



Hough End Sports Village

Flue and Ventilation Planning Application Report

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This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2008, BS EN ISO 14001: 2004)

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1. INTRODUCTION

This report outlines the flues and ventilation terminals that are proposed to serve the new development of The Hough End Sports Village Development in support of the planning application.

This report forms part of the Flue and Ventilation Strategy required to be submitted to planning authorities for approval.

The document provides an outline description of the flue requirements for proposed development.

Generally, flues will be installed to meet the requirements of the clean Air act 1993 and subsequent amendments thereof.

Mechanical and natural ventilation systems will be provided to the proposed developments.

Ventilation systems will be designed to comply with the minimum standards of The Building Regulations Approved Document Part F – Ventilation 2010.

2. Flues

The systems provided are summarised as follows.

2.1 Heating and cooling systems

It is proposed that the building shall be served by a combination of different systems to heat the building.

The ancillary areas of the building shall be provided with low pressure hot water heating system served by a high efficiency low NOx condensing boiler. The boiler will be located in the first floor plantroom and shall be provided with a manufacturer's proprietary flue system and fresh air inlet louvres to provide combustion air to the boiler and exhaust route for the flue gases. The flue shall be installed in line with the gas regulations and shall rise vertically from the plantroom to discharge at the roof level directly above.

It is also proposed that elements of the building shall be heated and comfort cooled from electric driven air source heat pump units located in the external plant area. Therefore, as the systems are all electrically driven there are no boiler flues associated with these systems.

2.2 Hot water generation

The hot water provision to the new extension building shall be provided by a the main heating system gas boiler identified in section 2.1 above as well as having an element of contribution from the air source heat pump units.

3. Ventilation Systems

Ventilation systems will be designed to comply with the requirements of;

The Building Regulations AD Part F – Ventilation, 2010.

Building Bulletin 101 – Ventilation of Schools

CIBSE Guides

BSRIA Guides, Application Manuals and Technical Memorandum

The Building Fire Safety Strategy

HVCA Guides, particularly “DW” series which will be applied as applicable to the system

Relevant British and European Standards

General ventilations system air intakes will be provided with filtration to provide clean air to the occupants within the building. These will be formed of panel and bag filters;

Panel filters to G4 / EU4

Bag filters to F7 / EU7

As detailed in BS EN 778 and Eurovent 4/5

3.1 Changing Room Ventilation System

It is proposed that the changing room areas of the new building shall be served by two dedicated air handling units providing fresh ventilation air and extracted exhaust air from the changing rooms areas of the building to meet the requirements of the Building Regulations Approved Documents, CIBSE Guidelines and the occupants within the rooms. The fresh air intake and exhaust air discharge point shall be located upon the side elevation of the building at the first floor external plant deck and shall be located at the CEN/TR 16798-4:2017 (annex A2) recommended separation distances to prevent recirculation of discharge air back into the building.

3.2 Gym Area Ventilation System

It is proposed that the newly formed gym area of the new building shall be served by a dedicated air handling unit providing fresh ventilation air and extracted exhaust air from the gym space to meet the requirements of the Building Regulations Approved Documents, CIBSE Guidelines and the occupants within the rooms. The fresh air intake and exhaust air discharge point shall be located upon the side elevation of the building at the first floor external plant deck and shall be located at the CEN/TR 16798-4:2017 (annex A2) recommended separation distances to prevent recirculation of discharge air back into the building.

3.3 Club and Training Room Areas

It is proposed that the club and training room areas of the new building shall be served by a series of local heat recovery mechanical ventilation units, providing fresh ventilation air to the building to meet the requirements of the Building Regulations Approved Documents, CIBSE Guidelines and the occupants within the rooms. The fresh air intake and exhaust air discharge point shall be located directly above the room through the roof of the building and shall be located at the CEN/TR 16798-

4:2017 (annex A2) recommended separation distances to prevent recirculation of discharge air back into the building.

3.4 Café Kitchen and Servery Area Ventilation Systems

It is proposed that the cafe kitchen area shall be similarly served by a dedicated ventilation system supplying and extracting exhaust air from the kitchen space via a dedicated kitchen grease filtration extract hood. The supply and extracted air shall be to the first floor external plant deck area where the system shall connect to a dedicated air handling unit. The unit will be ducted to discharge through a high level high velocity exhaust nozzle to ensure the fumes are dissipated correctly in line with the guidance in HVCA DW172.

3.5 Toilet Extract System

The new toilet provision located within the proposed building shall be served by a dedicated toilet extract ventilation system. The toilet extract system shall extract air from each of the toilet cubicles, with makeup air from the surrounding spaces entering the cubicles via undercut doors, with the extracted air ducted to a discharge terminal above roof level in the first floor external plant deck area of the building. The extracted air shall be discharged to atmosphere at a point located at the CEN/TR 16798-4:2017 (annex A2) recommended separation distance from any other vent system intake to prevent recirculation of discharge air back into the building.

3.5 Preparation Kitchen Extract Ventilation Odour Control

A risk assessment has been completed to define the likely requirements for the control of odour from the mechanical extract ventilation systems serving the food preparation kitchen and servery area, this is based on a worst-case scenario.

This risk assessment is based on the DEFRA document “Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems” 2005. We note that whilst this document has been withdrawn from use, no other form of assessment procedure has been implemented to assess the requirements. Therefore, in the absence of any further guidance being issued this document has formed the basis of the assessment.

The risk assessment is based upon a scoring methodology whereby;

Impact Risk	Odour control requirement	Significance Score*
Low to Medium	Low Level Odour control	Less than 20
High	High Level Odour Control	20 to 35
Very High	Very high level Odour control	More than 35

* Based on the sum of the contributions from dispersion, proximity to receptors, size of the kitchen and cooking type.

The following table details the performance requirement and associated score for dispersion, proximity of receptors, size of kitchen and cooking type factors.

Criteria	Score	Score	Details
Dispersion	Very poor	20	Low level discharge, discharge into court yard or restriction on stack
	Poor	15	Not low level but below eaves, or discharge below 10m/s
	Moderate	10	Discharging 1m above eaves at 10-15m/s
	Good	5	Discharging 1 m above eaves at 15m/s
Proximity of Receptors	Close	20	Closest sensitive receptor less than 20m for kitchen discharge
	Medium	15	Closest sensitive receptor between 20m and 100m from kitchen discharge
	Far	10	Closest sensitive receptor more than 100m from kitchen discharge
Size of kitchen	Large	20	More than 100 covers or large sized take away
	Medium	15	Between 30 and 100 covers or medium sized take-away.
	Small	10	Less than 30 covers or small take away.
Cooking type (odour and grease loading)	Very High	20	Pub (high level of fried food), fried chicken, burgers or fish & chips.
	High	15	Kebab, Vietnamese, Thai or Indian.
	Medium	10	Cantonese, Japanese or Chinese.
	Low	5	Most pubs, Italian, French, Pizza or steakhouse.

* Sensitive receptors are classified as residential properties around the site. As we are unaware of any residential properties, we have assumed worst case proximity for each unit.

Scoring

An assessment has been completed for each retail unit against the scoring methodology the following scores and result have been achieved.

Unit	Dispersion	Proximity to Receptors	Size of Kitchen*	Cooking Type+	Total Score
Kitchen	Moderate, 10	Medium, 15	Small, 10	Low, 5	40

Total Score = 40

Rating = Very high

Odour Control Equipment

Based on the risk assessment completed above and following the guidance within the document for a score of Very High the following technologies would be applicable to the food tech extract ventilation. The final selection of technology will be completed following further design development;

Very High level odour control may include:

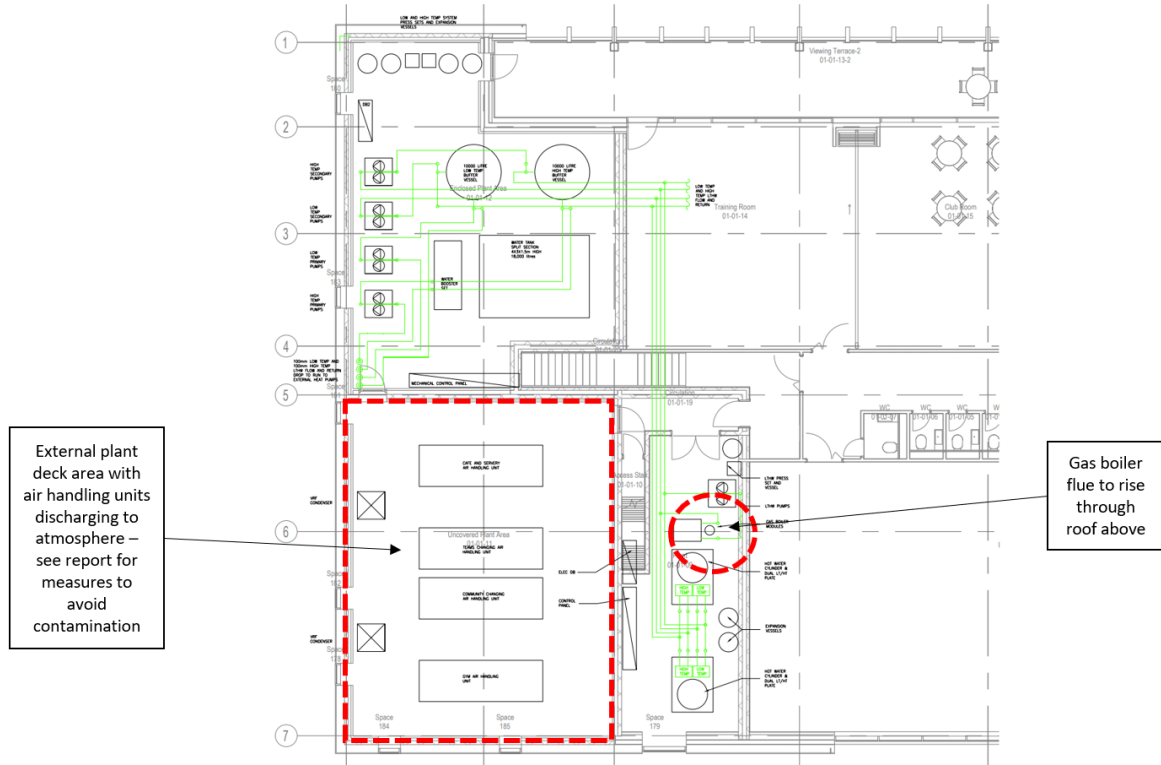
- Fine filtration or electro static precipitation (ESP) followed by carbon filtration (carbon filters rated with a 0.4 –0.8 second residence time).
OR
- Fine filtration or electro static precipitation (ESP) followed by carbon filtration and by counteractant/neutralising system to achieve the same level of control as 1.
OR
- Fine filtration or electro static precipitation (ESP) followed by UV ozone system to achieve the same level of control as 1.
OR
- Fine filtration or electro static precipitation (ESP) followed by wet scrubbing to achieve the same level of control as 1.

It is noted that maintenance must be carried out to ensure these performance levels are always achieved.

Recommendation

It is proposed that the café kitchen extract system shall be installed with electro static precipitation (ESP) followed by UV ozone system.

APPENDIX A – LOCATION OF VENTILATION AND FLUE OUTLETS





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