

St Thomas Street

Ventilation Strategy
November 2021

Ventilation Strategy

Vinegar Yard

119072/AR/20201227
Revision 03

Report Prepared For: St Thomas Bermondsey Limited

Issue	Date	Reason for Issue	Prepared		Checked		Approved	
00	10/12/20	Planning Issue	AR	10/12/20	PDH	10/12/20	PDH	10/12/20
01	18/12/20	Planning Issue – Updated Site Plan	AR	18/12/20	PDH	18/12/20	PDH	18/12/20
02	22/10/21	Updated Planning Issue	AR	20/10/21	PDH	21/10/21	PDH	21/10/21
03	27/10/2021	Planning Issue	AR	27/10/21	PDH	27/10/21	PDH	27/10/21

Ventilation Strategy
 119072/AR/20211027
 Revision 03

Sweco
 1 Bath Road
 Maidenhead
 Berkshire
 SL6 4AQ

+44 (0)1628 623 423
 building.services@sweco.co.uk
 www.sweco.co.uk

Contents

1. Introduction.....	4
1.1 <i>Basis of Design</i>	5
1.1.1 HVAC Design Density.....	5
1.1.2 Ventilation Rates.....	5
2. Proposed Ventilation Strategy.....	6
2.1 <i>Basement Areas</i>	6
2.2 <i>Retail</i>	6
2.3 <i>Mezzanine Floor Affordable Workspace Areas</i>	6
2.4 <i>D1 or B1(b) Floor Areas</i>	6
2.5 <i>Office</i>	7
2.6 <i>Toilets</i>	8
2.6.1 Office Areas.....	8
2.6.2 D1 or B1(b) Areas.....	8
2.7 <i>Smoke Extraction</i>	8

1. Introduction

This report has been prepared on behalf of St Thomas Bermondsey Limited (the “Applicant”) for the planning application of Vinegar Yard (the “Site”) mixed-used development, which is the land bounded by St Thomas Street, Fenning Street, Vinegar Yard and Snowfields including Nos. 1-7 Fenning Street and No. 9 Fenning Street, SE1 3QR. The site is in the London Bridge area in the London Borough of Southwark (“LBS” or the “Council”).

GLA reference number: GLA/6208/S2

LB Southwark reference number: 18/AP/4171

The proposed Vinegar Yard development is the redevelopment of the site to include the demolition of existing buildings, retention and refurbishment of the warehouse and the erection of a ground, mezzanine and 18 storey building (with plant at roof) and 3 basement levels, comprising of café and community space within the warehouse and within the new building office, flexible medical and research and development, and flexible retail and affordable workspace, alongside cycle and disabled car parking, servicing, refuse and plant areas, public garden (including soft and hard landscaping), highway improvements and all other associated works.

The updated scheme seeks to provide flexible medical and research & development floorspace (Use Classes D1 and / or B1(b)) designed to allow for occupation by Guys and St Thomas’ NHS Foundation Trust, but flexible to ensure long term resilience. Levels one to ten of the building will first be offered to Guys and St Thomas’ for use as either D1 medical space or B1(b) research & development. The remainder of the upper floors, levels 11 to 18, comprise a B1(a) office use. This configuration reflects Guys and St Thomas’s Adaptable Estates Strategy, where buildings are able to accommodate a range of possible functions both physically and by virtue of permitted uses in the long term.

In the event that Guys and St Thomas’ do not wish to occupy levels 1 to 10 of the proposed building, it will default to a B1(b) research and development use and will be made available to R&D occupiers whose work can support the SC1 Life Science & Innovation District. Minor changes to the plant configuration at levels 3 and 8 of the building and the retail floorspace at ground floor level would also change as a result of a research and development use. The remainder of the proposed floorspace within the scheme would not change in the event of a research and development occupier taking the building.

The flexible medical and research & development use will be controlled by a suitably worded planning condition and obligation within the Section 106 agreement.

This report is intended to give a brief introduction into the planned ventilation and air extraction systems for the Vinegar Yard development. Discharge velocity, louvres and gratings will be sized and located to ensure noise and odours are discharged in a manner that does not affect pedestrian walkways. Air filters used for odour and particulate reduction will be appropriate to the type of function being served within the building and subject to air quality assessment.

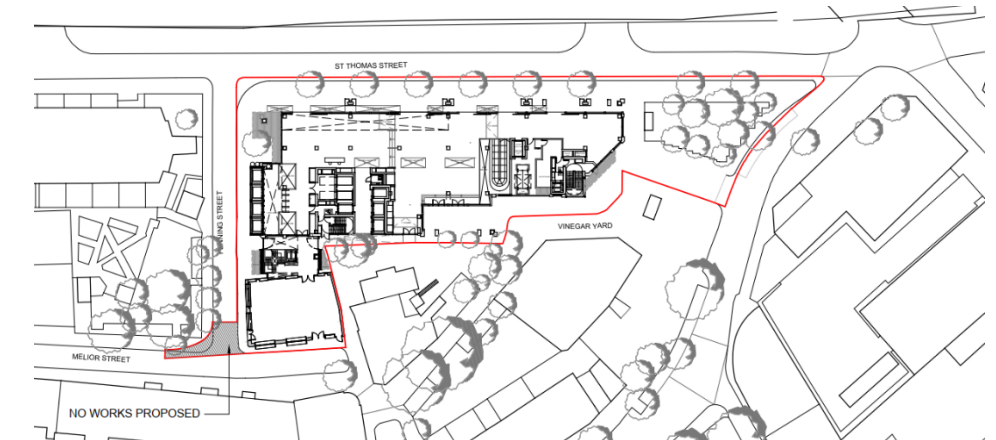


Figure 1: Proposed Site Plan for D1 scenario

01

Introduction

1.1 Basis of Design

1.1.1 HVAC Design Density

Area	HVAC Design Density
Ground floor retail / restaurant units	1 person per 4m ² (Based on net floor area)
Office Areas	1 person per 8m ² (Based on net floor area)
D1 and B1(b) Areas	1 person per 8m ² (Based on net floor area)
Affordable Workspace	1 person per 6m ² (Based on net floor area)

1.1.2 Ventilation Rates

Area	HVAC Design Density
Retail/Restaurant outside air supply	10 l/s per person (minimum)
Office areas outside air supply	14 l/s per person (minimum)
D1 areas outside air supply	10 air changes / hour at 2.7m clear height
B1(b) areas outside air supply	6 air changes / hour at 2.7m clear height
Toilet ventilation	10 air changes / hour
Plantrooms	1 air change / hour (minimum)
Restaurant	40 air changes /hour at cooking hood

2. Proposed Ventilation Strategy

2.1 Basement Areas

Ventilation of back-of-house (BOH), cycle stores and plant area within basements will be served by air handling unit(s), with frost protection coils, filters, thermal wheel heat recovery and fans, located at Basement 3 level.

A dedicated air handling unit (AHU) will serve the cycle shower areas located at Basement 1 Level. The AHU will consist of frost protection coils, filters, plate heat exchanger for heat recovery as well as cooling and heating coils.

The affordable workspace areas within the basement will be served by an AHU located at basement 3 level. All ductwork to and from the AHU to louvres and the affordable workspace areas at B1 and B1M will rise within vertical risers. The affordable workspace AHU will consist of frost protection coil, filters, thermal wheel for heat recovery, fans, heating and cooling coil.

Business essential secondary generators and the landlord essential life safety generator are located at basement 2 level. Supply and extract axial fans, duty and standby arrangement, will be located within the plant space to facilitate combustion air requirements.

Supply and extract axial fans will be located within the sprinkler and wet riser tanks and pump room to provide adequate air flow for cooling and combustion of the standby sprinkler and wet riser diesel engine pumps.

Bin stores within the basement areas will be served by duty and standby extract only fans located within the bin store areas. Make-up air for the bin store areas shall be via the basement ventilation AHU(s).

The supply authority's HV intake rooms, located at B1 level will be naturally ventilated to atmosphere as per utility provider requirements.

The gas meter room located within basement 1M will be naturally ventilated to atmosphere, as per utility provider requirements.

All basement ventilation plant will have ductwork that will rise within vertical risers to ground and/or ground mezzanine level to connect to outside air intake and exhaust air louvres/grilles. Air filters used for odour and particulate reduction will be appropriate to the type of function being served within the building and subject to air quality assessment.

2.2 Retail

Provisions will be made for retail tenants to be able to install heat recovery ventilation units within each retail unit's demise, to provide outside air ventilation to the space. These units will be able to connect to louvres provided at high level along the façade of high-level mezzanine.

Riser space will be allocated to allow for the installation of a future kitchen extract ductwork from ground floor to roof terrace level 10 for discharge to atmosphere.

The kitchen and preparation areas will be designed such that the spaces are at a negative pressure whenever operational. Within the kitchen, it is anticipated that ventilated supply/extract canopy(s) will be installed by the restaurant tenant. Extract ventilation plant will be provided by the tenant within their demise, with speed control and the necessary odour and filtration requirements.

2.3 Mezzanine Floor Affordable Workspace Areas

Provisions will be made for the affordable workspace areas to be able to install heat recovery ventilation units within the area, to provide outside air ventilation to the space. These units will be able to connect to outside air intake and exhaust air louvres provided at high level along the façade of high-level mezzanine.

2.4 D1 or B1(b) Floor Areas

Plant and louvre areas have been provided for the D1 or B1(b) areas to be served by centralised AHUs located at level 03 and 08 of the development, based on flow rates prescribed within the medical brief. The AHUs serving the D1 or B1(b) areas are located at L03 and L08. The air handling units design will be in accordance with Health Technical Memorandum (HTM) 03. The air handling units will satisfy the ventilation rates prescribed within HTM-03. Air filters used for odour and particulate reduction will be appropriate to the type of function being served within the building and subject to air quality assessment.

Outside air intake and exhaust air louvres are located at L03 and L08, along the perimeter of the external façade, within the centralised AHU plant rooms. The outside air intake and exhaust air louvres will be adequately separated to mitigate risks of re-circulation of air. Supply and extract ductwork from each AHU will rise and drop within centrally located vertical risers to serve each of the clinical floor areas.

Figure 2 below indicates the ventilation strategy for the D1 or B1(b) floors.

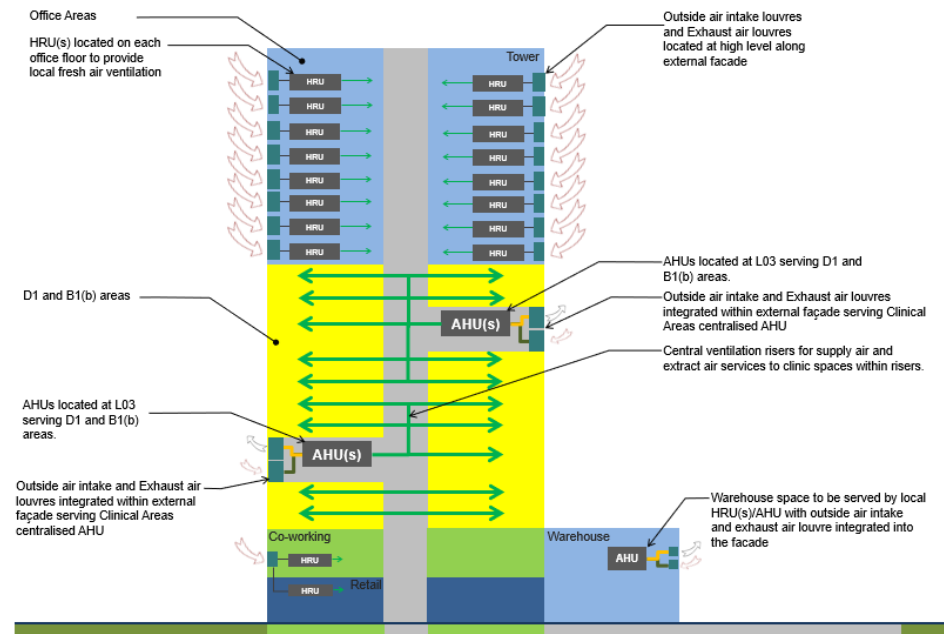


Figure 2, Above Ground Areas Ventilation Strategy

2.5 Office

The above ground office floors will be capable of mixed-mode ventilation. Openable windows along the perimeter of the façade will be able to accommodate natural ventilation to the office floor plate during favourable external conditions. This would allow mechanical ventilation and cooling systems, within the area with openable windows, to switch off and provide further energy savings. In addition to the openable windows, natural ventilation chimneys have been provided within the north facade to facilitate passive stack ventilation. It is anticipated that air from the south façade, where the noise levels are lower and air quality is better, will be drawn across the floor plate driven by the stack effect within the chimneys. The design will take advantage of prevailing wind direction and allows the north elevation to remain closed to the busy London Bridge Station.

Figure 3 below shows the location of the natural ventilation chimneys on the office floor plate highlighted in Red.

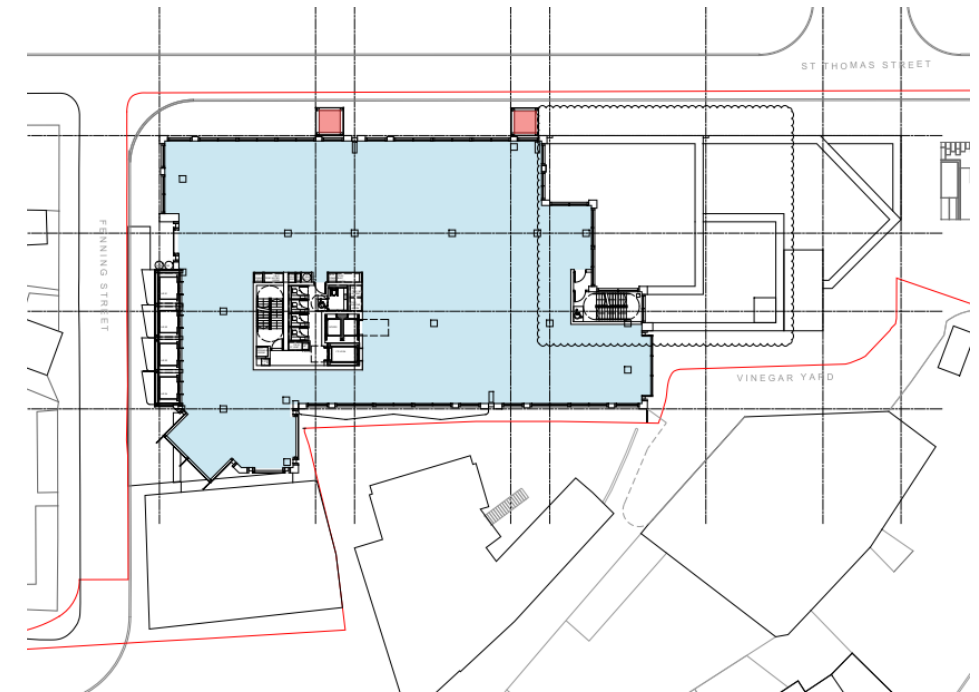


Figure 3, Location of natural ventilation chimneys highlighted in Red.

During hot summer days, or days with poor air quality, the openable windows will be closed, and the mechanical system switched on to provide mechanical ventilation and cooling to the space.

The above ground office floors will be served via soffit mounted heat recovery units (HRUs) with plate heat exchangers for heat recovery. The HRUs will be located on each floor within the high-level ceiling void to provide tempered localised outside air ventilation. The heat exchangers within these units will transfer a large portion of the heat contained within the indoor air to the outdoor air being supplied, which will mitigate excessive heat loss during the winter. The units will interface with high level louvres located along the perimeter of the façade to convey air from outside into the occupied office spaces, while simultaneously exhausting a similar amount of indoor air. The air volumes from the HRUs will exceed the requirements in Part F of the Building Regulations. Outside air intake and exhaust louvres shall face the same orientation to minimise imbalance due to difference of wind speeds. The outside air intake and exhaust air louvres will be adequately separated to mitigate risks of re-circulation of air.

Figure 2 indicates the ventilation strategy for the office floors with HRUs on each floor. Figure 4 provides an indicative section for a typical office floor with HRUs and fan coil units within the ceiling void.

The community hall within the warehouse will be served by a local AHU or HRU unit providing adequate fresh air flow rate, satisfying Part F building regulation requirements.

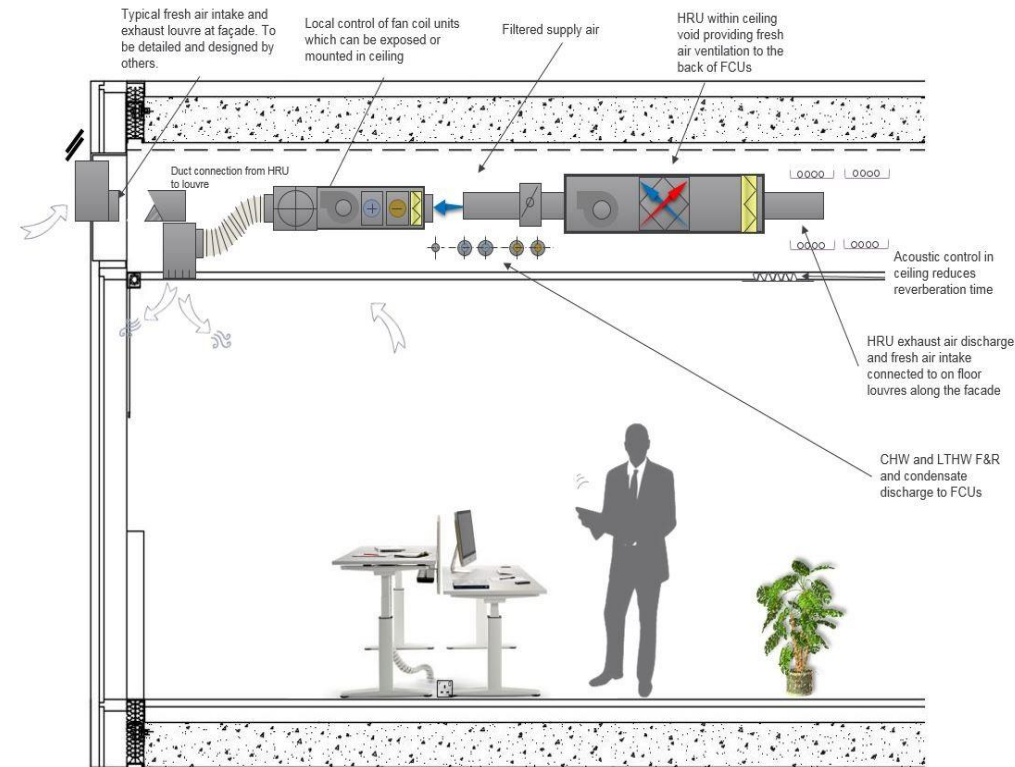


Figure 4: Office Areas HRU ventilation units within ceiling void

2.6 Toilets

2.6.1 Office Areas

Office toilets will be served by localised twin extract and supply fans located within the ceiling void above and/or adjacent to the WC. Each twin fan system will connect to louvres located along the external facade at high level to bring in outside air and exhaust air directly outside. The outside air intake and exhaust air louvres will be adequately separated to mitigate risks of re-circulation of air.

2.6.2 D1 or B1(b) Areas

D1 or B1(b) toilets will be served by centralised supply twin extract and supply fans located at level 03 and level 08. Each twin fan system will connect to louvres located along the external facade to bring in outside air and exhaust air directly outside at level 03 and level 08. Toilet supply extract and supply ductwork will drop and rise within centrally located vertical risers to distribute across each D1 or B1(b) floor plate. The

outside air intake and exhaust air louvres will be adequately separated to mitigate risks of re-circulation of air.

2.7 Smoke Extraction

Subject to the detailed resolution of the Fire Strategy and agreement with Building Control, the following systems are envisaged at this stage:

Mechanical Smoke Extract Ventilation

- Basement/BOH Plant rooms and corridors
- Cycle Storage Area
- Bin and Waste Storage Areas
- Basement Cycle shower and toilet facilities
- Basement Affordable Workspace areas

Mechanical Smoke Extract and Natural Make-up Smoke Ventilation

- Loading Bay

Firefighting Lobbies and Stairs

- Mechanical smoke extract commensurate in performance to EN 12101-6 Class B to each firefighting shafts

Natural Ventilation Chimney

- Mechanical smoke extract to the natural ventilation chimney.

Currently, the basement plant, BOH and affordable workspace areas will be served by two mechanical smoke extract systems. The duty/standby axial smoke extract fans will be located within the basement plant.

The loading bay shall be provided with a dedicated duty/standby mechanical smoke extract system.

The firefighting lobbies will be served by duty/standby smoke extract fans ducted to each lobby and via motorised louvre dampers activated by smoke detectors and pressure sensors in the firefighting lobby. There will be two separate systems, one serving each firefighting shaft. The smoke fans for each system will discharge straight to atmosphere. The fans will be located at the top of each firefighting shaft.