From: Marie O'Keeffe <marie.o'keeffe@adur-worthing.gov.uk> on behalf of Marie O'Keeffe
Sent: 25 October 2021 12:38
To: syrousa@gmail.com
Subject: Fwd: AWDM/1788/21
Attachments: A&W Kitchen Ventilation Guide_v_3.0.pdf

Dear Mr Amirpashaie

Hannah Powell in Environmental Health has asked me to forward the attached document.

Regards.
---------- Forwarded message ---------
From: **Hannah Powell** <hannah.powell@adur-worthing.gov.uk>
Date: Mon, 25 Oct 2021 at 12:07
Subject: AWDM/1788/21
To: Marie O'Keeffe <marie.o'keeffe@adur-worthing.gov.uk>

Hi Marie
Please could the attached guidance be emailed over to the applicant for the above application?
Many thanks
Hannah

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ADUR & WORTHING
COUNCILS

Kitchen Extraction and Ventilation – Information & Guidance 2019

Introduction

- The Public Health & Regulation Team of Adur & Worthing Councils has produced this document for commercial catering ventilation. It contains guidance on what you should consider when planning any kitchen extract and ventilation and the information that you should submit for approval by the Council before you install any ventilation plant at your premises.

- **Appendix A** lists the information required to support planning applications for commercial kitchens.

- **Appendix B** contains a summary of best practice performance requirements for the design and operation of commercial kitchen ventilation systems.

- If you receive this document as a result of conditions attached to, or proposed to be attached to any planning permission granted, you should submit final documents/schemes to the Planning Department in the first instance.

- The aim of any extraction/ventilation is twofold.

    1. to ensure that no nuisance, disturbance or loss of amenity is caused by odour, fumes, food droplets or noise to nearby properties;

    2. to provide a safe and comfortable workplace for your staff. Additionally, the visual appearance of the flue may be important, particularly in a conservation area and the flue itself may require a separate planning permission - you should enquire with the Planning Department regarding this matter.

- You should be aware that the design and installation of a system should be undertaken by a suitably qualified and experienced person with specialist knowledge of ventilation schemes. You should also budget for the considerable expense of such schemes and the ongoing maintenance.

- There are many different types of odour abatement available (carbon filters, electrostatic precipitation, high dilution and high velocity extraction). Not all types are suitable for all cooking methods.

- In designing an odour control scheme, you should ensure that grease and smoke particles are removed first, followed by gaseous odours. There are many different types of odour and particulate abatement available –ultraviolet (uv), electrostatic precipitation (ESP), carbon filters, high dilution/high velocity extraction are a few examples. Not all types are suitable for all cooking methods. In each case grease filters must be installed in the cooker hood.

- In circumstances where the end user of the premises is unknown, or where you cannot be specific about the type of food proposed to be cooked, you should be aware that we shall expect the highest level of odour control in order to cater for a worst-case scenario.

- Where particularly odorous food is likely to be cooked, it is recommended that a high level of odour abatement be incorporated into any scheme.

- Where cooking results in a large volume of smoke (e.g. char grilling, wood fired pizza ovens) it is important filters specifically designed to remove the smoke particles are placed before any odour filters.

- Do not forget maintenance. Without regular maintenance any system will fail. Maintenance shall include cleaning and/or replacement of all filters and annual cleaning of ductwork (which should be designed to be accessible, e.g. via hatches).

- Please ensure your scheme considers noise from the system (from fans and at the discharge point) and any equipment needed to reduce the noise. You do not want any system to disturb your neighbours.

- Please note that any references to minimum standards within this document are for guidance only and do not form part of any official Council policy.

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Appendix A: Information Required to Support Planning Applications for Commercial Kitchens.

To enable the Local Authority Planning Department to assess the suitability of a scheme the following information should be provided.

1. Information on premises

The following information should be supplied:

- the number of meals to be served per day;
- the method(s) of preparation and cooking;
- the types of meal served, e.g. fish and chips, Chinese food, Indian food, pizzas or Italian dishes, etc; and
- proposed hours of operation of the business and any ventilation plant.
- An odour risk assessment for the premises

2. Plans and drawings

Provide a scaled plan showing the internal arrangement of the premises and the dimensions/location of the ventilation system. The plan must contain external elevations of the buildings showing the

- dimensions;
- route; and
- exhaust characteristics of the ductwork in relation to the building.

The location of all filters and the fan must be clearly marked. Where the location of a filter is shown the type must be clearly identified and cross-referenced to the detailed product specification.

3. Pre-filters

A copy of the manufacturer's product data sheet should be supplied clearly showing:

- manufacturer's name;
- filter name and product code;
- dimensions of the pre-filter; and
- nature of the filter media.
- manufacturer's recommendations on the frequency and type of maintenance of the pre-filter having regard to the conditions that it will be used under.

4. Electrostatic precipitators (where proposed)

A copy of the manufacturer's product data sheet should be supplied clearly showing:

- manufacturer's name;

- ESP name and product code;
- dimensions of the ESP; and
- flow rate rating.

Manufacturer's recommendation on the frequency and type of maintenance of the ESP having regard to the conditions that it will be used under.

5. Carbon Filters (where proposed)

The details and type of carbon filter units should be identified. A copy of the manufacturer's product data sheet should be supplied that clearly shows:

- manufacturer's name;
- filter name and product code;
- dimensions of the filter panel; and
- the total number of filter panels in the filter bed.

The following information should also be included:

- the nature of the carbon (including product type);
- the frequency of replacement of the carbon units having regard to the conditions that it will be used under. The assumptions to this calculation must be clearly stated, including the frequency and duration of use. The manufacturer should provide recommendations on the frequency and type of maintenance required;
- total volume of carbon expressed in cubic metres;
- total mass of carbon expressed in kilograms;
- total surface area of the panels exposed to the exhausted air; and
- dwell time of the gases in the filter compartment and the control setting at which this is achieved. The assumptions to this calculation must be clearly stated and should include the air change rate for the setting quoted.

6. Odour counteractant or neutralising system (where proposed)

The details and type of counteractant or neutralising system should be identified. A copy of the manufacturer's product data sheet should be supplied that clearly shows:

- manufacturer's name;
- name of delivery system and product code;
- counteractant or neutralising chemical to be used;
- COSHH data sheets for chemical to be used; and
- anticipated counteractant or neutralising delivery rate.

7. UV-C system (where proposed)

A copy of the manufacturer's product data sheet should be supplied clearly showing:

- manufacturer's name;
- UV-C name and product code;

- dimensions of the UV-c unit;
- anticipated level of ozone being generated;
- anticipated residence time; and
- anticipated level of residual ozone likely at stack exit;

Manufacturer's recommendation on the frequency and type of maintenance of the UV-C having regard to the conditions that it will be used under.

8. Odour counteractant or neutralising system (where proposed)

The details and type of counteractant or neutralising system should be identified. A copy of the manufacturer's product data sheet should be supplied that clearly shows:

- manufacturer's name;
- name of delivery system and product code;
- counteractant or neutralising chemical to be used;
- COSHH data sheets for chemical to be used; and
- anticipated counteractant or neutralising delivery rate.

9. Cooker hood

The following information on the characteristics of the cooker hood should be supplied that clearly shows the:

- length that the cooker hood overhangs the appliances;
- face velocity at the cooker hood, expressed in metres per second; and
- dimensions of the opening of the cooker hood.

10. System Operation

In addition to the specification of the components the following must be provided about the system:

- extract rate (expressed as m^3/s) at the proposed rate of extract;
- dwell time of the gases in the carbon filtration zone;
- volume of the kitchen; and
- efflux velocity

Note: The system performance is dependent upon the extract rate of the air. Where the rate can be adjusted by the use of dampers or a variable speed fan, then the conditions under which the extract rate can be achieved must be described.

11. Flue Design

- The height and velocity of the final discharge are the two important factors. Generally, the greater the flue height, the better the dispersion and dilution of odours.
- The discharge of air should be at a minimum height of 1m above the roof ridge, especially if there are buildings nearby that may affect odour dispersion and dilution.

- Where this is not possible (e.g. because of ownership or structural constraints), additional techniques will be required in order to reduce odours, such as an increase in efflux velocity and additional filters, etc.
- The final discharge should be vertically upwards, unimpeded by flue terminals. The number of bends in the ducting should be minimised and the ducting should have a smooth internal surface.

12. Noise

Data on the noise produced by the system as a whole should be provided including:

- sound power levels or sound pressure levels at given distances (the assumptions to this calculation must be clearly stated);
- an octave band analysis of the noise produced by the system should also be provided, where possible; and
- hours of operation of the ventilation system (where this differs from the hours of opening).
- If the system produces internal sound levels above 70dB at the workstation, a workplace noise assessment should be conducted to ensure that compliance with occupational noise limits is met.

13. Maintenance

A schedule of maintenance must be provided including details for:

- cleaning of washable grease filters;
- frequency of inspection and replacement of all filters (grease filters, pre-filters and carbon filters where proposed);
- inspection and servicing of fans; and
- if schedule is not based on manufacturer's instructions include the reasons why.

14. Additional notes for guidance

- The air inlets must not permit pests to enter the kitchen. Fly screens are an example of how this can be achieved.
- Sufficient air must be permitted into the premises to replace air extracted. The method for supplying this make-up air should be detailed. The route of the air into the kitchen must not result in its contamination, for example passage through a toilet. Separate provision must be made for ventilation of a toilet.
- There must be sufficient access points to permit adequate cleaning of all the ductwork.

Appendix B: Summary of Best practice for design and operation of commercial kitchen ventilation systems: performance requirements

Minimum Ventilation Rates

• An internal ambient air temperature of 28°C maximum

• Maximum humidity levels of 70%

• Internal noise level should be between NR40 – NR50

• Dedicated make up air system to be approximately 85% of the extract flow rate

• Minimum air change rate of 40 per hour (bases on canopy and general room extraction)

• Extract flow rates for a commercial kitchen should be calculated using the thermal convection method only, as this overcomes heat and odour variation between different types of cooking appliances. Other less reliable methods remain available.

Minimum Requirements for Canopy

Velocity requirements:

• Light loading – 0.25 m/s (applies to steaming ovens, boiling pans, bain maries and stock pot stoves)

• Medium loading – 0.35 m/s (applies to deep fat fryers, bratt pans solid and open top ranges and griddles)

• Heavy loading – 0.5 m/s (applies to chargrills, mesquite and specialist broiler units)

Sizing:

• Ideally, the plan dimensions of the canopy shall always exceed the plan dimensions of the catering equipment by a minimum of 250 mm on each free side

• This should be increased to 600 mm in front of combination steaming ovens to cope with the steam or fumes released when the doors of the appliance are opened. Solid fuel appliances must have an overhang of 300 mm from the door open position

Materials:

• A material that would comply with the food hygiene requirement is stainless steel

Grease Separation:

• The grease extracted by the separators shall be collected and removed so that it will not accumulate in either the canopy plenum or the ductwork system, or fall back onto the cooking surface

• The separator shall be constructed so that there are no sharp edges or projections and shall be easily removable for regular cleaning

• Primary filters that retain grease within the filtration matrix until cleaned, shall not be used (not to be confused with those designed with purpose made integral collection reservoirs)

Minimum Requirements for Duct Work

• All duct work should be Low Pressure Class 'A' and constructed in accordance with BESA Specification DW/144 with a minimum thickness of 0.8 mm

• Duct velocities should be as follows:

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

• All internal surfaces of the ductwork should be accessible for cleaning and inspection. Access panels should be installed at 2.0 m centres and should be grease tight using a heat proof gasket or sealant

• Duct work should not pass through fire barriers

• Where it is not possible to immediately discharge the captured air, fire rated duct work may be required

Minimum Requirements for Fans

Fans should be selected to handle the design resistance with an additional 10% airflow and 20% pressure margin allowed to suit possible extensions to the original kitchen plan.

Backward curved centrifugal, mixed flow or axial flow impellers are preferred as they are less prone to unbalance and are more easily maintained and cleaned due to their open construction. Fixed or adjustable metal impellers with a robust and open construction shall be used,

Care shall always be taken with the location of the supply and extract fans to ensure that there is sufficient space for regular cleaning and maintenance. Limited space shall not restrict selection of the correct fan.

Drain holes should be fitted.

For fans serving canopies above solid fuel burning appliances, the motor must be out of the airstream and impellers must have metal blades.

Minimum Requirements for Odour Control

Objectives

• for new premises or premises covered by planning conditions restricting the impact of odour the system shall be designed to prevent harm to the amenity.

• for existing premises not covered by planning conditions restricting the impact of odour, the system shall be designed to avoid statutory nuisance and shall comply with the principles of Best Practical Means.

• The design of a control system should recognise that there are two phases of contamination in a kitchen exhaust; particulate (grease, smoke, hydrocarbons/VOC) and gaseous (odour). The particulate phase needs to be removed prior to dealing with the gaseous phase.

To achieve these objectives the odour control system shall include an adequate level of:

1. Particulate and odour control; and

2. Stack dispersion.

The overall performance of the odour abatement system will represent a balance of 1 and 2.

Discharge stack

The discharge stack shall:

1. Discharge the extracted air not less than 1 m above the roof ridge of any building within 15 metres of the vent serving the commercial kitchen. Additional odour control measures may still be required depending on the cooking type and frequency.

2. If 1 cannot be complied with for planning reasons, then the extracted air shall be discharged not less than 1 m above the roof eaves or dormer window of the building housing the commercial kitchen. A higher level of odour control measures than those required in part 1 may be required.

3. If 1 or 2 cannot be complied with for planning reasons, then higher level of odour control measures than those required in part 1 or 2 may be required.

Odour arrestment plant performance

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 of odour control may include:

1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.4 – 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.

In some instances where very high levels of control are required, combinations or sacrificial levels of filtration may be employed.

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

Minimum Requirements for Noise Control

For new premises or premises covered by planning conditions restricting the impact of noise the system shall be designed to prevent an acoustic impact on the external environment and therefore harm to the amenity, as well as ensuring that noise exposure of kitchen staff does not constitute an occupational noise problem (see Control of Noise at Work Regulations 2005).

For existing premises not covered by planning conditions restricting the impact of noise, the system shall be designed to avoid statutory nuisance and shall comply with the principles of Best Practicable Means.

To achieve these objectives the noise control system shall include:

• control of noise at source to the greatest extent possible; and

• control of noise to the environment by taking acoustic considerations into account within duct, grille and termination design.

The control system should meet the requirements laid down in BS4142: 2014 "Method for Rating and assessing industrial and commercial sound". Reference should also be made to "Planning Noise Advice Document: Sussex" (available at https://www.adur-worthing.gov.uk/noise/planning/).

Where in-line attenuators are used they shall be constructed so that there is no grease impregnation into the acoustic media. A protective membrane shall be specified for this purpose or this will reduce the design performance of the attenuator. This should be taken into account when selection is made.

It may be necessary to apply additional acoustic controls such as in line silencer or splitter attenuator after grease removal stages. Care should be taken to ensure that all such elements are capable of being accessed for cleansing purposes.

Minimum Requirements for Fire Suppression

Proprietors of commercial kitchens are under a duty to ensure that the fire precautions meet the requirements of The Regulatory Reform (Fire Safety) order 2005.

Minimum Requirements for Wood Burning Appliances

When serving a canopy above a wood burning appliance, the complete extract ductwork system shall be:

• Manufactured from stainless steel

• Constructed to DW/144 specification

• Have a minimum of 2-hour fire rating, tested and assessed to the latest version of BS476 part 24

Surface temperatures can reach in excess of 250°C so in these instances, in accordance with Building Control, the ductwork should be insulated to avoid heat transfer to adjacent combustible materials.

Solid Fuel Appliances should be considered separately when designing a safe and effective ventilation/control system.

Maintenance

Proprietors of commercial kitchens have a duty to ensure that the ventilation system serving their kitchen are maintained and operated effectively. Good maintenance is a prerequisite for ensuring that a system complies with Best Practicable Means under statutory nuisance provision and will form a key element of any scheme designed to minimise harm to the amenity under planning regulation. Good maintenance is required by the food hygiene regulations and will also minimise the risk of fire and minimise noise. The recommended cleaning period for grease extract system ductwork is:

Grease Loading		Daily Usages	Cleaning Interval/months
Heavy use	Heavy/continuous grease production	6 – 12 hours 12 -16 hours	3-6 months 2-3 months
Moderate Use	Moderate grease production	6 - 12 hours 12 - 16 hours	6 - 12 months 3 - 4 months
Light Use	No significant grease production	6 - 12 hours 12 - 16 hours	12 months 6 months

Recommendations for maintenance of odour control system include:

- System employing fine filtration and carbon filtration
  - Change fine filters every two weeks
  - Change carbon filters every 4 to 6 months
  - Use a system employing ESP and other in line abatement, typically

- ESP systems cleaned, and sump emptied on a four weekly basis.
  - UV-C systems used in line, cleaned on a four weekly basis

- Side Stream UV-C systems, cleaned every 3 to 6 months.
- Carbon filters with ESP pre-treatment change carbon filter every 6 to 12 months.

These time frames may increase or reduce for extreme or very light applications.