

project: Nelson Hotel, Littlehampton
Ventilation Services Summary – Planning Submission

The following information is presented to provide a documented description of what will be provided and give an outline of the Building Engineering Services Specification, in relation to the ventilation.

GENERAL VENTILATION

Bedrooms

The bedrooms will be ventilated via two methods. Where acoustic conditions allow the bedrooms will be naturally ventilated via openable windows with trickle ventilation provided for background. The ensembles will be provided with mechanical extract ventilation. Extract air ductwork shall be provided to each ensuite. The extract system shall operate on 'trickle' mode to provide background ventilation (continuous) and 'boost' when activated by the lighting presence sensor. The 'boost' function shall remain for 15 minutes after occupancy.

Where acoustic requirements necessitate the windows being closed the bedrooms will be provided with supply ventilation to the 'living area' and extract ventilation to the ensembles. The air shall be conveyed via a heat recovery ventilator to improve energy efficiency. Windows will still be openable to provide guests with the option to open them.

The mechanical ventilation plant shall be acoustic lined for low breakout noise and shall be provided with atmosphere and room side attenuators to meet the sound attenuation requirements of the Acoustic Consultant's recommendations.

Intake and extract air shall be via weatherproof grilles mounted to the external façade.

Mechanical Ventilation

All WCs, sanitary accommodation and cleaner's cupboards will be provided with mechanical extract ventilation. The extract ventilation shall operate in trickle mode (continuous) and provide 'boost' ventilation when activated by lighting presence sensor. The 'boost' function shall remain for 15 minutes after occupancy.

Elsewhere, where it is not viable to utilise openable windows heat recovery supply and extract ventilators.

Fresh air intakes and exhaust shall be drawn in or exhausted through air intake and exhaust plenum mounted on to wall louvres, as indicated on the drawings.

All mechanical ventilation plant shall be suspended from the underside of the floor slab via anti-vibration mounts.

Mechanical extract plant and heat recovery cross flow heat exchanger units shall be acoustic lined for low breakout noise and shall be provided with atmosphere and room side attenuators to meet the sound attenuation requirements of the Acoustic Consultant's recommendations.

KITCHEN VENTILATION

The ground floor kitchen shall be supplied with a dedicated supply and extract fan system located within the basement plant enclosure, for the supply with the extract being at roof level.

The kitchen itself shall be maintained under a negative pressure by increasing the extract air, over the supply air volume by approximately 15%. Although the final design is still to be concluded, based on the final selection of equipment, an assumed air change rate of 40ACH has been utilised to size the plant spaces, louvres and the risers. The final duties shall be based on details provided by the Catering Specialist using the methods described in HVCA DW/172.

From initial plant selections we are concerned in regard to the atmospheric noise from the plant in relation to the background noise level. As such attenuators have been allowed in the plant layouts on both the atmospheric and system sides of both the supply and extract fan. We will look to minimise this by selection of low noise and slower running fans as part of the detailed design, with the hope of eliminating attenuators particularly on the extract system.

Generally, the kitchen air shall be extracted through a canopy hood and baffle filters and exhausted via galvanised steel ductwork to the extract fan and onwards to the discharge point located on the roof.

The discharge of the extracted air from the kitchen is 1000mm above the roof ridge of any building within 20 m of the building housing the commercial kitchen.

Extract ductwork shall be fire rated from the point of exit from the kitchen fire compartment and shall be complete with all necessary access hatches for cleaning. Exhaust air shall pass through filters before discharging vertically, complete with atmosphere side sound attenuators and conical exhaust terminals in accordance with DW/172. All internal surfaces of the extract ductwork shall be accessible for cleaning.

The kitchen shall be provided with make-up supply air via a dedicated supply air handling unit located within the plant area, as indicated on drawings, supplying air tempered to 16°C. The kitchen supply system shall incorporate atmosphere side sound attenuators selected in accordance with the requirements of the Acoustic Consultant, panel filters installed up-stream of the fan and an LTHW heater battery to temper the supply air. Fresh air shall be drawn into the plant room through louvers located in the external wall, to architect's details, and shall be drawn into the fresh air intake section of the supply air handling units. The supply air shall be distributed via insulated ductwork from the fans to the spigot locations on the canopy hoods – final arrangements forming part of the detailed design.

The kitchen supply and extract fans shall be interlocked with the kitchen gas supply via dedicated control systems protecting the kitchen only. The system shall consist of a wall mounted control panel and a self contained actuator / pressure sensing unit within each kitchen area. The actuator shall be fitted to the gas supply serving the kitchen. Differential pressure switches shall be installed in the supply / extract ductwork to the kitchen or CT monitoring shall be installed such that if either fan is not running to the kitchen, then the gas solenoid valve serving the kitchen shall remain closed.

The AHUs shall be installed with inverter control for accurate commissioning of the system and adjustment of fan speed as secondary filters become dirty. The AHUs shall each be provided with a remote enable signal by a dedicated time schedule provided within the mechanical control panel at basement level.

Room side sound attenuators shall be fitted to the ventilation ductwork to meet the requirements of the Acoustic Consultant's recommendations.

Ductwork

Kitchen extract ductwork shall be installed in full compliance to HVCA Specifications DW/144 and DW/172. The ductwork shall be rectangular with access cleaning doors provided in horizontal runs of ductwork at no less than 3 metre intervals and at changes of direction.

Kitchen extract ductwork presents a particular hazard in that combustible deposits such as grease are likely to accumulate on its internal surfaces. Therefore the ductwork should resist fire from inside (type B) and must be rated for stability, integrity and insulation, for the same period of time as the compartment through which it passes.

As a fire in an adjacent compartment through which the kitchen extract ductwork is passing, could initiate a fire within the ductwork, which in the absence of the dampers might prejudice the safety of the kitchen occupants, it should also be tested to fire outside (type A) with the additional requirement that the internal surface of the ductwork within the compartment must meet the insulation criteria.

Fire rated kitchen extract ductwork shall be galvanised sheet steel manufactured to an enhanced standard, then degreased and factor sprayed with Flamebar BW11 as manufactured by Hotchkiss Group, or equal and approved. All fire rated ductwork and penetration seals must be tested to BS 476/ISO 6944 and manufactured and installed as tested or assessed by a NAMAS/UKAS Accredited Laboratory.

Final approval shall be obtained from the Local Building Control Officer/Fire Department prior to commencement of construction.

Drains shall be provided at the base of all risers.

All cleaning doors on horizontal ductwork shall be mounted on the side of the ductwork. Cleaning doors shall be co-ordinated with corresponding builderswork access doors in stud work around the extract duct.