



Kitchen extraction and ventilation report

Mr Arslan Younis
460 Cheetham Hill Road
MANCHESTER
M8 9JW

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Created By

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Executive summary

A report has been compiled for our client Mr Arslan Younis. The report recommends an ventilation system for the location 460 Cheetham Hill Road M8 9JW. The client wishes to open new Hot food restaurant and takeaway. The details will only consider the kitchen zone.

Introduction

Commercial Kitchens specialist has been commissioned by our client to recommend a practical working system for the kitchen ventilation which supports the planning and building requirements.

The new extraction system proposed will be intended for a fast-food such as kebabs with approx. 40 seating capacity.

Site description

The property in question is main road with plenty of different cuisines and different shops. The next-door property on either side are both business premises with accommodation upstairs, with limited parking on the main road.



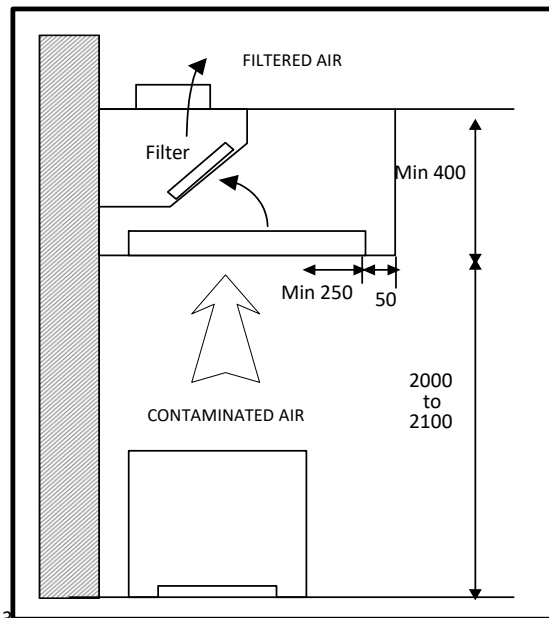
Canopy Hood details

The canopy will be a straight overhead wall mounted hood. Constructed of 304 grade stainless steel with ultrafine grains. The stainless steel will be designed with a plain polish.

The canopy hood will be located on the internal gable wall in the kitchen area.

Approximately 3m.

The extraction rate for the canopy will be heavy duty at 0.31-0.62 (m³/s)



Ductworks

The ducting will start from the side of the canopy hood (Right) going through to the rear of the building, exiting through the wall and leading to the roof vertically. Majority of the ductworks and extraction equipment will be kept internal to avoid complaints regards to the noise levels. The ducting will be fire graded 1.2mm thickness low pressure class A and be in accordance with HVCA Specification number DW/144. The duct work will be fully welded. Where gaskets are required, they will be non-porous, impervious to grease and cooking oils and withstand temperatures experienced within the extract hood.



Extraction Fan

The extraction fan will be a 450 Flaktwoods max fan which has a speed (rpm) 2910 and without any attenuators the sound will be 81dB(A) at 3 metres. The extractor fan will be accompanied with anti-vibrations housing and a lagging around the fan.

Replacement Air In system

The makeup air will replacement rate at 85% via a sperate mechanical filtered system. A second ducting system will be installed exiting the roof again, terminated with louvres within the kitchen area. Additional 15% will be via natural means. The air replacement will be variable to allow consideration on seasonal periods.

- Replacement Air Fan is recommended to be a 400mm Flaktwoods case fan to enable air circulation to the kitchen.

Odour control system

Odour and grease characteristics arising from an Grill food commercial kitchens.

		Odour concentration				Grease content			
Catering establishment	Description	Low	Moderate	High	Very high	Low	Moderate	High	Very high
Fast-food/Burger	Meat, oil			✓				✓	

Carbon Filtrations

The odour control measures falls into the high category
(Dispersion score = 5, proximity of receptors = 5, kitchen size = 5 and Grease load = 7 totalling 22 score).

Therefore, we have accounted for the high category to make sure we meet the requirements. We have recommended baffle filters acting as a fine filter or ESP, accompanied with carbon filters rated with a 0.6-0.8 second residence time.
4 x 395mm x 395mm x 395mm Carbon filters accompanied with 4 x 16" x 16" Bag Filters.

Attenuators & Silencers

To reduce the noise level and minimise disturbance. Anti-vibration mounts and brackets will be used for the ventilation system and 2D Attenuators (450mm) on either side of the fans applied jointly with the sound-insulated fan in case of low-noise requirements not only to the air duct but to the equipment altogether achieving a further reduction of at least 34dB.



This will reduce noise absorption produced during the ventilating equipment operation and spread along the ducting systems. Suitable for installation into round ducts. The attenuators reduce the noise level in the air duct additional 16dBA each minimum.

We are working to achieve 47dB



How Loud Is It?

The Following Chart (How Loud Is It?) Provides A Useful Reference For Anyone Who Wishes To Know What Typical Decibel Levels They Are Experiencing When They Are In The Close Proximity Of The Sated Noise Emitting Item, Or Alternatively Are Within The Stated Noise Environment Or Room.

The Decibel Levels Within The Chart Have Been Colour Coded, Their General Perceived Loudness Can Be Described As Follows....

0dB to 45dB	= Very Quiet to Quiet Noise Levels
50dB to 75dB	= Moderate Noise Levels
80dB to 90dB	= Moderate to High Noise Levels
95dB to 110dB	= Very High Noise Levels
115dB to 180dB	= Extremely High Noise Levels

How Loud Is It?

Reference	Decibels dB(A)	Reference
Saturn Rocket @ Lift-off	180	
	160	Instant Physical Hearing Damage
Jumbo Jet @ Take-off Thrust	150	
	140	Private Jet @ Take-off Thrust
The Threshold Of Pain	130	
Open Air Rock Concert	125	Light Aircraft On Take-off
Engine Test Cell	120	Loud Thunder Clap
Steam Turbine Generator	115	Industrial Air Compressor
Pneumatic Drill	110	Fire/Burglar Alarm
Chainsaw, Smoke Alarm	105	Car Alarm
Car Horn	100	Baby Crying Intensely
Passing High Speed Train	95	Circular Saw
Noisy Factory, Heavy Goods Vehicle	90	Electric Drill (Drilling into masonry)
Lawn Mower, Leaf Blower	85	Busy Main Road
Telephone Ringing	80	Hair Dryer, Kitchen Blender
Low Level Street Traffic	75	Vacuum Cleaner, Alarm Clock
Typical Car Setting Off	70	Radio On Normal Volume
Car On Idle, Electric Kettle	65	Living Room With TV On
Microwave Oven	60	Kitchen Cooker Extractor Fan
Medium Volume Speech	55	High Daytime Background Noise
Low Volume Speech, Central Heating Boiler	50	Low Daytime Background Noise
Domestic Oven Fan	45	Small Aquarium Air Pump
Inside A Quiet Library	40	Domestic Fridge Motor, Computer Cooling Fan
In A Quiet Living Room During Daytime	35	A Bee Or Wasp In Flight
A Low Whisper	30	Outdoors In A Semi-Rural Area During A Very Calm Night
A Ticking Clock	25	A Typical Quiet Bedroom
TV Broadcast Studio	20	In The Country During A Very Calm Night
Recording Studio, Pin Falling	15	The Audible Threshold For Most Adults
Shallow Breathing	10	Inaudible To Most Adult An Infant
Anechoic Test Cell	5	
Threshold Of Sound	0	Absolute Anechoic Condition

The Decibel Levels Shown Are Those That Could Typically Be Expected If The Stated Noise Emitting Item And Or Noise Environment Was Measured Using A Sound Level Meter Set With The Decibel 'A' Weighting Facility Enabled.

Because The Human Ear Is More Responsive To Mid & High Frequency Noise Levels, And Is Much Less Responsive To Low Frequency Noise Levels. The Decibel 'A' Weighting Takes This Into Consideration During The Measuring Process, And Will Therefore Replicate The Perceived Loudness Experienced By The Listener.



Maintenance

The maintenance contract comprises:

Fan to be removed and cleaned – entailing removal and replacement of the ductwork and gas appliances are serviced annually by fully qualified gas safe engineers.

Timescale of works to be confirmed.

Schedule

3 months Service and inspection

6 months Fan only

9 months Canopy, fan, ductwork

12 months All gas appliances, Canopy, fan, ductwork

Conclusion

After taking everything into consideration we would recommend for the above system and practice to be implemented for safe working environment and reduce unlikely complaints from noise and odours.

Similarly, a schedule for maintenance has been recommended to carry out safety checks and maintain a good working environment on an annual rota for continuous awareness of the community.