



Scours Lane, Reading

Noise Impact Assessment

dBx Acoustics Ltd
Beehive Mill
Jersey Street
Manchester
M4 6JG
0161 711 0320

21087 Scours Lane, Reading R01A

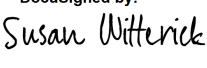
Client: Chartplan

Date: 14/01/2022

TABLE OF CONTENTS

TABLE OF CONTENTS	2
REVISION HISTORY	3
1 INTRODUCTION	4
2 SITE DESCRIPTION	5
SITE DESCRIPTION	5
PROPOSED DEVELOPMENT	6
3 BASIS OF NOISE ASSESSMENT	7
LOCAL AUTHORITY REQUIREMENTS	7
BS 4142:2014 – METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND	7
4 NOISE SURVEY	8
METHODOLOGY	8
EQUIPMENT	8
WEATHER CONDITIONS	9
5 ENVIRONMENTAL NOISE SURVEY RESULTS	10
6 BUILDING SERVICES NOISE EMISSIONS	11
PLANT SPECIFIC SOUND LEVELS	11
PLANT NOISE ASSESSMENT	11
7 NOISE DUE TO VEHICLE MOVEMENTS	12
VEHICLE MOVEMENTS	12
DELIVERIES	12
CAR DOOR SLAMS	12
8 SUMMARY AND CONCLUSION	13
APPENDIX A – GLOSSARY OF ACOUSTIC TERMINOLOGY	14
APPENDIX B – PLANT DETAILS	15

REVISION HISTORY

Revision	Date	Revision Details	Author	Checked
R01	16/11/2021	Original Issue	Matt Jones MEng AMIOA	Susan Witterick BSc MIOA
R01A	14/01/2022	Detailed Plant Noise Assessment	DocuSigned by:  7DDD768CC06141A... Angela Lamacraft MSc IEng MIOA	DocuSigned by:  3E69257DCFC14C6... Susan Witterick BSc MIOA

1 INTRODUCTION

- 1.1 dBx Acoustics has been appointed by Chartplan to undertake a noise survey and noise impact assessment for a proposed new, Class E use drive-through food retail unit at Scours Lane, Reading.
- 1.2 This report details the results of a noise survey at the site and assesses noise from proposed items of external building services plant.
- 1.3 The potential noise impact arising due to vehicle movements and car door slams is also considered.
- 1.4 A Glossary of Acoustic Terminology is presented in Appendix A.

2 SITE DESCRIPTION

Site Description

- 2.1 The proposed drive-through unit is located in the north of Reading, adjacent to an existing industrial estate. The site is bounded by Scours Lane to the west and Oxford Road to the south. To the north and east lie industrial and commercial units, with the main line railway located approximately 125 m to the north of the site.
- 2.2 The nearest residential premises are at Oxford Road and Bramshaw Road, approximately 30 m to the south west of the site boundary directly.
- 2.3 The nearest noise sensitive receptor is 757 Oxford Road, which is approximately 30 m south west of the Site.
- 2.4 Figure 1 illustrates the location of the site and the nearby noise sensitive receptors (NSRs).

Figure 1 – Site Boundary and Nearby Noise Sensitive Properties



Proposed Development

- 2.5 A Class E drive-through food retail unit is proposed at the site. The proposed site layout is shown in Figure 2.

Figure 2: Proposed Site Layout



- 2.6 The opening hours of the premises will be 07:00h to 23:00h daily.
- 2.7 External building services plant will be required to service the development.

3 BASIS OF NOISE ASSESSMENT

Local Authority Requirements

- 3.1 The site falls within the jurisdiction of Reading Borough Council (RBC).

Reading Borough Local Plan – EN17

- 3.2 This document, adopted on 4th November 2019, sets out RBC's requirements with regard to current guidance and policy, with the aspiration that new developments achieve the highest standards without compromising the health and wellbeing of residents.

- 3.3 RBC's policy EN17 states that:

"Where noise generating equipment is proposed, the noise source specific level (plant noise level) should be at least 10dBA below the existing background noise level as measured at the nearest noise sensitive receptor".

- 3.4 The noise source specific level is defined as the predicted noise level at the relevant NSRs, as opposed to the rating level, which is the specific level with correction factors included.

BS 4142:2014 – Methods for Rating and Assessing Industrial and Commercial Sound

- 3.5 BS 4142:2014 sets out a procedure for assessing noise impact whereby a Noise Rating is determined and compared with the existing local Background Sound Level.

- 3.6 The Rating Level (dB $L_{A,T,r}$) is evaluated from the Specific Noise Level by including several, cumulative corrections to account for factors such as distinguishable tone, impulse, intermittency or other readily distinguishable sound characteristics.

- 3.7 BS 4142:2014 seeks to determine a "representative" Background Sound Level, stating that

"...the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods."

- 3.8 The assessment of the impact depends upon the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level. An initial estimate of the impact of the specific sound is made by subtracting the Background Sound Level from the Rating Level, while considering the following points:

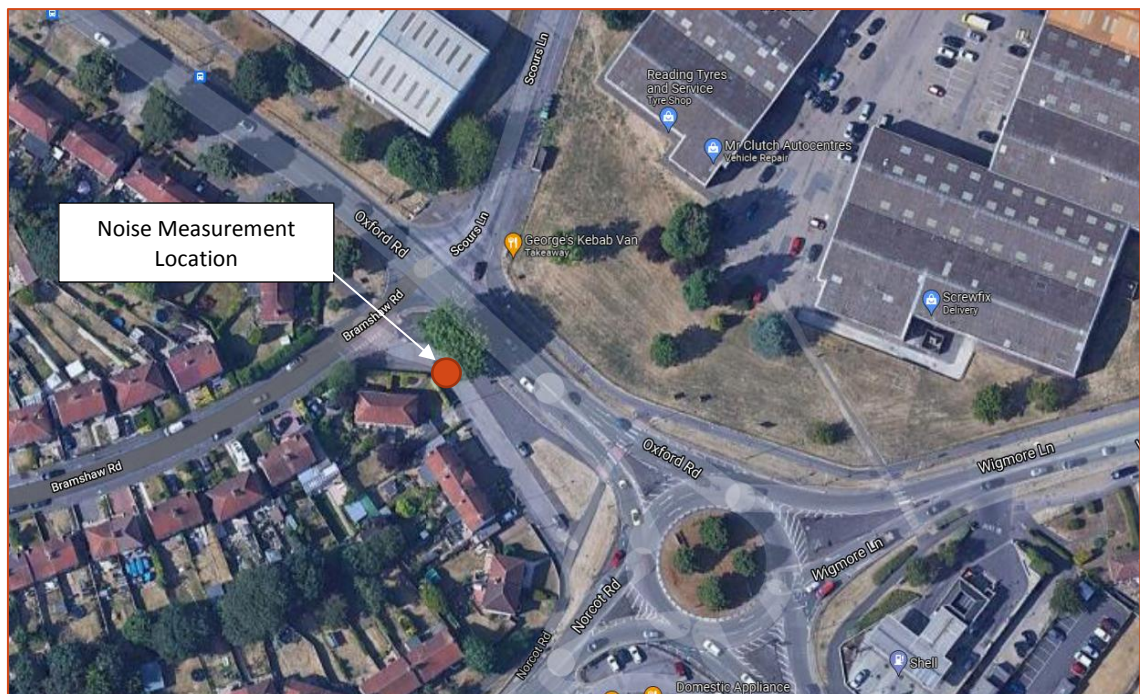
- a) Typically, the greater this difference, the greater the magnitude of the impact.
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, 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.

4 NOISE SURVEY

Methodology

- 4.1 dBx Acoustics has undertaken noise measurements to establish the existing ambient, background and maximum noise levels at the nearest NSRs.
- 4.2 An attended noise survey was undertaken from 14:30h to 16:45h on Monday 1st November 2021. Night-time noise measurement were undertaken between 05:30h and 06:15h on Tuesday 2nd November 2021, however, revised hours of opening result in these being unnecessary within the noise assessment.
- 4.3 Measurements were made at a location representative of the nearest noise sensitive receptors to the site, these being residential premises on the far side of Oxford Road.
- 4.4 Figure 3 indicates the noise measurement location.

Figure 3: Noise Monitoring Locations



Equipment

- 4.5 The equipment used during the environmental noise survey is detailed in Table 1.

Table 1: Equipment Used in the Environmental Noise Survey

Equipment	Attended Measurements (Manufacturer & Part No./ Serial Number)
Sound Level Meter	Cirrus CR:171C/G300656
Pre-amplifier	Cirrus Pre-amp/9136F
Microphone	MK:224/211733D
Calibrator	Cirrus CR:515/87921

- 4.6 The sound level meter was calibrated before and after measurements, with no significant drift recorded. An accredited laboratory calibrated the equipment not more than two years prior to the measurements being made, with the exception of the calibrator, which had been calibrated not more than one year prior to the survey.
- 4.7 All measurements were made in free-field conditions.

Weather Conditions

- 4.8 Weather conditions during the measurement period were generally cool and cloudy.
- 4.9 Wind speeds were within suitable parameters for the measurement of environmental noise (i.e. generally under 5 m/s). All microphones were protected with a windshield for the duration of the noise survey.

5 ENVIRONMENTAL NOISE SURVEY RESULTS

- 5.1 The noise climate at the NSRs during the noise measurement periods is dominated by road traffic on Oxford Road. Train movements from the mainline railway to the north of the site were audible between road traffic movements.
- 5.2 A summary of the daytime noise levels is presented in Table 2. All measurements were 15 minutes in duration.

Table 2: Daytime Noise Levels

Start Time (hh:mm)	Ambient Noise Level (dB LAeq,15mins)	Maximum Noise Level (dB LAFmax)	Background Noise Level (dB LA90, 15mins)
14:30	67	88	62
15:00	67	78	62
15:30	67	89	62
16:00	71	94	62
16:30	67	79	61
Average ¹	68	85	62

Note 1: The average calculates the logarithmic average of LAeq, 15min measurements and arithmetic average of LAFmax and LA90, 15min measurements.

6 BUILDING SERVICES NOISE EMISSIONS

Plant Specific Sound Levels

Plant Noise Assessment

- 6.1
- The external plant items identified in Appendix B have been advised by the client and manufacturers’ noise data have been provided.
- 6.2
- As described above, RBC require that the specific sound level from any new items of building services plant should be limited to 10 dB below the typical background noise level at the nearby NSRs.
- 6.3
- The operating hours of the proposed drive-through unit are from 07:00h to 23:00h daily, encompassing the daytime period only.
- 6.4
- Table 3 provides the plant noise assessment for the proposed plant, using the specific sound level, as required by RBC’s Local Plan Policy EN17.

Table 3: Specific Sound Level Limit at Noise Sensitive Receptor (Oxford Road residential)

Results	Heating		Cooling	
	Daytime (07:00h-23:00h)	Night-Time (05:30h-07:00h)	Daytime (07:00h-23:00h)	Night-Time (05:30h-07:00h)
Background Sound Level (dB LA90,T)	62	50	62	50
Specific Sound Level (dB LAeq,T)	33	33	31	31
Excess of Rating over Background Sound Level (dB)	-29	-17	-30	-19
	Meets the RBC plant noise criterion	Meets the RBC plant noise criterion	Meets the RBC plant noise criterion	Meets the RBC plant noise criterion

7 NOISE DUE TO VEHICLE MOVEMENTS

Vehicle Movements

- 7.1 The amount of additional vehicle movements arising due the proposed development is unknown, however it is anticipated that the majority of users of the site would be existing rather than additional vehicles using Oxford Road.
- 7.2 Department of Transport traffic data indicates that the AADT traffic flow on Oxford Road is 16274.
- 7.3 A 3 dB increase in noise levels is generally considered to be the lowest perceptible change in noise levels. This would require a doubling of vehicle movements on Oxford Road which is clearly not likely to occur as a result of the current proposals. 22 car parking spaces have been allotted within the development.
- 7.4 Therefore, vehicle movements are not expected to have any noise impact at the nearest NSRs.

Deliveries

- 7.5 The frequency of deliveries to the site is not known at this stage, but would be expected to be limited.
- 7.6 It is recommended that all deliveries should be scheduled during the daytime period i.e. between 07:00h and 23:00h.

Car Door Slams

- 7.7 Often where concerns are raised regarding noise from car parking it is the impulsive sound of door slams that is of concern to neighbouring residents.
- 7.8 In order to assess the potential impact of car door closures, dBx Acoustics has compiled a database of readings measured at 1 m from a selection of different cars and with a selection of different people closing their doors. In all cases the car owners were asked to close their doors as they normally would. From this database it has been determined that a car door closure typically generates a sound pressure level of 85 dB L_{AFmax} at 1 m.
- 7.9 At Scours Lane, there is approximately 40 m from the nearest car parking space to the residential façade.
- 7.10 Allowing for distance attenuation, the maximum sound pressure level arising at the residential façade due to car door slams would be 53 dB L_{AFmax} .
- 7.11 BS 8233:2014 sets a maximum noise limit within residential bedrooms at night of 45 dB L_{AFmax} during the night-time. Allowing for a typical 13 dB level difference across an open window, the predicted internal L_{AFmax} due to car door slams is 40 dB L_{AFmax} , which is not expected to lead to any adverse noise impact to residents.
- 7.12 The predicted maximum noise level due to car door slams is also significantly lower than the typical L_{AFmax} noise levels measured during the noise survey (85 dB L_{AFmax}), which were attributable to a variety of sources including road traffic noise and activity at surrounding residential properties. It is therefore not anticipated that car parking activity at this site would be detrimental to residential amenity.

8 SUMMARY AND CONCLUSION

- 8.1 dBx Acoustics Ltd has been appointed by Chartplan to undertake a noise survey and plant noise assessment for the proposed new drive-through food retail unit at Scours Lane, Reading.
- 8.2 A noise survey was undertaken at a location representative of the nearest noise sensitive receptors to determine the ambient, maximum and background sound levels during the proposed opening hours of the unit.
- 8.3 Based on the measured noise levels and plant noise data provided by the client, a plant noise assessment indicates that the requirements of Reading Borough Council (a specific plant noise level 10 dB below background sound level) will be met.
- 8.4 Consideration has been given to the noise impact of vehicle movements, car door slams, and deliveries. No adverse noise impact is anticipated.
- 8.5 Taking the above into account, noise should not be a limiting factor in any planning application.

APPENDIX A – GLOSSARY OF ACOUSTIC TERMINOLOGY

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (L_p) the reference quantity is $2 \times 10^{-5} \text{ N/m}^2$. The sound pressure level existing when microphone measured pressure is $2 \times 10^{-5} \text{ N/m}^2$ is 0 dB, the threshold of hearing.
Frequency	Number of cycles per second, measured in hertz (Hz), related to sound pitch.
A-weighting	Arithmetic corrections applied to values of L_p according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of L_p actually measured.
$L_{An,T}$	Level in dBA which was exceeded for n% of time, T. $L_{A90,T}$ represents the background sound level.
L_{AFmax}	The instantaneous maximum A-weighted sound pressure level, measured with a fast time weighting.
$L_{Ar,Tr}$	The rating level: the equivalent continuous A-weighted sound pressure level, plus any adjustment for the characteristic features of the sound.
Impact Sound	The noise generated by an impact on a structure. This is normally used to describe the noise created by people walking or moving furniture on a floor structure.

APPENDIX B – PLANT DETAILS

Manufacturer	Model Number	Surface Area (m ²)	Operating Mode	A-Weighted Sound Pressure Level (dB L _{pA}) @ 1 m, from Manufacturers' Data	Octave Band (Hz) Sound Pressure Level (dB L _{pA}) @ 1 m, from Manufacturers' Data							
					63	125	250	500	1000	2000	4000	8000
Mitsubishi	PUZ-ZM71VHA	0.9	Heating	49	53	52	53	44	43	39	33	27
			Cooling	47	52	49	47	44	42	38	31	24
Mitsubishi	PUZ-ZM140VKA	5.4	Heating	52	63	55	53	50	47	42	38	30
			Cooling	50	53	55	50	48	45	41	35	27
Mitsubishi	PUHZ-SP140VKA	1.0	Heating	57	66	64	58	55	54	49	44	36
			Cooling	56	66	58	56	52	51	44	42	34
Vent Axia	S12/WL	0.1	Extract	36 ¹	None provided							

Note 1: Data was provided at 3 m and has been distance corrected to 1 m assuming point source sound radiation.