

SS Commercial Kitchen Canopies

Extraction & Ventilations

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**460 Cheetham Hill Road,
Manchester
M8 9JW**

REF No. Extraction System

Specification

Summary

A report has been compiled for Mr Arslan Younis. The report identifies the ventilation system for the location 460 Cheetham Hill Road, M8 9JW. Planning Permission 133168/FO/2022 has been granted by Manchester City Council.

Condition 2 states: The development hereby approved shall be carried out in accordance with the following drawings and documents:

Drawing: Location plan

Drawing: Plans and Elevations ref: AL102

Document: Kitchen Extraction and Ventilation Report

Document: Odour Control.

Condition 4 states: notwithstanding details submitted, prior to the flue becoming operational, fumes, vapours and odours shall be extracted and discharged from the premises in accordance with a scheme to be submitted to and approved in writing by the City Council as Local Planning Authority. Details shall include a kitchen fume extract strategy report, including a risk assessment for odour and noise from Commercial Kitchen Exhaust Systems' and details of replacement air.

Canopy Hood Details

Dimensions Hood (A) 3000mm x 1200mm x 500mm x 300mm

The canopy is straight overhead wall mounted hood. The canopy is manufactured from stainless steel grade 304 with ultrafine grain with a plain polish, with grease drain off taps on either side of the extract hoods. The canopy hood is located on the gable wall and the extraction rate will be 0.31-0.62 (m³/s).

Duct Dimensions for Hood

The duct work size is 600mm X 300mm

Duct work and discharge

The duct work connects off the top of the canopy, (Ducting 600 x 300mm) which will go horizontal internal about 3meter, with a 90-degree bend at the end facing vertically and going up on the rear roof the of building. Majority of the ductwork and extraction equipment is internal to reduce noise levels. The Ducting is fire graded 1.2mm thickness low pressure class A and is in accordance with HVCA Spec number DW/144. The ductwork is fully welded with non porous gaskets.

Fan Specification for hood

Located within the duct work is a Flaktwood 450Max Compac Long cased axial fan, 2 polo, single phase, running via speed controller.

The fan runs at 2910rpms with a maximum operating noise of 71dba and can handle air flow rate in excess of 3.735m/sec @ 667pa. The fan has been accompanied with anti vibration housing and has lagging around the fan.

Replacement Air in system

The replacement Air Fan is a 400mm Flaktwoods cased fan.

The makeup air will has a replacement rate at 85% via separate filtered system. The second ducting system exits through the roof, terminated with louvres in the kitchen area. The rest will be through natural means.

Carbon Filtrations and Silencers.

There is an active carbon box with 4 active carbon filters at 395mm accompanied with 4 16 x 16 bag filters. installed there, straight after that there is a silencer (Elta SEL355/2-1AC), fan with sound

insulation, and another silencer, both 2 DB2 Silencers (450mm). In between the silencers we have installed a Flaktwood 450Max Compac Fan with anti-vibration mounts. The vertical discharge flue is 1 Meter above the roof ridge with no cowl (see appendix 1)

Cleaning and Maintenance

The carbon cells should be inspected for carbon testing every 3 months for results in changing, again this will be done by installation contractors. This will give an idea, whether the change of carbon filters should take place every 3 to 6 months to maintain its optimum efficiency.

The canopy and the stainless steel baffle filters should be cleaned on a daily basis. The stainless steel baffle grease filter are of a 304 grade. The grease filters are to be cleaned on the regime and use of the kitchen, typically a grease filter is cleaned daily.

The inspection and service of the fan is required every 6 months which will have to be carried out by the installation contractors. This again will be inspected by the installers.

We recommend that the canopy and duct work should receive a full deep clean 9 months after installation and then every 9 months thereafter by a recommend cleaning company which an issue a TR19 certificate, this will maintain maximum efficiency of the extraction system.

The carbon filter/prefilter and system will be kept on a date base by the installers which will contact the user when inspection is due.

ODOUR CONTROL

The following 'Risk Assessment for Odour' has been derived from criteria outlined by DEFRA 2005, Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems & EMAQ odour control guidance.

The assessment is carried to accurately score the site according to DEFRA/EMAQ standards. Odour control must be designed to prevent odour nuisance in a given situation.

The following score methodology is suggested as a means of determining odour control requirements using a simple risk assessment approach.

The odour control requirements considered here are consistent with the performance requirements listed in this report.

Dispersion

The kitchen extract system terminates through the vertical ductwork above the roof of the rear of the building at height above the ridge by 1m. The risk rating for dispersion is considered moderate.

Proximity to receptors

Residential properties rear to the commercial unit the application site is less than 20m from the flue; the risk rating for dispersion is described as close.

Size of kitchen

The unit will operate as a 40 seater café/restaurant. The risk is described as medium.

Cooking type

The venue will be serving kebabs and other hot foods; the risk rating for cooking type is high.

Criteria	Impact	Score	Details
Dispersion	Good	5	Discharging 1 meter above ridge @ 15 – 17m/s
Proximity of Receptors	Medium	10	Closest sensitive receptor less than 20 meters
Size of Kitchen	Medium	3	Between 30 – 100 covers or medium sized takeaway
Cooking Type	High	10	Mainly grilled food and burgers, little or no onions or spice – French fries in low fat oil.
Total Score		28	

Impact Risk

Impact Risk	Odour Control Requirement	Significant Score
Low/Medium	Low Level Odour Control	Less than 20
High	High Level Odour Control	20 – 35
Very High	Very High Level Odour Control	More than 35

Low to medium level control may include:

1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.1 second residence time).
2. Fine filtration followed by counteractant/neutralising system to achieve the same level of control as 1.

High level odour control may include:

1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2-0.4 second residence time).
2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1

Very high level odour control may include:

1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.6 –0.8 second residence time).
2. Fine filtration or ESP followed by carbon filtration and by counteractant/neutralising system to achieve the same level of control as 1.
3. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.
4. Fine filtration or ESP followed by wet scrubbing to achieve the same level of control as 1.

Maintenance must be carried out to ensure these performance levels are always achieved.=

Filtration:

Baffle filters acting as fine filtration accompanied with carbon filters with a 0.6-0.8 second resistance time.

NOISE CONTROL**Flanged Square Silencers Specification**

Silencers are available in two standard lengths –

- 1D (length = Diameter)
- 2D (length = 2 x Diameter)

Each length is then available with and without cylindrical centre-body or 'pod' which provides additional attenuation. These are identified by the inclusion is the product code 'P' for podded of 'NP' for un-podded versions.

When selecting the appropriate silencer, account needs to be taken of both the level of sound reduction achieved and, in the case of a podded silencer, the additional pressure drop in the system which needs to be overcome by the fan. For sound, deducting the appropriate 'dBA Attenuation' figure from the dBA @ 3m' figure in the relevant fan performance table gives a combined dBA @ 3m figure for the fan and silencer combination.

For pressure, the '^P' figure should be added to the pre-attenuation pressure requirement before selecting the appropriate fan.

Fresh Air Supply

Based on 85% of extraction rate = $1.27 \text{ m}^3/\text{sec}$ (<80 airchanges if fan run maximum speed)

External system resistance 245Pa Clean – 280Pa Dirty

bi. Fan + Silencer selection

Elta SEL355/2-1AC

Control of the fan is via an ATC 1-10 step transformer which basically provides 10 steps of control 1 being slow 10 being fast.

Optimum setting for is between 7 – 8 settings

Conclusion.

We can confirm condition 2 of the **Planning Permission 133168/FO/2022 granted by Manchester City Council has been discharged.**

We can confirm condition 4 of the **Planning Permission 133168/FO/2022 granted by Manchester City Council has been discharged**



Appendix 1.