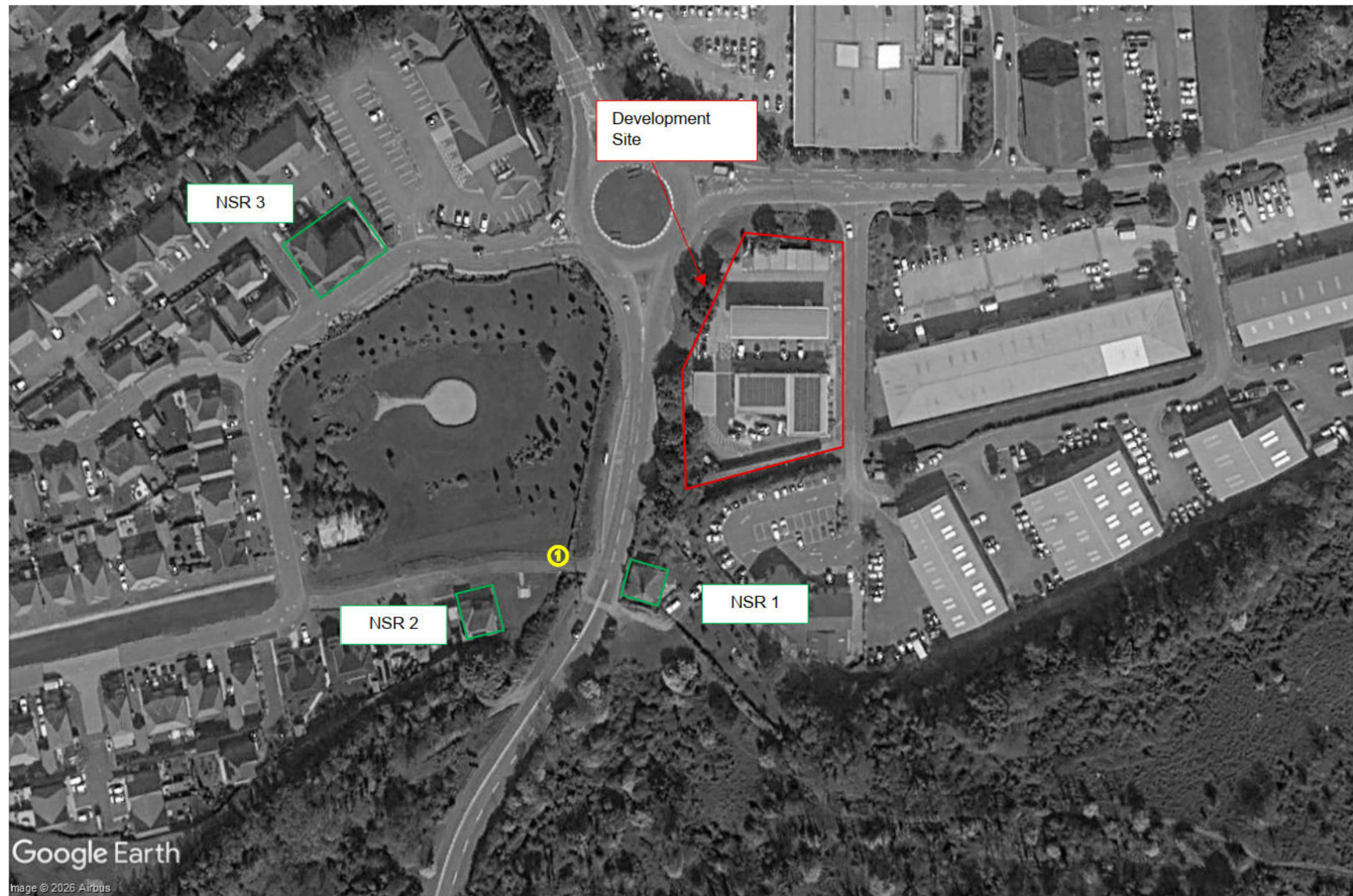


Figure 1.0 – Development Site and Surroundings

3. Survey

3.1 A noise survey of the site was undertaken between Friday the 14th of August and Monday the 17th of August 2026.

3.2 The following equipment was used to undertake the noise survey. All equipment used was field-calibrated at 1kHz with a drift of less than 0.1 dB before and after the measurement. Calibration certificates for the equipment can be provided upon request.

- SVAN 971A Class 1 Sound Level Meter – SN – 139441
- SVAN SV33B Class 1 Calibrator – SN – 122241

3.3 The long-term noise meter and associated microphone at Measurement Location 1 (ML1) were located attached to a lamp post on the adjacent street to the closest NSRs. The sound level meter was affixed approximately 2.7m from the ground with no other reflective surfaces in close proximity. The noise levels at this location are deemed to be representative of the noise levels at the NSRs.

3.4 The weather during the setup of the equipment is outlined below:

- 27.0 Degrees Celsius
- WNW wind with speeds of 3.1m/s
- No cloud cover or precipitation

During the collection of the equipment, the weather was as follows:

- 23.0 Degrees Celsius
- NW wind with speeds of 2.8m/s
- No cloud cover or precipitation

3.5 Generally, the weather across the majority of the survey complied with the requirements of BS 7445-2. A full weather summary for the duration of the survey is outlined in the table below and has been taken from the nearest functioning weather station.

Weather Data	
Description	Data
Temp (C)	14.4 – 31.7
Rainfall (mm)	0.0
Wind Speed (m/s)	0.0 – 5.4
Prevailing Wind	SSW
Relative Mean Humidity (%)	64.1

Table 4.0 – Weather Data

3.6 The summary results of the noise survey are presented in the tables below and will be used in the subsequent Noise Assessment. A full noise survey time history can be found in Appendix C.

Day, Eve, Night Results ML1				
Date	Time Period	L _{Aeq} (dB)	L _{Afmax} (dB)	L _{A90} (dB)
Day – 14/08/2026	11:30 – 19:00	67.0	97.0	53.0
Eve – 14/08/2026	19:00 – 23:00	65.0	92.0	41.0
Night – 14/08/2026	23:00 – 07:00	60.0	87.0	35.0
Day – 15/08/2026	07:00 – 19:00	67.0	104.0	49.0
Eve – 15/08/2026	19:00 – 23:00	63.0	89.0	41.0
Night – 15/08/2026	23:00 – 07:00	59.0	84.0	33.0
Day – 16/08/2026	07:00 – 19:00	68.0	98.0	51.0
Eve – 16/08/2026	19:00 – 23:00	64.0	89.0	39.0
Night – 16/08/2026	23:00 – 07:00	61.0	84.0	33.0
Day – 17/08/2026	07:00 – 12:30	66.0	102.0	46.0

Table 5.0 – Noise Survey Data ML1

3.7 The proposed extended operational times of the development are 24 hours a day. This primarily falls within the nighttime period between 23:00 – 06:00; as such, only a 15min assessment period nighttime BS4142 assessment will be undertaken. It is concluded that if low impact can be achieved at night, then it will also be achieved in the small 30min day time period of proposed extended operations between 22:30 – 23:00 Sunday evenings. The histogram below presents the nighttime L_{A90} background sound level analysis during periods where the petrol station does not currently operate but proposes to operate at night between 23:00 – 06:00, to establish the background sound levels free from the associated noise.

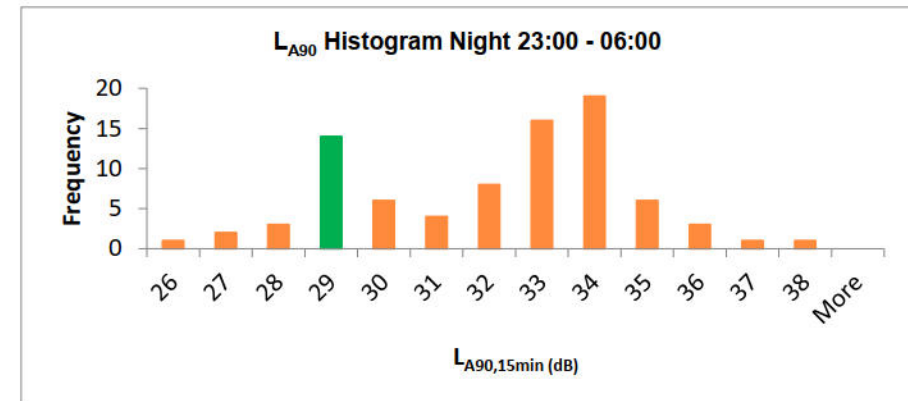


Figure 2.0 – L_{A90} Histogram

The analysis indicates that the statistically most repeated L_{A90} value during nighttime periods of extended operation is 34 dB. However, the background sound levels of the area are lower than this value for 64% of the time throughout the proposed periods of extended operation. Therefore, a more robust and conservative value of 29 dB L_{A90} will be used in the assessment. The background sound levels of the area are equal to or higher than this value for 92% of the time and therefore this value is deemed suitable and appropriate.

4. Mitigation and Noise Control Measures

4.1 In order to ensure the noise impact from the site during the proposed periods of extended operation at night is as low as possible, a set of noise control measures has been devised. These are outlined in the section below:

- The Jet wash bays should not be utilised in the periods of proposed extended operation.
- The tannoy system should not be operated or used during the periods of extended hours of operation except in cases of emergency.
- The fuel delivery time periods and tanker operations at the site should remain the same and not occur within the proposed period of extended operation.
- The three larger Toshiba AC units located to the rear of the kiosk (No. 1 Toshiba RAV-SM1104ATP-E1 – 71 dB LwA and No.2 Toshiba SM1103AT-E1 – 71 dB LwA) should be located in acoustic enclosures capable of reducing the noise emissions of the units by 10 dB. This level of sound reduction is relatively low and would easily be achieved by a standard hit-and-miss enclosure; however, any enclosure could be installed provided the minimum attenuation of 10 dB is achieved.
- During the proposed extended periods of operation, the exit access road to the rear of the kiosk building should be prohibited and coned off. All vehicles should be directed to use the entrances and exits from the forecourt as indicated in the figure below.

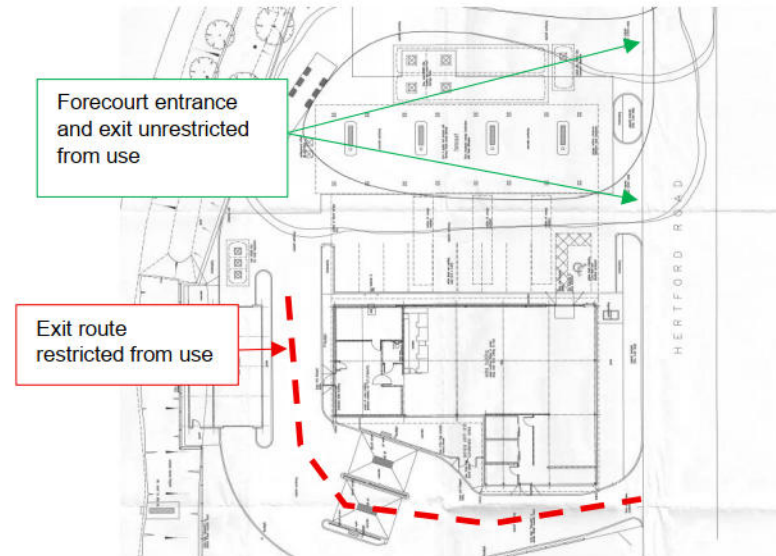


Figure 3.0 – Filling Station Exit Route Restrictions

5. Computer Noise Model Results

5.1 In order to calculate the specific sound levels from the PFS at the Noise Sensitive Receptor, a computer sound model has been generated using DGMR Noise Prediction Software. This software undertakes calculations using the methods outlined in ISO 9613-2:2024 Attenuation of Sound During Propagation Outdoors.

5.2 The following assumptions have been made within the computer sound model:

- The ground in the area has been considered primarily hard.
- The topography of the site and surrounding land has been taken from Google Earth and information gained on-site.
- The elevations and building height for the proposed development have been obtained from information gained on-site and associated plans.
- The fuel pumps have been input into the model as a point source 1m from the ground.
- The AC units have been input into the model as point sources 0.5 to 1.5m from the ground.
- The vehicle noise has been input into the model as a line source/moving point source at a height of 0.5m.
- The L_{Amax} car door slam events have been input into the model as a point source at a height of 1m.
- The sound power of the model inputs has been calculated based on measured noise data, and all calculations can be seen in Appendix D.

5.3 The results of the computer noise model can be found in the table below. The table below presents the noise levels at the most exposed window

associated with the Noise Sensitive Receptor, considering the noise control measures in Section 4.0 have been implemented.

5.4 Infinity Acoustics Ltd have been provided with transaction data of other 24-hour sites owned and operated by the client. The transaction data can be found in Appendix D. As can be seen in the proposed periods of extended operation between 23:00 – 06:00, there are, on average across 17 sites, 11 transactions per hour. As such, when considering the 15min assessment period, this would equate to 3 vehicles per 15 minutes. The model below will be based on this transaction data, and is deemed representative.

Location	Specific Noise Levels	
	$L_{Aeq\ 15min}$ (dB)	$L_{Amax,t}$ (dB)
NSR 1	21.0	42.0
NSR 2	16.0	38.0
NSR 3	14.0	37.0

Table 6.0 – Calculated Specific Noise Levels

5.5 As can be seen in the assessment above, the specific sound levels from the development in the proposed hours of extended operation are relatively low, and when considering an open window at the nearby dwellings, the internal noise criteria outlined in the W.H.O Guidelines on Community Noise could be readily achieved. This is an indication that the noise impact of the extension of operation hours may be low.

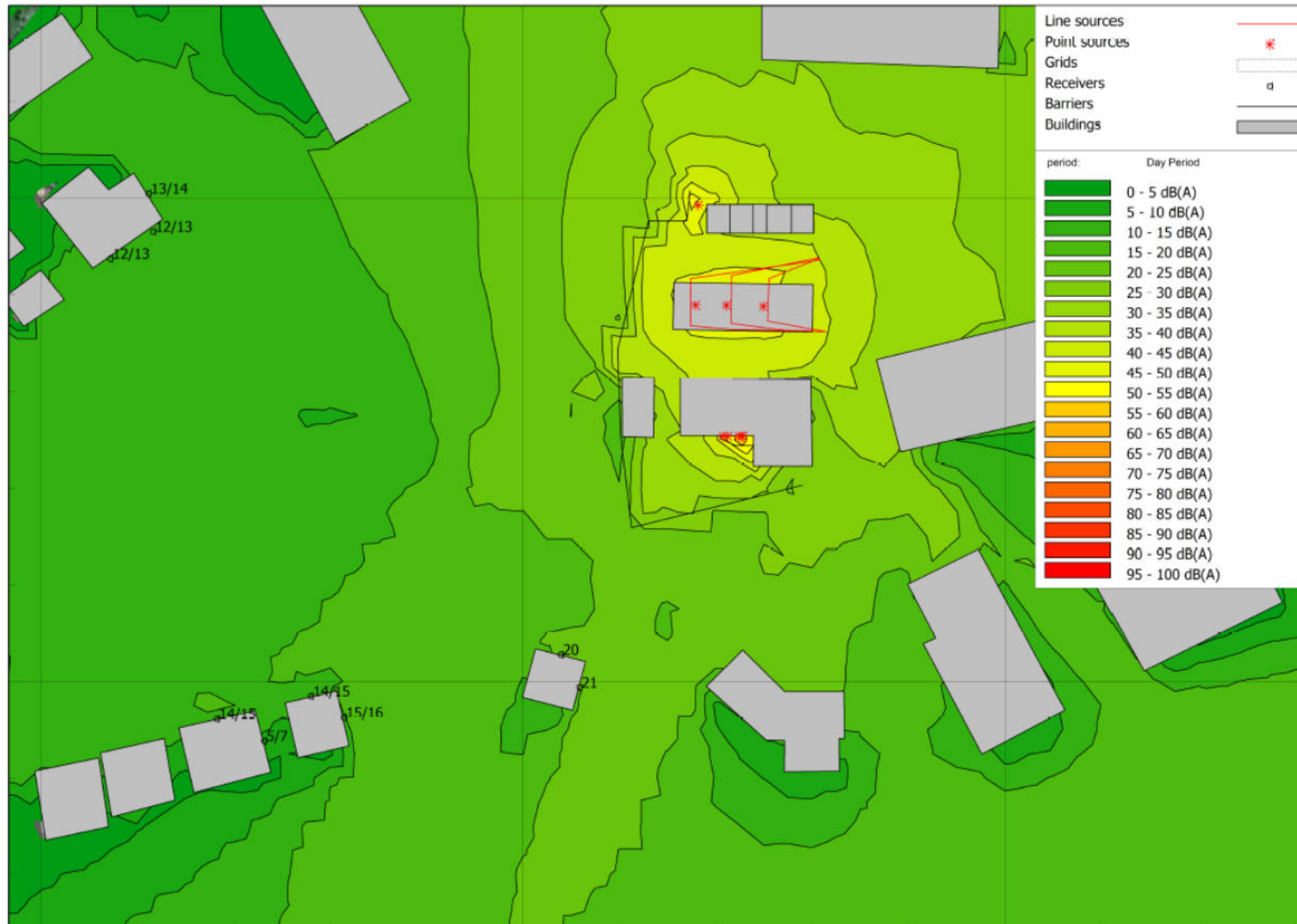


Figure 4.0 – $L_{Aeq,15\ min}$ – Specific Noise Level – 1.5m Grid Contour Height

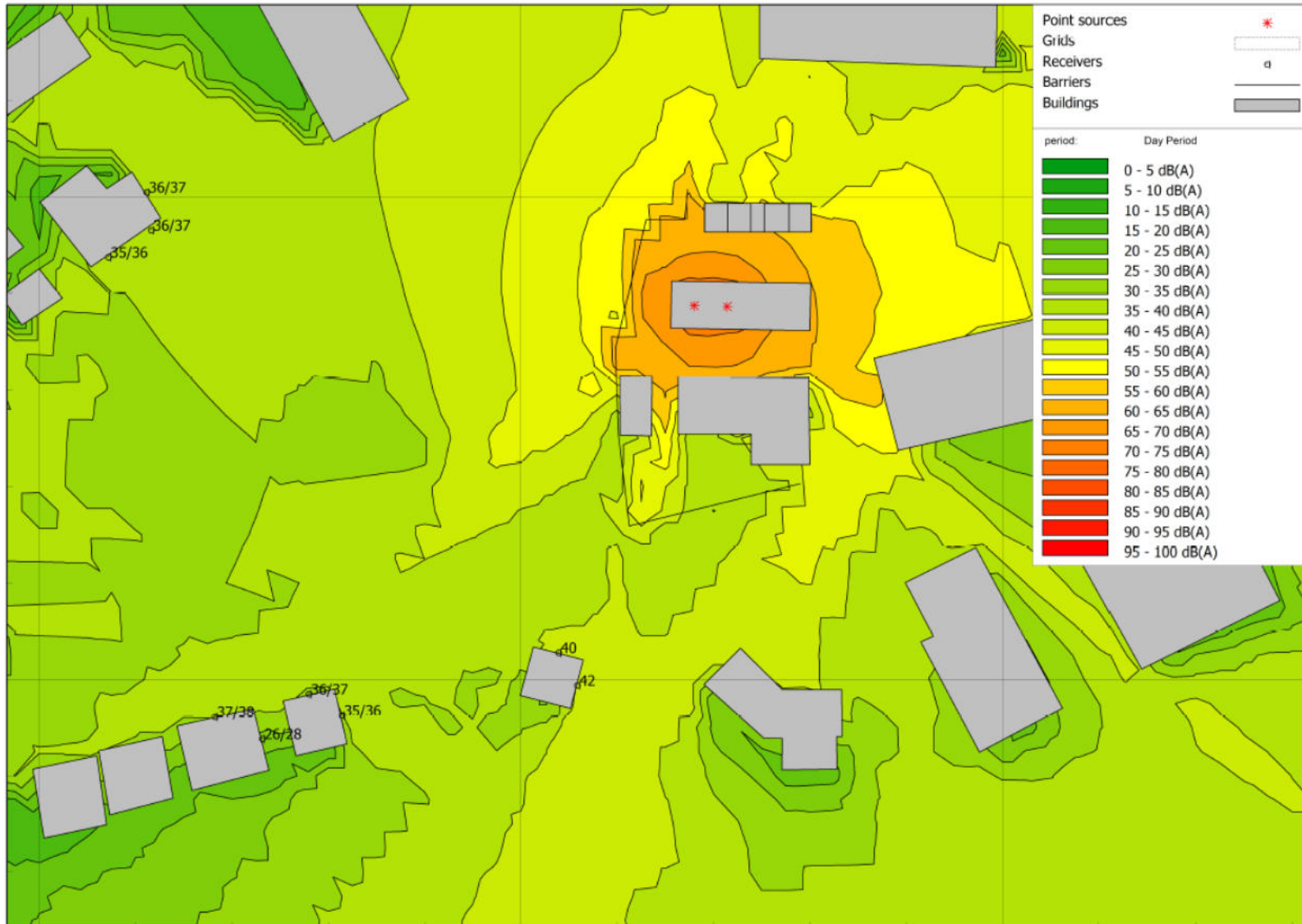


Figure 5.0 – $L_{A_{fmax}}$ Specific Noise Level – 1.5m Grid Contour height

6. BS4142 Noise Assessment

6.1 The following section of the report assesses the noise from the development during the proposed periods of extended operation by undertaking a BS4142 Assessment.

6.2 In order to establish the rating noise level for the assessment, the following rating penalties have been applied in accordance with the subjective methodology outlined in BS4142.

Rating Penalties		
Penalty Description	Penalty	Description
Tonality	+2.0	Slight Tonality of Fuel Pump and Engines
Impulsivity	+3.0	Impulsivity of Vehicle Door Closing
Intermittency	+3.0	Intermittent Activity at the Site
Other Characteristics	--	--
Total Rating Penalties		+8.0

Table 7.0 – BS4142 Rating Penalty Analysis

6.3 The BS4142 Assessment is outlined in the table below and has been undertaken assuming the noise control measures outlined in Section 4.0 of the report have been implemented.

BS4142 Assessment			
Description	NSR 1 (dB)	NSR 2 (dB)	NSR 3 (dB)
Specific Noise Level at NSR	21.0	16.0	14.0
Rating Noise Level +8 dB	29.0	24.0	22.0
Background L _{A90}	29.0	29.0	29.0
Level Above Background	0.0	-5.0	-7.0

Table 8.0 – BS4142 Assessment

6.4 The results of the assessment indicate that at all NSRs the rating noise levels are expected to fall equal to or a minimum of 7 dB below the background sound level at the NSR. When assessed in accordance with the BS4142 this equates to 'Low Impact Depending on Context'.

6.5 BS4142 stipulates that the context of the assessment should be fully considered when assessing the impacts of any given development. The pertinent context that surrounds the assessment is as follows:

- 1) The background sound levels used in the assessment are robust and conservative, as can be seen in the background sound level analysis above; the statistically most repeated L_{A90} level is 5 dB above the level used in the assessment. This indicates that for the vast majority of the time, the rating noise levels would fall further below the background sound levels than indicated in the assessment above.
- 2) The proposal does not represent the installation or implementation of any new noise sources into the area. All noise sources that would be active at the development site are already existing, and therefore the potential for impact is considered lower, as the nearby residents would likely have a tolerance to existing noise sources and types used at the site.

3) The rating noise levels and specific noise levels at the site would readily fall below the WHO criteria for bedrooms at night when considering an open window at the NSRs, and thus the potential for noise impact is likely lower than stated.

6.6 Given the outcome of the assessment and surrounding context, it is concluded that provided the recommendations outlined in Section 4.0 of the report are implemented, the noise would equate to 'No Observed Effect Level' when assessed in accordance with the NPPF and NPSE.

7. Increase In Ambient Noise Level Assessment

7.1 To provide further context to the assessment above, an increase in ambient noise levels assessment has been undertaken at the most exposed NSR.

7.2 The increase in ambient noise level assessment is undertaken by logarithmically adding the noise level from the site to the lowest measured ambient noise levels during the proposed extended hours of operation. The higher the increase in noise levels, the higher the likely noise impact. To provide a robust and conservative assessment, the rating noise levels will be used, thus accounting for any acoustic features associated with the petrol station noise.

7.3 The increase in ambient noise level assessment is outlined in the table below.

IANL Assessment	
Description	Night Most Exposed NSR (dB)
Rating Noise Level at NSR	29.0
Lowest Measured $L_{Aeq,15min}$	52.0
Resulting Noise Level	52.0
Increase in Noise Level	0.0
Impact Rating	'None'

Table 9.0 – IANL Assessment

7.4 When assessed in accordance with the IEMA Guidelines on Noise Impact, the increase in ambient noise levels due to the extension of operational hours at the site will be 'None' at the most exposed NSR, even when considering the rating noise level. This is a strong indication that the proposed extension of operational hours will not cause a significant impact on the surrounding NSRs.

8. Open Window Assessment - LAfmax

- 8.1 To further assess the potential for impact during the nighttime periods, an LAfmax Car Door Slam Open Window Assessment has been undertaken at the most exposed NSR in order to analyse a worst-case scenario.
- 8.2 The assessment below assumes a nominal 15 dB attenuation of an open window at the NSR, as well as two car door slams occurring at the site simultaneously, which is unlikely and therefore deemed a robust and conservative assessment method.

LAfmax Assessment	
Description	Most Exposed NSR (dB)
Car Door Slam LAfmax Noise Level at NSR	42.0
Attenuation from an Open Window	-15.0
Internal Noise Level in Bedroom NSR	27.0
W.H.O Criteria Bedrooms Night LAfmax	45.0
Level Below Criteria	-18.0

Table 10.0 – Open Window Assessment

- 8.3 The assessment above indicates that all internal noise criteria can be achieved within the bedroom of the most exposed NSR when considering LAfmax events from two simultaneous car door slams, which is deemed unlikely, and an open window. This indicates that the development would have a low impact on the NSR.

9. Conclusion

- 9.1 In conclusion, a noise survey has been undertaken at MFG BP Petrol Filling Station, Hertford Road, Marlborough, SN8 4AW. The noise levels obtained during the survey have allowed a noise assessment to be undertaken in order to assess the potential noise impact due to the proposed extension of operational hours on the surrounding dwellings.
- 9.2 Noise control measures have been defined in Section 4.0. The effectiveness of the noise control measures has been assessed in Sections 6.0, 7.0, and 8.0. The results of the noise impact assessment indicate that the noise levels from the development would be equal to or below the background sound level. This equates to 'Low Impact Depending on Context' when assessed in accordance with BS4142.
- 9.3 When assessing the context surrounding the assessment and the further contextual increase in ambient noise level assessment, it is expected that the actual impact of the site may be lower than indicated in the numerical BS4142 assessment, provided the recommendations and noise control measures outlined in Section 4.0 are implemented. Given the outcome of the assessment, this would represent the 'No Observed Effect Level' when assessed in accordance with the NPPF and NPSE.
- 9.4 Before the noise control measures are implemented or installed, prior approval of the outcome of the report should be sought from the local authority.

APPENDIX A – List of Terms and Glossary

The following section of the report outlines a glossary of terms used in the assessment to assist the reader in understanding the assessment above, which is, by necessity, technical in nature.

Decibel DB - The decibel, often denoted as dB, is the logarithmic unit used to describe the magnitude of sound or noise levels. The typical range of sound pressure levels is from 0 dB, defined as the threshold of hearing, to 120 dB, defined as the threshold of pain.

Frequency Hz – As well as the decibel sound and noise, it is also measured and defined in frequency. Frequency or Hertz (Hz) is an expression of the number of cycles a sound wave will complete per second. Larger frequencies may be expressed in kilohertz (kHz). The typical range of human hearing is from 20 Hz to 20,000Hz; however, with age, the audible frequency range decreases in most humans.

A - Weighting – The A-weighting is the most commonly used weighting curve taken from IEC 61672:2003 and is applied to sound pressure level measurements. The A-weighting is applied to measured sound levels to account for the loudness perceived by the human ear, as the ear is less sensitive to low audio frequencies.

LAeq - The A-weighted 'equivalent continuous noise level', which is an average of the total sound energy measured over any given time period. L_{Aeq} is the level of a continuous noise that has the same total (A-weighted) energy as the real fluctuating noise, measured over the same time period. The A-weighting represents a curve

that is applied to the measured noise levels to represent the way the human auditory system perceives sound.

LAfmax - The maximum A-weighted noise level that was recorded during the monitoring period using a fast time weighting. This acoustic parameter represents more transient sound levels within the acoustic environment, which may only occur for a few seconds or minutes.

LA10 - This is the A-weighted noise level exceeded for 10% of a given time period. This parameter is typically used to measure and predict road traffic noise.

LA90 - This is the A-weighted noise level exceeded for 90% of any given time period. Generally, this acoustic parameter represents the underlying background sound level in a given area and doesn't generally include transient or short-term noise events that may occur within the surroundings.

Sound Pressure – Sound pressure is the difference between the instantaneous pressure at a point in the presence of a sound wave and the static pressure of the medium. Sound pressure fluctuates due to refractions and compressions of air molecules.

Sound Reduction Index – The sound reduction index, denoted by the parameter 'R', is the laboratory-measured sound reduction given material or construction. R is measured in 1/3 octave band frequencies. The R_w sound insulation parameter stands for the weighted standardised sound reduction index and is a single-figure global rating of the sound insulation of a given material or construction.

APPENDIX B – Development Plans

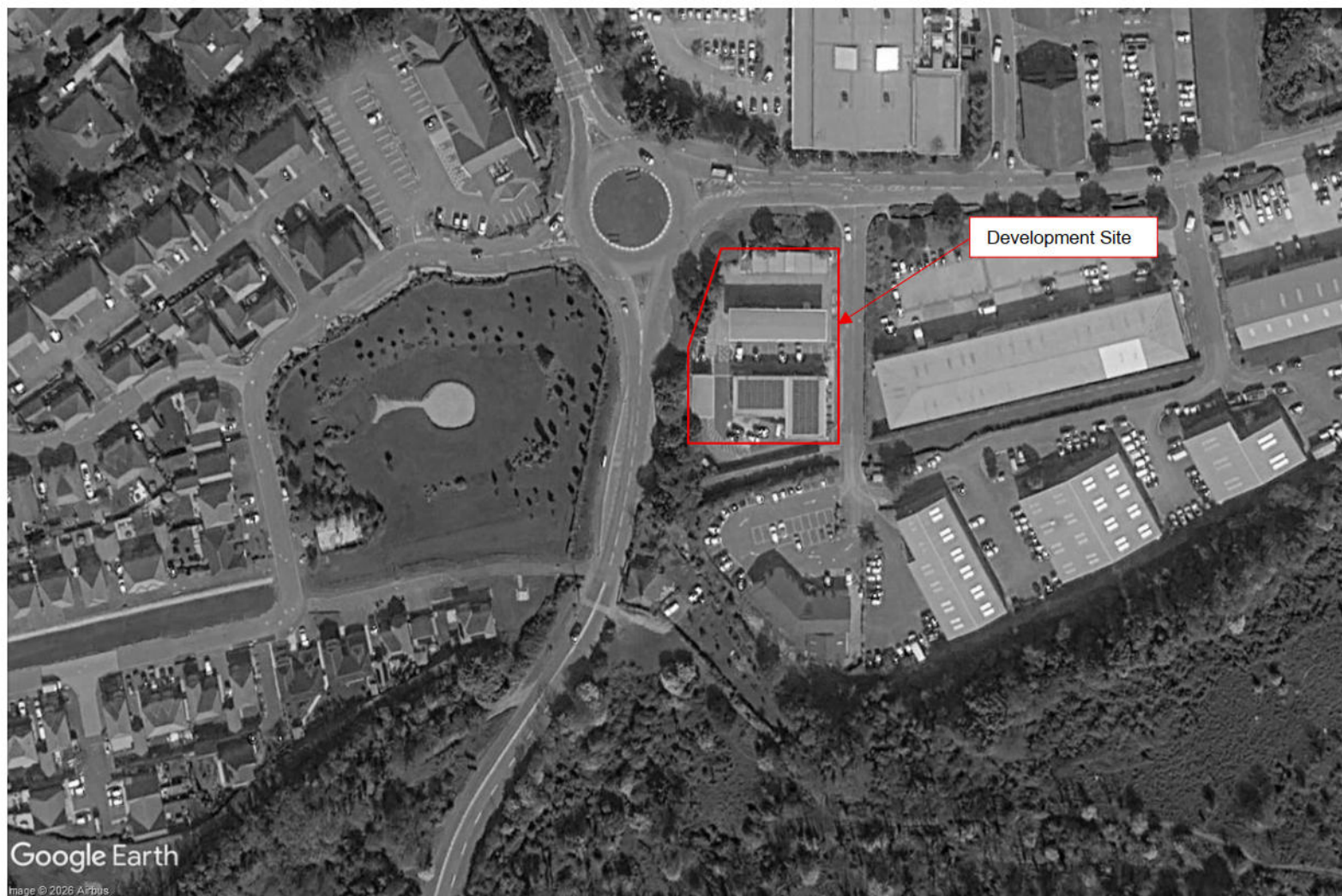


Figure 6.0 – Development Plans

APPENDIX C – Noise Survey History

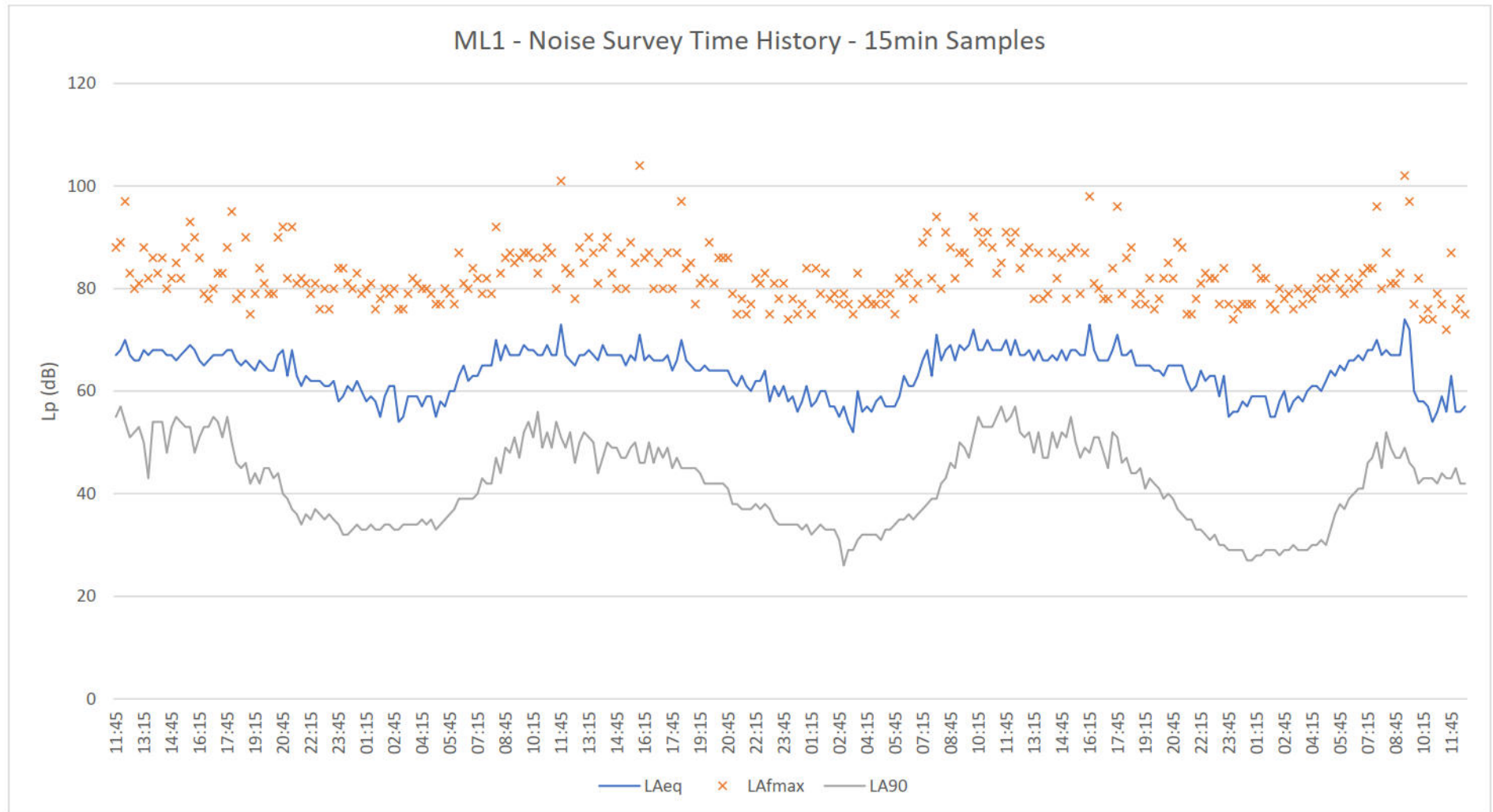


Figure 7.0 – Noise Survey Time History

APPENDIX D – Calculations

D1 – Noise Model Input Calculations – Specific Source Levels

The table below presents the source noise data used in the assessment. The noise data below was obtained by specific noise measurements of operations and plant at the site, as well as taken from the Infinity Acoustics Sound Database of noise data obtained from other client-owned petrol filling stations and manufacturers' data.

Description	Global A (dB)	Z Weighted Octave Band Frequency (Hz) (dB)						
		63	125	250	500	1k	2k	4k
Car Pass/Pullup/Departure by 3m	60.0	68.0	60.0	60.0	58.0	55.0	53.0	50.0
Car Calculated Sound Power Q2	78.0	86.0	78.0	78.0	76.0	73.0	71.0	68.0
Fuel Pump Lp at 1m	69.0	69.0	63.0	62.0	62.0	65.0	60.0	61.0
Fuel Pump Calculated Lw Q2	77.0	77.0	71.0	70.0	70.0	73.0	68.0	69.0
Tyre Pump Lp at 1m	64.0	69.0	66.0	64.0	60.0	50.0	46.0	60.0
Tyre Pump Calculated Lw Q2	72.0	77.0	74.0	72.0	68.0	58.0	54.0	68.0
Tannoy Lp at 2m	80.0	65.0	66.0	71.0	78.0	72.0	75.0	69.0
Tannoy Calculated Sound Power Q2	94.0	79.0	80.0	85.0	92.0	86.0	89.0	83.0
Jet Wash Lp at 4m	68.0	67.0	64.0	62.0	60.0	60.0	61.0	64.0
Jet Wash Calculated Sound Power Q2	88.0	87.0	84.0	82.0	80.0	80.0	81.0	84.0
Toshiba SM1103AT-E1 Sound Power	71.0	84.0	73.0	67.0	68.0	66.0	64.0	58.0
Toshiba RAV-SM564SDT-E Sound Power	65.0	78.0	67.0	61.0	62.0	60.0	58.0	52.0
Toshiba RAV-SM1104ATP-E1 Sound Power	71.0	84.0	73.0	67.0	68.0	66.0	64.0	58.0
Car Door Slam Lp at 1m	85.0	--	--	--	--	--	--	--
Car Door Slam Sound Power Q2	93.0	--	--	--	--	--	--	--

Table 11.0 – Specific Noise Level Measurements and Sound Power Levels

D2 – Model Inputs – On Time Corrections

Vehicle Movement On-Time Correction Calculations						
Assessment Period	Calculated L_{wA} (dB)	Total Dist (In and Out) (m)	Time to Cover Distance 10mph (mins)	no. Cars per Assessment Period	Total On-Time per Assessment Period (min)	Time Corrected L_{wA} (dB)
Night 15 min Fueling Per Lane	78.0	65.0	0.33	1	0.33	61.0

Table 12.0 – On-Time Corrections Vehicle Movements

Fuel Pump On-Time Correction Calculations						
Fuel Pump Type	Assessment Period	Calculated L_{wA} of Fuel Pump (dB)	Time to fill the car	Cars Per Pump	On-Time Per Pump (mins)	Time Corrected L_{wA} (dB)
Quantum T1001	Night 15min	77.0	1.5 min	1	1.5	72.0

Table 13.0 – On-Time Corrections Fuel Pumps

Tyre Pump On-Time Correction Calculations						
Pump Type	Assessment Period	Calculated L_{wA} of Tyre Pump (dB)	Time to fill the car tyres	Cars Per Pump	On-Time Per Pump (mins)	Time Corrected L_{wA} (dB)
Tyre Pump	Night 15min	72.0	5 min	1	5.0	67.0

Table 14.0 – On-Time Corrections Tyre Pumps

TOSHIBA Leading Innovation >>>

Toshiba Air Conditioning - RAV-SM Data Sheet

RAV-SM1404AT8P-E Outdoor Unit

Features

- R22 and R407C replacement technology
- Single fan unit
- Flexible, can be utilised for single, twin and triple indoor applications
- 3-phase supply



Technical Data

Model reference		RAV-SM1404AT8P-E
Nominal cooling	kW	12.5
Nominal heating	kW	16.0
Standard air flow	m ³ /h	4200
Standard air flow	l/s	1167
Sound power (cool/heat)	dB(A)	70/71
Sound pressure (cool/heat)	dB(A)	54/55
Dimensions (H x W x D)	mm	890 x 900 x 320
Unit weight	kg	68
Power supply	V-ph-Hz	380-415/3/50
Interconnecting cable		3 core + earth
Suggested fuse size	A	10
Maximum operating current (cooling)	A	17
Operating range, cooling	°C	-15 to 46
Operating range, heating	°C	-15 to 15
Pipe sizes (liquid-suction)	inch	3/8-5/8
Minimum/maximum pipe length	m	5/50
Maximum height difference	m	30
Pre-charge pipe length	m	30
Additional R410A refrigerant - factory charge	g/m - kg	40 - 2.8

Dimensional Drawings

Transactions Between 11pm – 7am

Total										
Transactions across 4 weeks (28 days)										
Site	Post Code	Travel Distance	23 to 24	01 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7
F5570 Fordhouse	WV10 7ED	2.8	408	250	177	150	162	365	1,107	1,505
F5186 Rolyat Oak	WV11 1BQ	3.7	209	378	225	158	99	138	309	138
F5241 Bilston	WV14 8NP	5.9	500	463	531	248	215	322	523	368
F5372 Sedgley Road	DY14LQ	7.8	464	425	280	185	184	242	620	1,070
F5551 Gailey	BT19 5PH	7.7	529	225	181	186	217	391	603	1,339
F5282 Tipton	DY4 9B	7.8	522	521	254	145	177	322	773	1,118
F5081 Bloxwich	WS3 2TZ	8.2	501	288	131	80	74	83	222	384
F5036 Wednesbury	WS10 9NA	9.2	547	450	286	217	230	513	1,005	1,430
F5447 Bluecoates	W51 2LN	10.0	464	396	287	163	122	132	149	339
F5613 Osprey	W69 2BH	10.3	352	245	149	130	106	224	473	615
F5143 Eve Hill	DY1 5AW	10.9	410	455	537	211	188	174	500	771
F5041 Merry Hill	DY5 1LL	11.7	522	215	136	131	126	163	384	751
F5261 Netherton	DY2 9PB	12.7	455	370	281	194	178	327	632	990
F5243 Brandhall	W68 8DQ	12.8	454	414	513	243	240	318	533	584
F5638 Shortcorss	WS3 3UA	13.7	510	418	288	218	171	314	660	1,043
F5051 Great Barr	B43 6NT	13.8	522	162	111	67	81	141	515	1,103
F5054 Handsworth	B21 0LA	14.0	431	523	244	163	142	234	486	558

Site Name	23:00	00:00	01:00	02:00	03:00	04:00	05:00
Fordhouse	15	10	6	5	6	11	43
Rolyat Oak	9	14	8	6	4	5	11
Bilston	18	17	12	9	8	12	19
Sedgley Road	17	15	10	6	6	9	22
Gailey	12	8	6	6	8	14	29
Tipton	12	11	8	5	6	12	28
Bloxwich	11	10	5	3	3	3	12
Wednesbury	20	15	10	8	8	11	36
Bluecoates	17	14	10	7	4	5	5
Osprey	12	9	6	5	4	8	20
Eve Hill	15	16	12	8	6	6	21
Merry Hill	12	8	5	5	5	6	14
Netherton	16	13	9	7	6	12	30
Brandhall	23	17	13	9	9	11	19
Shortcorss	19	15	10	8	6	11	24
Great Barr	12	6	4	2	3	5	18
Handsworth	15	12	9	6	5	8	17
Description	23:00	00:00	01:00	02:00	03:00	04:00	05:00
Average Transactions Per Hour	15.0	12.0	8.0	6.0	6.0	9.0	22.0
Average Per hour between 23:00 - 06:00	11.0						
Average per 15min 23:00 - 06:00	3.0						

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