
P3001350 - Dewsbury Market

Ventilation and Extract Statement - For Planning

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Issue Status

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P01	Draft Planning Issue	DI	26/07/24	AR
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This document is based on current design information available at the time of planning submission. The final installation may vary from the arrangements shown but the principles set out within the document should be achieved by the contractor. It remains the contractor's responsibility to collate and record all as built information and ensure that this aligns with all applicable planning deliverables.

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1 – Introduction

This Ventilation and Extract Statement supports the Full Planning Application for the Dewsbury Market development.

The Market is a significant project for Kirklees Council and the future of Dewsbury Town Centre. It is anticipated that the redevelopment of the historic structure will become a catalyst for wider town centre regeneration.

Historically, the market as a typology was at the epicentre of economic, social and political activity. Many towns and cities grew outward with the market as their origin, and today markets are still considered a signifier for the health of towns and cities. Their accessibility and affordability have supported the growth of many well-established larger retailers, whose humble beginnings were trading from market stalls.

Dewsbury's Market tradition dates back to the 14th century where it was first established in Thornhill, before moving to Dewsbury Town Centre. The Market Hall was built on Cloth Hall Street in 1904. The market's cultural and historical significance cannot therefore be overestimated.

The proposals seek to enhance the strengths of the historic market and re-establish it as a key destination of trade and social activity in Dewsbury. Longevity and future success will be secured by introducing new leisure uses, increasing the flexibility of spaces and allowing for a diverse programme of events for the local community and visitors alike.

The ventilation strategies comply with the guidance in BS 7913 conservation of historic buildings as well as the following standards and guidance:

- Building regulations Part F
- Non Domestic Building Services compliance guide
- BS EN 5588-9:1999 Fire precautions in the design, construction and use of buildings. Code of practice for ventilation and air conditioning ductwork (AMD 14993) (No longer current but cited in Building Regulations guidance)
- BS 9999:2017
- CIBSE guide B
- CIBSE commissioning code A
- DW 144
- DW 172
- CAIS 10 Ventilation in catering kitchens

2 – Ventilation and Extract Statement

Fresh air ensures that a healthy building is maintained through the removal of air borne contaminants as well as through the removal of carbon dioxide, moisture and other impurities from within the occupied spaces.

There are three main ventilation strategies commonly used:

- Natural Ventilation
- Mechanical ventilation
- Mixed mode (combination of both)

The building lies within the Dewsbury Town Centre Conservation Area.

The structure of the semi covered Market Hall will contain:

- Multiple retail units

The structure of the covered Market Hall will contain:

- Multiple retail / food and beverage units
 - Food retail units
 - Café shop with seating area
 - Offices in the mezzanine level
- Central Events / dining areas

The ventilation systems shall be designed in accordance with Building Regulations part F and CIBSE guide B and shall provide an adequate means of ventilation for the buildings occupants whilst ensuring that air quality and occupant comfort is satisfactorily maintained.

2.1 Semi-covered market:

The space is designed to be functional both in normal use market scenario and during events. A large extract fan will be placed above the WC facilities, to extract from the central area via high level extract bellmouths. The fan will be connected to CO₂ sensors strategically placed within the main space and will ramp up or down based on the occupancy levels and therefore Co₂ levels within the space as they will be used during all operation modes, both general and event.

Make up air will be supplied via a long row of glazed louvres mounted in the facade facing the market. The glazed louvres will be of the motorized type to allow automatic operation. The glazed louvres should open as required to minimise co₂ levels within the space. If possible, the natural ventilation openings should be utilised without the fans. If all openings being pen does not reduce co₂ levels, only then should the Extract fan be initiated.

2.2 Market Hall:

The space is designed to be functional both in normal use market scenario and during events. A large extract fan will be placed above the office area, to extract from the central area via high level extract bellmouths. The fan will be connected to CO₂ sensors strategically placed within the main space and will ramp up or down based on the occupancy levels and therefore Co₂ levels within the space as they will be used during all operation modes, both general and event.

Make up air will be supplied via a long row of glazed louvres mounted in the facade of the market. The glazed louvres will be of the motorized type to allow automatic operation. The glazed louvres should open as required to minimise co₂ levels within the space. If possible, the natural ventilation openings should be utilised without the

fans. If all openings being open does not reduce CO₂ levels, only then should the Extract fan be initiated. There are also openings with the roof that should be utilised as a make up air inlet.

Within the Market Hall there will be a number of Food and Beverage (F&B) stalls. The F&B units will be mechanically ventilated, the strategy is described later in this report, within section 2.5.

2.3 Toilets/ Changing areas

A decentralised ventilation strategy is applied to the toilets in the semi covered market. Those spaces are served by 2 No. dedicated Mechanical Ventilation Heat Recovery units (MVHRs). The MVHRs shall be used to ensure adequate fresh air is provided (Min. 6 ACH) with intake and exhaust cowls being located above the roof via roof penetrations.

These MVHR units will be used to ventilate the entirety of the WC block within the semi covered market. Make-up air will be pulled from adjacent rooms through transfer grilles as required, mounted at high level above the doors.

Heat will be recovered from the extract air paths to ensure system operation is as efficient as possible.

2.4 Offices/ staff room/ meeting room

It is proposed that fresh air will be provided to these spaces to ensure the minimum fresh air requirements can be met (10l/s/p).

These spaces shall be connected to an independent MVHR unit. The unit can be designed for continuous operation, and is capable of providing up to 70% heat recovery and will supply sufficient air flow in the space for the number of occupants. The staff WC's are also served by this MVHR unit.

Heat will be recovered from the extract air paths to ensure system operation is as efficient as possible.

2.5 Ventilation for Food & Beverage (F&B) units

Any commercial kitchen is to be fully electric (no gas or solid fuel appliances are to be utilised). The current option to ventilate the F&B stalls is to use a single Combined Kitchen Extract System.

This would consist of one kitchen extract fan which will serve all food retail units and a main extract duct distribution system with individual branches which will connect to the kitchen extract canopies of each food retail unit. Fresh makeup air is supplied by a separate supply fan. The ventilation units are to be located within the covered market, above the Office space on the dedicated mezzanine level plant area. Ductwork will distribute above the market stalls.

The kitchen extract fan configuration has been proposed to have extensive filtration: UV-C Grease & Odour in the canopies and Panel & bag filters, Carbon filter, run around coil, fan in the central plant.

The run around coil is used to provide an energy and environmental benefit as it will recover heat from the exhausted air and which will be used to temper the supply air. The main kitchen extract system shall be provided by the landlord but it is the responsibility of each tenant to ensure that their kitchen extract canopies/ hoods are provided with necessary filtration before any connection to the central system is permitted.

The use of solid fuel is excluded from the design. Inclusion of any future solid fuel will require additional ventilation and potentially more onerous fire strategy.

The F&B units will not be considered as individual fire compartments as they are contained within one space with open servery counters. Grease and odour filters will still be necessary to reduce the amount of grease, oil and smoke getting into the ductwork and increasing the amount of cleaning and maintenance required however maintenance by the landlord should be undertaken periodically to prevent any fires breaking out within the ductwork due to excess grease buildup.

It will also be imperative that a stringent maintenance regime be implemented and adhered to ensure all filters perform to their maximum efficiency.

There is no requirement for separate flues rising to roof level and all kitchen appliances shall be electric. The exhaust will be combined and terminated with a high velocity vertical cowl pointing upwards. Please refer to architectural elevations.

Furthermore, a demand based control system, specifically designed for kitchen canopies is considered at this stage (Halton M.A.R.V.E.L. or equal approved). As all F&B units are within the same spatial volume there is no requirement for Fire dampers on the ventilation system.

3 – Contaminants and Odours

A large amount of filtration has currently been allowed for in the central AHU plant, due to the varied nature of the potential tenancies and the wide range of offerings that are likely.

Typical catering types that may exist in the market are seen in the table below along with the level of Smoke, Grease and Odour and associated filtration levels.

Catering type	Smoke grease and odour characteristics			Grease, smoke and solid filtration			Low intensity odour control	Odour control			Odour counteraction
	Smoke	Grease	Odour	Grease filter	Cold water mist hood	Electrostatic precipitator	3 Stage fine filters	Ultra violet odour control	Activated carbon filter	Wet scrubbing	Odour neutralising spray
African	Low	Moderate	Moderate	✓	X	✓	X	✓	X	X	X
Chinese	Low	Very high	Moderate	✓	✓	✓	X	✓	X	X	X
Char grilling	Very high	High	High	✓	✓	✓	X	✓	✓	X	X
European	Low	Low	Moderate	✓	X	✓	X	✓	X	X	X
Fish & chips	Low	High	Moderate	✓	✓	✓	X	✓	X	X	X
Fried chicken	Low	High	High	✓	✓	✓	X	✓	✓	X	X
Indian	Low	High	Very high	✓	✓	✓	X	✓	✓	X	X
Malaysian	Low	High	High	✓	✓	✓	X	✓	✓	X	X
Mexican	Low	High	High	✓	✓	✓	X	✓	✓	X	X
Pizzeria	Low	Low	Low	✓	X	✓	X	✓	X	X	X
Pub food	Moderate	Moderate	Moderate	✓	X	✓	X	✓	X	X	X
Sea food	Low	Low	High	✓	X	✓	X	✓	X	X	X
Turkish	High	Moderate	Moderate	✓	X	✓	X	✓	X	X	X
Warmed food	None	Low	Low	X	X	X	✓	X	X	X	X

✓ Recommended
 X Unlikely to be required

The level of kitchen extract treatment and the maintenance requirements for each food unit shall be agreed with the individual tenant based on the food being prepared to ensure compliance with the Local Authorities requirements.

4 – Maintenance

In all instances of mechanical ventilation there are to be maintenance regimes which must be adhered to in order to ensure compliance, and resilience of any installed systems.

Any filters installed in the kitchen extract system shall be cleaned and replaced periodically in line with the manufacturer's recommendations dependent upon the level of usage within each of the food retail units.

The final design and maintenance activities for the common kitchen extract system shall be agreed with the environmental health officer/ building control officer before installation proceeds

Kitchen extract component	Recommended maintenance intensity
Grease, smoke and solid filtration	
Grease filter – mesh / baffle / cartridge / water wash	Daily cleaning
Cold water mist hood	Daily cleaning
Electrostatic precipitator	4 weekly cleaning
Low intensity odour control	
3 stage fine filters	2 weekly replacement
Odour control	
Ultra violet odour control	4 weekly clean, annual lamp replacement
Adsorption – activated carbon filter	4 to 6 month filter replacement
Wet scrubbing – spray/venturi/packed tower	Manufacturer dependant
Odour counteraction	
Odour neutralising spray	Manufacturer dependant
Ductwork	
Kitchen extract ductwork	3 to 6 monthly

5 – Acoustics

The acoustic performance of equipment shall be specified to satisfy the requirements of the site wide acoustic performance criteria. Please refer to the acoustic report.