

## **Danetre School Design Statement**

### **Justification for the Scheme**

By way of explanation, the Hot School Meal Plan is an NCC initiative to introduce into the Schools of Northamptonshire the opportunity to provide a hot school meal to all students/pupils in the county. There is an ambitious programme of works to target approx. 226 Schools over a 3 year programme that began in 2010. We are currently concentrating on Year 2 Schools in 2011, of which there are approx. 104 Schools being considered.

The internal kitchen refurbishment for this School consists of refurbishing the existing kitchen within the School. It is proposed to upgrade the current catering equipment and appliances, improve the overall working environment and ensure that the ventilation system for the Kitchen meets current legislation guidance.

### **Design**

The proposed external AHU plant location proposed will be positioned near the centre of the School complex directly above the Kitchen. Due to the topography of the site and surrounding areas being higher than the School, it may be possible for residential property past the School site boundary to see the new plant from a distance. The nearest residential site boundary is approx 37.5m away from the new plant location.

The kitchen ventilation systems have been designed to comply with current Health and Safety legislation and Building Regulations Approved Document Part F requirements.

Current legislation requires the safe removal of fumes and other gases/vapours that may pose a health issue to staff or be harmful to the building and its contents with regards to moisture etc.

The size of the ventilation equipment is dependent on the catering equipment being used within the kitchen and is closely controlled.

Associated plant also has to comply with noise limitation for the operatives (Noise at Work Act) and the efficiencies of the plant have to comply with Approved Document Part L of the Building Regulations legislation to ensure that fan energy is optimised to reduce lifetime running costs.

The plant is weather proof where fitted externally and the normal finish is galvanised steel.

The units would sit on a Roof Pro support system. This support system allows the plant to sit above the roof and facilitates re-roofing without de-commissioning the air handling plant should it be required. The height required for this function is 450mm however;

If planning restrictions require a lower value, the Roof Pro can be fitted as low as 200mm above the roof. This would not allow work to be carried out on the roof and the air handling plant would need to be de-commissioned.

## **Relevant Planning Policies**

The proposals for the external AHU plant feeding the new Kitchen ventilation comply with **Local Plan Policy GN2** of Daventry District Council in the following ways:

- The AHU plant is situated at high level to deter vandalism and avoid noise and smells coming into contact with people.
- The units are specified as one of the most energy efficient and quieter models on the market. The data for the noise generation can be seen within section 10 of the Ventilation and Extract Statement document supplied.
- Material finishes of the units are galvanised steel and powder coated grey to be sympathetic with the character of the building.
- The existing kitchen ventilation is non-compliant with current Regulations and the AHU plant has been designed and specified to meet these Regulations and improve the kitchen working environment for staff.

## **Smells**

With regards to odours, we would assume that the catering loads in each instance have not altered and so odours leaving the kitchen should be no worse than previously experienced.

We would advise that the new plant will be more effective at removing the building up of fumes and odours and these will inevitably create a smell. The distance and prevailing wind will carry these to any adjacent location.

If necessary, we can fit raised exhaust ducts that will discharge the odours to a higher level. This obviously will have an impact on the aesthetics which is also a consideration.

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**Building Services Design**  
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## **Ventilation & Extraction Statement**

### **Refurbishment Kitchen**

**Danetre Secondary School,  
Hawke Road, Daventry, Northamptonshire  
NN11 4LJ**



Food for thought

**A sustainable building starts with a healthy core**

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**ISSUE & REVISION RECORD**

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## **Section 1 – Information on Premises**

Number of meals per day: 560

Methods of preparation & cooking: The methods of cooking will be predominantly gas fired oven/hob and combination oven.

Types of meal served: The kitchen will be required to prepare fresh food for cooking, fresh baguettes, sandwiches, Panini's, pasta, jacket potatoes and may be required to cook frozen pre-prepared meals to send out to primary schools

Proposed hours of operation: 0800 – 1400hrs

## **Section 2 – Plans & drawings**

See attached for plans and elevations of proposed kitchen services.

## **Section 3 – Pre Filters**

Not applicable to this site

## **Section 4 – Electrostatic Precipitators**

Not applicable to this site

## **Section 5 – Carbon Filters**

Not applicable to this site

## **Section 6 - Odour Counteractant or Neutralising System**

Due to the nature of cooking, based on the equipment being installed, the occurrence of odours will be minimal. The velocity of the extracted air will be such that any odours that are produced will be dispersed and mixed into the surrounding air.

## **Section 7 – Cooker hood**

A supply and extract cooker hood is proposed to extend over the full length of the equipment, overhanging by a minimum of 400mm. Dimensions of the hood are 5150x3250x490. The hood has the following:

Full length double sided triangulated grease filter housing to retain Superstream baffle type grease filter panels handling a total extract volume of 1.58m<sup>3</sup>/sec against a resistance at the duct connection spigot of 110N/m<sup>2</sup>. The housing has integral grease collection system with removable drawers. The filter panels are suitable for cleaning within most commercial dishwashers.

Internal sloping skin on two sides forming insulated supply air plenum chambers with Britannia stainless steel diffuser panels to deliver 1.34m<sup>3</sup>/sec externally at low velocity. The diffusers are fitted with synthetic dust filter media and the panels are easily removed for maintenance.

## **Section 8 – System Operation**

Extract rate: 1.58m<sup>3</sup>/s

Supply: 1.34m<sup>3</sup>/s

The velocity of the extracted air leaving the system is 6.65m/s.

## Section 9 - Flue Design

The kitchen exhaust is located on the roof in a similar location to the existing extract fans. The final discharge is horizontal with a 45° louvre.

## Section 10 – Noise

Extract Fan

### Sound Data

Fan Power	Fan Speed RPM	Sound Spectrum dB re 10 <sup>-12</sup> w PWL Centre Frequency Hz								Sound Pressure Level dBA @ 3 metres from outlet
		63	125	250	500	1k	2k	4k	8k	
230Vac	1430	74	78	82	82	78	73	69	64	69
50Hz	1430	74	78	82	82	78	73	69	64	69
45Hz	1287	72	76	79	79	75	71	66	62	66
40Hz	1144	70	73	77	76	72	68	63	59	64
35Hz	1001	67	70	73	73	69	64	60	55	60
30Hz	858	64	67	70	70	66	61	57	52	57

### Insertion Loss Table

Case Insertion Loss	Sound Spectrum dB re 10 <sup>-12</sup> w PWL Centre Frequency Hz							
	63	125	250	500	1k	2k	4k	8k
	9	14	21	27	32	37	43	42

Supply fan

### Sensaire Noise Data

Sensaire Model	Sound Power Level Spectrum dB re 10 <sup>-12</sup> w PWL							
	Centre Frequency - Hz							
	63	125	250	500	1k	2k	4k	8k
1	67	66	76	75	71	64	58	53
2	59	69	64	59	54	49	45	39
3	64	74	69	64	59	54	50	44
4	75	78	77	71	65	62	60	59
5	69	79	80	69	67	62	59	57

Note: The above figures are for 1 phase units which are slightly noisier than 3 phase fans.

### Noise Breakout

Sensaire Model	Distance from unit - metres	Sound Pressure Level - dB									
		NR level	dBA	Centre Frequency - Hz							
				63	125	250	500	1k	2k	4k	8k
1	1	45	47	34	41	46	44	43	39	31	21
	3	40	42	30	39	41	39	39	36	26	20
2	1	35	36	28	42	35	31	30	30	30	23
	3	30	32	24	39	31	26	24	24	24	20
3	1	40	41	33	47	40	36	35	35	35	28
	3	35	37	29	44	36	31	29	29	29	23
4	1	45	49	43	52	48	42	40	42	40	38
	3	40	43	39	48	44	37	34	36	34	34
5	1	45	48	37	53	51	40	42	42	39	37
	3	40	44	33	49	47	35	36	36	33	32

NB: Noise breakout can be further reduced if heavy weight infill is fitted within the double skinned case.

(N.B the unit used is Sensaire 5)

### **Section 11 – Maintenance**

Filters for the AHU and kitchen canopy will be cleaned/replaced in accordance with the manufacturers' recommendations.

### **Section 12 – Additional Information**

The make up air for the kitchen will be supplied via a roof mounted AHU. This will be directly supplied to the kitchen canopy.