HEPWORTH
ACOUSTICS
Noise and Vibration Consultants

PROPOSED MOT GARAGE, 1122 – 1136 STOCKPORT ROAD, MANCHESTER

NOISE IMPACT ASSESSMENT

On behalf of:

Drive & Shine

Report No. 20425.1v1

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CONTENTS

		PAGE
1.0	INTRODUCTION	1
2.0	SITE DESCRIPTION AND PROPOSALS	3
3.0	NOISE SURVEY	4
4.0	ASSESSMENT OF NOISE IMPACT	5
5.0	SUMMARY AND CONCLUSIONS	8
FIGURE 1 – NOISE MONITORING LOCATIONS		9
Appendix I – Noise Units and Indices		10
Appendix II – Results of Background Noise Survey		12

1.0 INTRODUCTION

1.1 Hepworth Acoustics Ltd was commissioned by Drive & Shine to carry out a noise impact assessment in connection with proposals for a MOT garage at 1122 – 1136 Stockport Road, Manchester.

1.2 We understand that a previous planning application (ref no. 085903/FO/2008/N2) has been refused for the following reasons;

"The proposed development would be detrimental to the amenities of the occupiers of nearby dwellings, by virtue of associated noise and general disturbance as a result of activity generated by use of the property as an MOT station; as such the proposal would be contrary to policies DC26.1, H2.2 and LL14 of the Unitary Development Plan for the City of Manchester."

"The proposed MOT station would be out of character with the surrounding residential area and would lead to an increase in comings and goings at the site, by vehicular traffic, that would result in disamanity to nearby residents due to an increase in noise levels. The proposal is therefore contrary to Policy H2.2 and LL14 of the Unitary Development Plan for the City of Manchester"

1.3 Our assessment has involved the following:-

- Measurement of background noise levels in the vicinity of the nearest existing dwellings, during a weekday.
- Calculating the likely noise levels outside the nearest existing dwellings.
- Assessing the potential noise impact of the equipment by reference to British Standard British Standard 4142: 1997, 'Method for Rating industrial noise affecting mixed residential and industrial areas'
- Recommendation of noise mitigation measures.

1.4 Noise levels referred to in the text of this report have been rounded to the nearest decibel, as fractions of decibels are imperceptible. A description of noise units and noise characteristics is provided in Appendix I.

2.0 SITE DESCRIPTION AND PROPOSALS

2.1 The proposed site occupies a former petrol station, and is currently in use as a car wash. Vehicles are hand washed with the aid of a jet wash on the forecourt. Also, as part of a valet service, vehicle upholstery is vacuum cleaned. Trading hours are between 09:00 and 18:00 hrs, 7 days a week.

2.2 The proposal is for a MOT garage (1 no. service bay) and reception area in the south eastern corner of the site. Trading hours would be between 08:00 and 18:00 hrs Monday to Saturday and between 10:30 and 17:00 hrs on Sunday.

2.3 The nearest dwellings are adjacent to the site are 1118a and 1138 Stockport Road. There are also dwellings to the rear of the site, as shown in Figure 1.

2.4 The site is bounded by Stockport Road to the west, a busy route into Manchester city centre.

3.0 NOISE SURVEY

3.1 The surveys were carried out using a Brüel & Kjær 2260 'Type 1' Sound Analyser (s/n 02467015). The meter was mounted on to a tripod with a microphone height of approximately 1.5 metres above the ground. A calibration check was carried out before and after the noise measurements with no variance in calibration levels noted.

3.2 A survey of background noise levels the nearest dwellings to the proposed MOT garage was carried out on Wednesday 7th October 2009, between 07:55 hours and 11:30 hours. The noise levels were measured for a number of 15 minute periods at three locations. The locations are shown in Figure 1. During the survey, the weather was dry with a light breeze (<2 m/s).

3.3 The results of the noise survey are shown in Appendix I, and are summarised in Table 1 below.

Table 1: Summary of lowest measured existing noise levels

Location	dB L_{Aeq}	dB L_{A90}
1 – Rear of 1138 Stockport Road	64	60
2 – Rear of 1118a Stockport Road	65	59
3 – Rear of 111 Henderson Street	51	46

3.4 The measured noise levels were due to road traffic and intermittent noise from the car wash activities. As one would expect, the measured noise levels are fairly high on Stockport Road (due to road traffic noise), and lower to the rear of the site.

3.5 The results of the survey are used in the assessment described in Section 4.0.

4.0 ASSESSMENT OF NOISE IMPACT

Assessment Overview

4.1 When assessing the noise impact of new commercial/industrial noise on existing dwellings it is appropriate to refer to British Standard 4142 'Method for rating industrial noise affecting mixed residential and industrial areas', 1997.

4.2 The basis of BS4142 requires that a comparison be made between the 'Background Noise Level' at an assessment location and the 'Specific Noise Level' of the noise source under consideration at the same location.

4.3 The 'Specific Noise Level' is presented in terms of the L_{Aeq} acoustic parameter. If the noise under investigation is irregular and/or contains tonal or impulsive components a 5dB 'acoustic feature' correction is added to the 'Specific Noise Level' to obtain the 'Rating Level'. The 'Rating Level' is then compared with the 'Background Noise Level' in L_{A90}. The standard states that:-

i) a difference of around +10 dB or more indicates that complaints are likely
ii) a difference of around +5 dB is of "marginal significance"
iii) if the rating level is more than 10 dB below the measured background level, this is a positive indication that complaints are unlikely.

Assessment

4.1 Based on previous noise measurements by Hepworth Acoustics of operations at an MOT service centre, we have calculated likely levels of noise outside the nearest dwellings generated by the MOT garage, taking account the separation distance and noise shielding effects. The activities taken into account include noise from the radio; noise from raising and lowering the ramps; noise from revving of engines of cars on the ramps; noise from engine revving to test exhaust

emissions; noise from air tools to remove wheels; occasional bangs from metal tools and noise from driving cars into and out of the workshop.

4.2 The calculated specific noise levels are shown in the BS4142 assessment. The outcome of the assessment is given in Table 2.

Table 2: BS4142 Assessment

	Location 1	**Location 2**	**Location 3**
Calculated Specific Noise Level	55 dB(A)	61 dB(A)	42 dB(A)
Acoustic Feature Correction	+5dB(A)	+5dB(A)	+5dB(A)
Rating level	60 dB(A)	66 dB(A)	47 dB(A)
Background Noise Level	60 dBL_{A90}	59 dBL_{A90}	46 dBL_{A90}
Difference	0 dB(A)	+7 dB(A)	+1 dB(A)

4.3 Table 2 shows that there would be no significant impact at Locations 1 and 3 from operations at the MOT centre. However at Location 2 the noise impact would be of "marginal significance", in the absence of noise mitigation measures.

Noise Mitigation Measures

4.4 We recommend that any widows or other openings in the rear elevation of the proposed MOT service bay building are blocked up with brick/block and sealed.

4.5 We recommend that the roller shutter doors that are closed when any particulary noisy work is being carried out.

Traffic from Proposed MOT garage

4.6 The number of vehicles generated by the car wash range between 16 – 34 per day. The maximum number of MOT inspections a garage can do in one day is 10. These are very low

numbers of vehicles. Stockport Road is a heavily trafficked road. Therefore the additional traffic generated by the MOT garage will not significantly increase noise levels. For example for traffic noise to be increased by 1 dB would require a 30% increase in traffic.

5.0 SUMMARY AND CONCLUSIONS

5.1 Hepworth Acoustics Ltd has carried out an investigation into the potential noise impact of a proposed MOT garage at 1122 – 1138 Stockport Road, Manchester.

5.2 A previous planning application (ref no. 085903/FO/2008/N2) for the proposed MOT garage has been refused. A noise survey of the existing background noise levels was undertaken in the vicinity of the nearest dwellings to the site.

5.3 A BS4142 assessment of noise from the proposed MOT garage has been carried out at the nearest dwellings. The assessment found that there would be no significant impact at Locations 1 and 3. At Location 2 the noise impact would be of "marginal significance", in the absence of noise mitigation measures.

5.4 The recommended noise mitigation measures if implemented will be minimise noise impact at the nearest dwellings.

5.5 The low numbers of vehicles movements that would be generated by the proposed MOT garage will not result in any noticeable increase in traffic noise on Stockport Road.

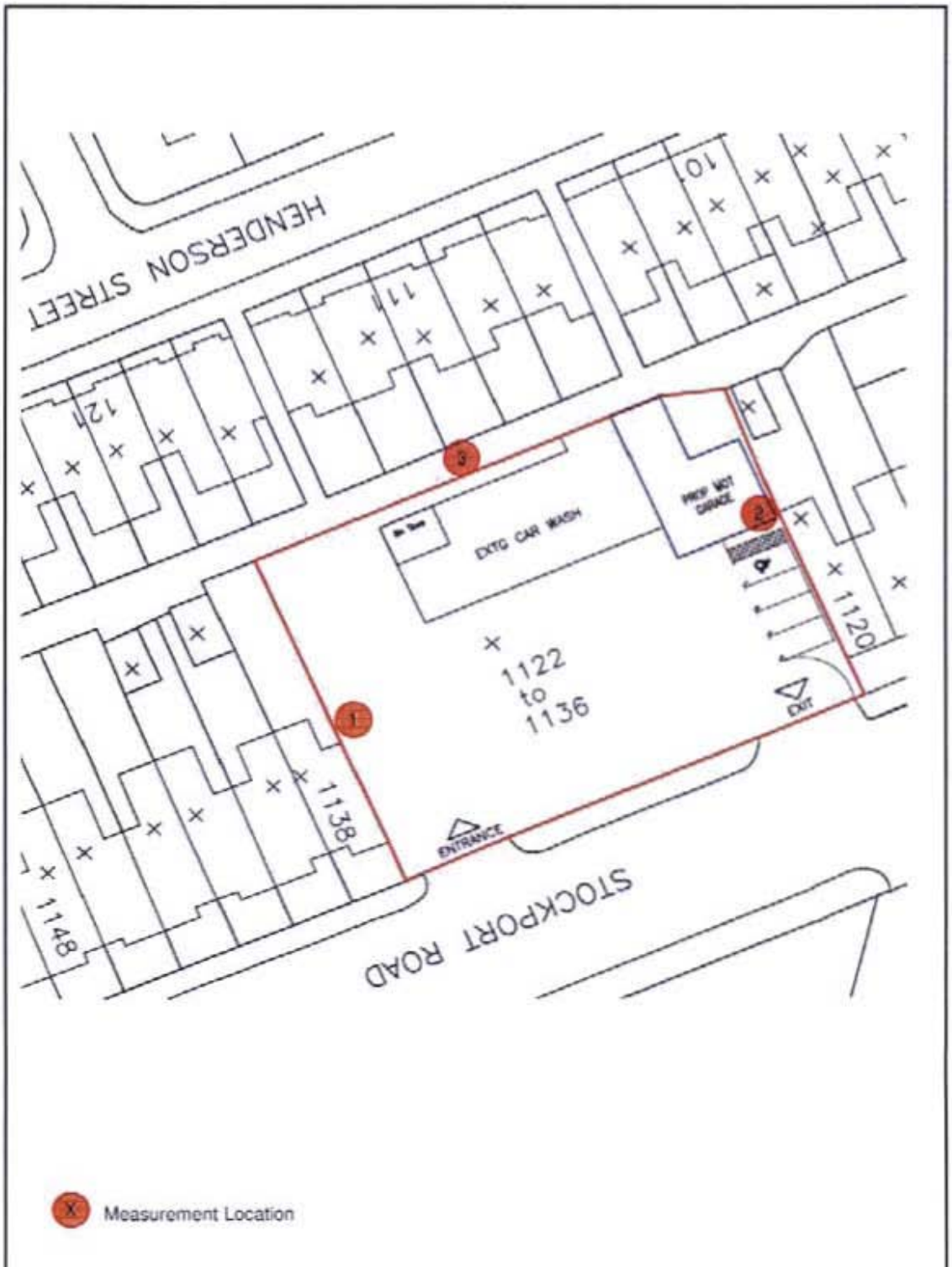

Figure 1 - Noise Measurement Locations	Report No. 20425	HEPWORTH ACOUSTICS Noise and Vibration Consultants

Appendix I – Noise Units and Indices

a) Sound Pressure Level and the decibel (dB)

A sound wave is a small fluctuation of atmospheric pressure. The human ear responds to these variations in pressure, producing the sensation of hearing. The ear can detect a very wide range of pressure variations. In order to cope with this wide range of pressure variations, a logarithmic scale is used to convert the values into manageable numbers. Although it might seem unusual to use a logarithmic scale to measure a physical phenomenon, it has been found that human hearing also responds to sound in an approximately logarithmic fashion. The dB (decibel) is the logarithmic unit used to describe sound (or noise) levels. The usual range of sound pressure levels is from 0 dB (threshold of hearing) to 120 dB (threshold of pain).

b) Frequency and hertz (Hz)

As well as the loudness of a sound, the frequency content of a sound is also very important. Frequency is a measure of the rate of fluctuation of a sound wave. The unit used is cycles per second, or hertz (Hz). Sometimes large frequency values are written as kilohertz (kHz), where 1 kHz = 1000 Hz.

Young people with normal hearing can hear frequencies in the range 20 Hz to 20,000 Hz. However, the upper frequency limit gradually reduces as a person gets older.

c) A-weighting

The ear is not equally sensitive to sound at all frequencies. It is less sensitive to sound at low and very high frequencies, compared with the frequencies in between. Therefore, when measuring a sound made up of different frequencies, it is often useful to 'weight' each frequency appropriately, so that the measurement correlates better with what a person would actually hear.

This is usually achieved by using an electronic filter called the 'A' weighting, which is built into sound level meters. Noise levels measured using the 'A' weighting are denoted dB(A) or dB LA.

d) Glossary of Terms

When a noise level is constant and does not fluctuate, it can be described adequately by measuring the dB level. However, when the noise level varies with time, the measured dB level will vary as well. In this case it is therefore not possible to represent the noise climate with a simple dB value. In order to describe noise where the level is continuously varying, a number of other indices can be used. The index used in this report is described below together with a glossary of terms.

L_{eq} This is the 'equivalent continuous noise level' which is an average of the total sound energy measured over a specified time period. In other words, L_{eq} is the level of a continuous noise which has the same total energy as the real fluctuating noise, measured over the same time period.

L_{Amax} This is the maximum A-weighted noise level that was recorded during the monitoring period.

L_{A10} This the A-weighted noise level exceeded for 10% of the time period. L_{A10} is used as a measure of traffic noise.

L_{A90} This is the A-weighted noise level exceeded for 90% of the time period. L_{A90} is used as a measure of background noise.

Appendix II – Results of Background Noise Survey

Dates:	Wednesday 7th July 2009
Equipment:	B&K 2260 'type 1' sound level meter (Serial No: 02467015), calibrator, tripod
Weather:	Dry with a light breeze (<2 m/s).
Results:	All levels shown are in dB(A)

Location 1: 1138 Stockport Road

Start	Finish	L_{Amax}	L_{A10}	L_{Aeq}	L_{A90}	Comments
07:59	08:14	76.2	67.0	64.0	59.8	Road traffic
08:52	09:08	77.4	67.4	65.4	61.4	Road traffic, cleaning yard, vehicle movements, talking, vacuum, jet wash
09:45	10:00	79.6	70.2	67.9	63.4	Road traffic, vehicle movements, talking, vacuum, jet wash
10:41	10:56	79.3	67.4	65.3	61.2	Road traffic, vehicle movements, talking, vacuum, jet wash

Location 2: 1118a Stockport Road

Start	Finish	L_{Amax}	L_{A10}	L_{Aeq}	L_{A90}	Comments
08:15	08:30	80.7	67.8	64.8	60.6	Road traffic
09:09	09:24	80.5	68.8	66.0	59.8	Road traffic, vehicle movements, talking, vacuum, jet wash
10:01	10:17	74.5	68.8	65.9	58.8	Road traffic, vehicle movements, talking, vacuum, jet wash
10:57	11:12	86.7	69.4	66.2	59.0	Road traffic, vehicle movements, talking, vacuum, jet wash

Location 3: 111 Henderson Street

Start	Finish	L_{Amax}	L_{A10}	L_{Aeq}	L_{A90}	Comments
08:34	08:49	65.4	54.4	52.2	47.4	Road traffic
09:27	09:42	62.8	56.2	53.4	48.2	Road traffic, faint jet wash, distant aircraft
10:19	10:35	64.3	55.0	52.5	48.0	Road traffic, talking, faint jet wash, distant aircraft
11:15	11:30	64.1	52.4	50.5	46.2	Road traffic, faint jet wash