Kitchen Extraction Specification
Odour Control Details
Noise Impact Analysis (DEFRA)

Report Location:

Covering Letter 3

General Description 4

Ductwork 5

Odour Control 6
Including Annex B information

Risk Assessment For Odour 8

Fan details 9

Noise Asssesment

Appendix A
Drawings

Appendix B
Data Sheets

Appendix C
Noise Survey Data

Name: Bradley Clarkes

Address: 7a Marple Road

Postcode: SK13 5EY

Date: 20/03/2017

Ref: **Commercial Kitchen Extraction Specification**

We have put together an intial design and specification for a proposed system at your new development in accordance to DW172 specification.

The cooking is of a low frequency and a low duty, therefore odour control required is of a minimal nature.

The fan will be a forward curved centrifugal impeller design., with a 3 step speed controller.

We have also included details of system maintenance for the proposed system, for your information and convenience. The system will have at least two annual inspections and system cleans, but may require more in order to comply with TR/19 guidelines. In addition the fan should be cleaned and relubricated at every 1750 hours.

If you have any questions or require further clarification of any points within this document please do not hesitate to contact ourselves, we will be most happy to assist where possible.

Yours sincerely

Phil Grady

1 General Description

Cooking Equipment	Fuel	Width	Depth	Co-efficient	Extract Volume
Open Top Range & Oven	Electric	600	600	0.25	0.09
-	-	0	0	0	0
-	-	0	0	0	0
-	-	0	0	0	0
-	-	0	0	0	0
-	-	0	0	0	0
-	-	0	0	0	0
-	-	0	0	0	0
-	-	0	0	0	0
-	-	0	0	0	0

Velocity Co-efficient	0.2	
Themal Convection Method	0.09	m3/s
Extraction Face Area	0.36	m2
Wall Mounted Canopy (Open One End)	0.02	m3/s
Specific Extraction Volume TCM	0.11	m3/s
Specific Extraction Volume FVM	0.19	m3/s

Total Extraction Length

Material T430 0.9mm (20swg) DP2 St. Steel

Canopy Length	1200	mm
Canopy Width	800	mm
Canopy Height	500	mm

2 Ductwork

The main duct work will be manufactured from galvanised mild steel sheet of a folded lock-formed and flange construction in accordance with DW/144 specification for Class A Ductwork. The class A ductwork will have a static pressure limit of less than 500Pa positive pressure and 500Pa negative pressure. In-duct velocity should not exceed 10m/s. Ductwork will be constructed from hot-dip galvanized steel sheets confirming to BS EN10142:1991 Grade DX51D+Z, coating type Z275.

The ductwork has been designed to follow the most direct route to atmosphere, whilst minimising bends and pressure. Any gaskets used should be of a no-porous type and be capable of withstanding the necessary heat loads found along the length of the ductwork.

Where required access panels will be cut into the ductwork in order to provide full cleaning access to every internal duct surface and component. Access panels should be located at no more then 3.0metres. Access panels should be sealed with an appropraite heat proof gasket or sealant.

Ductwork Size and Velocity

	Supply(m/s)	Extract(m/s)
Main runs	6 - 8	6 - 9
Branch runs	4 - 6	5 - 7
Spigots	3 - 5	5 - 7

Circular Ductwork

Volume Flow Rate	**0.19**	m^3/s
Hydraulic Diameter	**560**	mm
Velocity	**8**	m/s
Dynamic Pressure	**38.4**	pa
Reynolds Number	**248888.9**	
Roughness	**0.15**	mm
FDash (Alsthul Approx)	**0.016777**	
Friction Factor	**0.01706**	
Pressure Drop	**1.169841**	pa/m
Fitting K Factor	**0.030465**	
Fitting Pressure Drop	**11.69841**	pa

Rectangular Ductwork

Volume Flow Rate	**0.19**	m^3/s
Duct Width	**500**	mm
Duct Height	**400**	mm
Hydraulic Diameter	**491.881**	mm
Velocity	**8**	m/s
Dynamic Pressure	**38.4**	pa
Reynolds Number	**218613.8**	
Roughness	**0.15**	mm
FDash (Alsthul Approx)	**0.01733**	
Friction Factor	**0.01753**	
Pressure Drop / m	**1.368538**	pa/m
Fitting K Factor	**0.035639**	
Fitting Pressure Drop	**13.68538**	pa

3 Odour Control

Information on Premises

The number of meals served per day	15
The methods of preparation and cooking	Simmering
The types of meals served	English homecooked
Proposed hours of operation	Daytime

Plans and drawings

Plan dimensions	As shown on planning drawings
Plan route	Discharge via high velocity cowl
Exhaust characteristics	Self colour Zinc Hot Dip Finish

Prefilters

Manufacturers name	N/A
Filter name and product code	N/A
Dimensions of the prefilter	N/A
Nature of the filter media	N/A
Manufacturer's recommendations on frequency and maintenance	N/A

Electrostatic precipitators

Manufacturers name	0
ESP name and product code	0
Dimensions of the ESP	N/A
Flowrate rating	0

Carbon filters

Manufacturers name	N/A
Filter name and product code	N/A
The total number of filter panels	N/A
Carbon type	N/A
Frequency of replacement	N/A
Total volume of carbon expressed in cubic metres	N/A
Total mass of carbon expressed in kilograms	N/A
Dwell time of the gases in the filter compartment	N/A s

Odour counteractions or neutralising system

Manufactures name	N/A
Name of delivery system and product code	N/A
Counteracting tour neutralising chemicals be used	N/A
COSHH datasheets are chemical to be used	N/A
Anticipated counteract and or neutralising delivery right	N/A

Cooker hood

Length of the cooker hood overhangs the appliances	300 mm
Face velocity at cooker hood expressed in metres per second	0.20 m/s
Length of the opening the cooker hood	1200 mm
Depth of the opening the cooker hood	1100 mm

System operation

Extract rate expressed as M3/S at the proposed rate of extract	0.19	m3/s
Dwell time of the gases in the carbon filtration zone	N/A	sec
Volume of the kitchen	0	m3
Efflux velocity	14.47	m/s

Flue design

Flue termination point	□Discharge via straight through high velocity cowl	
Effective Height (inc efflux)	7.84	m
Height above ground (inc 1m above highest point)	2.2	m

Noise

SPL at known distance @ 3 metres	27.18686031	dB(A)
Hours of operation of the ventilation system	Unknown	

Maintenance

Washable primary baffle grease filters	Daily
Frequency of inspection and replacement of all filters	N/A
Inspection and servicing of fans	Every 3 months

Fresh air replacement system

Input rate expressed as M3/S	N/A	m3/s
Prefilter type	G4 (EU4)	
Method of diffusion	N/A	
Number of diffusers	#VALUE!	

Risk Assessment For Odour

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

Dispersion

Very poor	20	Low-level discharge, discharging to courtyard or restriction on stack
Poor	15	Not low-level but below eaves, or discharge of below 10 M/S
Moderate	10	Discharging 1m above eaves 10 to 15 M/S
Good	5	Discharging 1M above ridge 15 M/S

Proximity of receptors

Close	10	Close sensitive receptor less than 20 kitchen discharge
Medium	5	Close sensitive receptor between 20 and one 100 M from kitchen discharge
Far	1	Close sensitive receptor more than 100 and kitchen discharge

Size of kitchen

Large	5	More than 100 covers a large size takeaway
Medium	3	Between 30 and 100 covers or medium sized takeaway
Small	1	Less than 30 covers or small takeaway

Cooking type (odour and grease loading)

Very high	10	Pop high level of fried food, fried chicken, burgers or fish and chips
High	7	Kebab, Vietnamese, Thai or Indian
Medium	4	Cantonese, Japanese or Chinese
Low	1	Most pubs, Italian, French, pizza or steakhouse

Description	Dispersion	Proximity	Size Of Kitchen	Cooking Type	Total
Low to Medium	10	1	1	1	**13**

Classification **Low**

Recommended Odour solution

Primary Filters

Longar Type 2 Baffle Filters Cleaned Daily or at every service (Spare set available)

Second Stage Filtration & Odour Stage

Efflux

High level discharge @ 14.5 m/s
Effective stack height 7.8 Meters

4 Fan Details

Based on the following system requirements:-

Specific Extraction Volume TCM	**0.11**	**m3/s**	**388.8**	**m3/h**	**228.85** **cfm**
(Based on the Thermal Convection Method)					
Baffle Filter Loss @ 0.2 m/s	50	Pa			
Ductwork Pressure Loss	10	Pa			
Pre Filter	0	Pa			
Electrostatic Precipitator	0	Pa			
Carbon Loss	0	Pa			
Ozone	0	Pa			
Estimated Total Pressure	**60**	**Pa**			

Noise Data

TBA

5 Noise Assessment

Measured Background Noise
LA90 TBA dB
(Measured 1m from façade)

Fan Located Internally - TBA

Survey Equipment
Cirrus Research 171C
Cirrus Research Calibrator

Date of Survey: TBA
Time of Survey: TBA
Wind Speed & Direction: TBA
Precipitation
Fog / Mist
Ground
Temperature
Cloud Cover:
Presence of Conditions:

Calculations

Description	63	125	250	500	1k	2k	4k	8k	Total	Unit
Silenced Fan	62	64	66	67	68	67	63	56	74	L_w
Silencer 1D -315 -560mm	7	10	14	24	30	29	27	22	34	L_w
									9	L_w
End Reflection	0	0	0	0	0	0	0	0	9	L_w
Directivity loss	0	0	0	0	0	0	0	0	9	L_w
Distance loss (m) 3	10	10	10	10	10	10	10	10	19	L_w
Acoustic Enclosure	0	0	0	0	0	0	0	0		
Sound pressure level at receiver	45	44	42	33	28	28	26	24	49	L_w
Sound pressure level at receiver	0	33	31	22	17	17	15	13	38	L_p
A Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1	7	dB
dB(A) corrected	-26	17	23	19	17	19	16	12	**27.2**	**dB(A)**