

Cundy Street Quarter

Ventilation and Extraction Statement

Prepared by Cundall

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GROSVENOR

Project Cundy Street Quarter

Ventilation & Extraction Statement

Grosvenor Estate Belgravia

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X H.Iliescu	X <i>SA Smith</i>	X Peter Stocks
Principal author	Checked by	Verified by
Signed by: Smith, Steven	Signed by: Smith, Steven	Signed by: Stocks, Peter

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Contents

1.0	Introduction	2
2.0	Ventilation Arrangements	4
2.1	Guidance and Regulations	4
2.2	Assumptions	4
2.3	Ground Floor A1/A3/A4/B1	4
2.4	Kitchen Extract	4
2.5	Home Theatre/Amenity	5
2.6	Fitness Centre Area/Changing	5
2.7	Pool Area	5
2.8	Block A – Senior Living units	5
2.9	Block B and C - Residential units	6
2.10	Residential Corridors	6
2.11	Carpark Ventilation	6
2.12	Bicycle stores	6
2.13	Substations	6
2.14	Electrical switch rooms	6
2.15	Generator rooms	7
2.16	Water tank rooms	7
2.17	Refuse stores	7
2.18	Gas intake rooms	7
2.19	Cleaning	7
2.20	Noise and Vibration	7
3.0	Conclusion	9

1.0

Introduction

1.0 Introduction

This Ventilation & Extraction Statement has been prepared by Cundall to accompany the application for planning permission submitted on behalf of Grosvenor Estate Belgravia (hereafter referred to as the 'Applicant') for the proposed Cundy Street Quarter development (hereafter referred to as the 'Proposed Development').

The proposed site is approximately 1.77 ha within south Belgravia. The site has existing residential buildings, hardstanding and landscaping that will be removed. The use of the proposed development site is mix of residential private, intermediate, social rent, senior living and leisure, restaurant, community and green space. The engineering proposals reflect this mixed use and provide an appropriate solution that delivers the optimum solution in terms of energy, flexibility, resilience and space.

2.0

Ventilation Arrangements

2.0 Ventilation Arrangements

2.1 Guidance and Regulations

The design proposals consider the following design guidance and regulations.

- Approved Document Part F 2010 of the UK Building Regulations.
- BSRIA Rules of Thumb
- BCO Guide to Specification
- DEFRA – Guidance on the control of Odour and Noise from Commercial Kitchen Exhaust Systems
- HSE – CAIS10 Ventilation of Kitchens in Cater Establishments
- HVCA/B&ES – DW172 specification for Kitchen Ventilation Systems
- HVCA/B&ES – TR19 Internal Cleanliness of Ventilation Systems

2.2 Assumptions

The design proposals apply the following assumptions and Design Criteria.

- Supply and Extract Rate – 10 l/s per person
- Occupancy
 - Gym - 4m²/person (BSRIA Rules of Thumb)
 - Commercial - 5m²/person (BSRIA Rules of Thumb)
 - Restaurant - 3m²/person (BSRIA Rules of Thumb)
 - Cinema – 1.5m²/person (BSRIA Rules of Thumb)
 - Lobby/Office – 10m²/person (BSRIA Rules of Thumb)
- Kitchen Extract Ventilation Rate – 30 ACH (DW172, general extract requirements).
- Exhaust Velocity – 7 m/s (DW172).
- Kitchen Make-up Ventilation Rate – 85% of extracted air (DW172).
- Make-up Velocity – 5 m/s (DW172).
- Kitchen tenant/operator to install grease filtration within cooker hoods.
- Access to ductwork is to be provided every 3m (externally) and at changes of direction for cleaning.
- Minimum duct width or depth is 400mm and no turning vanes, which are difficult to clean, are provided.

2.3 Ground Floor A1/A3/A4/B1

Louvres will be provided within the ground floor façade at high level to allow for the future tenant's supply and extract controlled ventilation. As a part of their fitting out works, the tenant will install mechanical ventilation heat recovery (MVHR) units within their own unit, for the provision of supply and extract air, and heat recovery. The tenant will connect these units to the high level façade louvres with their ductwork.

2.4 Kitchen Extract

An allowance for kitchen extract has been made for a number of A3 restaurant units.

The future A3 units, comprising 3 units on the ground floor of Block A and 5 units on the ground floor of Block B, will be provided with kitchen extract ductwork within risers from ground floor to roof level. These risers will be provided with capped connections within the units for each future tenant to connect their equipment to as a part of their fitout. A plant zone has been allocated at roof level for each of these tenants to install their own kitchen extract fans and attenuators. Provision has been made in the risers for a future Kitchen extract system, sized at 30acph, with the assumption that 30% of the total area of the Kitchen is used for cooking. The height of the discharge will be approximately 1 metre above the height of the architectural horizontal screen. The tenant will have to provide adequate filtration of air within their own demise to limit the discharge of odours. All ventilation plant and filtration will be supplied and installed by the tenant.

Provision within the A3 units will need to be made by the tenant for odour control including where necessary; electrostatic precipitation, fine filtration, carbon filtration, UV Ozone system, in their equipment to provide a high degree of odour control.

Access panels will be provided at 2m intervals and all changes of direction for cleaning of the ductwork, to be accessed from the Landlords areas.

2.5 Home Theatre/Amenity

The Home Theatre/Amenity space, provided in the basement of block A, adjacent to the car park, will be provided with a dedicated general ventilation Air Handling Unit (AHU) in the basement. The supply and exhaust locations will be well separated. Intake and exhaust ductwork will be routed to a riser adjacent to the core. The system will be sized to accommodate 12 l/s/person supply and extract with an occupancy of 3m²/person. Intake Louvres will be positioned at ground floor around the courtyard and exhaust louvres at roof level which the system will be connected to.

2.6 Fitness Centre Area/Changing

There are two Fitness and changing suites for the development, located in block A & block B. Both are situated at basement level, adjacent to the swimming pool area. Each will be provided with a dedicated general ventilation AHU in the basement with well-separated supply and exhaust locations. Intake and exhaust ductwork will route to a riser adjacent to the core. The system will be sized to accommodate 20 l/s/person supply and extract with an occupancy of 4m²/person. Intake Louvres will be positioned at ground floor around the courtyard. Both extract fans will be remote to each AHU and positioned at roof level to negatively pressurise ducts to prevent odour leakage.

2.7 Pool Area

The pool area sited in the basement of block A, adjacent to the core area, will be provided with a dedicated general ventilation AHU in the basement with well-separated supply and exhaust locations. Intake and exhaust ductwork will route to a riser adjacent to the core. The system will be sized to accommodate 12 l/s/person supply and extract with an occupancy of 3m²/person. Intake Louvres will be positioned at first floor around the Senior Living Sunken Courtyard. Extract fans will be remote to each AHU and positioned at roof level to negatively pressurise ducts to prevent odour leakage.

The pool area sited in the basement of block B, adjacent to car park area, will be provided with a dedicated general ventilation AHU in the basement with well-separated supply and exhaust locations. Intake and exhaust ductwork will route to a riser adjacent to the core. The system will be sized to accommodate 12 l/s/person supply and extract with an occupancy of 3m²/person. Intake Louvres will be positioned at first floor around the Courtyard. Extract fans will be remote to each AHU and positioned at roof level to negatively pressurise ducts to prevent odour leakage.

2.8 Block A – Senior Living units

There will be two separate AHUs that will provide ventilation with heat recovery to the assisted living units. The AHU's will be positioned at basement level, two separate intakes will be provided from Ground floor and exhaust ducts will rise to roof level. Each AHU will serve separate wings of block A. One will serve Ebury street, the other will serve Elizabeth Place. Supply and extract ductwork will rise from the basement AHU to a header duct at high level ground floor where branch ducts will vertically serve senior living suites on the floors above. Satellite risers are positioned adjacent to senior living suites which will house supply and extract ductwork serving each suite.

Independent living units will have separate mechanical ventilation units (MVHR) that will meet the general ventilation requirements in accordance with Part F of the Building Regulations. No trickle ventilators will be provided, and the external windows will not be used to satisfy general ventilation requirements.

For the limited occasions where purge ventilation is required, the external windows are operable in compliance with Part F of the Building Regulation.

Where kitchenettes are specified these will be provided with a dedicated extract cooker hood with basic filtration.

2.9 Block B and C - Residential units

Individual dwelling mechanical ventilation units (MVHR) will meet the general ventilation requirements in accordance with Part F of the Building Regulations. No trickle ventilators will be provided, and the external windows will not be used to satisfy general ventilation requirements.

For the limited occasions where purge ventilation is required, the external windows will be operable in compliance with Part F of the Building Regulation.

Kitchens will be provided with a dedicated extract cooker hood with basic filtration.

2.10 Residential Corridors

The residential corridors will be mechanically ventilated using a combination of AOVs and the smoke extract system to reduce the risk of overheating. Thermostats linked to the smoke extract system will cause the system to run when temperatures in the corridors exceed recommended levels. Air paths will be created through ceiling voids to remove heat produced by any heating pipework at source.

2.11 Carpark Ventilation

The carpark will be ventilated by a combination of mechanical extract fans, impulse fans, and permanent natural openings.

Block A

Intake Louvres will be positioned at ground floor on Cundy Street, adjacent to the main entrance. Exhaust louvres will be positioned at ground floor level in the Loading Bay area.

Block B

Intake Louvres will be positioned at first floor adjacent to the Private sunken courtyard. Exhaust louvres will be positioned at ground floor level in the Loading Bay area.

2.12 Bicycle stores

In Block A Basement we considered the following bike spaces: Retail Staff Cycle, Staff Cycle and Scooter/Bike Storage.

In Block B Basement we considered the following bike spaces: Bike Store – Intermediate and Bike Store – Private

In Block C Basement we considered the following bike spaces: Bike Store

The bicycle stores will be mechanically ventilated and connected to a ventilation system that will supply plantrooms and storage rooms. There will be 2 different systems, one for Blocks A and C basement and one for Block B basement. The systems will be provided with a dedicated general ventilation Air Handling Unit (AHU) in the basement with well-separated supply and exhaust locations. Intake and exhaust ductwork will be routed to a riser adjacent to the core. The system will be sized at 3 acph. Intake Louvres will be positioned at ground floor around the courtyard and exhaust louvres will be at ground floor as well adjacent to the Loading Bay area.

2.13 Substations

In the Basement, there are 3 double substation rooms, one for each Block.

The substations will be provided with natural ventilation systems, in accordance with UKPN design requirements. Both Intake/Exhaust louvres will be positioned at ground floor.

2.14 Electrical switch rooms

Electrical switch rooms will be provided with mechanical ventilation systems to prevent overheating or natural ventilation where adjacent to outside wall. Both Intake/Exhaust louvres will be positioned at ground floor.

2.15 Generator rooms

Generator rooms will be provided with combustion air for the generator sets to meet the requirements of Approved Document J Combustion appliances and fuel storage systems, as well as general ventilation. This will be provided by mechanical ventilation. Intake Louvres will be positioned at first floor around the Senior Living Sunken Courtyard. Extract louvres will be positioned at ground floor level adjacent to the Loading Bay area.

2.16 Water tank rooms

Water tank rooms will be provided with either mechanical ventilation systems, or natural ventilation at high and low level if adjacent to an outside wall, which will prevent stagnation of air in the plantrooms.

2.17 Refuse stores

Refuse stores will be provided with sufficient natural ventilation to prevent stagnation of air and to control odours in accordance to Approved Document B Fire Safety Vol.2.

2.18 Gas intake rooms

Gas intake rooms will be naturally ventilated in accordance with the Institution of Gas Engineers and Managers (IGEM) regulations.

2.19 Cleaning

All ductwork is to be regularly cleaned to maintain a reasonable level of system health. Particular care for kitchen extract ductwork is required, these systems are to be cleaned on a regular basis by specialists experienced in these systems. Kitchen extract ductwork is to be cleaned in accordance with B&ES guidance TR19 – Internal Cleanliness of Ventilation Systems. Access to kitchen extract ductwork will be provided at three metre intervals and at changes in direction.

2.20 Noise and Vibration

All plant and ductwork supports are to be provided with anti-vibration mountings where required to avoid the disturbance caused by vibration. All air handling units and fans are to be provided with acoustic attenuation to meet the internal and external noise level criteria. Refer to the acoustic report for further details.

3.0

Conclusion

3.0 Conclusion

A draft ventilation and extraction strategy have been prepared for the proposed development. The key elements of the strategy are as follows:

- General ventilation to commercial units will be provided by heat recovery ventilation units connected to supply & exhaust louvres to the front of the unit at high level.
- Provision has been made for A3 cooking extract for the kitchen. This includes purpose-built penetrations, plant space, and duct routes to the roof.
- Residential units will be supplied either from a centralised AHU system (block A levels 1-4) or equipped with Mechanical Ventilation Heat Recovery (MVHR) units for block A (level 5 and above), and for blocks B and C. Air will be supplied to living spaces and bedrooms and extracted from 'wet' areas. Openable windows, and balcony doors will enable purge ventilation.
- The smoke extract system will also be used to ventilate the residential corridors in summer, to avoid overheating.
- The remaining plant and storage spaces will be naturally ventilated where possible, with mechanical ventilation to fully internal areas.

Cundall Johnston & Partners LLP

One Carter Lane London EC4V 5ER
United Kingdom Tel: +44 (0)20 7438 1600

Asia Australia Europe MENA UK and Ireland
www.cundall.com

