Able Acoustics

TSJ DRAWINGS

THE COACH PARK, LENHAM

ACOUSTIC ASSESSMENT

NOVEMBER 2023

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P1552/01	***November 2023***	***Position***	***Signature***
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CONTENTS

1. INTRODUCTION

1.1 Introduction

1.1.1 Permission is sought for: *Retrospective application for the erection of a tyre bay building and the laying of hardstanding."* at The Coach Park, Old Ashford Road, Lenham, Kent, ME17 2DG.

1.1.2 The local planning authority: Maidstone Borough Council (MBC) has attached a condition in respect of noise to the decision notice and TSJ Drawings has commissioned Able Acoustics Ltd to assess the impact of sound from the tyre bay.

1.1.3 This report presents the measurements undertaken, the results of the assessment and recommendations for mitigation where necessary.

2. UNITS AND STANDARDS

2.1 General

2.1.1 Noise is defined as unwanted sound. The range of audible sound is from 0 dB to 140 dB and a range of typical noise levels is presented in Table 2.1 below.

Table 2.1 Typical Sound Levels

Sound Pressure Level dB(A)	Source	Subjective Level
130 - 140	Jet (at 10m)	Threshold of pain
120 – 130	Pneumatic Drill (at 1m)	Extremely Loud
110 – 120	Loud Car Horn (at 1m)	Very Loud
100 – 110	Alarm Bell (at 1m)	Very Loud
80 – 90	Inside General Factory	Loud
70 – 80	Average Traffic (on street corner)	Loud
60 – 70	Conversational Speech	Moderate
50 – 60	Typical Business Offices	Moderate
40 – 50	Living-room Urban Area	Quiet
30 – 40	Library	Quiet
20 – 30	Bedroom (at night)	Very Quiet
10 - 20	Broadcasting Studio	Very Quiet

2.1.2 For variable sources, a difference of 3 dB(A) is just distinguishable. For road traffic or railway sound sources, a doubling of traffic flow will increase the overall noise by 3 dB(A). The "loudness" of a noise is a purely subjective parameter, but it is generally accepted that an increase/decrease of 10 dB(A) corresponds to a doubling/halving in perceived loudness.

2.1.3 The frequency response of the ear is usually taken to be about 20 Hz (number of oscillations per second) to 20 kHz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

2.1.4 External sound levels are rarely steady, but rise and fall according to activities within an area at any given time. In an attempt to produce a figure that relates this variable noise level to subjective response, a number of indices have been developed. These include:

i) $L_{Aeq,T}$ sound level

This is the "equivalent continuous A-weighted sound pressure level, in decibels", and is defined in British Standard BS 7445 [1] as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time". In simpler terms, it is a measure of energy within the varying noise.

ii) The L_{Amax} level

This is the maximum noise level recorded over the measurement period.

iii) The L_{A90} level

This is the level that is exceeded for 90% of the measurement period and gives an indication of the level during quieter periods. It is often referred to as the background sound level and is used in the assessment of disturbance from industrial sound.

iv) Ambient Sound

This is the totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. The ambient sound comprises the residual sound and the specific sound when present.

v) Residual Sound

This is the sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.

vi) Specific Sound

This is the sound from the sound source under investigation. The specific sound may be determined by subtracting the measured Residual Sound Level from the measured Ambient Sound Level.

2.2 Relevant Planning Condition

2.2.1 The local planning authority Maidstone Borough Council (MBC) has attached conditions to the planning decision notice [2]. Condition 03 relates to noise and states:

"The rating level of noise emitted from the proposed plant and equipment to be installed on the site (determined using the guidance of BS 4142 : 2014 Rating for industrial noise affecting mixed residential and Industrial areas) shall be 5dB below the existing measured background noise level LA90, T.

Reason: In the interests of aural amenity."

2.3 Assessment of Industrial and Commercial Sound

BS 4142 Method

2.3.1 BS 4142:2014+A1:2019 [3] provides methods for rating and assessing industrial and commercial sound. The Standard is used by local authorities and consultants to rate sound from fixed installations. The Standard was considerably revised 2014 and amended in 2019.

2.3.2 The Standard advocates the use of L_{Aeq}, a level which is directly measurable. The L_{Aeq}

is either measured or calculated at a receptor location and termed the "Specific Sound Level". The Specific Sound Level may then be corrected for the character of the sound and is then termed the "Rating Level".

2.3.3 When presenting values to be used in an assessment BS 4142:2014 requires that levels should be expressed as whole numbers on the grounds that expressing to one or more decimal places implies an improper degree of precision.[1]

2.3.4 BS 4142 states that the assessment position should be in the free field (at least 3.5m away from any reflecting façades) and at a preferred height of between 1.2 and 1.5 m above ground level. Where it is necessary to take measurements above ground floor level, choose a location which is approximately 1m from the façade on the relevant floor of the building if it is not practical to make the measurements at least 3.5m from the façade at this elevation.

2.3.5 When used to assess the impacts, the Rating Level is determined and the L_{A90} background sound level is subtracted from it, the result is then considered alongside a range of pertinent factors to determine the context. The Standard states:

"a) Typically, the greater this difference, the greater the magnitude of the impact.

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

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

d) 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."

The Standard notes that more than one assessment may be necessary[2] and continues to further qualify the assessment protocol by outlining conditions to the comparative assessment and stating that "not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact", thus implying that all sites should be assessed on their own merits and specifics. The Standard quantifies the typical reference periods (for the purposes of the standard) to be used in the assessment and these are shown in Table 2.2 below:

Table 2.2 Reference Periods

Period	Hours	Assessment Period
Typical Daytime	07:00 – 23:00	1hr assessment period
Typical Night-time	23:00 – 07:00	15min assessment period

2.3.6 The Standard notes that sound with prominent impulses has been shown to be more annoying than continuous types of sound (without impulses or tones) with the same equivalent sound pressure level. The Standard outlines a number of methods for defining appropriate "character corrections" within the Rating Sound Level to account

[1] This convention has also been applied in the presentation of the measured levels in the Appendices for consistency.
[2] Note 1 to Clause 11 Assessment of the impacts

for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency. These are a) the Subjective Method, b) the Reference Method for tonality and c) the Objective Methods for assessing both tonality and impulsivity. It is noted by the Standard that where multiple features are present the corrections should be added in a linear fashion to the Specific Sound Level. The Subjective Method is based on the following corrections shown in Table 2.3 below:

Table 2.3 Subjective Method Rating Corrections

Level of Perceptibility	Tonal Correction	Impulsivity Correction	Intermittency Correction	Correction for "Other sound characteristics"
No Perceptibility	+0dB	+0dB	If intermittency is readily identifiable +3dB	When neither tonal nor impulsive, nor intermittent but clearly identifiable +3dB
Just Perceptible	+2dB	+3dB		
Clearly Perceptible	+4dB	+6dB		
Highly Perceptible	+6dB	+9dB		

2.3.7 The Objective Methods are based around the actual quantification of frequency data and the impulsive prominence of the sound under investigation where possible.

2.3.8 It should be noted that the Standard states that the assessment methodology provided is not intended for the derivation of internal levels arising from sound levels outside or for the assessment of low frequency sound.

2.3.9 The Standard requires that when assessing the impacts the initial estimate of the impact may need to be modified due to context in which case pertinent factors need to be taken into consideration which include:

- The absolute level of sound in comparison to the residual sound level
- The character and level of the residual sound compared with the character[3] and level of the specific sound, e.g. does the residual sound contain already existing sources of impulsive or tonal sound and do these operate at similar times to a proposed new source and to what degree this would represent an incongruous sound by comparison with the acoustic environment in the absence of the specific sound.
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:

  i) Façade insulation treatment

  ii) Ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation

  iii) Acoustic screening

[3] The use of the word "character" in association with terms residual sound and specific sound indicates consideration be given to acoustic features which may increase the significance of impact of a sound.

2.4 Internal Levels

2.4.1 World Health Organisation (WHO) has suggested limits to prevent the onset of sleep disturbance and annoyance and preserve speech intelligibility [4]. The WHO guidelines state:

"When noise is continuous, the equivalent sound pressure level should not exceed 30 dB(A) indoors, if negative effects on sleep are to be avoided…..Indoor guideline values for bedrooms are 30 dB LAeq for continuous noise and 45 dB LAmax for single sound events."

The guidelines continue to state:

"To enable casual conversation indoors during daytime, the sound level of interfering noise should not exceed 35 dB LAeq."

3. SITE LAYOUT AND ENVIRONMENT

3.1 Site Layout

3.1.1 The application site is located at The Coach Park, Old Ashford Road, Lenham, Kent, ME17 2DG and is shown in Figure 01.

3.2 Operations

3.2.1 The subject of the application is the tyre bay which is not yet operational and is a scaffold structure with a single skin of profiled steel on an area of hard standing:

3.2.2 The operational hours of the tyre bay are restricted by condition 02 of the decision notice which states:

"The tyre bay hereby approved shall not be open for customers outside the hours of 09:00-18:00 Monday - Saturday and 10:00 - 16:00 on Sundays and Bank Holidays.

Reason: To safeguard the enjoyment of their properties by adjoining residential occupiers"

3.2.3 The proposed tyre bay operating hours are reported to reduce during winter months.

3.2.4 The tyre bay has a maximum capacity of 36 vehicles over the course of a 9 hour day based on a typical tyre replacement time of 15-minutes.

3.2.5 A test scenario was run at site and the separate noise generating activities were measured. During the test scenario it was observed that the following operations would occur.

- Vehicle arrives and drives into tyre bay building, engine switched off.
- Wheel nuts loosened using a crowbar/lever.
- Vehicle elevated on manual hydraulic jack.
- Compressed air tools used to remove wheel nuts.
- Wheel removed and rolled to tyre removal machine where tyre is removed from wheel.
- Wheel rims brushed clean and new tyre fitted.
- Tyre inflated.
- Wheel removed and rolled to wheel balancing machine.
- Wheel returned and fitted to vehicle, compressed air tools used to replace wheel nuts.
- Manual hydraulic jack removed.
- Vehicle drives away.

3.3 Environment

3.3.1 The application site is located in a mixed residential and industrial area and shown in Figure 01.

3.3.2 The nearest and potentially most noise sensitive residential premises are located at The Marvel which is 34 metres to the west of the tyre bay and also visible in Figure 01.

3.4 Sensitivity of the Receptor

3.4.1 The closest and potentially most noise sensitive premises are located at The Marvel. The receptor location is set back from the tyre bay behind an overgrown area (referred to as The Old Dairy Site). The Old Dairy Site was refused permission[4] for *"Erection of 2no. three bedroom semi detached dwellings, together with associated access, parking and landscape enhancements."* and is currently the subject of a planning appeal.[5] At the time of writing no appeal decision has been published. The Old Dairy Site is not considered a noise sensitive location for this assessment because no decision has been made.

3.4.2 The receptor location (The Marvel) is in use as a residential dwelling and considered to be sensitive.

3.5 Façade Insulation Treatment at Receptor

3.5.1 On site observations record that windows that resemble single glazed units (with one pane of glass) were present nearest noise sensitive premises. However, no data has been provided with regards to the makeup or acoustic performance of these units and it is not possible to quantify or estimate their likely acoustic performance.

3.5.2 For the purpose of this assessment, it is considered that additional façade insulation treatment is present, but its performance level is unquantified.

3.6 Alternative Ventilation Measures at Receptor

3.6.1 The internal layout of the properties is not known and facades facing the site have been photographed. The photographs record that windows did not feature alternative ventilation in the form of trickle vents.

3.7 Acoustic Screening

3.7.1 The eastern boundary of the receptor features a timber ~1.8m boundary fence. The boundary fence partially obscures the line of sight from source to receiver while containers on site and a boundary fence of non-uniform height also allows a partial line of sight between the source and receiver.

3.7.2 The activity takes place inside a scaffold structure enclosure with single skin of profiled steel forming the walls and roof. The junction of the walls and roof is not sealed and significant gaps were observed during the site visit which would likely reduce the overall level of effectiveness of the enclosure.

[4] Local Planning Authority Reference: 22/501566/FULL

[5] Planning Inspectorate Appeal Reference: APP/U2235/W/23/3315964

4. MEASUREMENTS

4.1 General

4.1.2 To establish levels at the site, a series of attended and unattended measurements have been made.

4.2 Instrumentation

4.2.1 The following instrumentation was used for all measurements:

- Rion type NL-52 Sound Level Meter (Serial No. 00843175)
- Rion type NH-25 Pre-amplifier (Serial No. 31989)
- Rion type UC-59 Microphone (Serial No. 06717)
- Rion type NC-74 Sound Level Calibrator (Serial No 34936366)

4.2.2 All equipment was within current manufacturer's periods of calibration/conformance and calibration/conformance certificates are attached in Appendix A.

4.2.3 Additionally, a Skye Instruments logging weather station was used to continually monitor the weather conditions over the unattended survey.

4.3 Source Measurements

4.3.1 Source measurements were made at a distance of 1m from each activity as both single figure A weighted values and also in 1/3 Octave centre frequency bands. When calculating the specific sound level the Standard directs use of a reference time period of 1 hour during the day and 15 minutes at night, however in practice sound sources may not always operate for the full duration of the reference period. A percentage on-time correction has been applied for each activity and the total level per hour for the activity was determined. A further correction was then applied to account for the activity occurring 4 times within the assessment period. The values are presented as whole numbers as is the convention in BS 4142. A summary of the measurements is provided in the table below:

Table 4.1 Activity Levels and Time Based Corrections

Activity	Level at 1m dB(A)	Time On (seconds per vehicle)	Time On (seconds per hour)	Time Correction dB[6]	Corrected Value dB(A)
Vehicle entering tyre bay	69.7	10.8	43.2	-19.2	50.5
Wheel nut loosened with crowbar	77.8	18.2	72.8	-16.9	60.9
Vehicle elevated on manual hydraulic jack.	59.9	25.3	101.2	-15.5	44.4
Compressed air tools used to remove wheel nuts.	74.6	12.1	48.4	-18.7	55.9
Wheel deflated on tyre removal machine	86.5	23.2	92.8	-15.9	70.6
Tyre is removed from wheel rim.	73.9	59.6	238.4	-11.8	62.1
New tyre fitted to wheel rim	72.3	26.7	106.8	-15.3	57.0
Wheel inflated, pop sounds as tyre 'forms'	82.8	57.5	230.0	-11.9	70.9
Wheel balancing check	56.8	12.3	49.2	-18.6	38.2
Wheel fitted to vehicle, compressed air tools used to replace wheel nuts, jack removed.	79.5	55.3	221.2	-12.1	67.4
Vehicle reverses out and drives away.	62.1	10.2	40.8	-19.5	42.6
Logarithmic Sum of All Time Corrected Activity Levels at 1 metre dB(A)*					**75**

* Value presented as a whole number as is the convention in BS 4142

4.4 Unattended Measurements

4.4.1 Measurements were undertaken at one location at a position representative of the nearest and potentially most noise sensitive receiver and designated Location A as follows:

- Location A: ground floor level, at the rear boundary of the application site with the Old Dairy Site screened from car washing activity.

4.4.2 The unattended measurements were made at one location from 13:30 on Tuesday 31st October to 10:45 on Thursday 02nd November 2023 to cover the quietest/ most sensitive period over which the tyre bay could operate.

4.4.3 During the survey the meteorological conditions were known to have been subject to raised wind speeds not exceeding 2.5m/s^{-1} and rain. The weather data has been used to identify periods which may have been compromised by the presence of rain and any periods where rain fell have been discounted, as have the preceding and following measurement periods.

4.4.4 Before the survey commenced, the calibration of the instrumentation was checked using the acoustic calibrator to a reference level of 94.0dB and a meter reading of

[6] The calculation used to determine the correction value is $10_{log}\ (T/3600)$ Where T is the duration of the activity and 3600 is the corresponding total number of seconds in a one hour period.

94.0dB was recorded. At the end of the survey the meter was checked again using the acoustic calibrator to a reference level of 94.0dB and a meter reading of 94.0dB was also recorded.

4.4.5 At the start and end of the survey the acoustic environment was subjectively noted to be primarily influenced by sound from road traffic on local roads and to a lesser degree jet washing of cars circa 45m north of the monitoring location on the far side of the tyre bay. Other sound included pedestrian sound and birdsong.

4.4.6 The sound level meter was set to record the following metrics automatically over 15 minute periods:

- L_{eq}
- L_{90}

4.4.7 The frequency response of the meter was set to "A" and the time response was set to "Fast".

4.5 Analysis

Background Sound Level

4.5.1 The background sound levels have been measured over a period of 48 hours to include the most sensitive period proposed operations could take place.

4.5.2 A modal, median and mean average analysis all indicate a level of 49dB $L_{A90,T}$ which has been adopted as the representative background sound level.

Residual Sound Level

4.5.3 The residual sound levels for the same periods have been logarithmically averaged. A value of 59dB $L_{Aeq,T.}$ has been determined as the residual sound level.

Table 4.3: Summary of Residual and Background Sound Levels

Parameter	Level
Background Sound Level	49dB $L_{A90,T}$
Residual Sound Level	59dB $L_{Aeq,T}$

*Values presented as whole numbers as is the convention within BS 4142

Specific Sound Level

4.5.4 The enclosure (tyre bay building) is not completely sealed and significant holes and gaps are present. The building is a scaffold structure with a steel single skin attached and for the purpose of this assessment has not been calculated as a building but a barrier and provides an exaggerated worst case scenario.

4.5.5 The total level has been calculated to the receptor location using the following formula:

$$L_2 = L_1 - 20 \times \text{Log}\ (D_2/D_1)$$

4.5.6 A 10dB correction for screening (with no line of sight from source to receiver) has also been applied yielding a specific sound level of 34dB $L_{Aeq,Tr}$

Acoustic Character

4.5.7 The specific sound level will be at least 25dB below the residual sound level and at least 15dB below the background sound level and is not expected to be audible.

4.5.8 Corrections in BS 4142 are based on perceptibility. A source that generates a specific sound level at receiver of 25dB below the residual sound level and 15dB below the background sound level, is unlikely to be perceptible above the residual acoustic environment. In this instance it is not necessary to apply character corrections.

5. ASSESSMENT

5.1 Assessment

5.1.1 A summary of the assessment is set out in the table below:

Table 5.1 Assessment

Results	Value	Relevant Clause	Commentary
Residual sound level	59 dB $L_{Aeq,1hr}$	**7.3.2** **8.1.2**	Determined at an alternative location together with the background level comparable to the assessment location
Combined Source Level at 1m	75 dB L_{pA}		See Section 4.3 above
Distance source to receiver	34m		To window on far side of fence
Distance attenuation	-30.6		$L_{p2} = L_{p1}$ -20x $_{Log}$ (D_2/D_1)
Acoustic Screening	-10dB		No line of sight source to receiver
Assessment made during the day so reference time interval is 1 hour		**7.2**	
Specific sound level	34 dB $L_{Aeq,1hr}$	**7.3.3** **7.3.4** **7.3.5**	Specific level calculated at receiver
Acoustic feature correction	0 dB	**9.2**	Unit not expected to be readily perceptible/audible against the residual acoustic environment
Rating level	34 dB $L_{Ar,Tr}$	**9.1** **9.2**	Specific sound level plus the Acoustic feature correction value
Background sound level	49 dB $L_{A90,1\ hr}$	**8**	Determined at an alternative location together with the residual sound level.
Excess of rating level over background sound level	-15 dB	**11**	Background sound level subtracted from the Rating sound level
Assessment indication	Low Impact	**11**	See Section 2.3 above and Section 5.2 below.
Uncertainty		**10**	The excess of the background sound level over the rating level is very large and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment.

5.2 Context

5.2.1 The initial assessment indicates an adverse impact to a significant adverse. BS4142:2014 requires that the conclusions of the assessment should take the context in which the sound occurs into account. BS4142 contains multiple instances of the term context which include: an understanding of the situation to be rated and assessed, the margin by which a sound exceeds the background sound level, its absolute level, time of day, and change in the acoustic environment, as well as local attitudes to the source of sound and the character of the neighbourhood.

5.2.2 The main contextual considerations are as follows:

- The initial assessment of the impact has been obtained by subtracting the background sound level from the rating level.
- Increased glazing i.e. windows that resemble insulating glass units (with one or more layer of glass) were not present at each of the closest and potentially most sensitive facades.
- Alternative ventilation is not obviously present, mechanical ventilation/air conditioning was not observed to be present at the residential premises, it is unknown if any mechanical ventilation/air conditioning or other form of alternative ventilation is present and none has been assumed.
- Multiple rooms may rely on openable windows for rapid ventilation.
- The property is in use as a residential dwelling and considered to be ‘sensitive’.
- Operations take place inside an enclosure and screening is provided between source and receiver.
- The presence of a comparatively high residual sound level attributable to road traffic is likely to reduce the impact when present and masking is expected to occur.
- The site is located at the edge of a mixed industrial and residential area.
- The initial assessment indicates a low impact.
- During the day the specific sound level of 34dB $L_{Aeq,1hr}$ is 25dB below the residual level of 54dB $L_{Aeq,T}$ and below the background level of 49dB $L_{A90,T}$ by 15dB.

5.2.3 It is concluded that the initial estimate of the impact does not need to be modified due to context and all pertinent factors have been taken into consideration.

5.3 Potential Impact of Uncertainty

5.3.1 BS 4142 requires that the potential impact of uncertainty[7] upon the assessment be reported. The following steps have been taken to minimise uncertainty affecting the measurement values:

- Class 1 Instrumentation was used for all measurements and a field calibration check was performed both before and after each measurement survey using a Reference Sound Calibrator that has been calibrated to UKAS standards within the last year.
- An outdoor microphone protection system was used to reduce sound attributable to wind at the microphone. Site measurements were also scheduled for a period when wind speeds were not expected to be high and this was confirmed by on site measurements both at the start and end of the survey.
- The measurements were undertaken to cover the hours considered to be most sensitive.
- Corrections for acoustic character were applied based on perceptibility.
- Best practice as indicated in the ANC Guidelines [5] has been followed when undertaking the measurements.
- A series of separate source term measurements were made at a distance of 1m from the various sources while activity was taking place.
- The field work for this assessment was undertaken by the author of this report who holds acoustic qualifications relevant to the application of the Standard and is experienced in undertaking work of this nature.

5.3.2 The following steps were taken to minimise uncertainty affecting the calculation values:

- Calculations for the specific sound level were based on measurement data and recognised calculations protocols.
- Holes and gaps were present in places at the edges of the enclosure as such the level of sound breakout cannot be accurately quantified. The calculations are based on assumed simple screening rather than complete enclosure to provide a worst case scenario and build additional protection into the report.
- The assessment calculations have adopted a simplistic approach following the prescribed method in BS 4142 and are presented in Section 5 of this report.
- Values incorporated into the assessment method have been rounded to the nearest whole number of decibels with the value of 0.5 being rounded up.

5.3.3 It is considered that all reasonable steps to reduce uncertainty have been taken and while uncertainty maybe present, the level of uncertainty in the result is low.

[7] Uncertainty in the context of BS 4142 does not provide an indication of error but is a recognition of variable factors on the assessment.

5.4 Internal levels

5.4.1 An open window provides approximately 13dB of façade attenuation, and the external level of 34dB(A) would correspond to an internal level of 21dB(A). This below the levels put forward by the WHO Guidelines for interference with speech and annoyance.

6. CONCLUSIONS

6.1 Summary of Conclusions

6.1.1 The results of the assessment indicate operation of the tyre bay in the format proposed will result in a low impact when assessed using BS 4142.

6.1.2 The results of the assessment indicate that the internal level will be below the guideline levels for the onset of interference with speech and for annoyance put forward by the WHO Organisation.

6.2 Statement of Competence

6.2.1 BS 4142:2014 requires a statement of the relevant qualifications, competency, professional memberships and experience directly relevant to the application of the standard of all those persons contributing to the assessment to be reported.

6.2.2 The assessment and field work were undertaken by Edward Crofton-Martin MSc, IEng[8], MIOA[9] MCIEH[10]. The author has 20 years of responsible experience in acoustics and his competence includes an MSc with distinction in Environmental and Architectural Acoustics, the Institute of Acoustics (IOA) Diploma in Acoustics and Noise Control, the IOA Certificate of Competence in Environmental Noise Measurement. The author is also an accredited expert witness (Practising Associate of the Academy of Experts) in the field of Acoustics and has prepared reports and given oral evidence for legal proceedings including in the High Court.

6.2.3 Beyond business he is a tutor and examiner for the IOA diploma course and a doctoral researcher at London South Bank University in the field of human perception of acoustic stimuli.

[8] Incorporated Engineer registered with the Engineering Council
[9] Corporate Member of the Institute of Acoustics
[10] Member of the Chartered Institute of Environmental Health

7. REFERENCES

1. British Standards Institution. British Standard 7445: Description and Measurement of Environmental Noise, Part 1. Guide to Quantities and Procedures, 1991.

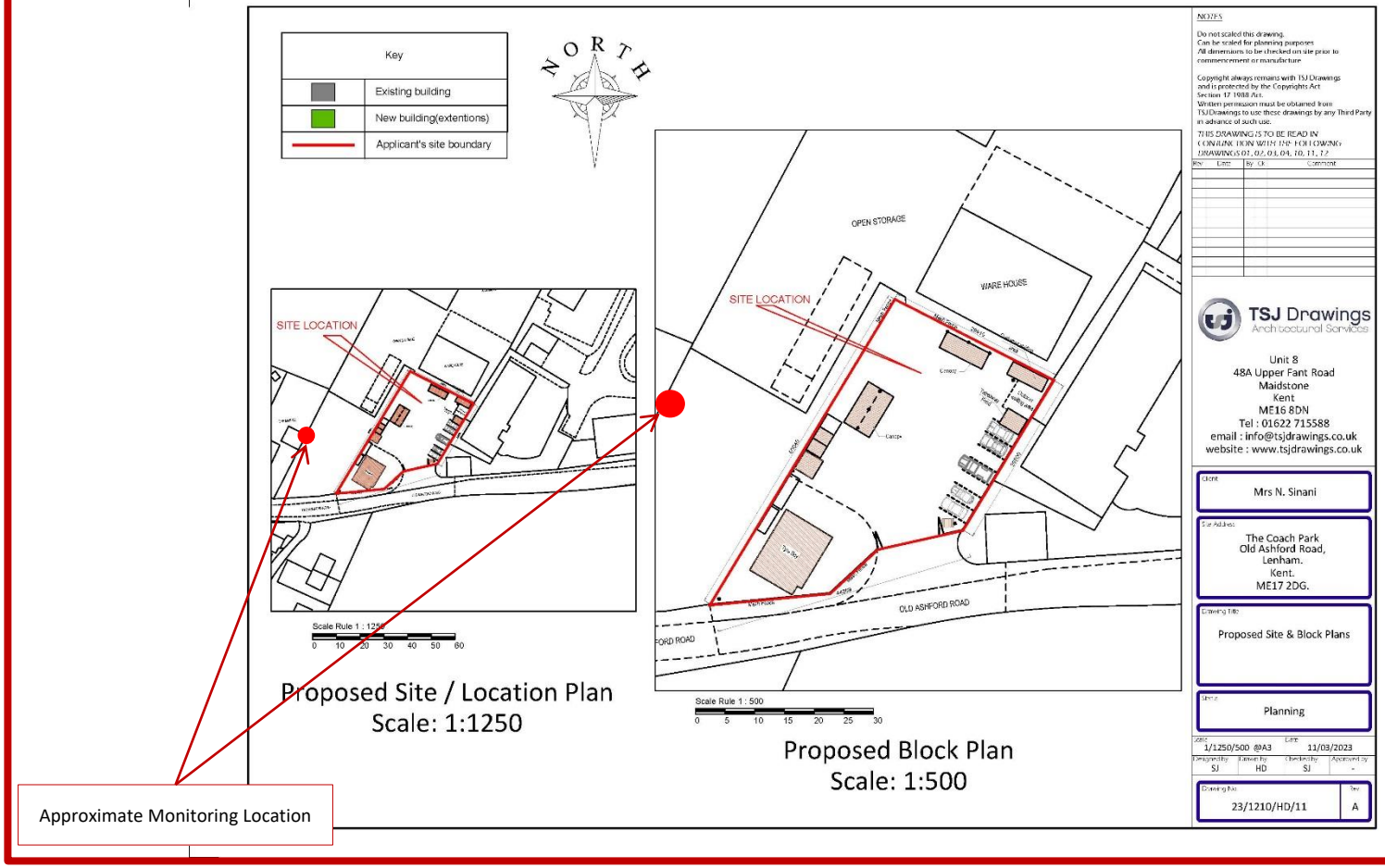
2. Maidstone Borough Council, Planning Decision Notice, Application Reference Number: 23/501294/FULL, 29th September 2023.

3. British Standards Institution. British Standard 4142: Methods for rating and assessing industrial and commercial sound, 2014 +A1:2019.

4. World Health Organisation. Guidelines for Community Noise. 2000.

5. The Association of Noise Consultants. ANC Guidelines, ANC Green Book: Environmental Sound Measurement Guide, 2nd Edition. 2021.

FIGURES



Not To Scale Resized From Original Image

Project	No.	Drawing	No.	File	Date
The Coach Park, Lenham	P1552	Site Location	Figure 01	P1552/Figures.ppt	20/10/2023

APPENDIX A

Calibration Certificates

CERTIFICATE OF CALIBRATION

Date of Issue: 01 June 2022 **Certificate Number: TCRT22/1338**

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

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Approved Signatory

K. Mistry

Customer	Able Acoustics Ltd Unit 20 Connect 10 Business Park Ashford TN24 0FE
Order No.	P1000
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00843175
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	31989
	Rion	Microphone	UC-59	06717
	Rion	Calibrator	NC-74	34536109
		Calibrator adaptor type if applicable		NC-74-002

Performance Class	1		
Test Procedure	TP 2.SLM 61672-3 TPS-49		
	Procedures from IEC 61672-3:2006 were used to perform the periodic tests.		
Type Approved to IEC 61672-1:2002	YES	Approval Number	21.21 / 13.02
	If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003		
Date Received	27 May 2022	ANV Job No.	TRAC22/05189
Date Calibrated	01 June 2022		

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	29 May 2020	TCRT20/1254	ANV Measurement Systems

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 09 August 2023

Certificate Number: UCRT23/2056

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

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Approved Signatory

K. Mistry

Customer	Able Acoustics Unit 20 Connect 10 Foster Road Ashford Kent TN24 0FE
Order No.	P1000
Test Procedure	Procedure TP 1 Calibration of Sound Calibrators
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-74	34936366

The calibrator has been tested as specified in Annex B of IEC 60942:2003. As public evidence was available from a testing organisation (PTB) responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the class 1 requirements of IEC 60942:2003.

ANV Job No.	UKAS23/08550	
Date Received	08 August 2023	
Date Calibrated	09 August 2023	
Previous Certificate	*Dated*	29 July 2021
	Certificate No.	UCRT21/1928
	Laboratory	0653

Appendix B

Unattended Measurement Results

Measurement Results

Project Number: P1552
Client: TSJ Drawings
Site Location: The Coach Park, Lenham

Instrumentation	Serial No.
Rion NL-52 Sound Level Meter	00843175
Rion NH-25 Pre-amp	31989
Rion UC-59 Microphone	06717
Rion NC-74	34936366

Calibration prior to survey:	94.0 dB (re 94.0)
Calibration after survey:	94.0 dB (re 94.0)

Start Time	L_{Aeq}	L_{A90}	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	Temp	Wind	Direction	Rain
31/10/2023 13:30	56	47	56	56	57	62	60	55	51	48	48	47	47	47	47	47	46	47	47	46	44	43	41	40	40	40	40	38	38	15.1	0.8	265	0.0
31/10/2023 13:45	55	47	56	56	55	58	57	54	49	48	49	47	46	46	47	46	46	47	47	45	44	42	41	39	39	40	40	37	37	15.0	0.9	303	0.0
31/10/2023 14:00	58	49	57	56	57	63	61	54	50	48	48	47	46	45	47	47	47	47	47	47	45	45	45	44	44	44	45	43	45	15.0	0.8	335	0.0
31/10/2023 14:15	55	46	57	57	56	65	64	59	50	49	47	46	45	45	45	46	45	46	46	45	43	42	41	39	39	38	40	40	37	14.2	0.6	312	0.0
31/10/2023 14:30	55	46	55	53	54	56	57	50	48	49	47	47	47	46	46	47	46	47	46	45	43	42	41	39	39	39	40	39	38	14.1	0.7	313	0.0
31/10/2023 14:45	57	47	55	53	54	61	55	52	50	48	47	47	46	47	47	47	47	47	47	46	45	44	44	43	43	44	44	42	43	13.6	0.6	320	0.0
31/10/2023 15:00	54	46	54	51	55	59	60	51	51	50	48	47	46	45	44	44	45	46	46	45	43	41	37	34	32	39	35	30	25	13.4	0.5	305	0.0
31/10/2023 15:15	55	47	54	56	56	61	56	58	49	48	50	49	47	45	45	46	46	47	47	45	43	42	41	39	39	38	38	36	36	12.8	0.6	243	0.0
31/10/2023 15:30	57	49	56	53	61	58	56	53	51	49	47	47	47	47	48	48	48	48	48	47	46	44	44	43	44	43	43	40	41	12.4	0.5	273	0.0
31/10/2023 15:45	57	48	54	56	56	57	54	51	49	47	47	47	47	48	48	47	47	47	47	46	45	44	44	42	42	42	42	40	41	12.1	0.4	247	0.0
31/10/2023 16:00	56	49	55	54	56	60	58	52	52	50	48	49	48	47	48	48	47	48	48	46	44	43	40	39	39	39	39	36	36	11.9	0.4	237	0.0
31/10/2023 16:15	58	49	54	52	55	58	56	53	53	51	49	48	48	47	47	48	48	48	48	47	46	45	43	43	43	43	44	42	43	11.6	0.3	243	0.0
31/10/2023 16:30	55	48	55	53	55	58	57	53	49	49	48	47	46	45	44	45	46	47	47	45	43	42	40	38	39	39	40	37	38	11.3	0.2	237	0.0
31/10/2023 16:45	54	49	55	57	55	57	55	51	53	48	46	46	46	45	44	45	46	47	47	45	43	41	37	35	35	32	32	32	22	11.0	0.0	235	0.0
31/10/2023 17:00	55	49	55	55	56	58	54	54	56	49	47	48	46	47	46	46	46	48	48	45	43	41	37	34	33	30	29	26	25	10.7	0.0	235	0.0
31/10/2023 17:15	55	49	54	52	56	58	60	52	51	49	47	47	46	47	45	45	46	48	48	46	43	41	37	34	31	28	26	22	20	10.5	0.0	235	0.0
31/10/2023 17:30	53	48	52	52	54	59	57	52	48	49	46	45	45	44	43	43	45	46	46	44	42	40	36	33	30	28	24	20	18	10.6	0.0	235	0.0
31/10/2023 17:45	53	47	52	51	53	57	54	50	48	46	44	45	45	44	43	43	44	46	46	44	42	40	36	32	29	26	24	20	18	10.5	0.0	215	0.0
31/10/2023 18:00	54	48	51	52	54	57	55	50	48	50	47	46	45	45	44	44	46	47	47	45	42	40	36	32	29	26	24	20	18	10.5	0.0	215	0.0
31/10/2023 18:15	53	47	55	53	57	61	55	50	50	48	47	46	45	45	44	44	44	46	45	43	40	38	35	32	30	28	27	23	22	10.6	0.1	218	0.0
31/10/2023 18:30	52	46	52	50	52	57	52	48	46	45	44	43	44	44	42	43	45	46	45	43	41	38	35	31	29	28	25	21	19	10.8	0.3	247	0.0
31/10/2023 18:45	52	45	50	50	52	55	55	59	47	47	48	45	45	46	44	43	43	45	45	42	40	38	35	32	29	26	24	21	19	11.1	0.6	220	0.0
31/10/2023 19:00	50	44	50	46	48	56	51	48	45	42	42	41	40	40	39	40	41	43	42	41	39	37	33	31	30	29	28	25	26	11.3	0.8	257	0.0
31/10/2023 19:15	54	46	51	49	50	51	51	49	49	47	46	45	45	45	43	43	43	44	44	43	41	40	39	40	41	41	41	38	40	11.4	0.6	235	0.2
31/10/2023 19:30	52	44	54	49	55	58	51	46	44	43	40	42	41	40	40	40	42	43	43	41	40	39	38	38	38	37	36	33	32	11.4	0.5	252	0.0
31/10/2023 19:45	53	44	50	48	50	55	50	47	45	45	44	43	43	41	41	42	43	45	45	43	42	41	40	40	40	40	40	37	37	11.3	0.6	237	0.2
31/10/2023 20:00	51	42	50	49	48	52	50	43	43	42	39	40	40	39	39	40	41	43	43	41	40	39	37	37	37	36	35	32	31	11.2	0.4	200	0.0
31/10/2023 20:15	50	41	49	45	47	49	48	44	41	42	40	40	39	38	39	39	41	43	42	40	39	38	36	35	35	35	34	30	29	11.1	0.3	213	0.0
31/10/2023 20:30	53	45	50	48	49	52	54	49	47	49	47	45	45	44	43	43	44	45	44	43	42	41	39	39	39	39	38	35	35	11.1	0.7	258	0.0
31/10/2023 20:45	52	46	49	48	49	57	57	49	48	46	43	42	43	41	41	41	41	42	42	41	40	39	38	39	40	39	39	36	37	11.0	0.5	267	0.4
31/10/2023 21:00	52	46	51	49	50	53	49	48	45	47	45	43	44	44	43	43	42	42	42	41	40	40	39	40	40	40	39	37	38	10.9	0.3	233	0.2
31/10/2023 21:15	53	47	49	47	49	52	48	46	43	44	42	42	42	41	40	41	42	42	42	40	40	39	39	41	41	41	41	38	40	10.8	0.4	223	0.2
31/10/2023 21:30	49	43	46	44	47	52	47	42	42	40	38	37	38	38	38	39	40	41	41	39	37	36	35	36	36	36	35	32	34	10.8	0.2	193	0.2
31/10/2023 21:45	50	42	49	48	49	52	48	44	44	44	44	43	42	41	40	40	40	41	40	39	38	37	37	37	38	37	36	34	35	10.9	0.3	237	0.0
31/10/2023 22:00	51	44	51	48	50	53	51	45	44	44	43	41	42	41	41	41	41	42	42	40	39	38	38	38	39	39	38	36	37	10.9	0.3	260	0.2
31/10/2023 22:15	50	42	49	47	47	50	51	45	45	47	43	44	44	41	41	40	40	41	41	40	38	37	36	36	36	35	34	32	33	11.0	0.3	153	0.0
31/10/2023 22:30	50	40	48	46	46	51	50	44	45	45	44	42	43	41	40	40	40	41	41	40	38	37	36	36	36	35	34	32	32	11.0	0.3	188	0.0
31/10/2023 22:45	50	45	47	47	46	47	45	43	39	39	38	37	38	36	36	37	38	39	40	39	38	38	37	38	39	39	38	36	38	11.0	0.3	240	0.4
31/10/2023 23:00	47	40	44	42	42	44	43	40	36	36	35	34	34	33	33	33	35	36	36	35	34	34	34	35	35	35	34	32	34	10.9	0.2	247	0.0
31/10/2023 23:15	45	39	45	41	42	43	41	38	36	34	32	33	31	31	32	33	34	35	35	34	33	32	33	33	34	33	33	31	33	10.9	0.5	275	0.0
31/10/2023 23:30	50	44	47	44	44	45	46	40	37	35	33	34	34	34	34	35	37	38	38	38	38	37	38	39	40	40	39	37	40	10.9	0.4	232	0.2
31/10/2023 23:45	48	41	44	44	44	47	45	49	39	37	34	35	35	34	34	35	37	38	38	37	36	35	35	35	35	35	34	32	34	10.7	0.4	277	0.2
01/11/2023 00:00	44	40	43	40	40	44	43	39	35	33	31	32	32	32	32	33	35	35	33	32	30	30	30	31	32	32	31	30	33	10.7	0.4	138	0.0
01/11/2023 00:15	49	40	44	43	42	49	47	41	39	39	36	37	37	36	37	37	39	40	40	38	37	37	36	36	36	36	35	32	33	10.7	0.5	247	0.0
01/11/2023 00:30	45	40	45	41	40	42	41	37	34	35	33	34	32	32	33	34	36	37	35	33	31	31	31	32	32	32	31	30	32	10.8	0.5	233	0.0
01/11/2023 00:45	45	41	45	42	41	44	42	39	36	38	36	37	35	35	35	36	38	39	37	33	31	30	28	28	28	28	28	26	28	10.9	0.6	243	0.0
01/11/2023 01:00	46	37	43	42	41	44	46	39	37	38	35	35	34	33	33	34	36	37	37	35	35	34	32	32	32	32	31	29	29	11.0	0.5	245	0.0
01/11/2023 01:15	44	39	43	39	38	44	40	37	37	35	34	34	34	33	34	35	37	38	35	33	31	29	28	29	29	29	29	27	29	11.1	0.5	152	0.2
01/11/2023 01:30	46	43	44	42	42	47	46	43	37	39	37	37	37	37	37	39	41	41	38	34	30	27	26	26	27	27	26	25	27	11.2	0.4	243	0.0
01/11/2023 01:45	48	45	44	42	44	50	50	44	40	41	39	39	38	38	39	40	43	43	40	36	33	30	28	28	29	29	29	26	26	11.2	0.4	262	0.0
01/11/2023 02:00	45	42	43	40	41	44	45	40	36	36	34	35	35	35	36	37	39	39	36	32	28	26	25	26	27	27	26	25	27	11.4	0.6	247	0.0
01/11/2023 02:15	45	41	41	39	41	43	43	39	35	35	33	35	35	36	36	37	39	40	37	33	29	26	25	26	27	27	26	25	27	11.7	0.7	280	0.0
01/11/2023 02:30	46	41	42	40	41	43	44	40	37	37	35	36	35	36	36	36	39	40	37	35	33	31	29	29	30	29	29	27	26	11.9	0.7	248	0.0
01/11/2023 02:45	44	41	42	40	45	44	43	39	35	36	35	35	34	35	35	36	38	38	35	32	30	27	25	25	25	25	25	23	24	12.1	0.6	247	0.0
01/11/2023 03:00	45	43	46	43	44	46	44	40	40	41	39	39	40	37	37	37	39	39	36	32	28	26	25	26	27	27	26	25	26	12.3	0.9	248	0.0
01/11/2023 03:15	46	42	46	41	43	48	45	41	39	39	36	37	37	36	37	37	39	39	37	35	32	31	30	30	31	31	31	29	30	12.4	1.1	268	0.0
01/11/2023 03:30	47	42	45	43	42	46	45	41	39	38	36	37	37	37	37	38	39	39	37	35	33	33	32	32	33	33	33	31	30	12.6	1.2	268	0.0
01/11/2023 03:45	47	42	46	43	42	44	43	40	38	39	37	39	39	37	37	38	39	39	37	34	33	32	32	33	34	34	34	32	31	12.7	1.3	258	0.0
01/11/2023 04:00	45	42	45	45	41	44	43	39	38	40	36	36	37	36	36	37	38	38	36	32	30	29	29	30	31	31	31	29	29	12.6	1.3	267	0.0
01/11/2023 04:15	46	42	44	42	41	48	43	39	37	37	36	36	36	36	36	36	38	38	37	34	33	31	31	32	33	33	32	30	30	12.6	1.2	253	0.0
01/11/2023 04:30	46	44	45	44	44	47	46	41	38	39	37	38	38	38	37	38	40	40	37	33	29	27	26	27	28	28	28	26	26	12.5	1.0	252	0.0
01/11/2023 04:45	48	45	45	45	44	51	47	43	40	39	38	38	38	38	39	40	41	41	40	37	35	33	32	32	32	32	32	30	28	12.6	1.0	248	0.0
01/11/2023 05:00	49	47	48	46	45	50	48	43	41	40	38	40	39	40	40	41	43	43	41	37	35	34	33	34	35	35	35	33	32	12.7	1.1	260	0.0
01/11/2023 05:15	50	46	47	48	45	47	48	43	40	40	38	40	41	40	40	40	42	42	41	38	36	35	34	34	35	36	36	34	33	12.7	1.2	265	0.2
01/11/2023 05:30	51	47	48	46	46	49	48	44	43	43	41	41	42	41	41	41	43	43	42	40	38	37	36	37	38	38	38	36	35	12.7	1.3	247	0.0
01/11/2023 05:45	54	49	51	49	50	50	50	47	45	45	42	43	44	43	43	43	44	45	44	43	41	41	40	41	42	42	42	40	39	12.7	1.5	252	0.0
01/11/2023 06:00	54	49	52	50	52	52	51	47	46	47	44	44	44	44	43	44	45	46	45	44	42	41	40	41	41	41	41	39	38	12.7	1.6	252	0.0
01/11/2023 06:15	55	49	52	50	48	52	51	48	46	47	45	44	45	45	44	44	45	46	46	44	43	43	42	42	43	43	43	41	39	12.7	1.6	255	0.0
01/11/2023 06:30	55	50	53	51	51	52	54	48	46	47	44	45	45	45	44	44	45	46	45	44	42	42	41	41	42	42	43	41	39	12.7	1.6	175	0.0
01/11/2023 06:45	56	50	53	51	53	53	56	55	47	47	45	45	45	45	45	45	46	47	47	45	44	43	42	42	43	43	43	41	40	12.8	1.5	263	0.0
01/11/2023 07:00	57	50	54	52	54	57	54	50	48	48	46	46	47	46	45	45	46	48	48	46	45	44	43	43	43	43	43	41	39	12.9	1.6	232	0.0
01/11/2023 07:15	58	51	59	55	55	60	59	53	51	50	49	49	48	48	47	47	48	49	49	48	47	46	45	45	45	45	45	43	41	13.0	1.8	270	0.0
01/11/2023 07:30	58	52	58	54	55	58	56	53	51	49	47	47	47	46	46	47	48	49	49	47	46	45	44	44	45	45	44	42	41	12.8	1.6	250	0.2
01/11/2023 07:45	58	52	57	56	56	57	56	54	51	50	48	48	48	47	46	46	48	49	49	47	46	45	44	44	45	45	44	42	41	12.6	1.7	260	0.0
01/11/2023 08:00	59	53	59	56	54	57	55	55	49	50	47	47	47	47	46	47	48	49	49	48	47	47	46	47	48	48	47	45	45	12.6	1.7	253	0.4
01/11/2023 08:15	58	50	58	55	57	60	57	51	49	48	46	47	47	45	45	46	47	48	48	47	46	45	45	45	46	45	44	41	41	12.1	1.8	198	0.2
01/11/2023 08:30	59	52	58	55	55	57	56	52	49	50	49	51	48	47	46	47	48	49	49	48	47	46	45	46	46	47	46	43	43	11.7	1.4	253	0.2
01/11/2023 08:45	59	52	56	57	57	62	57	53	51	49	47	48	45	45	45	46	47	49	49	48	47	46	46	47	47	47	47	45	45	11.5	1.2	248	0.6
01/11/2023 09:00	55	49	54	52	54	57	54	53	49	48	51	46	45	44	44	44	46	47	47	45	44	43	41	41	41	41	39	36	35	11.6	1.1	247	0.0
01/11/2023 09:15	56	49	53	53	57	62	55	56	49	49	46	46	47	46	45	45	46	48	48	46	45	44	42	42	42	42	41	38	36	11.9	1.2	237	0.0
01/11/2023 09:30	56	50	56	54	56	59	55	51	49	49	48	47	48	47	47	46	47	48	48	46	44	43	42	42	42	42	41	38	36	12.1	1.4	232	0.0
01/11/2023 09:45	60	50	55	55	55	57	55	56	55	58	55	53	54	52	54	52	52	51	50	49	48	47	46	46	45	45	44	42	46	12.2	1.8	237	0.0
01/11/2023 10:00	62	51	56	57	55	57	56	53	52	53	52	51	51	51	51	50	50	51	50	50	49	49	49	51	51	53	50	48	50	12.2	1.8	227	0.4
01/11/2023 10:15	59	50	58	60	58	57	55	52	51	51	49	49	50	48	48	48	48	49	48	47	46	46	46	46	46	47	45	44	44	12.0	1.9	250	0.0
01/11/2023 10:30	60	49	56	57	58	58	55	52	50	50	50	51	48	48	48	50	49	50	50	49	48	48	46	46	47	46	46	43	45	12.1	1.6	247	0.0
01/11/2023 10:45	56	48	52	52	54	55	53	51	48	48	47	48	46	46	45	45	46	47	47	45	45	43	41	41	41	41	40	37	36	12.1	1.6	250	0.0
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01/11/2023 12:00	55	48	55	54	57	57	54	51	50	50	48	49	48	47	46	46	46	47	47	45	44	42	40	39	39	39	39	37	36	12.8	1.6	255	0.0
01/11/2023 12:15	57	49	56	57	61	62	59	53	51	50	49	55	47	47	48	48	48	49	49	47	45	44	43	42	43	43	43	41	39	12.7	1.8	202	0.0
01/11/2023 12:30	59	50	58	57	56	61	58	52	50	51	49	50	49	49	50	51	51	50	50	48	47	47	45	45	46	46	45	43	42	12.6	2.0	238	0.0
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01/11/2023 15:45	61	49	54	53	55	58	59	52	50	49	48	48	49	48	48	49	51	52	52	51	50	48	47	46	46	47	47	44	43	11.6	0.8	245	0.0
01/11/2023 16:00	56	48	53	52	55	57	56	50	49	48	51	53	49	46	46	46	47	48	49	46	44	43	40	37	35	34	33	29	28	11.1	0.9	268	0.0
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01/11/2023 18:00	54	47	52	50	54	57	53	49	45	43	42	43	42	42	42	42	44	46	46	44	43	41	39	39	39	38	37	34	32	8.8	0.3	227	0.0
01/11/2023 18:15	54	48	53	52	57	55	54	52	46	45	42	43	45	44	43	44	45	47	46	43	41	40	39	38	38	37	36	32	31	8.2	0.4	235	0.0
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01/11/2023 18:45	53	47	51	51	52	54	52	48	46	45	42	42	42	41	41	42	44	46	45	43	42	40	38	38	38	38	37	33	31	8.7	0.9	237	0.0
01/11/2023 19:00	53	48	50	51	52	54	51	48	45	45	44	44	43	43	42	43	45	46	45	43	42	40	39	39	39	38	37	34	33	8.6	0.8	243	0.0
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01/11/2023 19:30	54	49	51	50	54	61	53	49	47	44	42	44	44	44	44	44	46	47	47	43	42	40	38	38	38	37	36	32	31	8.4	0.4	213	0.0
01/11/2023 19:45	54	51	51	49	51	56	52	50	46	44	43	43	43	44	44	45	47	48	47	43	40	37	35	34	34	33	32	29	28	8.2	0.1	173	0.0
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01/11/2023 20:15	53	49	51	50	50	54	52	49	46	45	44	44	44	44	43	43	45	47	46	43	41	40	37	36	36	36	35	31	30	8.1	0.3	77	0.0
01/11/2023 20:30	54	47	54	51	50	52	50	48	42	43	42	42	43	43	43	45	47	48	47	45	43	40	36	35	35	34	33	31	31	8.6	0.4	200	0.0
01/11/2023 20:45	52	47	51	49	51	53	51	49	45	46	45	44	44	44	43	42	43	44	43	41	40	39	38	38	39	39	39	37	35	9.3	0.8	265	0.0
01/11/2023 21:00	53	48	50	49	49	52	50	49	45	44	43	43	43	45	43	43	44	44	44	42	41	40	39	40	41	41	41	39	37	10.1	1.1	265	0.2
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01/11/2023 21:45	55	49	51	49	48	47	47	46	45	47	44	43	43	43	43	43	44	44	44	43	43	42	42	43	44	44	44	42	41	10.9	1.4	290	0.0
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02/11/2023 00:45	61	54	56	54	53	50	49	48	51	55	53	50	50	49	49	49	49	49	49	49	49	49	48	49	49	49	49	47	45	10.8	1.4	302	0.0
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02/11/2023 01:45	68	55	63	60	57	56	53	54	55	59	62	60	59	57	56	56	56	56	56	56	55	56	55	56	57	56	56	54	52	11.2	1.8	272	0.2
02/11/2023 02:00	64	55	60	58	55	53	51	51	52	57	59	56	53	52	52	52	52	52	52	52	52	52	51	52	53	52	52	50	48	11.2	1.8	268	0.2
02/11/2023 02:15	66	57	61	58	56	54	52	52	54	59	61	58	55	54	54	54	54	54	54	54	54	54	53	54	54	54	54	52	50	11.3	1.6	245	0.0
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02/11/2023 03:00	65	55	58	56	54	52	50	50	52	57	59	57	54	52	53	53	53	53	53	53	53	53	53	53	54	54	53	51	51	11.5	1.6	243	0.4
02/11/2023 03:15	63	54	60	57	55	53	50	50	52	57	59	55	52	52	52	52	52	52	52	52	52	52	51	52	52	52	51	49	48	11.4	1.7	238	0.6
02/11/2023 03:30	61	52	60	57	55	51	49	49	51	55	56	53	51	50	50	50	50	50	50	50	50	49	49	49	50	50	49	47	46	11.2	1.6	285	0.2
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02/11/2023 07:00	64	57	62	59	57	58	59	54	53	57	57	54	52	52	52	52	52	53	53	52	52	52	51	52	53	52	52	50	50	10.1	2.1	225	0.8
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02/11/2023 08:15	58	51	55	54	56	58	56	51	50	51	49	49	48	47	47	47	48	49	49	48	47	46	45	45	45	44	44	41	39	10.8	1.7	242	0.0
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02/11/2023 08:45	59	52	53	53	55	57	55	51	49	49	47	47	47	47	46	47	48	49	49	48	47	46	46	46	47	47	47	44	43	11.3	1.4	257	0.4
02/11/2023 09:00	58	51	54	53	54	57	54	51	49	47	46	48	47	46	47	46	47	47	47	48	46	46	45	45	46	45	45	43	43	11.4	1.2	267	0.2
02/11/2023 09:15	57	49	54	53	53	58	56	50	50	48	47	47	47	47	46	47	46	47	47	46	45	45	43	43	44	43	43	40	40	11.5	1.2	210	0.2
02/11/2023 09:30	56	48	56	53	55	57	59	52	49	48	46	46	46	44	45	45	46	47	47	46	45	44	42	42	43	42	41	38	36	11.3	1.2	308	0.0
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02/11/2023 10:15	54	48	56	53	54	55	53	50	49	47	46	46	45	44	44	44	45	46	46	44	43	42	39	39	39	39	38	35	33	10.9	1.1	330	0.0
02/11/2023 10:30	57	50	59	58	57	59	57	56	52	51	50	49	47	47	48	48	48	48	47	46	45	44	42	42	42	42	42	39	39	10.8	1.1	200	0.0

Appendix C

Source Measurement Results

Appendix C: Measurement Results

Project Number: P1552
Client: TSJ Drawings
Site Location: The Coach Park, Lenham

Instrumentation	Serial No.
Rion NL-52 Sound Level Meter	00843175
Rion NH-25 Pre-amp	31989
Rion UC-59 Microphone	06717
Rion NC-74 Calibrator	34936366

Calibration prior to survey:	94.0 dB (re 94.0)
Calibration after survey:	94.0 dB (re 94.0)

Activity	L_{Aeq}	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz
Vehicle entering tyre bay .	69.7	65.8	68.3	56.1	60.8	60.1	62.7	58.4	56.4	60.0	59.9	59.4	57.0	62.0	61.2	59.8	60.8	61.0	60.0	57.5	56.7	55.9	56.5	56.5	53.4	53.8	51.5	46.4
Wheel nut loosened with crowbar.	77.8	60.6	54.5	56.1	55.8	56.9	48.8	55.1	51.9	55.8	50.7	47.2	50.1	56.0	61.6	61.2	52.3	57.5	60.0	62.3	66.5	67.8	68.8	70.7	66.6	66.5	66.2	63.8
Vehicle elevated on manual hydraulic jack.	59.9	52.5	51.6	48.6	52.0	49.6	45.2	43.0	39.9	42.2	44.6	45.4	41.8	44.5	43.3	46.3	45.8	46.3	48.4	48.1	50.3	51.0	48.8	51.3	47.1	42.7	41.5	39.9
Compressed air tools used to remove wheel nuts.	74.6	53.0	54.8	51.7	53.3	54.1	50.5	50.1	51.5	50.3	46.5	47.5	44.8	48.2	50.0	52.0	53.0	55.8	55.2	61.2	61.6	63.5	65.9	66.9	64.6	65.6	63.5	61.7
Wheel deflated on tyre removal machine .	86.5	57.4	65.2	60.5	66.1	71.7	67.7	64.1	68.4	62.7	71.6	61.0	62.8	61.3	68.6	65.0	61.6	57.5	56.7	58.8	62.0	66.2	68.9	72.2	76.3	78.1	80.3	82.3
Tyre is removed from wheel rim.	73.9	61.0	62.2	61.7	66.7	72.0	67.9	69.0	68.8	66.6	75.4	65.3	63.2	62.3	67.2	65.8	64.9	63.8	61.6	60.6	62.0	59.2	58.1	56.7	55.6	56.3	57.7	58.9
New tyre fitted to wheel rim.	72.3	53.0	51.1	54.0	49.4	48.4	53.4	67.2	58.8	59.9	59.9	56.4	54.7	58.0	57.1	59.3	60.5	54.8	54.2	53.6	57.3	54.9	58.9	59.5	61.4	62.7	65.1	65.1
Wheel inflated, pop sounds as tyre 'forms'	82.8	56.3	55.6	57.0	52.9	54.2	55.6	59.5	64.3	68.8	68.5	71.0	70.6	70.1	73.8	73.5	72.0	79.0	71.2	69.7	66.6	67.5	68.5	67.4	66.8	64.3	62.6	59.8
Wheel balancing check.	56.8	54.4	55.1	50.2	52.5	47.0	48.2	61.2	45.4	49.0	62.4	50.3	47.7	46.2	46.4	47.2	43.5	38.5	35.3	33.7	34.6	34.6	33.9	39.0	43.4	41.7	45.3	47.6
Wheel fitted to vehicle, compressed air tools used to replace wheel nuts, jack removed.	79.5	50.5	51.2	50.4	52.8	52.4	51.5	54.5	58.7	52.2	50.5	50.4	50.1	54.5	57.4	60.5	63.1	61.0	61.3	63.7	67.3	69.2	69.5	69.1	70.2	71.2	70.7	66.6
Vehicle reverses out and drives away.	62.1	62.1	67.7	66.7	56.5	55.4	55.2	57.3	55.1	55.7	56.6	50.0	49.8	56.4	53.8	51.5	53.0	54.2	52.2	48.8	48.1	47.6	48.0	47.9	44.3	45.2	44.1	40.4