

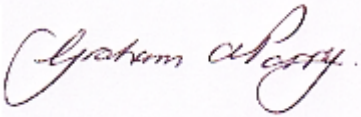
Report for:

Kingfisher Mini Coaches

357 Basingstoke Road, Reading
Noise Impact Assessment

Status: Final

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1. INTRODUCTION

ACCON UK Limited (ACCON) has been commissioned by Kingfisher Mini Coaches to carry out a Noise Impact Assessment for a proposed development at 357 Basingstoke Road, Reading. The site is located within the administrative boundary of Reading Borough Council (RBC).

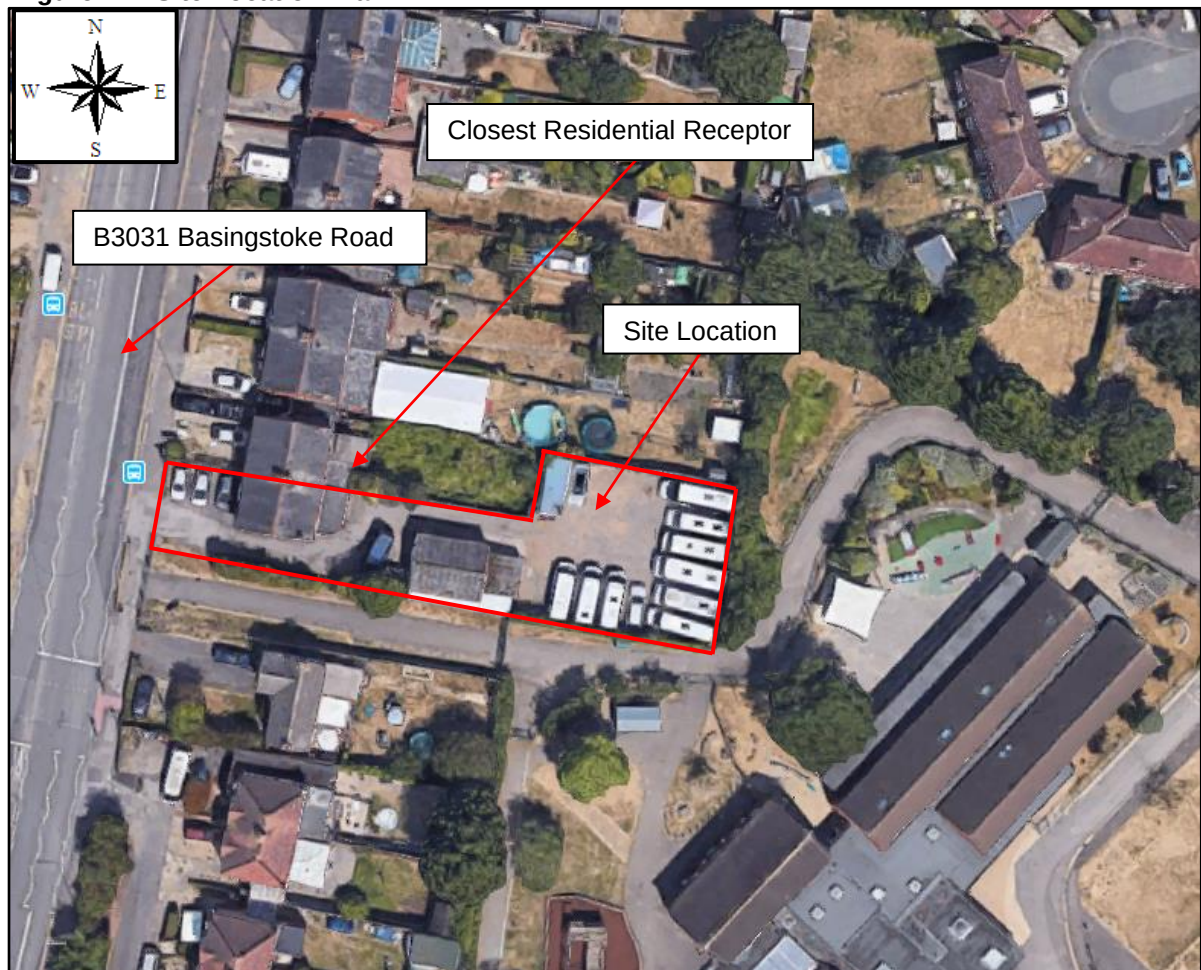
The proposed development will comprise the demolition of the existing workshop, store and metal container and the erection of a new purpose-built workshop.

The proposed development site is located immediately to the east of the B3031 Basingstoke Road. The site is bounded to the north and south by residential dwellings and to the east by Whitley Park Primary and Nursery School.

The purpose of this assessment is to carry out a noise measurement study in respect of the proposed development in order to determine the noise impact of the proposed development on the nearby residential receptors and to provide recommendations for noise mitigation, where required, to ensure that the identified target noise criteria are not exceeded.

The site location and the closest residential receptor can be identified in **Figure 1.1**.

Figure 1.1: Site Location Plan



2. THE NATURE, MEASUREMENT AND EFFECT OF NOISE

A Glossary of Acoustic Terminology is provided in **Appendix 1**.

2.1. Noise

Noise is often defined as sound that is undesired by the recipient. Whilst it is impossible to measure nuisance caused by noise directly, it is possible to characterise the loudness of that noise. 'Loudness' is related to both sound pressure and frequency, both of which can be measured. The human ear is sensitive to a wide range of sound levels. The sound pressure level of the threshold of pain is over a million times that of the quietest audible sound. In order to reduce the relative magnitudes of the numbers involved, a logarithmic scale of decibels (dB) is normally used, based on a reference level of the lowest audible sound.

The response of the human ear is not constant over all frequencies. It is therefore usual to weight the measured frequencies to approximate the human response. The resulting 'A' weighted decibel, dB(A), has been shown to correlate closely to the subjective human response.

When related to changes in noise, a change of ten decibels, for example from 60 dB(A) to 70 dB(A), would represent a doubling in 'loudness'. Similarly, a 10 dB(A) decrease in noise, for example from 70 dB(A) to 60 dB(A), would represent a halving in 'loudness'. A change of 3 dB(A) is generally considered to be just perceptible¹. **Table 2.1** provides typical noise levels of common sources.

Table 2.1: Typical Noise Levels

Approximate Noise Level (dB(A))	Example
0	Limit of hearing
30	Rural area at night
40	Library
50	Quiet office
60	Normal conversation at 1 m
70	In car noise without radio
80	Household vacuum cleaner at 1 m
100	Pneumatic drill at 1 m
120	Threshold of pain

¹ Institute of Environmental Management and Assessment (2014). Guidelines for environmental noise impact assessment.

3. NOISE ASSESSMENT CRITERIA

3.1. National Planning Policy Framework

The revised National Planning Policy Framework (NPPF, February 2019) supersedes the 2012 and 2018 versions of the NPPF. The purpose of the planning system is to contribute to the achievement of sustainable development. There are three dimensions to sustainable development: economic, social and environmental. The environmental role is to contribute to protecting and enhancing our natural, built and historic environment; and as part of this, make effective use of land, help to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate to adapt to climate change including moving to a low carbon economy.

One of the core planning principles is to contribute to conserving and enhancing the natural environment. Allocations of land for development should prefer land of lesser environmental or amenity value, where consistent with other policies in the Framework (Paragraph 171). The planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability (Paragraph 170).

Paragraph 180 of the NPPF states:

“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 (see Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food and Rural Affairs, 2010));*
- 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.”*

Additionally, Paragraph 182 states:

“Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.”

3.2. Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) was developed by DEFRA and published in March 2010. The vision of the NPSE is to *'Promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development'*.

The Noise Policy Statement for England (NPSE) aims to *'through the effective management and control of environmental neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

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

Based on concepts from toxicology, it introduces three 'Effect Levels' relevant to the assessment of noise. These 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 effects on health and quality of life can be detected; and
- SOAEL: Significant Observed Adverse Effect Level: This is the level above which significant adverse effects on health and quality of life occur.

3.3. Planning Practice Guidance

The Planning Practice Guidance for Noise (PPG-N) was published in March 2014 and most recently updated in July 2019. The PPG-N provides the following advice on how to manage potential noise impacts in new development:

"Plan-making and decision making need to 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.*

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy."

The document goes on to acknowledge the levels of noise exposure at which an effect may occur as provided in the NPSE and introduces a fourth level:

- **UAEL: Unacceptable Adverse Effect Level:** This is the level at which extensive and regular changes in behaviour and/or an inability to mitigate the effect of noise lead to psychological stress or physiological effects.

It is important to understand that as the PPG-N does not provide any advice with respect to specific noise levels/ limits for different sources of noise, it is appropriate to consider other sources of advice and guidance documents when considering whether new developments would be sensitive to the prevailing acoustic environment.

3.4. Reading Borough Council

Jodie Wilson, a Senior Environmental Health Officer at Reading Borough Council (RBC) issued an Internal Memorandum dated 18 July 2019 which was received by ACCON on 2nd September 2019 and the advice is reproduced below.

"The proposal is for a new building and similar use to existing, so noise levels from the proposal are not expected to worsen compared with existing but it is possible that noise levels from existing use may not have been desirable in the first place.

I recommend that a BS 4142 noise assessment be carried out for the proposed workshop against the background levels (without existing workshop in operation) to be sure that the proposal is acceptable at that location. It may be that additional noise mitigation measures will be necessary given the close proximity to residential receptors.

The assessment shall be carried out for [sic] in accordance with BS4142:2014 methodology. The predicted specific sound levels ($L_{Aeq,TR}$) as measured at a point 1 metre external to sensitive facades shall be at least 10dB below the existing background sound level, $L_{A90,T}$ when all plant/equipment (or any part of it) is in operation. The predicted rating level, $L_{Ar,Tr}$ (specific sound level plus any adjustments for the characteristic features of the sound) as measured at a point 1 metre external to sensitive façades shall not exceed the existing background sound level, $L_{A90,T}$ when all plant/equipment (or any part of it) is in operation. The plant shall thereafter only be installed in accordance with the assessment.

Furthermore, it is unclear from the application what the proposed hours are for the workshop activity. I would like to see those restricted to reduce potential for disturbance to local residents. If a full application is made, I would expect proposed hours to be 8-6 Monday to Friday and 9-1 Saturday with no use of the workshop for vehicle repairs at other times."

3.5. British Standard BS 4142:2014

BS 4142 *Methods for rating and assessing industrial and commercial sound* provides a method for the measurement and rating of industrial type noise sources and background noise levels outside dwellings. The rating level (defined in the BS) is used to rate the noise level of the source (this is defined as the 'specific sound level') outside residential dwellings.

The rating level is determined by assessing the character of the noise and applying an acoustic feature correction, if appropriate, to the specific sound level. Corrections are applied for the tonality, impulsivity and intermittency of the noise source which can all increase the impact of noise.

The initial assessment described in BS 4142 to determine whether an adverse impact is likely is based on establishing the difference between the rating level and the background noise level outside the residential property of interest. The British Standard states that the following points should be considered:

- *“Typically, the greater this difference, the greater the magnitude of the impact.*
- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.”*

Where it is considered that the initial assessment of the impact needs to be modified due to the context in which the noise is occurring, BS 4142 suggests that all pertinent factors are taken into consideration, including:

- 1) *The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.*

Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

Where residual sound² levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.

- 2) *The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound, to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake*

² The residual sound is defined as the ambient sound level at the assessment location in the absence of the specific sound source

character comparisons should reflect the way in which sound of an industrial and/or commercial nature is likely to be perceived and how people react to it.

- 3) *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. facade insulation treatment;*
 - ii. ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and*
 - iii. acoustic screening.*

4. NOISE MEASUREMENT SURVEY

A noise measurement survey has been carried out in order to determine the typical background sound levels ($L_{A90,T}$) at the proposed development site.

The noise measurements were carried out between 1000 hrs on Tuesday 15th October 2019 and 1000 hrs on Thursday 17th October 2019 at one semi-permanent noise monitoring position at a height of 4.5 metres above the ground (MP1).

The weather conditions recorded during the daytime on Tuesday 15th October 2019 were dry with approximately 100% cloud cover and a south-westerly wind with speeds of approximately 0.3 m/s and a temperature of 14 °C was recorded. The weather conditions recorded during the daytime on Thursday 17th October 2019 were dry with approximately 80% cloud cover and a south-westerly wind with speeds of approximately 1.2 m/s and a temperature of 11 °C was recorded. The weather during the night-time on the 15th October 2019 was mostly dry, with some rain which did not affect the measurements. The weather during the night-time on the 16th October 2019 was dry.

These weather conditions are considered suitable for the noise measurement survey.

The measurement location is identified in **Figure F.1**.

4.1. Semi-Permanent Noise Monitoring

The semi-permanent noise measurement utilised a Svantek 971 Class 1 Sound Level Meter. The sound level meter holds a current certificate of calibration, which is available upon request. The equipment was field calibrated before and after the measurement period to ensure that it had remained within reasonable calibration limits (± 0.5 dB).

Measurement Position 1 (MP1) was located at a height of 4.5 m above ground level in a free-field position on the northern boundary of the proposed development site, approximately 60 metres to the east of B3031 Basingstoke Road.

The daytime and night-time free-field noise levels measured at MP1 are summarised in **Table 4.1**. The detailed noise measurement results are presented in **Appendix 2**.

Table 4.1: Summary of Free-Field Semi-Permanent Noise Levels for MP1

Date	Period (hours)	$L_{Aeq,T}$ (dB)	L_{Amax} (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
15.10.16	Daytime (0700 hrs to 2300 hrs)	56	76	56	49
	Night-time (2300 hrs to 0700 hrs)	51	62 (63)	47	41
16.10.16	Daytime (0700 hrs to 2300 hrs)	56	75	56	48
	Night-time (2300 hrs to 0700 hrs)	53	64 (65)	47	41

Note: The noise measurements were carried out over consecutive five-minute periods. The $L_{Aeq,T}$ was subsequently logarithmically averaged over the time periods indicated in **Table 4.1**. The L_{AFmax} is the average of the maximum hourly measured L_{AFmax} in each period, with the tenth highest night-time L_{AFmax} noise levels (obtained from the measured five-minute periods) presented in parenthesis. The measured $L_{A10,5mins}$ and $L_{A90,5mins}$ have been arithmetically averaged for the respective time periods.

5. BS 4142 ASSESSMENT

A BS 4142 assessment was carried out to identify the impact of the proposed development to the existing residential receptors within close proximity of the proposed site. The closest sensitive residential receptor is the adjacent house to the north of the proposed workshop.

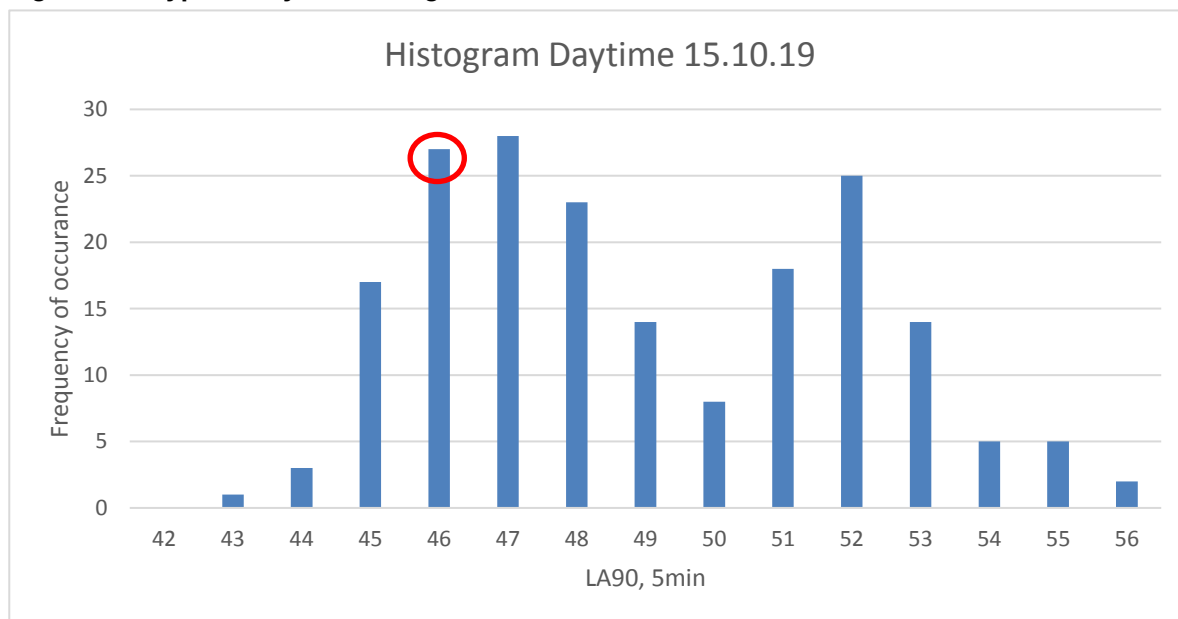
The existing and proposed site layout plans are identified in **Figure F.2**.

Potential noise sources that may emanate from the proposed workshop include noise from vehicle repairs such as hammering noises, bangs and clangs as well as sounds from bus engines etc. It should be noted, that the vehicle repairs only take place during the daytime (0700 hrs to 2300 hrs) and therefore only the daytime period has been assessed.

5.1. Background Sound Levels

Figure 5.1 identifies the typical daytime background sound level as measured at MP1. As a worst case scenario and to provide greater precision to the assessment, the 5-minute period background sound levels ($L_{A90,5min}$) have been utilised. Where appropriate the lowest background sound level has been utilised (see Note 1).

Figure 5.1: Typical Daytime Background Sound Levels



Note: (1): The daytime background sound level as recorded on 15th October 2019 was selected, since it was lower and more typical than the background sound level recorded on the daytime of 16th October 2019.

(2): The 46 dB $L_{A90,T}$ has been chosen as the typical background sound level instead of the 47 dB $L_{A90,T}$ since it occurred with almost the same frequency but provides a worst case scenario.

The typical daytime background sound level is considered to be 46 dB $L_{A90,T}$.

5.2. BS 4142 Assessment

The measured noise level of the existing open workshop operations has been identified through the audio recording acquired at MP1, and is considered to be 55 $L_{Aeq,T}$.

The specific sound level at the closest sensitive receptor has been calculated by utilising the measured noise level at MP1 and converting to a sound power level. Additionally, based on a worst case on-site observation it has been assumed that the potentially noisy activities within the new workshop would occur for 40 minutes in any one hour. The sound power level has then been distance corrected to the closest sensitive receptor from the proposed location of the new workshop to determine the specific sound level which is $46L_{Aeq,1hr}$. This assessment assumes that doors to the new workshop will be open during the relevant activities.

An acoustic feature correction has been added to the specific sound level which includes a +3 dB correction for impulsivity and a +3 dB correction for intermittency.

Error! Reference source not found. Error! Reference source not found. identifies the BS 4142 assessment for the proposed development.

Table 5.1: BS4142 Assessment

Results	Daytime (dB)	Relevant Clauses of BS 4142:2014	Commentary
Typical Background Sound Level $L_{A90,T}$ (dB)	46	8.1, 8.2	Typical background sound level during the daytime period as measured at MP1.
Specific Sound Level $L_{Aeq,T}$ (dB)	46	9.1	Sound Level as predicted at the closest sensitive receptor.
Acoustic Feature Correction (dB)	+6	9.1, 9.2, 9.3	An acoustic feature correction for impulsivity (+3 dB) and intermittency (+3 dB) has been added to the specific sound level.
Rating Level (dB)	52	9.1	Specific Sound Level + Acoustic Feature Correction
Excess of Rating Level over the Background Sound Level (dB)	+6	11	
	Adverse Impact	11	

Table 5.1 identifies that the use of the proposed workshop, assuming open doors, will result in an adverse impact to the closest residential sensitive receptor during the daytime period. It should be noted that the vehicle repairs, as well as other operations associated with the proposed workshop, would only occur during the daytime period.

According to the guidance provided by RBC (**Section 3.4**), the specific sound level of the proposed development should be at least 10 dB lower than the measured background sound level, whilst the rating level should not exceed the background sound level

Table 5.2 identifies the assessment as required by the RBC.

Table 5.2: RBC Assessment

Parameters	RBC Requirements	Values Predicted for the Proposed Development	Commentary
Typical Background $L_{A90,T}$ (dB)	46	46	The typical daytime background sound level identified in MP1
Specific Sound Level $L_{Aeq,Tr}$ (dB)	36	46	According to the RBC requirements, the specific sound level should be at least 10 dB lower than the measured background sound level. The predicted specific sound level exceeds the 36 dB, therefore mitigation is required.
Rating Level $L_{Ar,Tr}$ (dB)	≤ 46	52	According to the RBC requirements, the rating level should not exceed the measured background sound level. The predicted rating level exceeds the 46 dB, therefore mitigation is required.

Table 5.2 identifies that mitigation is required for the proposed development, in order to achieve the criteria stated by RBC.

5.3. Mitigation Measures

Based on observations made on site in respect of the existing workshop operations, as expected, noise is predominantly emitted from the open workshop door. Therefore, in order to achieve a specific sound level which does not exceed the background noise level, mitigation in the form of an insulated door to the proposed development workshop is proposed. The insulated door at the workshop should provide an A-weighted sound reduction of at least 10 dB such that the specific sound level at the closest sensitive receptor (identified in **Figure 1.1**) does not exceed 36 dB during the daytime (10 dB lower than the background sound level: see **Section 3.4**). This assumes that all of the operations of the proposed

workshop are occurring inside the workshop building with the insulated door closed. It has been assumed that the remainder of the external building façade and roof achieves a minimum sound reduction of 25 dB R_w and that any partially open windows in the workshop office area of the workshop building would provide a sound reduction of approximately 15 dB from inside to outside

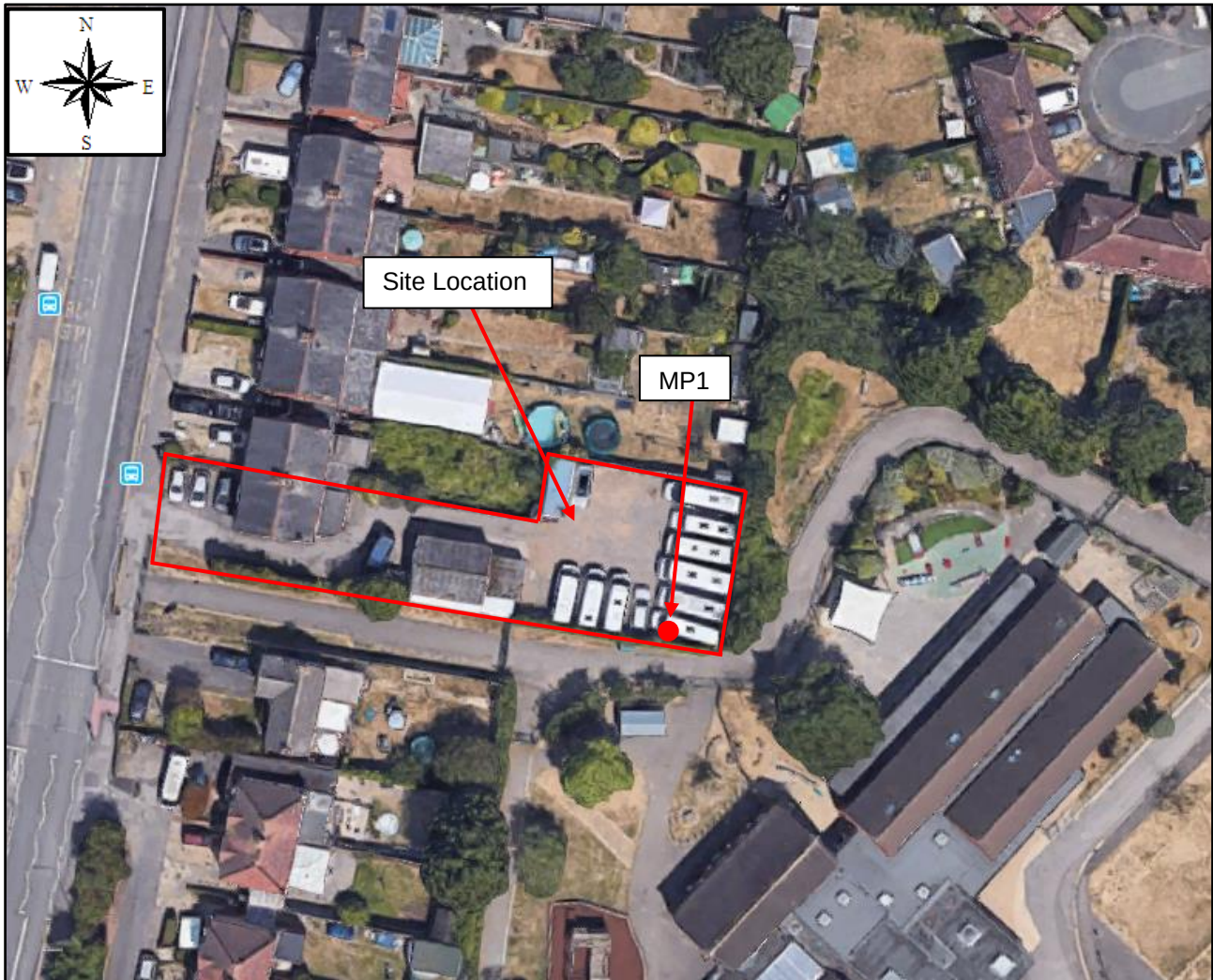
6. CONCLUSION

A noise measurement survey has been carried out at the proposed development site in order to identify typical background sound levels which are representative of those at the nearest noise sensitive receptor and typical workshop activity noise levels currently carried out at the site. The measured noise levels have been utilised to inform a BS 4142 assessment in line with the requirements set out by RBC.

Section 5.2 identified that, the proposed workshop will have an adverse impact to the closest noise sensitive receptors. Therefore mitigation in the form of an insulated garage door providing a minimum A-weighted sound reduction of 10 dB has been proposed. It is identified that with the workshop door closed, the specific sound level, and therefore the rating level associated with the proposed workshop, will achieve the RBC requirements.

ADDITIONAL FIGURES

Figure F.1: Noise Measurement Location



Existing Plan

Proposed Plan

Existing workshop

Proposed workshop

Metal container

Office

Closest sensitive receptor

Closest sensitive receptor

Existing Block Plan 1:500

Proposed Block Plan 1:500

APPENDICES

Appendix 1

Glossary of Acoustic Terminology

Term	Description
'A'-Weighting	<i>This is the main way of adjusting measured sound pressure levels to take into account human hearing, and our uneven frequency response.</i>
Decibel (dB)	<i>This is a tenth (deci) of a bel. Decibel can be a measure of the magnitude of sound, changes in sound level and a measure of sound insulation. Decibels are not an absolute unit of measurement but are an expression of ratio between two quantities expressed in logarithmic form.</i>
$L_{Aeq,T}$ (Ambient/Period Sound Level)	<i>The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. T may be as short as 1 second when used to describe a single event, or as long as 24 hours when used to describe the noise climate at a specified location. $L_{Aeq,T}$ can be measured directly with an integrating sound level meter.</i>
$L_{A90,T}$ (Background Sound Level)	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 90 per cent of a given time. The $L_{A90,T}$ is used to describe the background noise levels at a particular location.</i>
L_{Amax}	<i>The 'A'-weighted maximum sound pressure level measured over a measurement period. Typically measured with 'fast' weighting (125 ms) or 'slow' weighting (1 s).</i>
Rating Level, $L_{Ar,Tr}$	<i>The specific sound level plus any adjustment for the characteristic features of the sound.</i>
Residual Sound Level, $L_r = L_{Aeq,T}$	<i>Ambient 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.</i>
Specific Sound Level, $L_s = L_{Aeq,Tr}$	<i>The equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr.</i>
R_w	<i>Weighted sound reduction index, a single number quantity for the airborne sound insulation in buildings and of building elements such as wall, doors and windows. The quantity is intended for rating the airborne sound insulation and for simplifying the formulation of acoustical requirements in building codes, when measured in the presence of flanking sound transmission, denoted R'_w.</i>

Appendix 2

Noise Measurement Results

Table A2.1: Noise Measurement Results for MP1 – 15.10.19 to 16.10.19

Time	L _{Aeq,T} (dB)	L _{AFmax} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
0700 – 0800	54	66	55	51
0800 – 0900	57	83	59	52
0900 – 1000	55	77	57	51
1000 – 1100	55	72	57	49
1100 – 1200	59	87	59	50
1200 – 1300	62	81	63	52
1300 – 1400	58	80	58	48
1400 – 1500	60	82	63	51
1500 – 1600	56	78	57	49
1600 – 1700	52	74	54	47
1700 – 1800	52	76	54	47
1800 – 1900	52	79	53	47
1900 – 2000	53	73	55	48
2000 – 2100	49	65	52	46
2100 – 2200	49	66	51	45
2200 – 2300	50	74	52	45
2300 – 0000	45	64	47	42
0000 – 0100	44	59	46	41
0100 – 0200	42	58	44	40
0200 – 0300	42	63	43	39
0300 – 0400	40	54	42	39
0400 – 0500	43	58	45	39
0500 – 0600	47	64	49	43
0600 – 0700	59	76	57	47
Day (0700 – 2300)	56	76	56	49
Night (2300 – 0700)	51	62	47	41

Table A2.1: Noise Measurement Results for MP1 – 16.10.19 to 17.10.19

Time	L _{Aeq,T} (dB)	L _{AFmax} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
0700 – 0800	52	72	54	48
0800 – 0900	55	73	57	50
0900 – 1000	55	74	57	49
1000 – 1100	54	70	56	49
1100 – 1200	57	79	58	50
1200 – 1300	62	82	64	53
1300 – 1400	60	86	61	52
1400 – 1500	61	83	61	52
1500 – 1600	56	81	57	49
1600 – 1700	53	76	55	46
1700 – 1800	53	77	54	46
1800 – 1900	52	78	54	46
1900 – 2000	51	67	53	46
2000 – 2100	49	66	51	44
2100 – 2200	50	70	51	43
2200 – 2300	46	65	48	41
2300 – 0000	44	57	46	39
0000 – 0100	43	56	45	38
0100 – 0200	41	69	42	37
0200 – 0300	42	63	43	38
0300 – 0400	42	55	44	39
0400 – 0500	46	62	47	42
0500 – 0600	50	66	52	44
0600 – 0700	61	81	58	49
Day (0700 – 2300)	56	75	56	48
Night (2300 - 0700)	53	64	47	41



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