MARTIN
ENVIRONMENTAL
SOLUTIONS

Acoustic and Odour Assessment for proposed take-away at 12 South Parade, Rochdale. OL16 1LR.

Prepared for:

Bakhtyar Hama,
211 Broadway,
Oldham,
OL9 8RR

January 2021

Contents

1. Introduction 3
Site Location and Context 3
2. Policy and Guidance 4
Noise 4
Odour 7
3. The Assessment 9
Noise 9
Odour 9
4 Conclusion 12
Noise 12
Odour 12
Figure 1 – Aerial Photograph 13
Appendix A – Fan and silencer details 14
Appendix B – Sound level calculations 17
Appendix C – Weather Data 18
Appendix D – Odour Assessment 19

1. Introduction

1.1. Martin Environmental Solutions has been commissioned to undertake an acoustic and odour assessment to support a planning application for a hot food takeaway at 12 South Parade Rochdale OL16 1LR.

Site Location and Context

1.2. The site is located to the south of South Parade, in a busy city centre location with commercial units adjacent, including two other hot take-away shops located on either side of the development. A flat is present above the development site. A number of public houses are also present in the area.

1.3. An aerial Photograph is enclosed in Figure 1.

2. Policy and Guidance

Noise

2.1. The impact of noise can be a material consideration in the determination of planning applications. The planning system has the task of guiding development to the most appropriate locations. It is recognised that on occasions it will be difficult to reconcile some land uses, such as housing, hospitals or schools, with other activities that generate high levels of noise. However, the planning system is tasked to ensure that, wherever practicable, noise-sensitive developments are separated from major sources of noise (such as road, rail and air transport and certain types of industrial development).

2.2. The Government's publication of the National Planning Policy Framework (NPPF), updated in February 2019, states that planning policies and decisions should prevent new and existing development from contributing to or being put at unacceptable risk from, of being adversely affected by unacceptable levels of noise pollution.

2.3. The Government have also issued the Noise Policy Statement for England (NPSE). The NPSE clarifies the Government's underlying principles and aims in relation to noise and sets a vision to promote good health and a good quality of life through the effective management of noise while having regard to the Government's sustainable development strategy. The NPSE aims to mitigate and minimise adverse impacts on health and quality of life through the effective management and control of noise.

2.4. The NPSE introduces the following terms, although no sound levels are given to represent these, many authorities have identified the sound level criteria in line with the World Health Organisation, BS8233:2014 and BS4142: 2014 levels. The terms introduced by the NPSE are:

NOEL – No Observed Effect Level (<30dB(A)inside <50dB(A) outside, 10dB below background)
LOAEL – Lowest Observed Adverse Effect Level (30-35dB(A) inside 50-55dB(A) outside, background to +5dB)
SOAEL – Significant Observed Adverse Effect Level (>35dB(A) inside, >55dB(A) outside, >+10dB above background)

2.5. The sound levels within the brackets of the previous paragraph are those determined as appropriate levels to indicate the relevant effect levels represented by the NPSE.

2.6. Other commonly used examples of standards utilised by Local Planning authorities for the consideration of noise impacts include comparison of the likely noise levels to be experienced at a development, with levels that have been recommended by the World Health Organisation (WHO) as Guidelines for the prevention of Community Noise Annoyance and within BS8233: 2014.

2.7. The WHO recommended noise levels for outdoor amenity areas (gardens) that should not be exceeded are 55dB(A) $L_{Aeq,16hr}$ in order to avoid 'Serious Community Annoyance or 50dB(A) $L_{Aeq,16hr}$ to avoid 'Moderate Community Annoyance' during the day. For indoor levels WHO set 35dB(A) $L_{Aeq,16hr}$ during the day to prevent Moderate Annoyance and 30 dB(A) $L_{Aeq,8hr}$ at night to prevent sleep disturbance.

2.8. The WHO guidance also recommends that maximum sound levels at night should not regularly exceed 45dB(A) within bedrooms to prevent sleep disturbance. Regularly is considered to be more than 10 times during any 8-hour night time period.

2.9. BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' also specifies desirable noise levels to be achieved inside dwellings.

2.10. BS 8233:2014 'Sound insulation and noise reduction for buildings – Code of Practice' also specifies desirable noise levels to be achieved inside dwellings. BS 8233 presents two levels, the first between the hours of 07:00 – 23:00 and the second between 23:00 -07:00.

2.11. The daytime period suggests internal noise levels of 35dB $L_{Aeq,16hr}$, for resting in living rooms and bedrooms while for night time a level of 30dB LAeq,8hr is recommended. Criteria for external areas mirrors that within the WHO guidance.

2.12. In addition, the 'ProPG Planning & Noise, Professional Practice Guidance on Planning & Noise, New Residential Development' provides a 4-staged approach to undertaking a risk assessment in relation to anticipated sound levels at new residential development and the provision of mitigation measures. The guidance is principally aimed at sites exposed predominantly to noise from transportation sources.

2.13. The first stage consists of an initial noise risk assessment, based on indicative day and night-time *noise* levels. Simply put, the higher the ambient noise in an area the greater the impact. The levels given are shown below although it should be noted that these are in excess of both the Lancashire guidance, WHO and BS 8233: 2014.

Noise Risk Category*	Potential Effect if Unmitigated	Pre-Planning Application Guidance
0 – Negligible $L_{Aeq,16hr}$ **<50dB** $L_{Aeq,8hr}$ **<40dB**	May be noticeable but no adverse effect on health and quality of life	In this category the development is likely to be acceptable from a noise perspective, nevertheless a good acoustic design process is encouraged to improve the existing environment and/or safeguard against possible future deterioration and to protect any designated tranquil areas. A noise assessment may be requested to demonstrate no adverse impact from noise. Application need not normally be delayed on noise grounds.
1 – Low $L_{Aeq,16hr}$ **50-63dB** $L_{Aeq,8hr}$ **40-55dB**	Adverse effect on health and quality of life	In this category the development may be refused unless a good acoustic design process is followed and is demonstrated via a Level 1 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised and that a significant adverse impact will not arise in the finished development. Planning conditions and other measures to control noise may be required.
2 – Medium $L_{Aeq,16hr}$ **63-69dB** $L_{Aeq,8hr}$ **55-60dB** L_{AFmax} **>80dB****	Significant adverse effect on health and quality of life	In this category the development is likely to be refused unless good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised, and clearly demonstrates that a significant adverse noise impact will not arise in the finished development. Planning conditions and other measures to control noise will normally be required.
3 – High $L_{Aeq,16hr}$ **>69dB** $L_{Aeq,8hr}$ **>60dB** L_{AFmax} **>80dB****	Unacceptable adverse effect of health and quality of life	In this category the development is very likely to be refused on noise grounds, even if a good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement. Applicants are advised to seek expert advice on possible mitigation measures. Advice on the circumstances when the refusal of a new housing on noise grounds should normally be anticipated is included in the ProPG.

2.14. Stage 2, consists of a full assessment of the prevailing ambient noise and requires 4 elements to be considered:

I. Element 1 – Good Acoustic Design
II. Element 2 – Internal Noise Level Guidelines
III. Element 3 – External Amenity Area Noise Assessment
IV. Element 4 – Assessment of Other Relevant Issues

2.15. A good acoustic design is implicit in meeting the requirements of the NPPF and can help to resolve many potential acoustic issues.

2.16. Details of the criteria considered suitable are provided above for both internal and external sound levels. Element 4 includes such issues as local and national policy, likely occupants, wider planning objectives.

Odour

2.17. The Government sets out its policy in relation to planning in the National Planning Policy Framework (NPPF). The NPPF states that planning policies and decisions should "preventing 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"; and "In preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment"

2.18. While Odour is not specifically mentioned in is implied by the above and the Planning Practice Guidance (PPG) note issued by the government on Air Quality states "odour and dust can also be a planning concern, for example; because of the effects on local amenity" it continues to state "mitigation options where necessary, will depend on the proposed development and should be proportionate to the likely impact".

2.19. Before an odour can be present an adverse effect, there must be exposure to the odour and therefore a source, a pathway, and a receptor without these three links no exposure can occur. In the case of this application the source is the take-away. The pathway is the air and the receptor are the occupants of the nearby existing dwellings.

2.20. In assessing the impact of odour on or from a development the scale of the exposure and therefore impact is determined by the parameters collectively known as the FIDO factors (Frequency, Intensity, Duration and Offensiveness) In addition the sensitivity of the receptor (location) will determine the magnitude of the exposure. Factors that influence the magnitude of a commercial odour problem include the size/volume of the cooking facility, the type of food being prepared and the type of cooking appliances being used.

2.21. Furthermore, new and updated guidance on assessing the impact of extraction systems from commercial kitchens has been published by EMAQ 'Control of Odour

and Nose from Commercial Kitchen Extraction Systems'. This is a revision of the 2005 guidance document 'Control of Odour and Nose from Commercial Kitchen Extraction Systems' produced by NETCEN and DEFRA which has been withdrawn.

2.22. This document details a methodology which should be followed to assess the potential impact from commercial kitchen extraction systems on nearby land uses and how to identify suitable control and mitigation measures as required.

3. The Assessment

Noise

3.1 The exact specifications for the extraction system have not been chosen and so this assessment will identify a suitable system to ensure no adverse impact is experienced in line with the guidance sound levels identified above and the Councils requirements which mirror the same levels.

3.2 The extract location will be to the rear of the site with the nearest residential property being the flats above the site. The extraction system will terminate 1m above the ridge of the building, the final exit point being 1.75m from the nearest window.

3.3 An open provides a 15dB attenuation[1] therefore the external sound level will need to be 45dB(A) at the window in order to achieve the required internal sound level.

3.4 In order to achieve the required sound levels it is recommended that a Flaktwood, 45JM/16/4/5/30 cased axial Flow fan is used within the system combined with a Flaktwood, BDER-60-050-090 sound attenuator (silencer).

3.5 This will result in a sound level of 43.8dB(A) at the window and therefore a sound level of 28.8dB(A) internally. (See Appendix A). Below the guideline values and the criteria required by the Council.

Odour

3.6. In line with the EMAQ document an assessment of the likely impact from odour has been undertaken.

3.7. The takeaway is considered to be small in size. The extraction system is to be located to the rear of the site with the final extract point fitted with a jet cowl to assist with the discharge of any emissions. The odour and grease loading has therefore been identified as very high, with all food is be prepared on site.

3.8. Prevailing wind direction for the area, obtained from the Middleton weather station, is westerly as shown in Appendix C.

3.9. The EMAQ document identifies a number of control measures to avoid odour emissions from commercial kitchens becoming a problem. The document lists the

[1] BS8233: 2014; Guidance on sound insulation and noise reduction for buildings

various control measures available and identifies minimum standards to ensure odour emissions will not create a problem to neighbouring land uses. Appendix 3 of the document identifies a risk assessment to assess the impact and control measures required, and this will be used as the basis of this assessment.

3.10. The following assumptions have been used within the assessment:

- The extraction system is to terminate at ridge level, to the rear. The system will not be fitted with any restrictive cowl, but instead a jet cowl to aid distribution, in line with the guidance a score of 5 is applied.
- The nearest receptor is the office accommodation above as such a score of 10 has been applied.
- The business has identified as 'small' a takeaway, and therefore score 1 has been applied.
- The odour and grease characteristics from the venue are considered to be high, in line with the guidance document a scoring of 10 is applied.

3.11. Based on the above parameters the risk assessment has been conducted, see Appendix D, and given the location, number of sensitive receptors and the nature of the food to be served has identified a high potential odour impact risk.

3.12. As such mitigation measures in the form of odour and grease control would be required.

3.13. The extraction system should be fitted with

- Stainless steel grease baffle filters fitted to the extraction hood
- An Electrostatic Precipitator, 3000EA system to be fitted behind the above to remove any residual grease, followed by
- A Fusion Air, FUSION-OZ10 ozone filtration system. This unit will generate ozone which will be released into the extracted air stream neutralising the odour.
- The flue will then terminate at sufficient height and velocity to force emissions vertically up via a jet cowl fitted to the final exit point.

3.14. It should be noted that the silencer to be fitted to the system should be located after the ESP and ozone system, therefore these devices should be internally located to aid maintenance.

3.15. This above system has been designed specifically for commercial kitchen extraction systems and has been used across the country in take-aways and restaurants to control and eliminate odour emissions.

3.16. The system is maintained and cleaned in line with the manufacturer's instructions and a separate cleaning schedule will be produced and maintained.

3.6 The installation of the above mitigation measures ensures suitable removal of grease and odour from the extraction system. The height of the flue and use of an accelerator cowl further ensures that should any odours not be treated they will be directed vertically into the atmosphere for dilution without affecting the adjacent or any other nearby properties

4 Conclusion

Noise

4.1 A suitable extraction fan and sound attenuator have been identified to ensure that no adverse impact will be experienced by the adjacent flat, and sound levels will be in line with the required standard.

4.2 The inclusion of the above mitigation measures to all habitable rooms will ensure that the internal and external sound levels are acceptable and will result in a No Observe Effect on the future residents in line with the Noise Policy Statement for England.

4.3 As such the development will meet the objectives of the National Planning Policy Framework in ensuring that no significant adverse impact is experienced by the future residents. The development is therefore considered to be acceptable in terms of noise.

Odour

4.4 An assessment of the potential impact of odour from the development has been undertaken in line with the EMAQ guidance document.

4.5 This has identified that odour may pose an adverse impact on adjacent properties and as such additional mitigation measures have been identified in the form of grease and odour control.

4.6 The proposed mitigation measures when installed and maintained will ensure no adverse impact on adjacent land uses in line with the National Planning Policy Framework.

Figure 1 – Aerial Photograph



Appendix A – Fan and silencer details

Technical Details

Fan Code	45JM/16/4/5/30
Fan Diameter / Size	450 Size / mm
Blades	5
Fan Speed	1420 rpm
Velocity	7.6 m/s
Blade Angle	30°
Installation Type / Form of Running	D / B
Fan Casing	Long
Requested Duty	1.2m³/s @ 135 Pa (static)
Outlet Dynamic Pressure	35 Pa
Duty Shaft Power	0.322 kW
Max Shaft Power	0.331 kW
Total Efficiency	64.1 %
Pitch Angle Range	24° - 30°
Motor Frame	BT9 (Sized at 1.2kg/m3 Air Density)
Motor Grade	IE1
Motor Rating	0.320 kW
Full Load Current	2.2 A
Starting Current	5 A
Motor Mounting	Pad
Electrical Supply	220-240 Volts 50 Hz 1 Phase
Start Type	DOL
Motor Winding	Standard
Enclosure	Standard All
ErP [FMEG] Rating	N 51 (ErP Compliant 2013)
ErP [FMEG] Target	N 50
Measurement Category	D
Efficiency Category	Total
Fan + Motor Efficiency	43.0% (1.5 m³/s @ 132 Pa)
Motor Input Power (ErP)	0.463 kW
SFP value	0.41 W/(l/s)
Energy Consumption	999 kWh (2000 h/year)
Running Cost / Year	£90
Air Density	1.2 kg/m³ / 20 °C / 0 m / 50% RH
Smoke Venting	Non Smoke Venting
Product Number	EJ461466

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m**
Inlet*	75	74	70	68	64	63	59	55	79	50
Outlet*	76	74	70	68	64	63	60	56	79	50
Breakout*	66	56	48	45	39	35	38	32	67	28

BDER-60

SOUND ATTENUATION

BDER-60 size - length		Attenuation (dB) at octave bands, middle frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
010	-030	10	8	11	14	17	24	29	17
	-060	16	12	20	27	33	43	44	24
	-090	18	16	27	35	44	47	46	27
	-120	18	21	30	36	43	47	45	32
012	-030	3	7	8	12	15	20	22	14
	-060	8	11	15	23	29	38	37	21
	-090	10	14	21	33	42	49	45	26
	-120	13	17	27	39	49	49	48	32
016	-030	2	5	6	9	12	19	17	13
	-060	5	7	13	17	22	33	28	18
	-090	9	10	21	28	34	47	34	21
	-120	11	13	24	34	43	49	42	26
020	-060	7	6	13	17	20	29	21	16
	-090	9	9	20	23	29	43	26	19
	-120	11	11	25	31	36	48	33	23
025	-060	9	4	10	12	15	25	19	17
	-090	8	7	15	19	24	34	22	20
	-120	10	8	19	25	30	38	26	22
031	-060	2	5	8	12	16	19	15	14
	-090	4	6	12	17	23	26	18	16
	-120	5	7	16	19	27	30	21	17
040	-090	4	7	11	19	22	21	19	15
	-120	5	9	15	24	27	25	21	17
050	-090	4	6	8	16	18	15	16	11
	-120	4	8	11	21	23	18	18	13
063	-090	3	3	6	13	13	12	7	7
	-120	5	5	8	16	16	14	9	9
Tolerance ±		6	3	2	2	2	2	2	3

Appendix B – Sound level calculations

Outlet	Frequency (Hz)									
	63	125	250	500	1000	2000	4000	8000	Lw	Lp@1.5m
45JM/16/4/5/30	76	74	70	68	64	63	60	56	79.0	66.1
Directivity	1	1	2	2	4	5	8.5	13		
silencer - BDER-60-050-090	4	4	8	16	18	15	16	11		
a-weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1		
resulting sound level	44.8	52.9	51.4	46.8	42	44.2	36.5	30.9	56.6	**43.8**

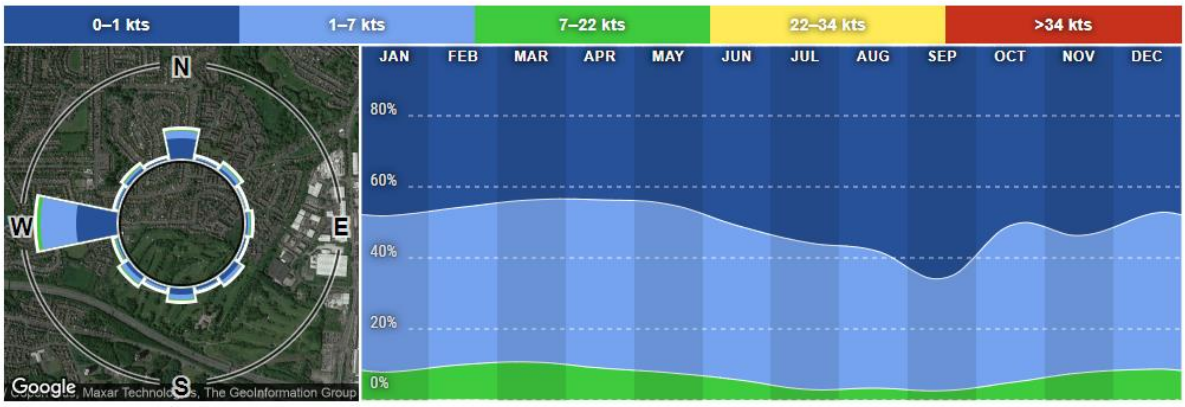
Appendix C – Weather Data

Middleton

DOMINANT WIND DIRECTION

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
WSW	WSW	W	WNW	W	WNW	W	W	WNW	W	WNW	WSW

Wind direction and strength distribution



Appendix D – Odour Assessment

Impact Risk	Odour Control Requirement	Significance Score*
Low to Medium	Low level odour control	Less than 20
High	High level odour control	20 to 35
Very high	Very high level odour control	more than 35

Criteria	Score	Score	Details
Dispersion	Moderate	5	Discharging 1m above the eaves
Proximity to Receptors	Close	10	Closest sensitive receptor 5m
Size of Kitchen	Small	1	Small take-away
Cooking type	High	10	Take-away – burrito, fried food
Total		**26**	