



HARNISS

C O N S U L T I N G

VENTILATION STATEMENT

FOR

PROPOSED CARE HOME, HOTEL FELIX, CAMBRIDGE

ON BEHALF OF



DOC No: 1761-REP-VS-01

REVISION P1
February 2021

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Revision	Date Issued	Description	Prepared	Approved
P1	10.02.2021	First Issue	TS	MC

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1.0 Introduction

This statement has been prepared by Harniss Consulting Ltd on behalf of Kyn to provide a summary of the design criteria, to which the mechanical ventilation shall be designed and installed at the proposed residential care home development on the site of the existing Felix Hotel in Cambridge.

The statement has been produced as part of a desktop review of the 'commercial' type fixed-buildings services systems in respect to mitigating potential issues from both noise and odour.

The specification produced for Kyn, and the detail herein, reviews the catering kitchen services requirements of the proposed care home against recommendations and information from, the now withdrawn, *Defra Guidance on the Control of Odour and Noise from commercial Kitchen Exhaust Systems* and DW/172.

The scheme is currently at initial planning stage and as such the design of individual ventilation systems and their components has not been fully detailed. However, the Employers Requirements and the early planning conceptual design has incorporated the following elements to ensure that the development harmonises with its surrounding residential setting.

2.0 Noise Criteria for Fixed-Building Services

The ventilation strategy for the building is via natural means (window openings), where achievable and practical; and as such this dictates that the building services plant shall be designed, selected and positioned to ensure a maximum noise level at the nearest residential façade on-site; and the maximum noise level at the boundary, of no greater than 38dB.

With an opening window achieving between c.15dB noise reduction, this will exceed the noise reduction requirements to ensure the internal noise design criteria of 30dB at night and 35dB during day-time hours (07:00-23:00) is achieved.

The ventilation and cooling plant shall be designed to be located within areas of less sensitivity such as within dedicated plant rooms, within service area, concealed voids and at roof level within the formed roof well. These locations offer the best shielding of plant, but the overarching design criteria which forms the Design and Build contract will be the noise limit for plant design, selection and operation as stated in the above paragraphs.

The brief for the catering kitchen has yet to be completed and as such the detailed design of the ventilation system is not developed. The operation times of the system are potentially from 0600 through to late evening, however, the ventilation system is not fully operational throughout this period. The ventilation system shall be specified to provide full speed control from 30% to 100% of design duty to reflect the activity being undertaken i.e. during food preparation activities in the early morning the ventilation system would only be operating at c.30% of total system duty to meet the occupancy requirements, so the corresponding noise level will be significantly reduced. The kitchen ventilation plant shall also be located internally and shall be fitted with suitable melinex lined attenuators to ensure the above noise criteria is met. The kitchen exhaust shall be expelled at high velocity at high level in line with DW/172 recommendations, ensuring that the low risk of kitchen odours of this building are efficiently diluted.

Community day spaces and circulation spaces such as the dining, lounge areas and corridors shall be provided with mechanical heat recovery ventilation systems to provide between 2 and 6-air changes per hour to each space (or 10ltr/sec per person based on occupancy rates agreed with the building operator at time of detailed design, whichever the greater air volume). The heat recovery ventilation units serving these spaces are located within the ceiling/roof voids and within the roof wells and shall operate continuously to maintain good air quality within the building. Within these

systems are attenuators to ensure that the air borne noise from the plant is not transferred to either the space served or the external surroundings.

These systems include heat recovery devices to maximise system efficiency and reduce energy consumption. The heat recovery devices also include heating and cooling coils as well as a by-pass for summer operation to aid in the dissipation of heat from the building.

Ventilation to the plant room shall be via louvred doors with insect mesh which will provide sufficient noise reduction to enable the heat generation plant to meet the maximum noise level at the boundary.

The conceptual scheme has identified the following systems where external equipment or connections to the external façade are required with their proposed location identified for information: -

Ventilation		
Kitchen Ventilation	Supply and Extract Fans	Extract fan located at roof level within plant well. Noise breakout limited through design specification and air borne noise reduced to meet design criteria by way of in-duct attenuation.
Laundry Ventilation	Supply and Extract Fans	Fan units located at roof level within plant well. Noise breakout limited through design specification and air borne noise reduced to meet design criteria by way of in-duct attenuation.
Ventilation Systems serving day spaces & corridors	Local Heat Recovery Ventilation Units	Local units within ceiling/roof voids and within plant wells. Noise breakout limited through design specification and air borne noise reduced to meet design criteria by way of in-duct attenuation and selection of equipment on low-fan speeds.
Cooling		
Communications Room & Medical Stores	DX Cooling	External condensers at either at ground floor or at roof level with screening. Noise breakout limited through design specification and screening, where required. Low noise equipment to be specified in all instances.
Reception / Café / Day Spaces / Offices	Variable Refrigerant Volume Heat Pump (VRF/VRV)	External condensers within roof plant wells. Noise breakout limited through design specification and screening, where required. Low noise equipment to be specified in all instances.

3.0 Odour

The kitchen ventilation system shall be designed and installed so to satisfy the following criteria to meet low standard of odour control envisaged for the scheme:

- The kitchen canopy itself shall be positioned directly over the hob area and shall be sized to suit the calculated air volume at 20 air changes per hour, as per DW/172 guidance. Filtration shall be provided within the extract system to ensure that grease and airborne waste products are not expelled to atmosphere.
- The supply/makeup air shall be provided at 85% of the air volume removed by the kitchen extract system. This ensures that the room operates under a negative pressure and therefore odours cannot escape through the building fabric of the room to atmosphere.
- The extracted air shall be discharged not less than 1m above the eaves level of the building.
- The kitchen extract system shall terminate via an accelerator with a discharge velocity of no less than 7m/s (under full system duty) to meet DEFRA's dispersion rating.

4.0 Kitchen Ventilation System Maintenance Requirements

To ensure the correct operation of the kitchen ventilation system is sustained, regular maintenance is required. Failure to do so can often lead to increased pressure drop within the system, flowrates dropping and hygiene levels falling. An increased risk of fire within the ductwork system is also likely due to grease build-up.

Due to the risks mentioned above, the *Defra Guidance on the Control of Odour and Noise from commercial Kitchen Exhaust Systems* recommends that the following maintenance is provided: -

- A visual inspection of the ventilation system be carried out at least once a week. All metal surfaces should be checked to ensure that there is no accumulation of grease or dirt and that there is no surface damage.
- Cooker hoods and grease filters should be cleaned on a daily basis.
- Baffle type self-draining filters and collection drawers should be cleaned weekly as a minimum. The cleaning period for mesh filters should be at least twice a week.
- Periodic 'deep hygiene cleaning' be undertaken by a specialist contractor. All accessible main ductwork runs and branches, including fitted equipment should be inspected and cleaned. [Note: periodic will be defined by the frequency in use of installed systems].
- All fans are maintained on a regular basis as recommended by the fan manufacturer.
- Ventilation grilles, where fitted have easily removable cores to facilitate cleaning;
- Change fine filters every two weeks; and

The care home development team shall ensure that the above maintenance requirements are included within the buildings Operation and Maintenance manuals so that the operational management team can implement the schedule indefinitely.

5.0 Conclusion

Through correct specification, the developer will seek to mitigate potential odour and noise issues emanating from the systems installed to achieve the high-level domestic environment to meet the specific needs of each and every building user, whilst ensuring harmony with the developments surroundings.