



Hurstwood Environmental Consulting



Prospect House SEND School

Kitchen Ventilation Design Strategy



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Revision Record

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1.0 Introduction

The kitchen for Prospect House SEND School is modeled on similar facilities in schools around the Country and typical usage is limited to the production of a small range of hot and cold lunches / snacks for the pupils and staff members between the hours of approximately 11am and 2pm each day. The school is designed for 100 Pupils and allowing for Staff, assuming a 60/40 split between cooked meals and cold or home prepared meals; we estimate that this will amount to approximately 80 covers per day with the menu typically offering no more than 5 choices from a list which may include:

- Sandwiches and Panini's
- Salads
- Pasta dishes and bakes
- Casseroles
- Curries or Chili and rice
- Chips
- Oven baked meats
- Fish fingers and similar
- Heated prepared vegetables
- Heated readymade puddings; and small baked goods such as cupcakes

The servery will also be stocked with a small range of cold drinks and snacks.

1.1 Cooking Equipment

The main cooking equipment provided within the kitchen comprises:

- Electric combination oven (10 Grid)
- Gas 6 Burner Range
- Electric Bain Marie / Hot Cupboard

1.2 Kitchen Canopy

An overhead island mounted combination extract and supply type canopy shall be provided in line with the recommendations of the Heating and Ventilating Contractors Association Specification DW172. As designed and provided by Airedale Ventilation Services.

The prime function of the kitchen canopy shall be to protect the area surrounding the cooking process from soiled matter and flame giving a tolerable and safe area for staff to work in.

The canopy shall be provided with grease filters in line with the Loss Prevention Certification Boards document LPS 1263 for the removal of flammable grease deposits.



1.3 Kitchen Ventilation

From the extract spigots located on top of the kitchen canopy, spent air shall discharge to atmosphere via fire rated ductwork complying with BS 3476, drawn via a motor out of air stream extract fan discharging at high level via a reducing cone type discharge terminal with a minimum efflux velocity of 15 m/s at an air volume of 970l/s.

All ductwork shall be fully accessible with access doors provided at 3.0m intervals to allow inspection and cleaning. Both Supply and extract units shall be located within the enclosed courtyard at ground level.

Make up air to the kitchen shall be via a dedicated fresh air supply unit delivering filtered and tempered air to the canopy and kitchen. The unit shall be sized at a maximum of 85% of the total extract volume. The remaining 15% shall infiltrate naturally from the surrounding areas maintaining a negative pressure within the kitchen preventing the potential transfer of kitchen odours to areas outside the kitchen.

Attenuation shall be provided in the supply and extract systems in line with the project's acoustic report. Attenuators in the kitchen extract system shall be constructed so that there is no grease impregnation into the acoustic media by way of a protective membrane.

1.4 Kitchen Extract - Risk Assessment for Odour

In order to determine the level of odour the site will produce and the necessary mitigation measures needed, a risk assessment has been carried out in line with Annex C of DEFRA's Guidance on the Control of Odour from Commercial Kitchen Exhaust Systems. The assessment summary is included for information. The levels of risk are grouped in the table below:

Impact Risk	Odour Control Requirement	Significance 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

Four areas of risk are assessed to work out the score for the system which can then be correlated to the level of odour control required. The areas and associated risks/ score are detailed below.

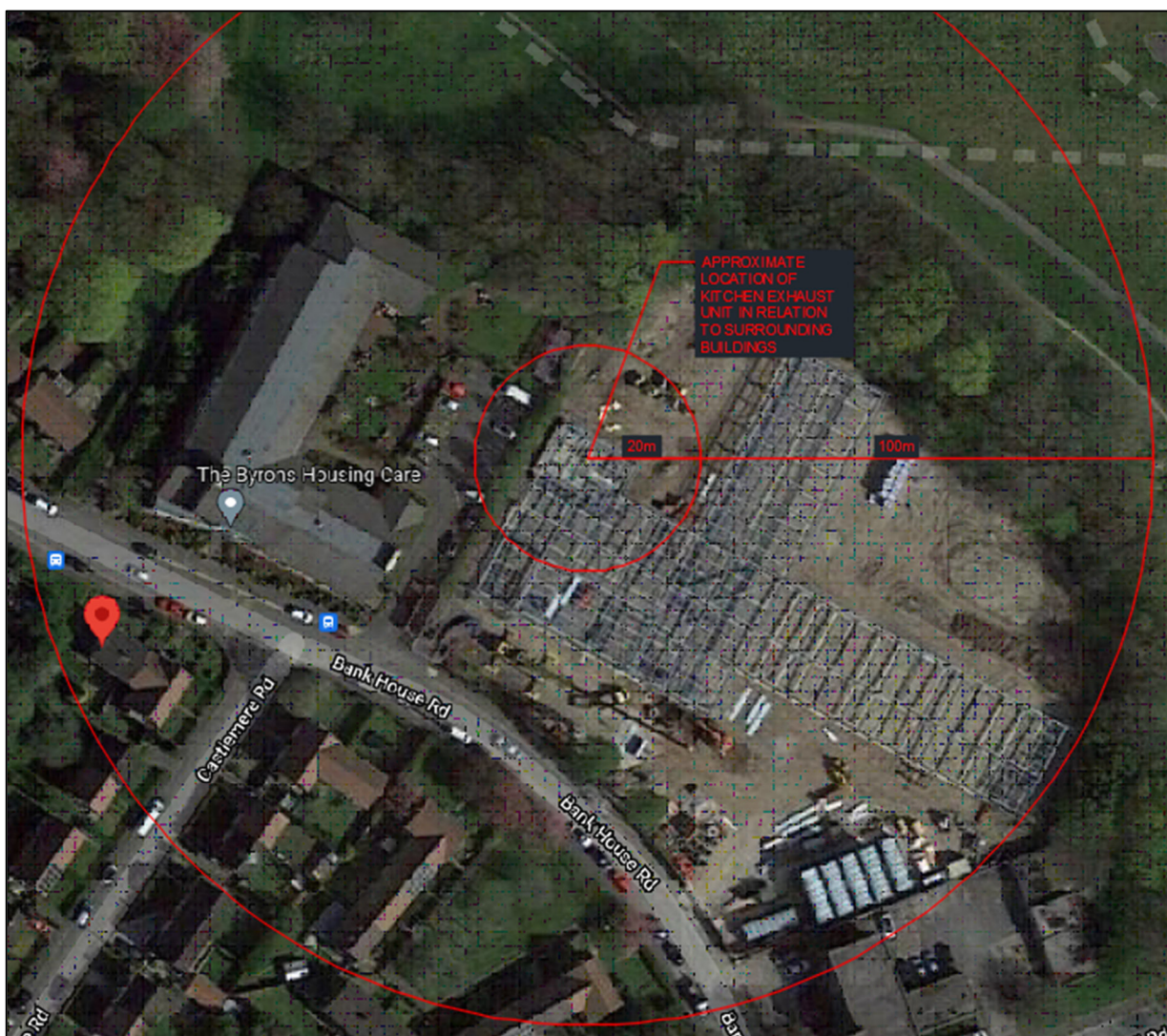
Criteria	Rating	Score	Details
Dispersion	Very Poor	20	Low level discharge, discharge into courtyard or restriction on stack
	Poor	15	Not low level but below eaves or discharge at below 10m/s
	Moderate	10	Discharging 1.0m above eaves at 10 -15 m/s
	Good	5	Discharging 1.0m above eaves at 15 m/s



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Proximity of Receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge
	Far	1	Closest sensitive receptor more than 100m from kitchen discharge
Size of Kitchen	Large	5	More than 100 covers or large sized take away
	Medium	3	Between 30 and 100 covers or medium sized take away
	Small	1	Less than 30 covers or small take away
Cooking Type	Very High	10	Pub (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

Below is an illustration of the site and the distance to possible receptors





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Below is an evaluation for the site based on the criteria above

Criteria	Rating	Score	Details / Comments
Dispersion	Moderate	10	Discharging at high level at 15m/s efflux velocity
Proximity of Receptors	Medium	5	Between 20 and 100m to closest receptor
Size of Kitchen	Medium	3	Less than 100 covers
Cooking Type	Low	1	Food provided deemed low odour and grease loading

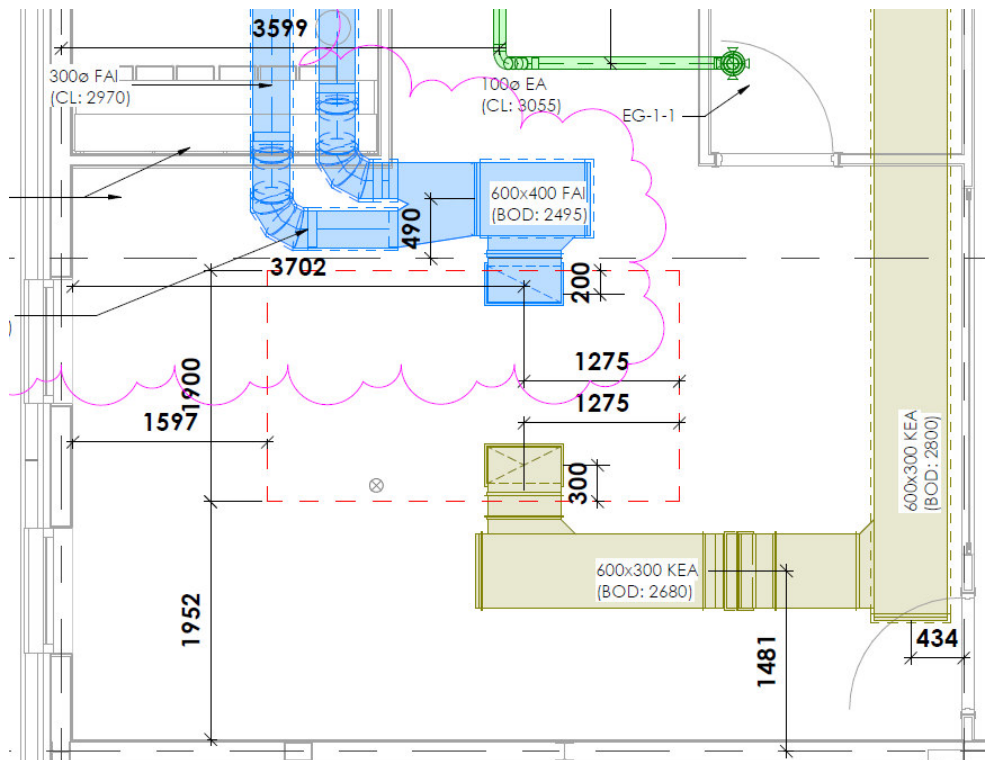
Impact Risk	Odour Control Requirements	Significance Score
Low / Medium	Low Level Odour Control	19

As can be seen from the above risk assessment the site is at low to medium risk for nuisance from odour to adjacent accommodation. This requires a low level of odour control as defined within the DEFRA Guidelines and it is proposed that only baffle filters shall be provided in accordance with the DEFRA guidance for a kitchen of this type with a low/medium significance score.

Baffle filters comprise of a number of interlocked vanes which when assembled, form a two-pass grease removal device. Grease laden air passes through the filter and by a series of forced changes in direction and velocity, the grease becomes separated from the air stream and is deposited on the vertical vanes.

The deposited grease is then drained off through weep holes spaced at intervals and into a collection drawer that must be cleaned at regular intervals. The size of the grease drawer has been sized to suit the type of cooking and frequency of cleaning.

The grease drawer is isolated from the air stream to avoid re-entrainment of grease and odours.



Plan layout - Kitchen Extract Discharge Duct

Extract Fan:

NuAire SQUIF Single inline Bifurcated – 970l/s (0.2W/l/s)

1.5 Natural Gas

The kitchen extract system shall be interlocked with the kitchen gas supply. In the event of air flow failure, the gas supply shall be isolated via a motorised shut off valve.