

Savills (UK) Limited

MCDONALDS MANCHESTER FORT
#1462

Noise Impact Assessment

Report No. 14-0167-82 R01





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Report No.: 14-0167-82 R01

Date: 17 November 2021

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0 NON TECHNICAL SUMMARY

- 0.1 The McDonalds located at 10 Queens Rd, Cheetham Hill, Manchester M8 8UF is investigating the possibility of extending the opening hours of the restaurant, drive-thru and delivery services to be operational 24/7. The current operation of the store is 06:00-23:00.
- 0.2 A noise impact assessment was completed as a combination of attended measurements on 26th - 27th May 2021, and unattended measurements from 26th – 27th May 2021, covering the attended measurements and the intervening hours.
- 0.3 Road traffic noise on the A6010 & A665 is a major contributor to the noise climate around the site, with some contribution from deliveries, McDonald's plant, and aircraft overflights. The closest residential properties are approximately 38m away to the north of the premises, on the opposite side of the A6010.
- 0.4 An assessment of the potential noise impact due to the extension of operating hours has been undertaken for the four principal noise sources. The significance of each has been assessed with national planning and noise policy regarding the Noise Policy Statement for England 2010, and therefore the National Planning Policy Framework:

Effect Threshold	Subjective / Objective Assessment levels at 3m in-front of residential façades			
	People	Vehicles	COD	Roof Plant
Significant observable adverse effect (SOAEL)				
Lowest observable adverse effect level (LOAEL)			✓	
No observable effect level (NOEL)	✓	✓	✓	✓

Table 0: Noise Significance Impact Thresholds for extending hours of operation of the restaurant, drive thru and in store eating services (in green after mitigation).

- 0.5 The assessment shows that the noise impact (in terms of people, plant & vehicle noise) would be likely to cause a maximum of a **low impact on the nearby residential amenity, without mitigation**, so the proposal should be considered to meet the LOAEL when viewed in its entirety.
- 0.6 A Premises Noise Management Plan is set out in Appendix B, is to be implemented at the store and should be extended to apply to the proposed opening times. Such a Plan establishes good practice with the intention of proactively managing the risk of any issues relating to noise arising.

1 INTRODUCTION

- 1.1 Sustainable Acoustics Ltd have been commissioned to carry out a noise impact assessment, as part of the planning application for the proposed extension of opening hours at McDonald's Manchester Fort #1462. The restaurant and Drive-thru currently have planning permission to operate between 06:00 and 23:00. It is proposed to extend the operating hours of the store to 24/7 for the restaurant, drive-thru and delivery via 3rd party delivery services.
- 1.2 A noise survey has been undertaken between 26th – 27th May 2021 which established the existing activity around the site during the evening and morning, as well as during early morning hours (when McDonalds is currently closed) in order to inform an assessment of the likely noise impact during the proposed additional hours.

2 SITE CONTEXT

McDonald's Manchester Fort is located at 10 Queens Rd, Cheetham Hill, Manchester M8 8UF. The surrounding area has a mix of commercial and residential properties. Figure 1 shows the area and distances to closest residential properties.

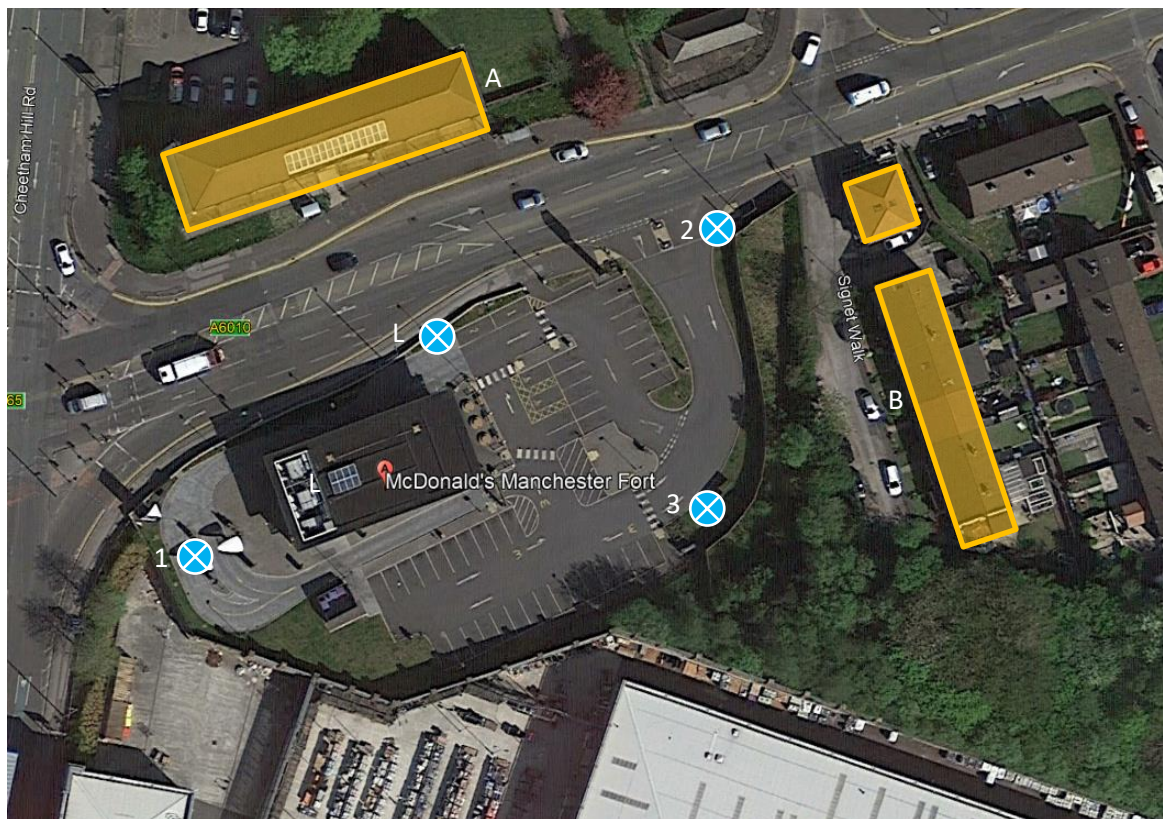


Figure 1: Map of local area with distances to residential properties. Logging sound level meter marked as L. Attended measurement positions marked as 1, 2 & 3.

- 2.1 The site has a drive-thru and a car-park to the east of the store. The entrance and exit for both drive-thru is located in the car park, to the south of the store.
- 2.2 There is no current record of antisocial behaviour associated with McDonald's operations. McDonald's have an Antisocial Behaviour Policy to manage any incidences of anti-social behaviour.



3 NOISE SURVEY

- 3.1 **Attended survey:** A visit was made to the premises to conduct a noise survey on 26th & 27th May 2021 to capture opening and closing periods for the store. The attended measurements were carried out to ascertain output from the rooftop plant, which is the most significant source of noise at the site.
- 3.2 **Unattended survey:** Monitoring was also undertaken at fixed position at the northern end of the McDonalds Carpark on 26th - 27th May 2021, to record noise levels at a position representative to those at the closest residential properties at 1st floor level due to its similar distance from the adjacent A6010 and junction, after the rooftop plant switches off at the end of operations. Noise levels were recorded in 15-minute periods over the survey period.
- 3.3 **Locations:** Measurement positions are shown at Figure 1.
- 3.4 Weather conditions during the setup and collection of the logging sound level meter were calm and clear, with a light breeze varying between 0-7mph (under 5 m/s). Local weather records show that wind direction varied between easterly and northerly over the course of the survey period. No precipitation was recorded over the survey period.
- 3.5 **Equipment:** The following equipment was used in the survey.

Equipment	Type	Serial Number	Calibration	
			Date	Certificate no
Svantek Class 1 Sound Level Meter	971	60684	24/05/19	14013087-2
Preamplifier	SV18	62752	24/05/19	14013087-2
Microphone	7052E	66699	24/05/19	14013087-2
Svantek field calibrator	SV33	58228	15/05/20	14015460
Svantek Class 1 Sound and Vibration Analyser	958A	34551	04/03/21	00001054-1a
Microphone	7052E	55952	04/03/21	00001054-1a
Preamplifier	SV 12L	33537	04/03/21	00001054-1a
Svantek Class 1 Sound and Vibration Analyser	958A	34551	04/03/21	00001054-1a

Table 1: Equipment used for environmental noise survey

All equipment is within traceable calibration and the meters were calibrated using the field calibrators before and after the survey periods, without significant drift observed.



4 NATIONAL NOISE PLANNING GUIDANCE & ASSESSMENT CRITERIA

4.1 The Assessment methodologies used for this report are:

- BS4142:2014 – Rating and Assessing Industrial and Commercial Sound with reference to the Noise Policy Statement England (NPSE)
- Prediction of car parking and Communications Operation Device (COD) noise using sound propagation calculations and comparison against criteria from BS8233:2014, NPSE, National Planning Policy Guidance on Noise (PPG:Noise) and local planning policy.

The local authority is Manchester City Council. The Manchester Local Plan Core Strategy (2012) is the relevant policy document. The proposal is for night time refreshment including takeaway from the restaurant and drive-thru, so Policy C10 applies to it. The requirements of Policy C10 are similar to those of national planning policy in that the requirement is to demonstrate that residential amenity is not impacted unacceptably.

The Environmental Health department at Manchester City Council have recommended that noise from the COD does not exceed a level equal to **5dB below the existing night-time background** level outside the closest receptor windows.

For more information on the methodologies, relevant policy frameworks and practise guidance, please refer to Appendix A.

5 OBSERVATIONS

Ambient Noise / Area Comments

- 5.1 Ambient noise in the area is dominated by traffic noise on the A6010 & A665. Noise levels are generally high adjacent to the busy road junction. Aeroplane overflights were audible during setup and collection of the logging sound level meter, but were not dominant and planes did not appear to be low flying. Some sirens from emergency services vehicles were noted during the attended measurements.

People

- 5.2 No people noise from customers entering and exiting McDonald's on foot or loitering outside the store was audible at street level, though at some points during the attended noise survey a queue for collecting food was present.

Vehicles

- 5.3 The drive-thru was in use on both dates. Engine noise was audible near to the ordering position/position 1, and exit when within approximately 5m of the queue.



COD/Store Noise

- 5.4 The COD was generally inaudible except when very close (approx. 5m) due to high noise levels from the A6010 & A665.

Plant

- 5.5 At street level, plant from McDonald's is audible at position 1, position 2 during lulls in traffic and other noise sources, and inaudible at position 3.

6 RESULTS

Attended measurement results

- 6.1 Attended measurements were made of the rooftop plant, which are summarised below. The rooftop plant consists of two condenser units, kitchen extract and a large unit in an enclosure (assumed to be refrigeration plant).
- 6.2 Staff indicated that the air conditioning units and refrigeration plant are currently active 24/7 dependant on demand so the proposed extended opening hours will not affect their operation and they form part of the existing ambient noise climate.
- 6.3 Full detail of the measurements including 1/1 octave band data can be found in Appendix B.

Position	Description	LAeq,1min
Position 1	1m from kitchen extract exhaust, in rooftop plant area	75.4dB

Table 2: Summary of measurements of plant noise levels measured in the plant enclosure on the roof.

- 6.4 The level recorded at 1m from the kitchen extract exhaust is in line with previous measurements of standard McDonald's kitchen extract equipment undertaken by Sustainable Acoustics at other sites, indicating that the unit is appropriately maintained.

Unattended measurement results

- 6.5 The variation of noise levels (L_{Amax} , L_{Aeq} , L_{A90}) between 26th - 27th May 2021 are shown in 15-minute intervals in Figure 3.
- 6.6 A summary of noise levels at the site is shown in Table 3.

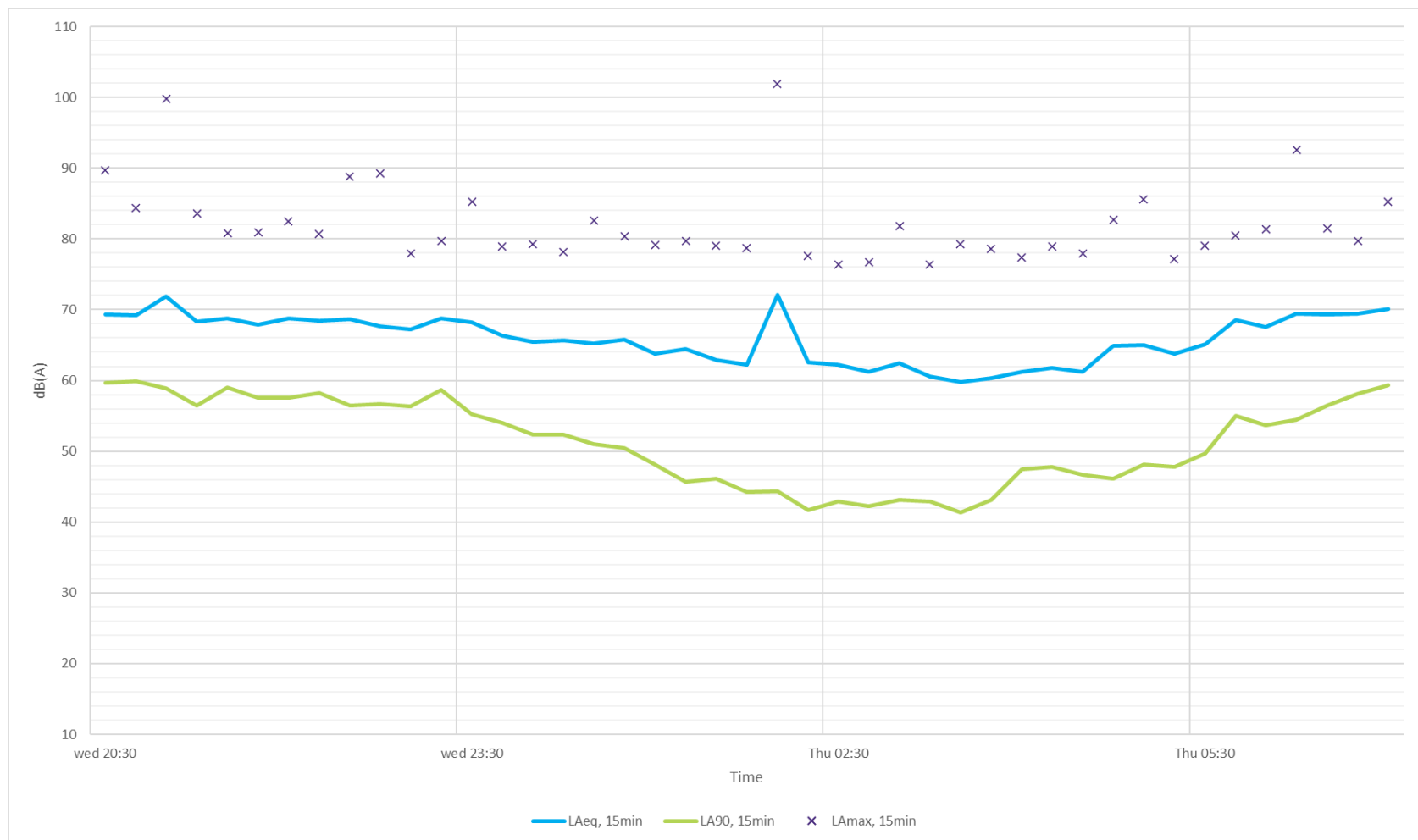


Figure 2: Time history from logging sound level meter at position L. No obvious effect is visible from the rooftop plant activity.



		Ambient noise level dB LAeq		Maximum noise level dB LAmax, 15 min		Background noise level dB LA90, 15 min	
		Range (15 min)	Period	Range	Typical*	Range	Typical*
Night-time	23:00-07:00	60 - 72	66	76 - 102	81	41 - 59	43

Table 3: Acoustic parameters measured between 26th - 27th May 2021.

* indicates typical maximum defined as the maximum noise level exceeded by the highest 10th percentile of maximum noise levels. Typical background noise level is between the most commonly occurring and the 90th percentile background noise levels.

7 ASSESSMENT

People / ASB

- 7.1 We are not aware of any record of previous antisocial behaviour associated with operations at the site. The risk of antisocial behaviour at the site is managed by the McDonald's antisocial behaviour policy, which is outlined in Appendix E.
- 7.2 The area outside McDonalds does not feature any seating or tables so noise from customers eating outside is not expected. The expected customer counts for customers are shown below:

Car-Park

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
2300	10	10	10	10	12	12	10
0000	6	6	6	6	10	10	6
0100	6	6	6	6	8	8	6
0200	4	4	4	4	4	4	4
0300	4	4	4	4	4	4	4
0400	4	4	4	4	4	4	4
0500	4	4	4	4	4	4	4

Table 4: Predicted customer counts for customers using the carpark during extended opening hours



- 7.3 A raised human voice typically has a sound power of around 76dB (L_{WA}). Therefore, assuming that all customers for the worst-case hour (Saturday 00:00-01:00) arrive at once and half of them are raising their voices (5 sources), the total level at the receptor A over the A6010, 41m from the store entrance, is likely to be 43dBA.
- 7.4 The predicted level is equal to the above typical night time background noise levels recorded at a similar distance from the major noise source (A6010), and 23dB below typical ambient noise levels. This is a good indication that people noise is likely to be audible only at worst case times outside the receptor when other noise sources in the area are inactive.
- 7.5 The internal level predicted with a 15dB allowance made for a partially opened window for ventilation is 28, which is 7dB below the recommendation from BS8233:2014 for inside noise levels suitable for night time resting in a generally noisy area (where a 5dB relaxation can be applied).
- 7.6 We therefore conclude that people noise is likely to have a No Observable Effect Level (NOEL).

Plant

- 7.7 Plant noise from the rooftop plant was generally not audible at street level near to sensitive receptors on the opposite side of the A6010. At night during lulls in other local noise sources it was audible at position 2, and at position 1 where it is audible throughout the evening and night time periods when it is in operation. We note, however, that Position 1 is in the opposite direction to sensitive receptors and closer to the source.
- 7.8 During the noise survey the kitchen extract was observed to operate only during store opening hours with other plant constantly active and forming part of the night time background noise in the area.
- 7.9 No penalty for tonality should be applied for the kitchen extract as the noise spectrum recorded is broadly similar to traffic noise (which is the dominant noise source at the site), and therefore is not readily distinctive against the background noise in the area.
- 7.10 The surround of the rooftop provides good screening to receiver windows at all elevations due to its height (approximately 2.5m) and location (directly adjacent to the rooftop plant). Because of this screening effect and the similar path lengths, 2nd floor level windows at receptor A are the judged to be worst case receptors for noise from the rooftop as the screening effect is lesser and the distance is slightly lower than to other receptors (38m vs 86m).
- 7.11 The assessment using the methodology from BS4142:2014 for the kitchen extract is shown in Table 4.

Sound Pressure Level @ 1m	75.4dB	$L_{Aeq,1min}$ @ 1m from exhaust vent
Path length to receiver	38m	
Screening	-14.3dB	Barrier Calculation is shown in Appendix F
Attenuation with distance	-31dB	$20 \cdot \log(1/38)$
Level at receiver window	30dB	2 nd floor window directly across A6010, Receptor A (see Figure 1). Rounded to 0 decimal places.
Background noise 23:30-05:00	43dB	$L_{AF90,15min}$



Penalties	none	Extract unit is not intermittent or distinctive against existing soundscape
Rating level	-13dB	Source + attenuation compared with background noise 23:30-05:00.

Table 5: BS4142 assessment for kitchen extract operating over the remaining night-time period.

- 7.12 We are not aware of any noise complaints relating to plant noise from McDonald's operation.
- 7.13 BS4142:2014 states that rating levels of +5dB or more are an indication that adverse impact is likely at the receptor. Therefore, the impact of the one unit of plant which would require extended operation to facilitate 24-hour operations falls into the **No Observable Effect Level** as defined in the NPSE, as the predicted level at the receptor is more than 10dB below the background noise level.
- 7.14 We note that this assessment is relative, and absolute noise levels must also be considered. Using the levels from BS8233:2014 as a guide, the appropriate internal target noise level should be below 35dB(A) internally (as the area is already noisy a relaxation of 5dB has been applied).
- 7.15 As the external level is already below 35dB(A), we expect the internal level to also be below this level.



Vehicles

Projected vehicle counts as received from store management are shown below:

Drive-Thru

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
2300	20	20	20	20	25	25	22
0000	13	13	13	13	16	25	22
0100	13	12	13	13	16	16	16
0200	12	11	11	11	15	15	12
0300	11	11	11	11	12	12	12
0400	11	11	11	11	12	12	11
0500	15	15	15	15	18	18	15

Table 6: Predicted drive-thru customer counts for the extended opening hours proposed.

Car Park

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
2300	10	10	10	10	12	12	10
0000	6	6	6	6	10	10	6
0100	6	6	6	6	8	8	6
0200	4	4	4	4	4	4	4
0300	4	4	4	4	4	4	4
0400	4	4	4	4	4	4	4
0500	4	4	4	4	4	4	4

Table 7: Predicted customer counts for the use of the car park during extended opening hours.



- 7.16 The customer ordering device (COD) is located at the southern end of the McDonalds carpark, adjacent to the wall along the boundary.
- 7.17 The sound pressure level of a car passing at low speed (<10mph) is primarily dictated by engine noise, with tyre/road noise only becoming dominant at speeds over 30mph.
- 7.18 The sound power level (L_{WA}) of a car passing at low speed is typically in the region of 86dB. This is derived from measurement data taken by Sustainable Acoustics, which indicates that car pass-bys at low speed (9mph) typically measure at around 62dB $L_{Aeq, T}$ at 6m. Treating the engine as the dominant sound source, and as a point source, the sound power is calculated as 86dB L_{WA} .
- 7.19 Splitting the path into the entrance of the drive-thru into two segments as visible from receptor B, and calculating a point source with a sound power of 86dB moving along the path at 5 mph, the sound pressure from the worst-case hour (Sunday 0100-0200 with 22 vehicle movements) of the extended opening proposal is calculated to be 34dB $L_{Aeq, 1hr}$ from vehicle movements at Receptor B along the drive-thru. The calculation is shown in Appendix F.
- 7.20 Comparing the calculated level of noise from vehicle movements against the existing noise environment, the impact is predicted to be NOEL as the predicted noise from vehicle movements is 9 dB below the current recorded background noise level and is therefore unlikely to be audible at the most sensitive receptor except at the quietest times when other noise sources are not active.
- 7.21 Delivery vehicles operated by 3rd party delivery companies are therefore not considered to be a material issue, as noise levels from vehicle movements are predicted to be considerably below current background noise levels.

Maximum Noise Levels

- 7.22 The other noise source related to vehicles is vehicle doors being closed. The car park is located closer to the receptors than the McDonalds restaurant.
- 7.23 The closest space to the receptor and in close proximity to the restaurant (i.e. that is likely to be used by delivery drivers or customers) is approximately 33m from receptor B which is adjacent to the carpark to the east of the site.
- 7.24 Our previous measurement data suggests that a car door slamming registers an L_{AFmax} of 62dB at 7m.
- 7.25 The attenuation expected over 33m distance relative to a measurement at 7m is 13dB.
- 7.26 The predicted worst case maximum level for a car door closing at the receptor for this activity is therefore 48dB. This is below the current typical maximum levels by 33dB (see Table 3).
- 7.27 Guidance from BS 8233:2014 is generally considered to establish aspirational targets for internal ambient noise levels in the case of new housing, but the standard no longer provides specific guidance on acceptable maximum noise levels. However, the guideline value for the onset of sleep disturbance, given in the World Health Organisation (WHO) guidelines, is 45 dB L_{Amax} within bedrooms. If the attenuation through an open window is assumed to be 15 dB (BS 8233:2014 Annex G), the corresponding external noise level target would be 60 dB L_{Amax} . The guidance suggests limiting the incidence of events exceeding 45dB L_{Amax} is appropriate. Where maximum events do not exceed this level internally, the number of occurrences is not relevant for assessment according to the standard.



- 7.28 On this basis we assess the use of parking spaces for either delivery vehicles or customer parking as NOEL.

Drive-thru (via COD)

- 7.29 A COD is present at the McDonald's restaurant. Sustainable Acoustics have measured similar devices at other McDonald's sites.
- 7.30 It was observed that during attendance at the site, the COD was audible at short distances (under 5m), though this was during daytime and evening hours when ambient and background noise are higher than for the proposed extended opening hours.
- 7.31 Measurements of different stores have been undertaken in order to identify noise levels for each level setting of the COD, as shown in Appendix D. Recommended settings for daytime and night time hours have been made in the mitigation section and this has also been included in Appendix B, as part of the Noise Management Plan for the store to ensure noise impact is kept to a minimum.
- 7.32 The distance from the COD to the nearest sensitive receptor (to the north across the A6010) is 47m, with the direct path obscured by a wall along the site boundary. The receptor to the east is 101m away with the body of the McDonald's building between source and receiver. The northern receptor is therefore judged to be the most sensitive for this noise source.
- 7.33 The attenuation expected over 47m relative to 1m, assuming the COD is a point source, is 33dB.
- 7.34 In order for the level of the COD at the receptor to be 5 dB below background (43 dB – 5 dB = **38 dB**) the COD levels at 1m must not exceed 71 dB.
- 7.35 The noise level for the COD was observed to marginally exceed this level at 1 meter during the survey, and so it will be necessary to set a maximum setting in order for the proposed extended hours to yield no adverse effect in terms of noise.
- 7.36 The predicted internal level at the receptor, assuming a reduction of 15dB for a partially opened window for ventilation would be 23 dB(A). This is in line with the recommendation from BS8233:2014 that night time noise levels do not exceed 30 dB(A) for night time sleeping. It is therefore concluded that, with the correct setting in place, the COD noise will be a No Observable Effect Level, NOEL.

8 MITIGATION

- 8.1 Generally, the proposed extension of hours of the restaurant for restaurant, drive-thru and delivery is expected to result in **no or low impact** on the nearby residential properties from plant, vehicles, COD or people when considered in turn. Mitigation to the COD in the form of amending its output setting will bring the overall impact to a No Observable Effect Level, NOEL.
- 8.2 In order for the COD levels to be 5dB below the background noise levels at the receiver, the level at 1m from the COD will need to be less than or equal to 71 dB(A). This can be achieved with a **COD setting of 11** or lower during night-time trading hours.



- 8.3 It will need to be confirmed how this setting will be applied during these hours. **If it can be set to change automatically within these hours, this should be done.** If it is to be done manually, then the restaurant must determine the following points, and include it within their noise management plan.
- How the setting restriction is managed
 - The staff in charge of this restriction.
 - Staff who can change the setting.
 - How it is checked.
- 8.4 A premises noise management plan (Appendix B) should be implemented, which embeds taking proactive best practice steps to further reduce the potential for noise impact on the residential properties.

9 CONCLUSION

- 9.1 A noise impact assessment has been completed by Sustainable Acoustics Ltd. at the McDonald's located at 10 Queens Rd, Cheetham Hill, Manchester M8 8UF. The restaurant is investigating the possibility of extending the opening hours of the drive thru, restaurant and delivery services to 24/7.
- 9.2 The assessment was completed as a combination of attended measurements and unattended measurements between 26th - 27th May 2021.
- 9.3 The assessment shows that the noise impact for the extension of opening hours (in terms of use of the car park for customers and deliveries, vehicles using the drive-thru, and operation of the rooftop plant), would be unlikely to cause any measurable impact on the nearby residential amenity and therefore should be considered to be at the No Observable Effect Level (NOEL).
- 9.4 Ordering at the drive-thru (COD ordering) is predicted to have a low impact unless the setting is limited during night-time trade. If the COD setting can be set to a level no greater than 11, then the level at the receiver would be less than 5dB lower than the existing background noise levels which is in line with the requirements of the NPSE and therefore the NPPF.
- 9.5 A premises noise management plan in Appendix B is to be implemented, which is intended to proactively minimise the risk of noise from antisocial behaviour (ASB). This is a precautionary measure as no ASB was observed during the survey, and the risk of it is considered to be low. We recommend that a proactive approach to controlling such risks is followed to allow residents to build trust with the premises' efforts to run through extended hours without causing disturbance due to noise.
- 9.6 It is concluded that, with appropriate mitigation to the COD, there is no technical basis for refusal of this application, on noise grounds; when applying the appropriate national policy on planning and noise and assessing using the relevant standard methodologies. We recommend that no conditions or additional mitigations should be necessary to achieve this.



APPENDIX A

Relevant policy and guidance



9.1 National Planning Policy Framework

Current planning policy is based on the National Planning Policy Framework (NPPF), revised in July 2018 which supports a presumption in favour of development, unless the adverse impacts of that development would outweigh the benefits when assessed against the policies in the Framework, taken as a whole.

The noise implications of development are recognised at paragraph 180, where it is stated that planning policies and decisions should:

- *“mitigate and reduce to a minimum potential adverse impacts from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life¹”*
- *“Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason”*

9.2 Noise Policy Statement for England

Paragraph 180 of the NPPF also refers to advice on adverse effects of noise given in the Noise Policy Statement for England² (NPSE). This document sets out a policy vision to

“Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”.

To achieve this vision the Statement sets the following three aims:

“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.*

9.3 British Standard BS 4142: 2014

The British Standard BS 4142: 2014, *Methods for rating and assessing industrial and commercial sound* is an update of the previous edition of the standard, and describes methods for rating and assessing sound of an industrial and/or commercial nature, to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident. The sound from the industrial/commercial source is rated by taking into account the sound level of the source, known as the specific sound level, and its characteristics, such as tonal, impulsive or intermittency of the source, and applying an appropriate correction to give the rating level of the sound source. To gain an initial estimate of the potential impacts of the sound source, it is compared to the background noise level, and the level by which the rating level exceeds the background noise level indicates the following potential impacts:

¹ See Explanatory Note to the Noise Policy Statement for England.

² Department for Environment, Food and Rural Affairs, *Noise Policy Statement for England*, London, 2010



Difference	Assessment
Around 10 dB or more	Likely to be an indication of a significant adverse impact, depending on the context
Around 5 dB	Likely to be an indication of an adverse impact, depending on the context
0 dB or less	An indication of the specific sound source having a low impact, depending on the context

The standard states that “where an initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following:

- 1) *The absolute level of the sound*
- 2) *The character and level of the residual sound compared to the character and level of the specific sound*
- 3) *The sensitivity of the receptor”*

The standard also requires an indication of the uncertainty of the assessment made.

9.4 British Standard 8233: 2014

The British Standard BS 8233: 2014, *Guidance on Sound insulation and noise reduction for buildings* provides additional guidance on noise levels from sources without specific character in the built environment, based on the recommendations of the World Health Organisation. The criteria desirable levels of steady state, “anonymous” noise in unoccupied spaces within dwellings, from sources such as road traffic, mechanical services and other continuously running plant, are tabulated below:

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq, 16 \text{ hour}}$	-
Dining	Dining room/area	40 dB $L_{Aeq, 16 \text{ hour}}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16 \text{ hour}}$	30 dB $L_{Aeq, 8 \text{ hour}}$

It is noted, however that where development is considered necessary or desirable, despite external noise level above WHO guidelines, the above target levels may be relaxed by up to 5 dB.

The standard also recommends that for traditional external amenity areas, such as gardens, it is desirable that external noise levels do not exceed 50 dB $L_{Aeq, T}$, and that 55 dB $L_{Aeq, T}$ would be acceptable in noisier environments. However, it is recognised that these values may not be achievable in all areas where development is desirable, and in such locations, development should be designed to achieve the lowest practicable levels.

9.5 Local Planning Policy

Manchester City Council is the relevant local authority. The Manchester Local Plan Core Strategy (2012) is the relevant policy document. The proposal is for night time refreshment including takeaway



from the restaurant and drive-thru, so policy C10 should apply to it. Policy C10 is reproduced below for reference. The requirements of Policy C10 are similar to those of national planning policy.

Policy C 10

Leisure and the Evening Economy

New development and redevelopment that supports the evening economy, contributes to the vitality of district centres and supports a balanced and socially inclusive evening/night-time economy will be permitted, subject to the following considerations:

1. Cumulative impact – in areas where there is already a concentration of bars (A4), hot food takeaways (A5) and other night-time uses which are detrimental to the character or vitality and viability of the centre, there will be a presumption against further facilities.
2. Residential amenity – the proposed use should not create an unacceptable impact on neighbouring uses in terms of noise, traffic and disturbance.
3. Balance - new uses in Manchester centres should support both the day-time and evening/night-time economies whilst not undermining the role of the primary shopping area.

When considering the impact of a proposed bar or hot food take away regard will be had to the above policy and also:

- The existing number of similar establishments in the immediate area and their proximity to each other;
- The type and characteristics of other uses, such as housing, shops and public houses;
- The existence of vacant shop units and the condition of the unit;
- The importance of the location for local shopping, and the number, function and location of shops that would remain to serve the local community;
- The character of the centre and its frontage, and the nature of the use proposed;
- The potential impacts of the proposal on the wider community; and
- Any known unresolved amenity, traffic or safety issues arising from existing uses in the area.

Figure 3: Manchester City Council Local Plan Core Strategy Policy C10.



APPENDIX B

Attended measurements



File number	Time	Duration (mm:ss)	L _{Aeq}	L _{Amax}	L _{eq}								Position	Remarks
					63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz		
16	26/05/2021 19:54	01:00	75.4	76.3	73.9	75.7	78.5	70.2	70.9	65.3	61	63.3	Rooftop plant area	1m from kitchen extract exhaust, in rooftop plant area
17	26/05/2021 19:59	01:00	74.5	76.8	77.3	80.7	80.2	71.6	67.1	59.1	51.5	49.5	Rooftop plant area	1m from kitchen extract exhaust, in rooftop plant area
22	26/05/2021 22:25	10:00	58.1	73.3	65.6	60.4	56.2	55	54.5	48.9	42.9	36.7	1	2 cars in carpark, short queue to order and collect food, roof extract audible at this position
23	26/05/2021 22:35:56	05:00	60	81.6	67.9	60.7	58.6	55.8	55.2	50.5	45.6	45.5	1	Emergency vehicle siren during measurement
24	26/05/2021 22:40	01:00	64.1	77.3	74.1	59	57.8	62.4	61.2	52.4	45.5	38.9	1	
25	26/05/2021 22:43	10:00	58.3	74.3	62.5	57.7	55.8	53.5	56	49.4	38.9	30.9	3	4 cars in carpark, 1 car in drive-thru. Can't hear roof plant at this position due to traffic noise, except when the road is quiet.
26	26/05/2021 22:54	15:00	71.2	85.5	67.7	65.1	65.5	64.8	69.5	62.6	50.8	40.5	2	5 cars in carpark, no cars in drive-thru. Emergency vehicle siren on main road. Engine noise from bus depot audible. Lights out in the restaurant at 5 minutes into measurement.
33	27/05/2021 05:12	10:00	55.6	69	63.8	55.9	55.2	51.1	52.1	47.5	40.9	32.2	1	No cars in carpark or drive-thru. Aeroplane overflight during measurement.
34	27/05/2021 05:32	15:00	56.4	69.8	66	60.9	57.6	52.4	52.6	46.5	39.1	30.9	1	Plant noise clear at this position. One car enters carpark and leaves during measurement.
35	27/05/2021 05:48	15:00	59.3	71.3	65.2	59.8	58.1	55.4	56.6	49.7	41.6	34.7	2	Traffic and roof plant make up ambient noise. Drive in still closed (cone in the lane). One staff car arrives during measurement.



File number	Time	Duration (mm:ss)	L _{Aeq}	L _{Amax}	L _{eq}								Position	Remarks
					63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz		
36	27/05/2021 06:05	10:00	71.5	91.6	70.2	67.5	65.6	65.1	69.1	63.7	57.4	51.4	3	2 cars in carpark. Four busses leave bus depot, high aeroplane overflight and emergency siren during measurement. Cone in drive-thru lane removed. Electrical hum from nearby sub station audible (63Hz band).
37	27/05/2021 06:17	15:00	58.5	71.4	66	60.2	57.8	54.8	55.1	49.2	42.7	37.3	1	2 cars in carpark. High aeroplane overflight. Noisy moped on road at 2:15 into measurement. Truck reversing beeper at 00:45 into measurement.



APPENDIX C

Plant noise levels



Extract system - Variation of output sound levels with extract speeds

The noise level variation for different speeds has been measured at other McDonalds stores. The noise levels measured for the extract duct and the fan are shown below in Tables C1 and C2.

Speed (Hz)	Noise level measured dB(A)	Calculated sound power level (SWL)
25	63 - 64 *	71 - 72
30	67	75
35	70 - 71	78 - 79
40	73 - 75 *	81 - 83
45	76 - 79	84 - 87

Table C1. Noise levels at different speeds for the kitchen extract duct.

* Calculated level based on other measurements for that store.

Speed (Hz)	Noise level measured dB(A)	Calculated sound power level (SWL)
25	64 - 67 *	72 - 75
30	67 - 69	75 - 77
35	69 - 71	77 - 79
40	71.5 * - 73	80 - 81
45	74 - 75	82 - 83

Table C2. Noise levels at different speeds for the kitchen extract fan.

* Calculated level based on other measurements for that store.

Table C1 shows that the noise levels for the extract duct measured at different stores provide steps of **3 to 4 dB(A) per each 5 Hz setting variation**. Table C2 shows that the noise levels for the extract fan measured at different stores provide steps of typically 2dB(A) per 5Hz speed variation. It is likely that this is partially due to contribution from the extract duct noise. Therefore, the main output difference is from the extract duct rather than from the fan.

It was also possible to calculate the frequency spectrum trend for different speeds as shown in Figure C1 below. Note that for 25Hz and 40 Hz the frequency spectrum was only measured at one store, whereas for the rest of speeds the trend shows the logarithmic average of the different stores.

It is clear that for 30 Hz to 45 Hz settings, there is a trend showing possible tonality around 250 Hz. The spectral shape between 30 Hz, 40 Hz and 45 Hz settings is almost identical other than shifted up for the higher speed settings. However, the measurement for the speed setting of 25 Hz shows a different shape, where the possible tonality has shifted down to the 125 Hz octave band. Not many systems allow the 25 Hz setting, and therefore this data will be revised when there are more opportunities to measure other stores at the speed setting of 25 Hz.

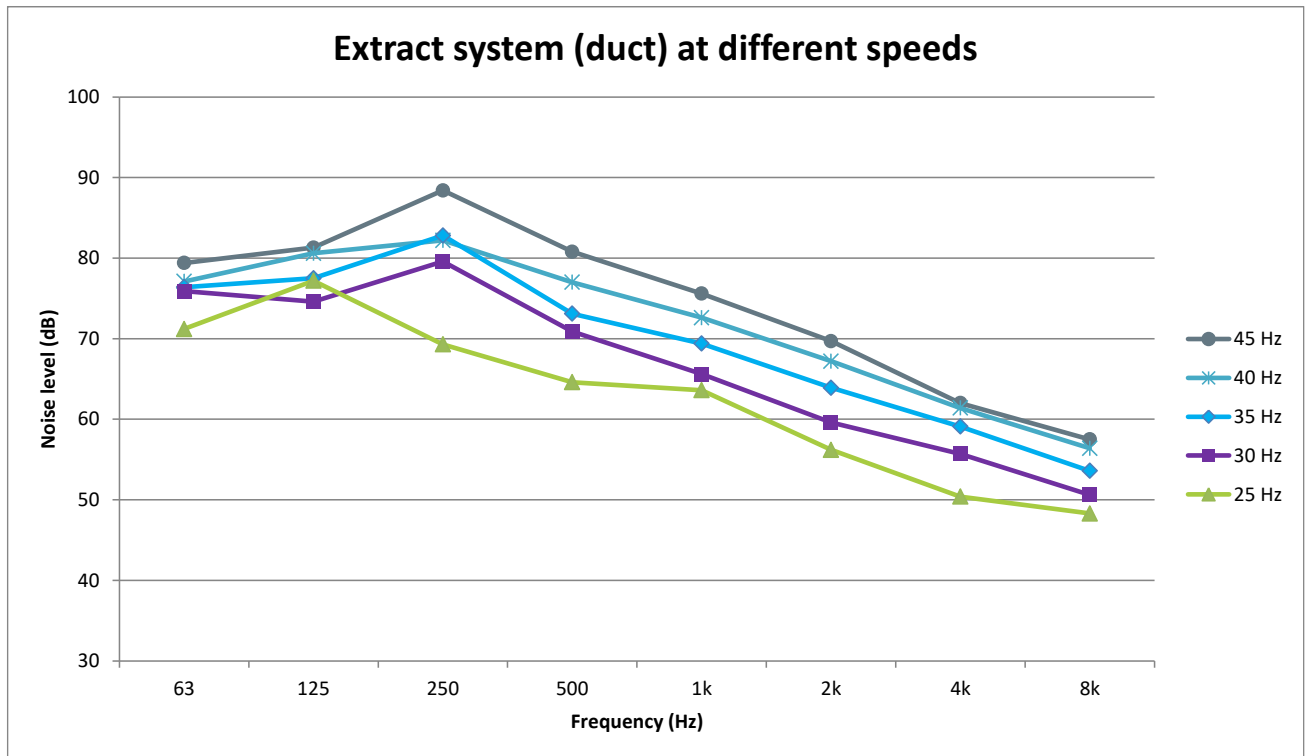


Figure C1. Frequency spectra for different speeds for the kitchen extract (duct).



APPENDIX D

COD Noise Levels



1 Sound Levels of COD

The Communications Operating Device (COD) systems have been measured at a number of stores for different levels, in order to indicate noise levels for different settings, study variability between stores and provide an average noise level per level setting in order to provide guidance to the COD system management based on measured ambient noise levels and distance to nearest residents.

The measured noise levels at three McDonalds stores (North Cheam, Wandsworth Road and Maidstone) are shown below in Figures D1 – D3. All the systems were 3M although the COD was an older version at Wandsworth Road (Figure D5) rather than the latest one that can be found at most stores as it was at North Cheam and Maidstone.

Subjectively there was a noticeable difference between the main 3 levels measured, and when the systems were set at level 8 it was just audible above the ambient noise levels. North Cheam was the quietest and therefore the noise levels measured were less affected by road traffic noise in the area. At Wandsworth Road there was fairly constant traffic at all times and the roof plant was clearly audible. At Maidstone the measurements for settings 18 and 13 were affected by a van engine on the other lane of the store drive thru service. This is clearly visible in Figure D4.

When taking the average of the levels measured at the three stores, it is possible to determine that the reduction in noise level is between 6-7 dB per 5 levels of the COD system. Figure D6 shows that the average noise level against McDonalds COD system settings as a best fit a linear trend. Therefore, using this data it is possible to determine what settings each store needs to operate at in a given background noise level, in order to achieve adequate levels which are not excessively audible at the nearest residential property. The overall noise levels for every setting from 6 to 20 have been calculated and shown in Table D1.

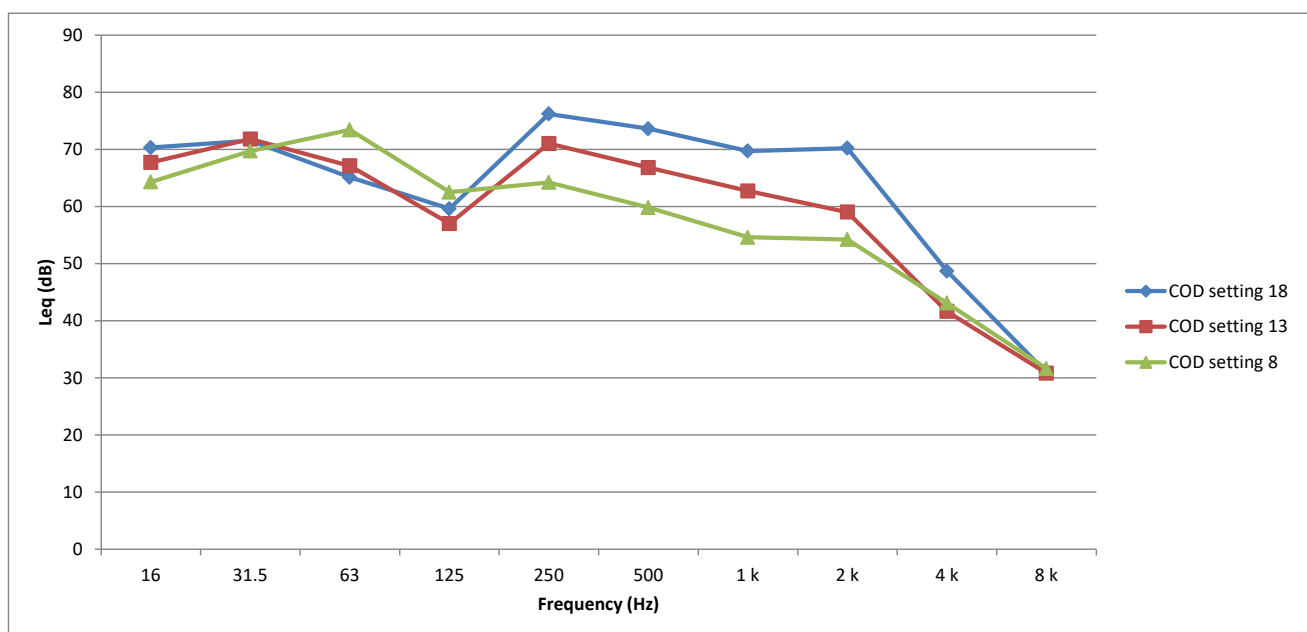


Figure D1. Measurements at 1m from COD - North Cheam

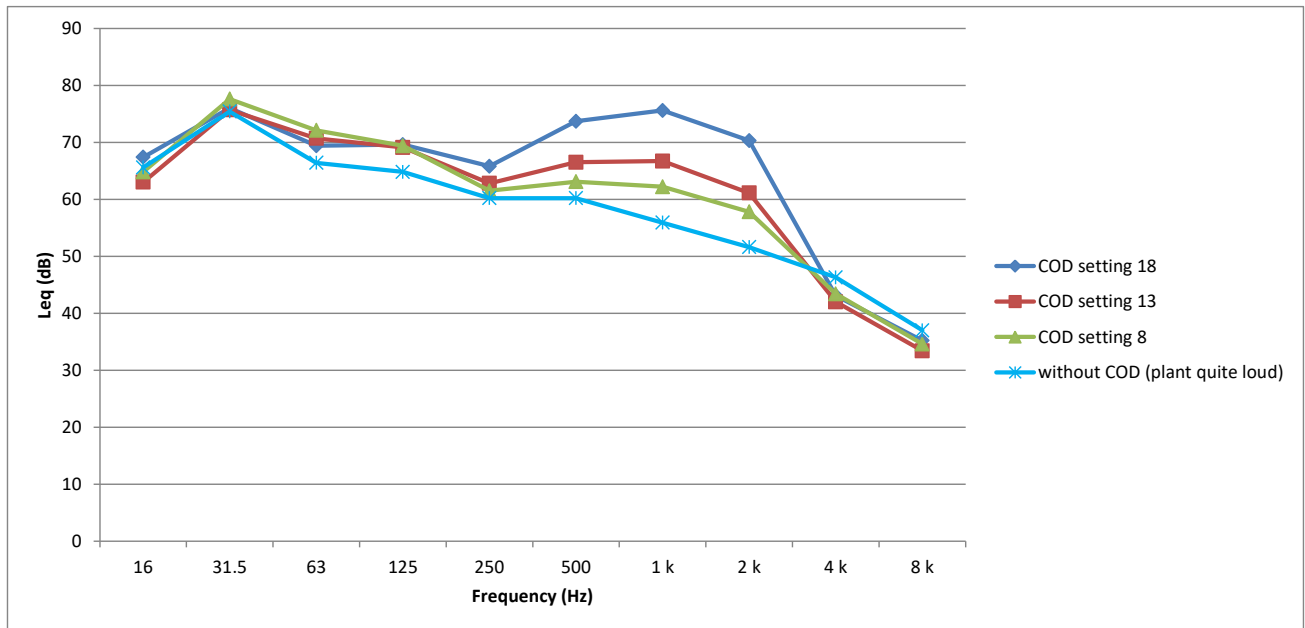


Figure D2. Measurements at 1m from COD - Wandsworth Road

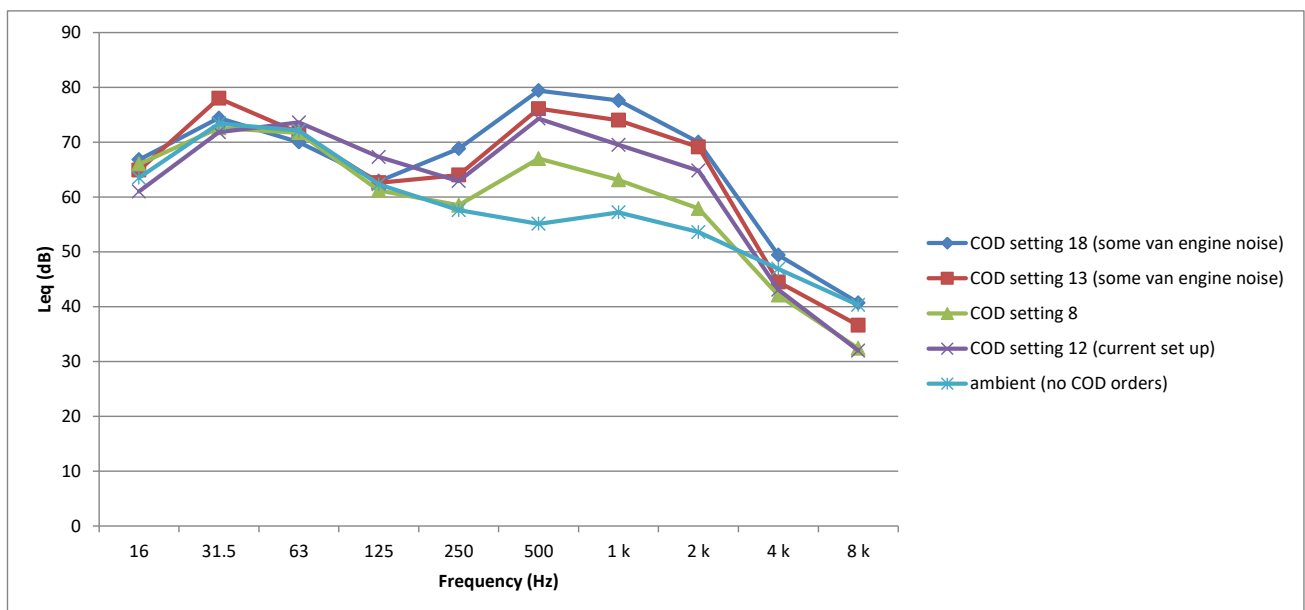


Figure D3. Measurements at 1m from COD - Maidstone

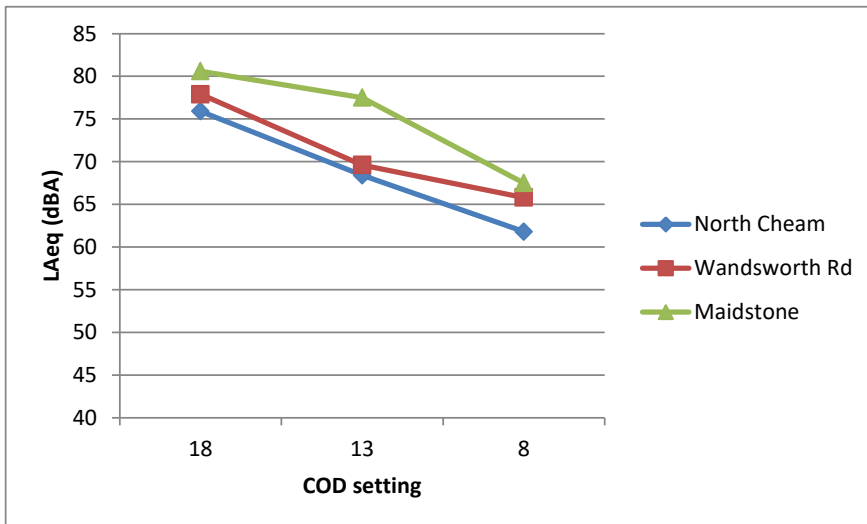


Figure D4. Measurements at 1m from COD – Overalls (dBA) for the 3 stores



Figure D5. Photo of COD system at Wandsworth Road

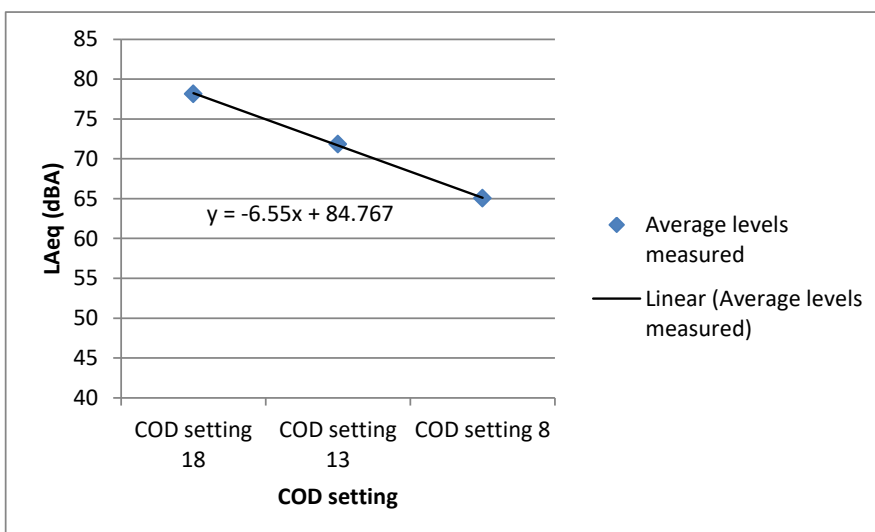


Figure D6. Linear regression fitting average levels from 3 stores



COD setting	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Noise level at 1m from COD (dBA)	62.4	63.7	65.0	66.3	67.6	68.9	70.2	71.5	72.8	74.1	75.4	76.7	78.0	79.3	80.6

Table D1. Noise levels for COD settings 6 to 20 – measured (bold) and calculated based on difference measured and linear regression.

2 Assessment of required COD Levels against ambient noise

Subjectively, when the COD was set to level 8, it was perceived as not loud enough for Wandsworth Road and Maidstone and slightly more audible at North Cheam. The overall ambient noise levels for Wandsworth Road and Maidstone when the COD was not in use were 61 dBA for both stores. This means that a difference of 4dBA is not enough for the COD to be at a workable level. When the setting was 13, it was clearly audible at all stores and at Maidstone, the COD system was set up to 12, which was also subjectively clearly audible. This means that a difference between the COD level and ambient noise levels of 10dBA is more than enough, and 8dBA a reasonable difference for the COD to be at a workable level. Table D2 shows the noise levels for each COD setting at distances with the residential properties between 10 and 60 meters and what the maximum ambient noise levels can be at the COD for the setting to be at a workable noise level.

COD setting	Noise level at 1m from COD (dBA)	Noise levels from the COD at different distances (m)												Max ambient noise level required (dBA)
		10	15	20	25	30	35	40	45	50	55	60		
20	80.6	61	57	55	53	51	50	49	48	47	46	45	72.6	
19	79.3	59	55	53	51	49	48	47	46	45	44	43	71.3	
18	78.0	58	54	52	50	48	47	46	45	44	43	42	70.0	
17	76.7	57	53	51	49	47	46	45	44	43	42	41	68.7	
16	75.4	55	51	49	47	45	44	43	42	41	40	39	67.4	
15	74.1	54	50	48	46	44	43	42	41	40	39	38	66.1	
14	72.8	53	49	47	45	43	42	41	40	39	38	37	64.8	
13	71.5	52	48	46	44	42	41	40	39	38	37	36	63.5	
12	70.2	50	46	44	42	40	39	38	37	36	35	34	62.2	
11	68.9	49	45	43	41	39	38	37	36	35	34	33	60.9	
10	67.6	48	44	42	40	38	37	36	35	34	33	32	59.6	
9	66.3	46	42	40	38	36	35	34	33	32	31	30	58.3	
8	65.0	45	41	39	37	35	34	33	32	31	30	29	57.0	
7	63.7	44	40	38	36	34	33	32	31	30	29	28	55.7	
6	62.4	42	38	36	34	32	31	30	29	28	27	26	54.4	

Table D2. Calculated COD noise levels at distances between 10 and 60m for COD settings 6-20 and correspondent maximum ambient noise level required for the setting to be workable.



APPENDIX E

McDonald's Guidance on Anti-Social Behaviour



McDonalds has launched national Guidance for Managing Anti-Social Behaviour, aimed to reduce the risk of ASB happening at McDonalds premises and to help store managers to know how to best manage Anti-Social Behaviour (ASB) if this happens and to do so safely and effectively.

The Guide defines ASB as *“behaviour likely to cause harassment, alarm or distress to one or more persons”*. The methods and tools described in the Guide have been summarised below:

- All restaurants should have a CCTV system installed that complies with McD minimum standards so it can be used for the purposes of monitoring as well as identification and able to do so in low light.
- Body worn cameras (BWC) are not recommended and at restaurants belonging to McOpCo are not permitted to managers or employees.
- Detecting and preventing ASB:

Loitering: groups of people hanging around can increase the risk of ASB and therefore if an individual or a group is perceived to be loitering, it is recommended to approach them in a safely and effective way (method described on the Guide) in order to dismiss the groups or individuals.

Drug misuse: a list of indications is provided so staff can identify possible problems and for the management team to deal with the problem. A list of tactics than can be implemented to prevent the issue is also provided.

Staff Safe AV: alarm system that helps raise an alert to a monitoring station so an operator can connect to see and hear what is happening. The system consists of a control panel and six activation buttons (3 mobile units, 1 for staff working outside, 1 on the control panel) and is capable of announcements by pressing the control panel activation button, there will be an announcement to tell customers that the premises are externally monitored. The system is also capable of recordings, and these recordings are kept at the Call Centre anytime an audio activation is made. These recordings can be useful as evidence for the Police. An external speaker could be fitted when the restaurant is in a non-residential area, if approved by a Licensing Officer or the Local Authority. This would allow to make announcements from inside the premises to inform individuals or groups outside.

- Use of tools such as classical music, stop free WiFi service and power to charging points inside: Playing classical music inside the store, groups of teenagers will tend not to want to stay at the premises and therefore they will leave as soon as they finish eating. It is suggested that some individuals or groups might stay longer than necessary at the restaurant to use the free WiFi and charging points. Although it is desirable for customers to enjoy their stay, it is also desirable to deter loitering that could lead to ASB in or around the premises. Therefore, by temporary suspension of the WiFi and charging points facilities, groups are likely to willingly mobilise.
- Partnership with Police and other forces is encouraged and provides a proactive commitment to trying to manage ASB. Radio Links help the Franchisees and Managers build relationships with the Police and other businesses including Shop Watch, Pub Watch and Retail Radio Links initiatives. The restaurant management team should attempt to deal with issues in the restaurant, however, if there is a persistent problem, the option of using guarding policy should be assessed for the required time.
- Reporting and tracking incidents allows issues to be identified and create plan actions to address them. The process of reporting is explained in detail on the Guide for both crime and ASB.



- As a last resource, it is possible to ban specific people that have caused an issue. This should only be applied when all other resources to stop the problem have not been effective and should always be done with support of an external partner, ideally the local Police.

Note: the use of a mosquito devices was identified as one commercially available way to disperse groups of young people, however, this is not recommended as it introduces another noise source that could cause annoyance to other in the vicinity, especially children or animals with more sensitivity to high frequency.

Two main step guides are also provided in the document:

- **ASB Incident Management: 5 Step Method for Managers**
 1. Approach and ask for the behaviour to stop, explain that if the behaviour does not change they will need to leave the premises
 2. If the behaviour continues, explain that they need to leave the premises. Dialog should be kept at a minimum. If they do not leave, explain that further action will be taken.
 3. If they have not left, ask again and explain that the assistance button is going to be used, which would take CCTV footage and pass it to the police and it could result in a ban from the restaurant and other prosecution from the police. If they still not leaving, Staff Safe takes over and there is no more dialog between the member of staff and the person or group.
 4. Staff Safe Operator will contact the police and will stop the dialog with the person or group
 5. It is likely that the person or group leave before the police arrives, however, an overview together with the incident log book and CCTV footage should be provided to the Police. If an individual results to be banned from the restaurant, it is crucial to enforce it at all times.
- **ASB Incident Management: 7 Point Plan – Post ASB Incidents Actions**
 1. All incidents should be recorded in the Incident Log
 2. Shift Manager should take a picture from CCTV footage of the individual and attach it to the Incident Log
 3. Monthly review of the Incident Log at Manager's meeting. Banning letters should be given to the Police.
 4. The Police is encouraged to issue the Banning Letter through a home visit
 5. Reasons for banning:
 - Instant Ban: due to aggressive, abusive, threatening behaviour or damage to property
 - Yellow Card: issued for less significant incidents, three yellow cards would result on a Ban.
 6. Monthly review of Incident Log and Banning Letters, preferably with the Police.
 7. Advise other McDonalds in the area of banned individuals.



PREMISES NOISE MANAGEMENT PLAN (PNMP) : MANCHESTER FORT (#1462)

The following measures **must be implemented between 11pm to 7am**, as part of a proactive management effort to minimise the noise impact cause to nearby residents, created by the operation of the premises, and its customers when inside or in the vicinity of the premises.

These measures include :

Noise Source	Control measure
1. Minimising Vehicle and antisocial behaviour Noise (eg. Loud music)	Staff shall be vigilant for vehicles that arrive and have either loud music playing, or where the car is being driven deliberately to create noise by revving of the engine or other stunts after 2300. Observational records should be made of registration plates in the Incident log where possible, and CCTV footage used to provide evidence of culprits whom regularly cause antisocial behaviour. Where these are substantial examples then these should be supplied to the authorities with a copy of the noise log. Drivers should be encouraged to switch engines off when not in use. Movement of bin should not occur before 6.30am to minimise noise. <u>Members of the management team, who are properly trained are required to quickly and safely challenge those creating unreasonable noise levels and request them to adjust their behaviour, to minimise noise and respect their neighbours. Information on those causing antisocial behaviour (ASB), should it continue, will be recorded as an incident and reported, when required to statutory authorities thereby and minimising and preventing the disturbance caused to neighbours as far as possible. For further information on McDonalds National Policy on ASB see the McDonalds Guidance for Managing Anti-Social Behaviour.</u>
2. People Noise	Signs shall be prominently displayed that ask customers that come into the premises to leave quietly in order to respect our neighbours. At the drive through signs should request that customers keep noise to a minimum, or may risk not being served. We will work in partnership with the police and other statutory authorities to address any nuisance or crime and disorder that generate noise outside the restaurant within the licence, which could include CIA staff on a risk assessment basis to achieve, where it is expected to be necessary to control noise. Customers that are seen to be disregarding the notices and or loitering outside after 2300 and making noise should be encouraged to come inside if they are eating, rather than be outside, or move on. Where this becomes confrontational an ASB trained Manager will attend and have the power bar the person. <u>Gatherings of people in the car park who are not waiting to be served, should be challenged by the Manager, notified that they are on CCTV and recorded in the Incident log. Although rare where there is evidence of antisocial behaviour, of which significant levels of noise are part, information will be made available to the authorities. A phone number will be made available to residents to contact the store, to report evidence of ASB within the boundary of the premises.</u>
3. Intercom (COD) and other Noise	The intercom system should be set up such that it reduces in noise level after 2300 and before 0600, such that it is barely audible at the closest residential properties. For this store a COD setting of 10 is to be trialled, as current settings are unknown. If this was to raise any issues, such as order inaccuracy, then the setting can be revised, with a maximum recommended setting of up to 11 due to distance to the residents. These levels would not be expected to cause a noise impact.

Approved Plan for Store No. : ____, Authorising person : _____, Signature _____

The cover features a vibrant green background with a large, stylized wavy graphic in yellow and white that flows across the middle. On the right side, there is a photograph of a McDonald's restaurant at night, with its illuminated signage and interior visible. In the bottom left corner, the McDonald's Golden Arches logo is displayed. The title 'McDonald's Incident Book' is prominently featured in the bottom right corner in a bold, white sans-serif font. A small copyright notice is located at the very bottom left.

Name/s.....

Telephone Number/s.....

Email/s.....

Work Address.....

Name/s.....

Telephone Number/s.....

Email/s.....

Work Address.....

Name/s.....

Telephone Number/s.....

Email/s.....

Work Address.....

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APPENDIX F

Calculations



Barrier attenuation (based on CRTN)			
CRTN		Author: NC	?
v1.0	CH	o -30 in Shadow z	09/07/2018
Source-receiver distance, m	38	S-R angle	0.052583
Source-barrier distance, m	2	ight to S-R line	2.105263
Source height, m	2	ted path length	38.82843
Receiver height, m	4	ect path length	38.0526
Barrier height, m	4		
Path length difference, m	0.776	Log pld	-0.11023
	Shadow zone	one attenuation	-14.5223
Attenuation, dB	-14.5	one attenuation	-0.02251

Figure 4: Barrier calculation for kitchen extract

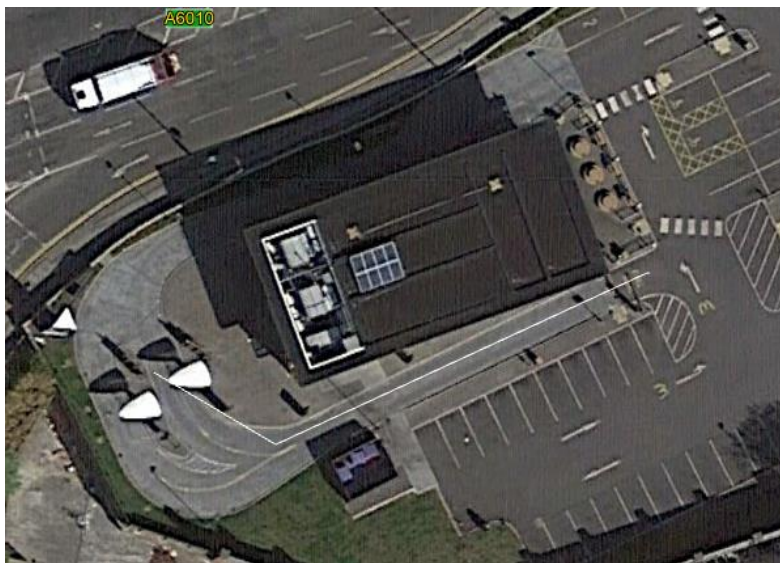


Figure 5: Path for moving vehicle calculations

Calculation:																								
Route 1 - nearest to receptor A																								
Description	Input (NB: S-R distance > length of segment)				Source			Barrier				Receiver noise level					S-R ang	Height	Direct p	Log pit	Illuminat	Illuminat	Attenuat	
	S-R Distance (m)	Length (m)	Speed (m/s)	Duration (s)	Source (L _{AW})	# per hour	# in 5 min	Distance S-R	S-B	S	R	B	dB	L _{Amax}										L _{Aeq, 1 hour}
1	68	32	1.3	24.6	86	22	2						0.0	41.3	33.1	33.5	###	###	###	###	###	###	###	###
2	93	12	1.3	9.2	86	22	2						0.0	38.6	26.1	26.5	###	###	###	###	###	###	###	###
3													0.0				###	###	###	###	###	###	###	###
4													0.0				###	###	###	###	###	###	###	###
5													0.0				###	###	###	###	###	###	###	###
6													0.0				###	###	###	###	###	###	###	###
7													0.0				###	###	###	###	###	###	###	###
8													0.0				###	###	###	###	###	###	###	###
9													0.0				###	###	###	###	###	###	###	###
10													0.0				###	###	###	###	###	###	###	###
Total						45	4							41.3	33.9	34.3	###	###						

Figure 6: Moving vehicle calculation - point source moving along a linear path