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LSH AUTO UK LTD

MERCEDES BENZ OF WHITEFIELD, BURY

NOISE ASSESSMENT REPORT

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LSH AUTO UK LTD

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NOISE ASSESSMENT REPORT

NOVEMBER 2022

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EXECUTIVE SUMMARY

Wardell Armstrong LLP has been instructed by LSH Auto UK Ltd, to carry out a noise impact assessment for the proposed extension of operating hours at the Mercedes Benz of Whitefield Bodyshop and Garage, in Bury. The proposals seek to amend the opening hours that are currently controlled by an existing planning condition. Operations, including deliveries, at the site will be unaffected.

A noise assessment has been carried out for the proposed opening times, in accordance with 'British Standard 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound (BS4142)' to establish the likelihood of an adverse impact occurring due to noise.

Background sound levels have been measured during the daytime and night-time periods close to the nearest noise sensitive receptors (NSRs). The NSRs identified to be most likely to be affected by noise from the site are dwellings located to the north and south of the premises.

This assessment considers the potential impact of noise generated by the garage, on nearby NSRs.

The assessment has shown that, in accordance with BS4142, noise from the proposed development will cause a 'low impact' at sensitive receptors following the implementation of the recommended mitigation measures set out in this report.

As noise levels generated by the proposed development are of a low impact, and do not exceed the existing background sound levels at nearby NSRs. This demonstrates that the requirements of Paragraphs 185 and 187 of the NPPF have been achieved. Therefore, noise impact is not a material consideration for the planning application.

1 INTRODUCTION

- 1.1.1 Wardell Armstrong LLP (WA) has been commissioned by LSH Auto UK Ltd (LSH) to prepare a noise assessment report, to inform a variation of condition application to amend the opening hours at Mercedes-Benz of Whitefield, Bury.
- 1.1.2 The site is located to the south-east of Blackbridge. To the north, the site is bound by residential premises on the A56, approximately 35m away from the garage. To the east, the site is bound by woodland with residential premises on Ajax Drive beyond. To the south the site is bound by residential receptors on the A56, located approximately 40m away from the site. To the west, the site is bound by the A56, with existing dwellings beyond.
- 1.1.3 The existing Mercedes Benz premises are currently permitted to operate as follows:
- Monday to Friday: 08:00 to 18:30
 - Saturday: 08:00 to 17:00
 - Sunday: 11:00 to 17:00
- 1.1.4 It is proposed that the operation hours will be extended to:
- Monday to Friday: 06:00 to 22:00
 - Saturday: 06:00 to 17:00
 - Sunday: no change proposed
- 1.1.5 Services provided at Mercedes-Benz of Whitefield include minor repairs and services to vehicles. The proposed alterations of opening hours are understood not to increase or change the nature of the work carried out, nor affect the amount or timings of deliveries and HGV movements associated with the site.
- 1.1.6 This noise report has been prepared to assess the potential of noise impacts occurring at the nearby NSRs, during the proposed extended hours of operation, in accordance with relevant guidance.

2 ASSESSMENT METHODOLOGY

2.1 Scope of Works

2.1.1 The proposed assessment methodology is based upon good practice, our experience of similar projects, and relevant technical and planning guidance. This assessment considers the potential noise impacts caused by proposed operations associated with the premises on identified NSRs.

2.2 Noise Survey

2.2.1 As part of this assessment, WA has carried out attended and unattended noise surveys, to measure the existing ambient and background sound levels at nearby noise sensitive receptors (NSRs), as well as the specific noise levels generated as part of typical operations of the workshop. The noise survey is further discussed in Section 3 of this report.

2.3 Assessment Methodology

2.3.1 The potential impacts have been assessed with reference to the following guidance and legislation:

- National Planning Policy Framework, 2021 (NPPF)
- Noise Policy Statement for England, 2010 (NPSE)
- Planning Practice Guidance – Noise, 2019 (PPG)
- BS4142: 2014 + A1:2019 – Methods for rating and assessing industrial and commercial sound (BS4142)
- British Standard 8233:2014 Guidance on Sound Insulation & Noise Reduction for Buildings (BS8233)

2.3.2 Further details of these documents are included in Appendix A.

3 BASELINE CONDITIONS

3.1.1 The existing baseline situation, including the identification of the NSRs, has been informed by a review of available mapping data and aerial photography.

3.2 Noise Sensitive Receptors

3.2.1 The NSRs identified as part of the noise assessment, listed in Table 1 below, are located closest to the Mercedes Benz premises and are the most sensitive to noise generated within the workshop. Other receptors may be affected by activity at the site, however, the impacts at these receptors will be equal to or less than the specified NSRs. The identified NSRs are described in Table 1 below, and illustrated on Drawing No. GM12604-001.

Table 1: Noise Sensitive Receptor Location			
Receptor	Location	Bearing from Site	Approximate Distance to Site Boundary
NSR1	835 Manchester Road, Bury, BL9 9TP	North	25m
NSR2	865 Manchester Road, Bury, BL9 9TP	South	35 m

3.2.2 NSRs 1 and 2 are representative of daytime and night-time noise levels at the nearby residential premises, during weekday and weekend periods.

3.3 Details of Noise Monitoring

3.3.1 WA carried out attended and unattended noise surveys to measure representative residual and background sound levels at the identified NSRs, as well as specific noise levels generated as part of operations at the workshop. Monitoring Location 1 (ML1) is representative of the existing acoustic environment at NSR1 and NSR2, while ML2 is representative of the noise generated by the activity at the garage.

3.3.2 For this assessment, daytime hours are taken to be between 07:00 - 23:00 and night-time 23:00 - 07:00.

3.3.3 A-weighted¹ L_{eqs} ² and L_{90s} ³ were measured in accordance with the requirements of BS4142 and BS8233. The maximum sound pressure levels $L_{AF, max}$ and A-weighted L_{10s} ⁴

¹ A' Weighting An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions.

² L_{eqs} Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.

³ L_{90} The noise level which is exceeded for 90% of the measurement period.

⁴ L_{10} The noise level which is exceeded for 10% of the measurement period.

were also measured to provide additional information. The measured noise levels are shown in full in Appendix B.

- 3.3.4 Table 2 details the measurement periods and the observations taken during each measurement and identifies significant noise sources that were audible. Each ML is shown on Drawing GM12604-001. Observations during the night-time at ML1 were undertaken through analysis of the audio recordings, taken as part of the noise monitoring procedure.

Table 2: Noise Monitoring Periods and Observations			
Monitoring Location	Start Date and Time	Finish Date and Time	Acoustic Environment
ML1 (Residential Dwellings)	17:00 27/10/2022	17:00 31/10/2022	During daytime and night-time periods, the dominant noise source is road traffic from A56 and M66.
ML2 (Specific Sound Levels)	16:00 31/10/2022	17:00 31/10/2022	Representative of noise generated during typical operations of the Mercedes Benz bodyshop and garage.

3.4 Meteorological Conditions

- 3.4.1 The weather conditions during the noise survey were recorded. The details are shown in Table 3 below.

Table 3: Noise Survey Weather Conditions From 27 th October to 31 st October 2022	
Description	Weather Conditions
Average Temperature	11°C to 17°C
Average Wind Speed	<1.0 m/s to 4.0m/s
Cloud Cover	60% to 100%
Precipitation	Dry with occasional short-term showers

3.5 Measured Noise Levels

- 3.5.1 The measured noise levels have been analysed to determine the existing residual ($L_{Aeq,T}$) and background ($L_{A90,T}$) sound levels for both daytime and night-time periods. The results are summarised in Table 4 below.

Table 4: Average Measured Noise Levels at the Monitoring Locations				
Noise Monitoring Location	Average Daytime $L_{Aeq,t}$ (dB)	Daytime Background $L_{A90,t}$ (dB)	Average Night-time $L_{Aeq,t}$ (dB)	Night-time Background $L_{A90,t}$ (dB)
ML1	53 - 57	47 - 49	47 - 49	39 - 41
ML2	64	-	-	-

- 3.5.2 The measured sound levels have been used in this report to determine the potential noise impact, generated by the extended hours of operation at the nearby NSRs.

4 ASSUMPTIONS, LIMITATIONS AND UNCERTAINTY

4.1 Introduction

4.1.1 The noise assessment set out in this report is affected by the following assumptions and limitations.

4.2 Assumptions

4.2.1 The following assumptions have been made:

- NSRs are positioned at a height of 1.5 m above ground level during daytime periods, and 4.0m during the night-time.
- Development led road traffic will not significantly affect the level of road traffic noise from the A56.
- The nature of the operations carried out at the workshop, or the noise levels generated by them will remain the same.
- During summer periods, shutter doors will be open 100% of the time during day to control temperature inside the workshop. This represents the worst case scenario in term of noise levels and has been used to inform this noise assessment.
- The number and timing of HGVs and deliveries will not be affected by the extension of operational hours.
- The noise measurements are representative of typical operations at the bodyshop and workshop.
- A window open at 20% provides around 13 dB of noise attenuation.

4.3 Limitations

4.3.1 The noise levels have been carried out using detailed calculations, to establish the attenuation of noise propagating over a distance.

4.4 Uncertainty

4.4.1 To reduce the level of uncertainty within this assessment, the following steps have been taken:

- The background noise measurement location was selected to be representative of the background sound levels at the identified NSRs.
- In accordance with guidance, the microphone was mounted on tripod 1.5m above the ground, with the diaphragm positioned horizontally. The monitoring locations represent free field measurements.

- The closest NSRs have been determined from scale maps.
- The background sound measurements were undertaken during suitable weather conditions during proposed operational hours weekday and weekend periods.
- The daytime background noise levels are assessed over 1-hour periods in accordance with BS41412.
- The night-time background noise levels are assessed over 15-minute periods in accordance with BS4142.
- The results of each measurement period are reported to the nearest 0.1dB.
- Noise measurements were made using a Class 1, integrating Sound Level Meter (SLM) with audio recording and playback.
- The SLM was calibrated upon commencement and termination of the noise surveys. No significant drift in the calibration was recorded.
- Specific noise measurements of workshop noise were measured 1m away from the open shutter door, with the monitor positioned 1.5m above ground.

5 BS4142 NOISE IMPACT ASSESSMENT

5.1 Introduction

5.1.1 This section of the report sets out the assessment of noise emissions from the workshop during proposed hours of operation, and the potential impacts they have on existing Noise Sensitive Receptors.

5.2 Identification of Existing Noise Sources

5.2.1 The operations at the workshop have been investigated through site walkovers and detailed observations, as well as discussions with the client and staff at the workshop. The noise generated by the workshop is a combination of a variety of noise sources, these include:

- Torque Wrench
- Vacuum Cleaner
- Car Lift
- Hammering
- Doors and Bonnets Slamming
- Tyre Changing Facilities

5.2.2 A noise measurement of the noise generated by the workshop was undertaken over a 1-hour period, supplemented by discussions with staff and operators, it is understood to be representative of typical operations at the site. The measurement was undertaken with the shutter door open, which is considered to be representative of typical operations during the summer periods.

5.3 BS4142 Assessment

Identification of the Specific Sound

5.3.1 Specific noise monitoring had been used to determine the typical 1 hour sound level from the workshop ($L_{Aeq, 1hr}$).

5.3.2 Noise associated with the workshop was attenuated well by the building envelope, and only audible from the workshop doors. Therefore, an area source propagation calculation was used to calculate the specific sound levels at receptors.

5.3.3 The predicted specific sound levels during the daytime and night-time periods at the NSRs are presented below in Table 5.

Table 5: Predicted Specific Sound Level at Sensitive Receptors				
Receptor	Location	Distance from Workshop	Predicted Specific Sound Level	
			Daytime, dB L _{Aeq} , 1hr	Night-time, dB L _{Aeq} , 15mins
NSR1	North from Workshop	30m	38	38
NSR2	South from Workshop	45m	34	34

Identification of the Background Sound Level

- 5.3.4 Section 8 of BS4142 provides guidance on the selection of the background sound to be used in the assessment. BS4142 states that the background sound levels used for the assessment should be representative of the period being assessed (i.e., daytime and night-time periods), and that there is no “single” background sound level.
- 5.3.5 Therefore, analysis of the measured sound levels is required to select the most appropriate and representative background sound levels (L_{A90}) at the NSRs identified in Table 1. An assessment has been carried out based upon the measured sound levels during the daytime and night-time periods.
- 5.3.6 A detailed breakdown and analysis of the long term measured data at ML1, representative of the background sound levels at NSR1 and NSR2, during both day and night-time periods is shown in Appendix C.
- 5.3.7 A summary of the representative background sound levels, during the proposed extended hours of operation at NSRs are shown in Table 6 below.

Table 6: Representative Background Sound Levels at NSRs		
Receptor	Representative Background Sound Level	
	NSR1	NSR2
Weekday Evening (17:00-20:00), dB L _{A90} , 1hr	47	47
Weekday Night-time (06:00-07:00), dB L _{A90} , 15min	50	50
Weekday Morning (07:00 – 08:00), dB L _{A90} , 1hr	52	52
Weekend Night-time (06:00-07:00), dB L _{A90} , 15min	45	45
Weekend Morning (07:00 – 08:00), dB L _{A90} , 1hr	50	50

- 5.3.8 The assessment of background sound levels, summarised in Table 6 above, shows that background sound levels measured during the weekend night-time present the most stringent criteria. These will therefore be used to assess noise from the premises during proposed operational hours.

Application of Weighting for Characteristics of Specific Sound

5.3.9 BS4142 includes guidance on the application of additional weightings which include tonality, impulsivity, or intermittency any other distinctive characteristics. Where such features are present at the assessment location character corrections to the specific sound should be added to obtain a rating level.

5.3.10 Table 8 shows that the calculated specific sound levels, generated by the premises, are expected to be 7dB below the measured background sound level during the daytime and night-time periods at NSR1, and 11dB below the measured background sound level at NSR2. Therefore, it is not considered to be likely that acoustic characteristics will be distinguishable at receptors. However, for robustness, intermittency in the use of plant was distinguishable at the source, with the torque wrenches used in quick succession. Therefore, a 3dB intermittency correction is considered to be appropriate to be applied.

BS4142:2014+A1:2019 Assessment

5.3.11 In accordance with BS4142, the noise rating levels from the bodyshop and garage, as received at the NSRs, have been compared with the corresponding measured background sound levels L_{A90} and are shown below in Table 7.

Table 7: BS4142 Assessment of the Noise from the Proposed Development as received at NSRs during the Daytime and Night-time				
Description	Daytime (dB(A)) (0700-2300 hours)		Night-time (dB(A)) (2300-0700 hours)	
	NSR1	NSR2	NSR1	NSR2
Specific Sound Level at NSRs, dB $L_{Aeq, T}$	38	34	38	34
Acoustic Character Penalty, dB	3	3	3	3
Rating Level, dB (A)	41	37	41	37
Background Sound Level, dB $L_{A90, T}$	45	45	45	45
Excess of rating over Background level, dB(A)	-4	-8	-4	-8

5.3.12 The results displayed in Table 7 have been calculated and assessed in accordance with BS4142. The results indicate that the rating levels during periods of extended operations are expected to be at least 4dB below the measured background sound levels at NSR1, and 8dB at NSR2, during the day and night-time periods. Therefore, operations at the bodyshop and garage are expected to generate only a 'low impact'

at receptors (which is the lowest category set out in BS4142) during the proposed opening times, depending upon the context.

BS4142 Context Assessment

5.3.13 BS4142:2014 States; “the significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs”.

5.3.14 The first requirement of the above statement has been determined in the noise impact assessment section above. To establish the context in which the industrial sound will reside three pertinent factors must be considered, these are;

- The absolute sound level;
- The character and level of the residual sound compared to the character and level of the specific sound; and,
- The sensitivity of the receptor.

Absolute level of Sound

5.3.15 To determine the first context test in BS4142 it is necessary to determine whether the residual and background sound levels are high or low. Section 11 of BS4142 states;

“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 sound 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.”

5.3.16 The rating sound levels are 41dB during the daytime and night-time at NSR1, and 37dB during the daytime and night-time. Background sound levels at the NSRs, during the most sensitive periods are 45dB L_{A90} during the daytime and night-time. Both the rating levels and background sound levels are considered to be moderate. Therefore, in terms of the absolute level of sound, the difference presented in Table 7 provides a good indication of the potential noise impact at the NSRs.

Character and level of the Residual and Specific Sound

5.3.17 The noise sources at which contribute to the specific sound (i.e. torque wrenches, scissor lifts, and car doors and bonnets closing) associated with the workshop, will be different in character to that of the residual sound (road traffic noise on the A56 and M66) which comprises predominantly low to mid frequency noise. It is considered that noise from the premises may be distinguishable from the character of the existing acoustic environment. Therefore, the character of the residual noise is not expected to reduce any impact of the rating level. This character has been considered within the initial estimate of the noise impact, Table 7.

5.3.18 Table 4 shows, the residual sound levels at NSR 1 and 2 during the daytime are between 53-57dB(A), and 47-49dB(A) during the night-time periods. Table 5, shows the predicted specific sound levels to be 38dB(A) at NSR1, and 34dB(A) at NSR2 during both day and night-time periods. Therefore, as the specific noise levels are expected to be significantly lower at the NSRs, than the measured residual sound levels, It can be concluded that this difference is likely to further reduce any potential impact at NSRs.

Sensitivity of Receptor

5.3.19 With regard to pertinent factors to be taken into consideration, Section 11 of BS4142 states;

“The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal design and/or outdoor acoustic conditions, such as:

- i. Façade insulate treatment;*
- ii. Ventilation and/or cooling that will reduce the need to have windows open as to provide rapid or purge ventilation; and*
- iii. Acoustic screening.”*

5.3.20 The glazing and ventilation specifications of the identified NSRs are not known. However, to be robust it is assumed that the identified NSRs do not have the benefit of alternative ventilation methods. Therefore, they are likely relying on open windows to achieve sufficient background ventilation.

5.3.21 The existing façade mitigation will provide some attenuation of the noise from the proposed development. It is generally agreed that a partially open window provides

approximately 13dB of attenuation, this would therefore further reduce the impact at all receptors during daytime and night-time periods when considering internal living areas.

- 5.3.22 Notwithstanding, as the specific noise levels generated by the facility are low level, and below the background sound level L_{A90} , the internal and external sound levels are likely to remain unchanged.

BS4142 Assessment Summary

- 5.3.23 A BS4142 assessment has been undertaken to assess the potential noise impacts caused by extending operational hours of the existing bodyshop and garage on nearby NSRs.
- 5.3.24 The calculated noise levels, expected to be generated during the extended operational times are below the measured background sound level at NSR1 and 2 during the daytime and night-time.
- 5.3.25 A context assessment shows that the noise associated with the proposed development will generate a **low impact** at all NSRs, when considered in context. This is the lowest category stated in BS4142.
- 5.3.26 Therefore, mitigation measures will not be required to reduce noise levels from the premises

6 CONCLUSIONS

- 6.1.1 Wardell Armstrong LLP have been commissioned by LSH Auto UK Ltd to carry out a noise impact assessment to support the variation of condition application to amend the opening hours at Mercedes-Benz of Whitefield.
- 6.1.2 The operational noise assessment has been carried out in accordance with British Standard 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS4142).
- 6.1.3 To establish background sound levels at the nearby noise sensitive receptors, attended and unattended noise monitoring has been carried out during daytime and night-time periods at locations considered to be representative of existing sensitive receptor, during the proposed extended hours of opening.
- 6.1.4 This assessment considered the noise impacts caused by the proposed development, on noise sensitive receptors, during the daytime and night-time weekday and weekend periods, where appropriate.
- 6.1.5 In accordance with BS4142 assessment procedure, the proposed development will cause only a **low impact** at existing noise sensitive receptors. Therefore, no mitigation measures are required to protect the amenity of the identified noise sensitive receptors.
- 6.1.6 The predicted noise levels generated, by the proposed development do not exceed the existing background sound levels at the identified noise sensitive receptors.
- 6.1.7 This demonstrates that the requirements of Paragraphs 185 and 187 of the NPPF have been achieved. Therefore, noise impact is not a material consideration for the planning application.

APPENDICES

APPENDIX A

Policy, Standards and Guidance

National Planning Policy Framework

In July 2021 the 'National Planning Policy Framework' (NPPF) was amended as the current planning policy guidance within England.

Paragraph 185 of the NPPF states:

'Planning policies and decisions should also ensure that new development is appropriate for its location taking in 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 impact 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 impact on health and the quality of life;
- b. Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason'...

Paragraph 187 of the NPPF states:

'Planning policies and decisions should ensure that new development can be integrated with existing business 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.'

Noise Policy Statement for England

With regard to 'significant adverse impacts on health and the quality of life' the NPPF refers to the 'Noise Policy Statement for England' (NPSE).

The Noise Policy Statement for England refers to the World Health Organisation when discussing noise impacts and introduces observed effect levels which are based on

established concepts from toxicology that are applied to noise impacts by WHO.

Three levels are defined as follows:

‘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.

SOAEL – Significant Observed Adverse Effect Level

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

The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided. The second aim refers to the situation where the impact lies somewhere between LOAEL and SOAEL, and it requires that all reasonable steps are taken to mitigate and minimise the adverse effects of noise. However, this does not mean that such adverse effects cannot occur.

Planning Practice Guidance – Noise

The Planning Practice Guidance (PPG) provides further detail about how the effect levels can be recognised. Above the NOEL noise becomes noticeable, however it has no adverse effect as it does not cause any change in behaviour or attitude. Once noise crosses the LOAEL threshold it begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. Increasing noise exposure further might cause the SOAEL threshold to be crossed. If the exposure is above this level the planning process should be used to avoid the effect occurring by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused. At the highest extreme the situation should be prevented from occurring regardless of the benefits which might arise. Table 1 summarises the noise exposure hierarchy.

Table 1: National Planning Practice Guidance Noise Exposure Hierarchy			
Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

The PPG summarises the approach to be taken when assessing noise. It accepts that noise can override other planning concerns, but states:

“Neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separate from the economic, social and other

environmental dimensions of proposed development”

British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings

British Standard 8233 “Guidance on sound insulation and noise reduction for buildings” 2014, suggests the following guideline noise levels and states that they are based on guidelines issued by the World Health Organisation;

- 35 dB L_{Aeq} (16 hour) during the day time in noise sensitive rooms
- 30 dB L_{Aeq} (8 hour) during the night time in bedrooms
- 45 dB $L_{Amax,F}$ during the night time in bedrooms
- 50 dB L_{Aeq} (16 hour) desirable external noise levels for amenity space such as gardens and patios
- 55 dB L_{Aeq} (16 hour) upper guideline value which would be acceptable in noisier environments.

In addition, for internal noise levels it states;

“Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.”

Furthermore, with regard to external noise, the Standard states;

“However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited”.

British Standard 4142:2014 Methods for rating and assessing industrial and commercial sound (BS4142):

BS4142 is used to rate and assess sound of an industrial and/or commercial nature including:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;

- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

The standard is applicable to the determination of the following levels at outdoor locations:

- rating levels for sources of sound of an industrial and/or commercial nature; and
- ambient, background and residual sound levels, for the purposes of:

- 1) Investigating complaints;
- 2) Assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and
- 3) Assessing sound at proposed new dwellings or premises used for residential purposes.

The purpose of the BS4142 assessment procedure is to assess the significance of sound of an industrial and/or commercial nature.

BS4142 refers to noise from the industrial source as the 'specific noise' and this is the term used in this report to refer to noise which is predicted to occur due to activities associated with industrial noise. The 'specific noise' sources, of the existing industrial premises that have been observed are detailed in Section 3 of this report.

BS4142 assesses the significance of impacts by comparing the specific noise level to the background noise level (L_{A90}). Section 3 of this report provides details of the background noise survey undertaken.

Certain acoustic features can increase the significance of impacts over that expected from a simple comparison between the specific noise level and the background noise level. In particular, BS4142 identifies that the absolute level of sound, the character, and the residual sound and the sensitivity of receptor should all be taken into consideration. BS4142 includes allowances for a rating penalty to be added if it is found that the specific noise source contains

a tone, impulse and/or other characteristic, or is expected to be present. The specific noise level along with any applicable correction is referred to as the 'rating level'.

The greater the increase between the rating level over the background noise level, the greater the magnitude of the impact. The assessment criteria given by BS4142 are as follows:

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

During the daytime, BS4142 requires that noise levels are assessed over 1-hour periods. However, during the night-time, noise levels are required to be assessed over 15-minute periods.

Where the initial estimate of the impact needs to be modified due to context, BS4142 states that all pertinent factors should be taken into consideration, including:

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and,
- 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.

APPENDIX B

Appendix B: Noise Survey Summary		
Period start	L _{Aeq, T} (dB)	L _{A90} (dB)
Daytime 27/10/2022		
27/10/2022 17:00	55.0	49.9
27/10/2022 18:00	54.7	49.2
27/10/2022 19:00	52.5	49.1
27/10/2022 20:00	51.4	48.1
27/10/2022 21:00	50.4	46.0
27/10/2022 22:00	50.4	45.9
Night-time 27/10/2022		
27/10/2022 23:00	49.1	44.8
27/10/2022 23:15	49.6	44.6
27/10/2022 23:30	49.1	43.6
27/10/2022 23:45	47.2	42.7
28/10/2022 00:00	47.2	42.5
28/10/2022 00:15	47.3	42.6
28/10/2022 00:30	48.0	40.9
28/10/2022 00:45	47.7	41.4
28/10/2022 01:00	46.2	42.0
28/10/2022 01:15	47.6	42.5
28/10/2022 01:30	46.3	41.9
28/10/2022 01:45	44.8	39.8
28/10/2022 02:00	44.5	38.9
28/10/2022 02:15	43.7	38.8
28/10/2022 02:30	46.7	39.7
28/10/2022 02:45	46.0	39.7
28/10/2022 03:00	46.6	40.7
28/10/2022 03:15	44.6	40.0
28/10/2022 03:30	43.6	38.6
28/10/2022 03:45	42.8	39.1
28/10/2022 04:00	44.9	40.5
28/10/2022 04:15	45.8	41.3
28/10/2022 04:30	46.2	42.3
28/10/2022 04:45	48.0	43.0
28/10/2022 05:00	47.9	44.2
28/10/2022 05:15	48.7	45.5
28/10/2022 05:30	49.8	46.7
28/10/2022 05:45	50.5	48.1
28/10/2022 06:00	51.4	48.7
28/10/2022 06:15	52.2	49.7
28/10/2022 06:30	52.4	50.1
28/10/2022 06:45	54.1	51.2
Daytime 28/10/2022		
28/10/2022 07:00	56.5	52.5
28/10/2022 08:00	63.4	52.8

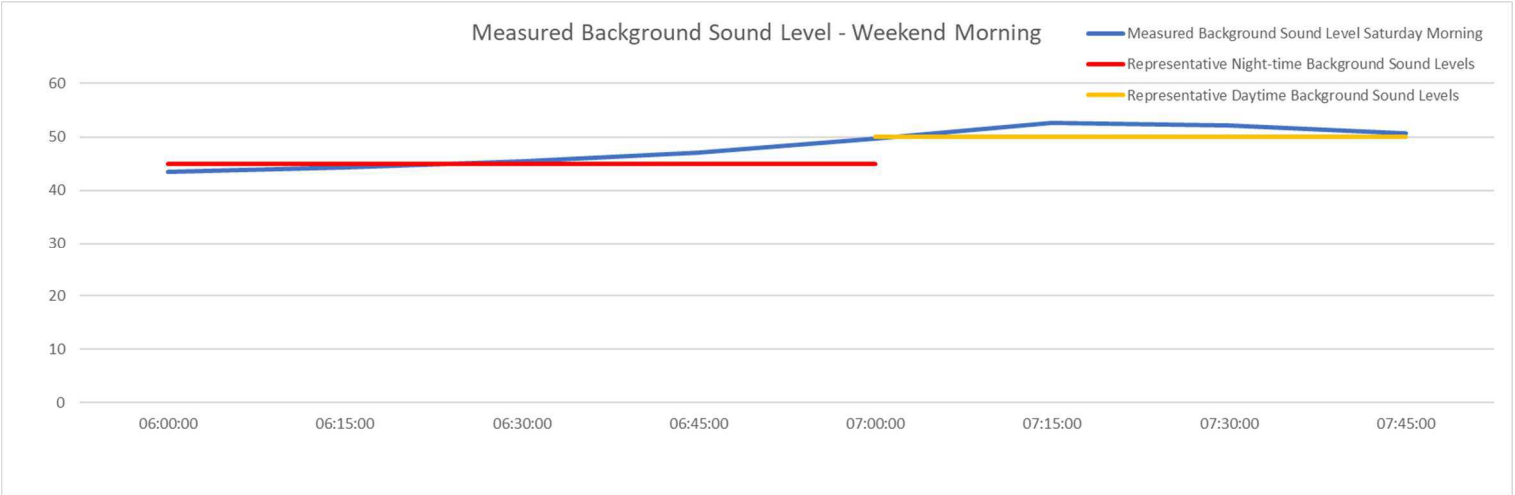
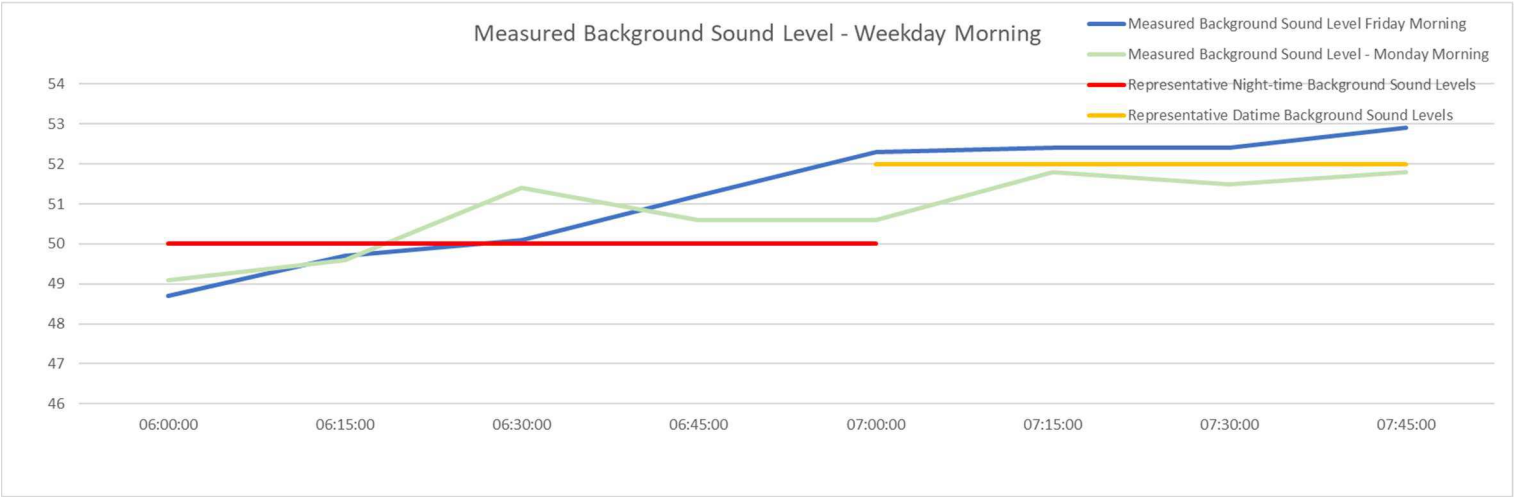
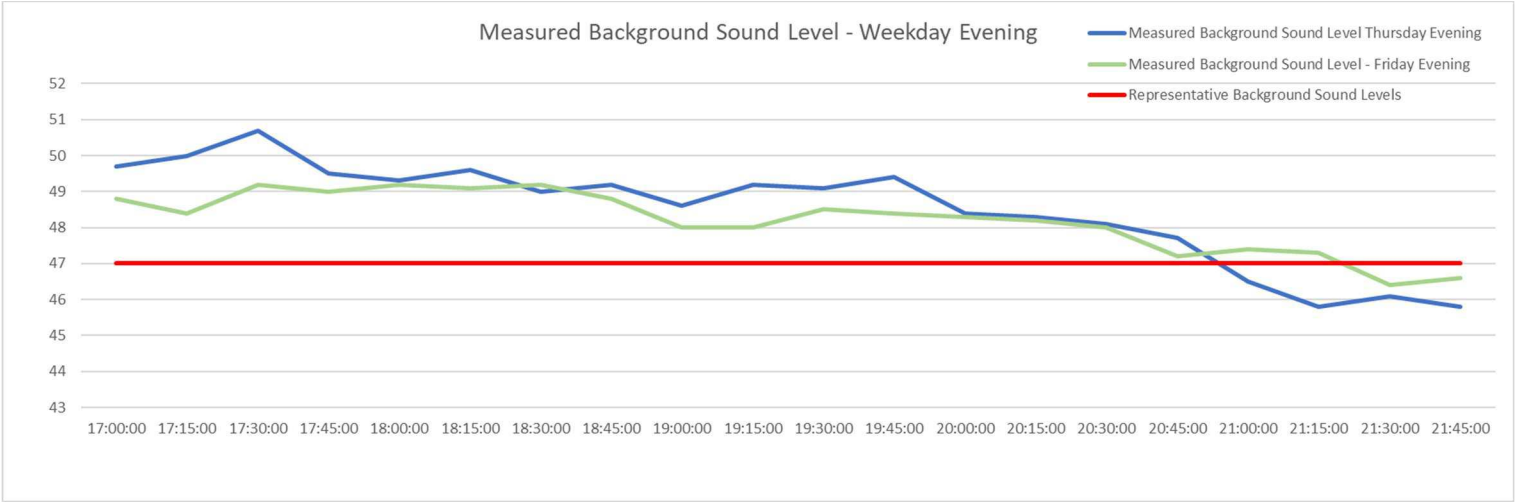
Appendix B: Noise Survey Summary		
Period start	L _{Aeq, T} (dB)	L _{A90} (dB)
28/10/2022 09:00	54.5	50.9
28/10/2022 10:00	54.6	50.3
28/10/2022 11:00	58.6	49.2
28/10/2022 12:00	54.9	49.7
28/10/2022 13:00	54.4	49.6
28/10/2022 14:00	61.3	51.3
28/10/2022 15:00	57.7	49.3
28/10/2022 16:00	54.5	49.1
28/10/2022 17:00	54.2	48.9
28/10/2022 18:00	52.9	49.1
28/10/2022 19:00	52.0	48.2
28/10/2022 20:00	51.6	48.0
28/10/2022 21:00	50.7	46.8
28/10/2022 22:00	50.5	46.4
Night-time 28/10/2022		
28/10/2022 23:00	49.6	45.6
28/10/2022 23:15	49.6	45.4
28/10/2022 23:30	49.4	44.8
28/10/2022 23:45	48.0	43.7
29/10/2022 00:00	49.0	44.1
29/10/2022 00:15	48.2	44.2
29/10/2022 00:30	47.7	41.5
29/10/2022 00:45	47.5	41.7
29/10/2022 01:00	46.0	40.5
29/10/2022 01:15	45.9	39.2
29/10/2022 01:30	46.0	38.1
29/10/2022 01:45	45.6	38.3
29/10/2022 02:00	44.6	37.8
29/10/2022 02:15	45.2	37.8
29/10/2022 02:30	45.1	38.8
29/10/2022 02:45	46.0	38.9
29/10/2022 03:00	43.4	36.3
29/10/2022 03:15	43.6	36.4
29/10/2022 03:30	45.1	36.6
29/10/2022 03:45	44.0	37.9
29/10/2022 04:00	44.3	37.1
29/10/2022 04:15	44.8	37.0
29/10/2022 04:30	45.4	39.2
29/10/2022 04:45	44.1	39.4
29/10/2022 05:00	46.0	42.0
29/10/2022 05:15	48.3	44.4
29/10/2022 05:30	48.5	43.8
29/10/2022 05:45	50.1	44.0
29/10/2022 06:00	47.6	43.4

Appendix B: Noise Survey Summary		
Period start	L _{Aeq, T} (dB)	L _{A90} (dB)
29/10/2022 06:15	48.4	44.3
29/10/2022 06:30	49.7	45.5
29/10/2022 06:45	50.5	47.0
Daytime 29/10/2022		
29/10/2022 07:00	54.5	50.9
29/10/2022 08:00	56.4	52.6
29/10/2022 09:00	58.5	54.7
29/10/2022 10:00	56.7	53.6
29/10/2022 11:00	54.6	51.8
29/10/2022 12:00	55.7	52.9
29/10/2022 13:00	55.7	52.2
29/10/2022 14:00	57.9	51.1
29/10/2022 15:00	55.1	51.4
29/10/2022 16:00	54.9	51.9
29/10/2022 17:00	56.4	51.3
29/10/2022 18:00	53.6	50.0
29/10/2022 19:00	53.7	48.9
29/10/2022 20:00	51.4	46.9
29/10/2022 21:00	50.5	45.5
29/10/2022 22:00	49.9	45.4
Night-time 29/10/2022		
29/10/2022 23:00	50.1	45.0
29/10/2022 23:15	52.3	46.1
29/10/2022 23:30	49.8	45.2
29/10/2022 23:45	49.2	44.3
30/10/2022 00:00	49.6	44.7
30/10/2022 00:15	49.9	44.9
30/10/2022 00:30	49.7	44.2
30/10/2022 00:45	48.9	42.5
30/10/2022 01:00	48.0	42.0
30/10/2022 01:15	47.5	41.2
30/10/2022 01:30	47.8	41.3
30/10/2022 01:45	47.3	41.5
30/10/2022 02:00	47.8	42.6
30/10/2022 02:15	46.9	40.4
30/10/2022 02:30	46.4	41.1
30/10/2022 02:45	46.6	41
30/10/2022 03:00	45.7	40.5
30/10/2022 03:15	46.2	40.7
30/10/2022 03:30	45.8	40.2
30/10/2022 03:45	45.8	40.5
30/10/2022 04:00	45.7	40.9
30/10/2022 04:15	45.2	39.9
30/10/2022 04:30	46.6	42.1

Appendix B: Noise Survey Summary		
Period start	L _{Aeq, T} (dB)	L _{A90} (dB)
30/10/2022 04:45	48.3	42.1
30/10/2022 05:00	47.7	42.3
30/10/2022 05:15	49.4	43.2
30/10/2022 05:30	51.1	43.7
30/10/2022 05:45	49.3	43.5
30/10/2022 06:00	49.4	44.0
30/10/2022 06:15	51.4	44.8
30/10/2022 06:30	52.5	44.0
30/10/2022 06:45	51.9	45.0
Daytime 30/10/2022		
30/10/2022 07:00	51.0	45.9
30/10/2022 08:00	52.4	47.6
30/10/2022 09:00	53.5	49.4
30/10/2022 10:00	54.9	50.3
30/10/2022 11:00	57.7	51.7
30/10/2022 12:00	55.2	50.8
30/10/2022 13:00	55.8	50.4
30/10/2022 14:00	55.5	50.3
30/10/2022 15:00	57.1	49.7
30/10/2022 16:00	53.9	49.6
30/10/2022 17:00	53.0	48.6
30/10/2022 18:00	52.5	48.6
30/10/2022 19:00	51.6	48.5
30/10/2022 20:00	53.5	47.5
30/10/2022 21:00	50.0	46.0
30/10/2022 22:00	49.2	44.7
Night-time 30/10/2022		
30/10/2022 23:00	49.7	44.4
30/10/2022 23:15	47.8	43.1
30/10/2022 23:30	46.9	42.7
30/10/2022 23:45	47.8	42.3
31/10/2022 00:00	48.0	42.5
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31/10/2022 00:30	48.7	41.9
31/10/2022 00:45	47.8	40.6
31/10/2022 01:00	48.8	40.7
31/10/2022 01:15	45.5	40.0
31/10/2022 01:30	45.8	40.1
31/10/2022 01:45	44.3	38.4
31/10/2022 02:00	45.8	38.6
31/10/2022 02:15	44.3	37.9
31/10/2022 02:30	44.1	38.9
31/10/2022 02:45	44.3	39.6
31/10/2022 03:00	43.1	39.3

Appendix B: Noise Survey Summary		
Period start	L _{Aeq, T} (dB)	L _{A90} (dB)
31/10/2022 03:15	44.1	40.1
31/10/2022 03:30	44.1	40.4
31/10/2022 03:45	44.3	40.0
31/10/2022 04:00	44.3	41.1
31/10/2022 04:15	46.7	42.3
31/10/2022 04:30	46.3	43.5
31/10/2022 04:45	48.4	45.4
31/10/2022 05:00	50.6	45.7
31/10/2022 05:15	49.3	46.4
31/10/2022 05:30	50.9	47.6
31/10/2022 05:45	53.0	48.3
31/10/2022 06:00	53.0	49.1
31/10/2022 06:15	52.8	49.6
31/10/2022 06:30	55.1	51.4
31/10/2022 06:45	55.3	50.6
Daytime 31/10/2022		
31/10/2022 07:00	54.8	51.4
31/10/2022 08:00	54.9	51.1
31/10/2022 09:00	54.0	50.1
31/10/2022 10:00	64.1	50.3
31/10/2022 11:00	53.3	49.6
31/10/2022 12:00	54.0	49.7
31/10/2022 13:00	53.9	49.2
31/10/2022 14:00	54.0	50.5
31/10/2022 15:00	55.8	52.3
31/10/2022 16:00	53.7	51.1

APPENDIX C



DRAWINGS



KEY

- Monitoring Locations
- Receptor Locations

Notes:

Boundaries are indicative. Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHECKED	APPROVED
CLIENT					

MERCEDES BENZ OF WHITEFIELD

PROJECT

LSH AUTO UK LTD

DRAWING TITLE

MONITORING LOCATION AND NOISE SENSITIVE RECEPTORS

DRG No.	GM12604/001		REV	A	
DRG SIZE	A3	SCALE	1:1,000		
DRAWN BY	GER	CHECKED BY	PK		
		DATE	16/11/2022		
		APPROVED BY	SU		



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Middlebrook
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BRISTOL

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Temple Gate
Redcliffe
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