



Ventilation/ Extraction Statement  
CHAPMAN BDSP

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1 Introduction

The Ventilation/Extraction statement presented below has been provided in support of the planning application for New City Court.

2 Design Criteria

This is a short note summarising the design principles of the ventilation scheme for the Tower, Georgian Terraces and Keats House developments that make up New City Court.

2.1 Table of Ventilation Rates

Ventilation Rates	
Tower - Office	1.6 l/s/m²
Georgian Terraces - Offices	Not Controlled
Keats House - Offices	Not Controlled
Tower - Retail	2 l/s/m²
Georgian Terraces – Retail	Not Controlled
Keats House - Retail	Not Controlled
Reception	1.6 l/s/m²
Plantrooms	1 ACH
Retail Storage	1 ACH
Showers	10 ACH
Staff Mess	10 ACH
Building Management Suite	1.6 l/s/m²
Bin Storage	10 ACH
Office/Retail Toilets	10 ACH

2.2 Acoustic Requirements

All the ventilation systems within the development will comply with the acoustic requirements set out by the acoustic consultant. Compliance will be facilitated by the following design considerations stated below:

- All the louvres will be sized to have a maximum face velocity of 1.5 m/s;
- All the ventilation ductwork will be sized to have a maximum internal velocity of 5 m/s;
- The Air handling units and fans that are part of the mechanical ventilation systems will be fitted with adequate attenuation specified to ensure compliance with the acoustic requirements.

Additionally, compliance with BS4142 with regards to the ventilation systems will be the acoustic consultant's responsibility as it covers "Methods for rating and assessing industrial and commercial sound".

2.3 Filtration and Odour Abatement

The air handling units and fans providing fresh air will be fitted with filter banks consisting of deep-pleated filter panels providing minimum efficiencies of 85% (F7 standard in accordance with BS EN 779) to ensure good air quality standards are achieved.

For odour abatement purposes air from the hot kitchens located in the A3 retail units will be exhausted at roof level via Halton ecology type exhaust fans with the appropriate level of filtration to ensure compliance with Southwark Council's (SC) requirements. The responsibility for the purchase, installation and maintenance of the A3 kitchen exhaust fans and associated filtration is the responsibility of the tenants and will be included as a requirement in the A3 retail tenants' handbook.

### 3 Ventilation/Extraction Strategy

#### 3.1 Tower

##### 3.1.1 Basement Levels

Fresh air is provided to the basement levels via three louvres located on the ground floor (L00). These three louvres are labelled as L00\_I\_01, L00\_I\_02 and L00\_I\_03 (Locations of louvres highlighted in Image 01).

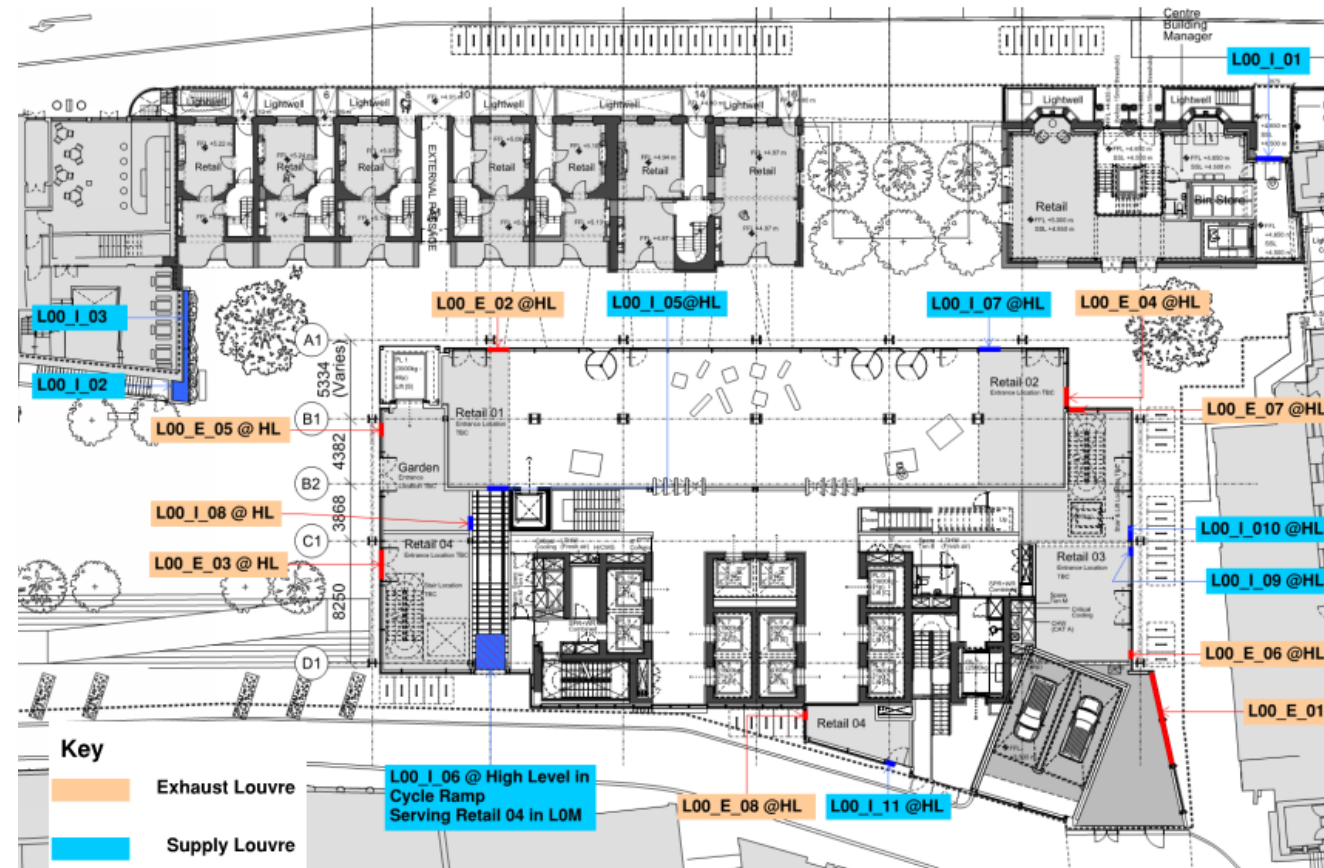


Image 01: Locations of Louvres in L00

L00\_I\_01 is a louvre located in Keats house that provides fresh air to the bin holding zone located in Basement Level 2 (LB2).

L00\_I\_02 is a floor grille (as such drainage will be required) which provides outside air to the ventilation plantroom located in LB2 via a common plenum. Once the outside air is treated by the various air handling units and fans located in the plantroom the air is then supplied to the following areas:

1. B2 & B1 Plant Rooms.
2. Car Park/ Loading Bay.
3. Circulation Spaces.
4. Building Management Suite and Staff Messing.
5. B1 Cycle Storage.
6. Reception.

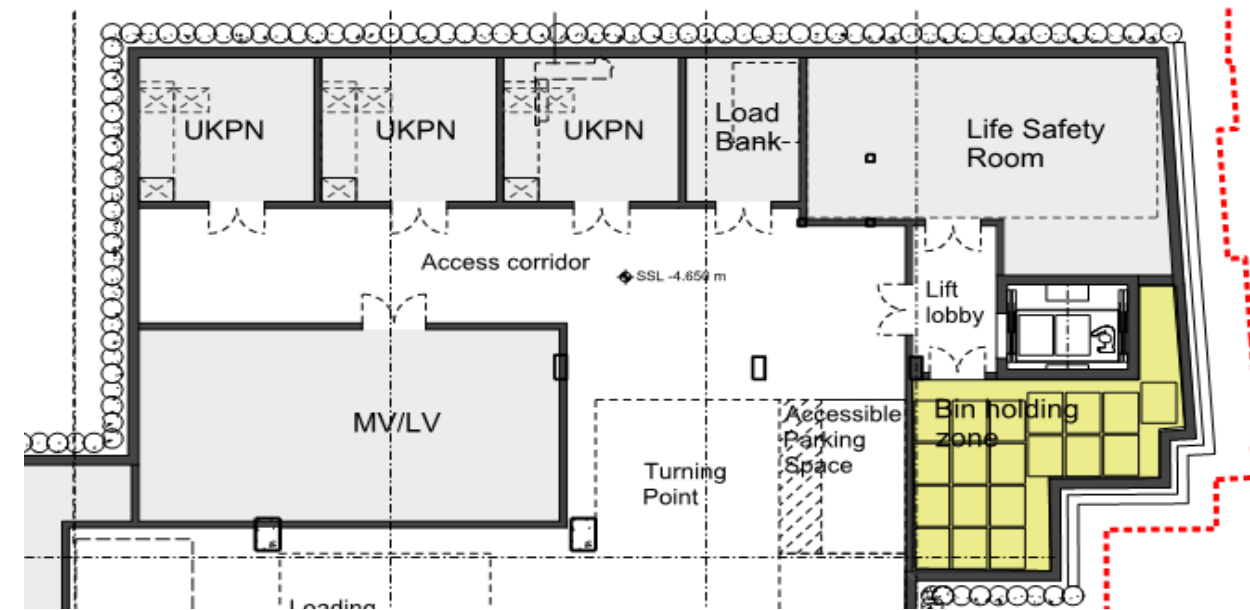


Image 02: Areas served by Louvre L00\_I\_01 in LB2.



Image 03: Areas served by Louvre L00\_I\_02 in LB2.



Finally, the louvre labelled L00\_I\_03 is located alongside L00\_I\_02 and is also a floor grille. This louvre supplies air to the ceiling mounted air handling units located within the showers in Basement Level 1 (LB1).

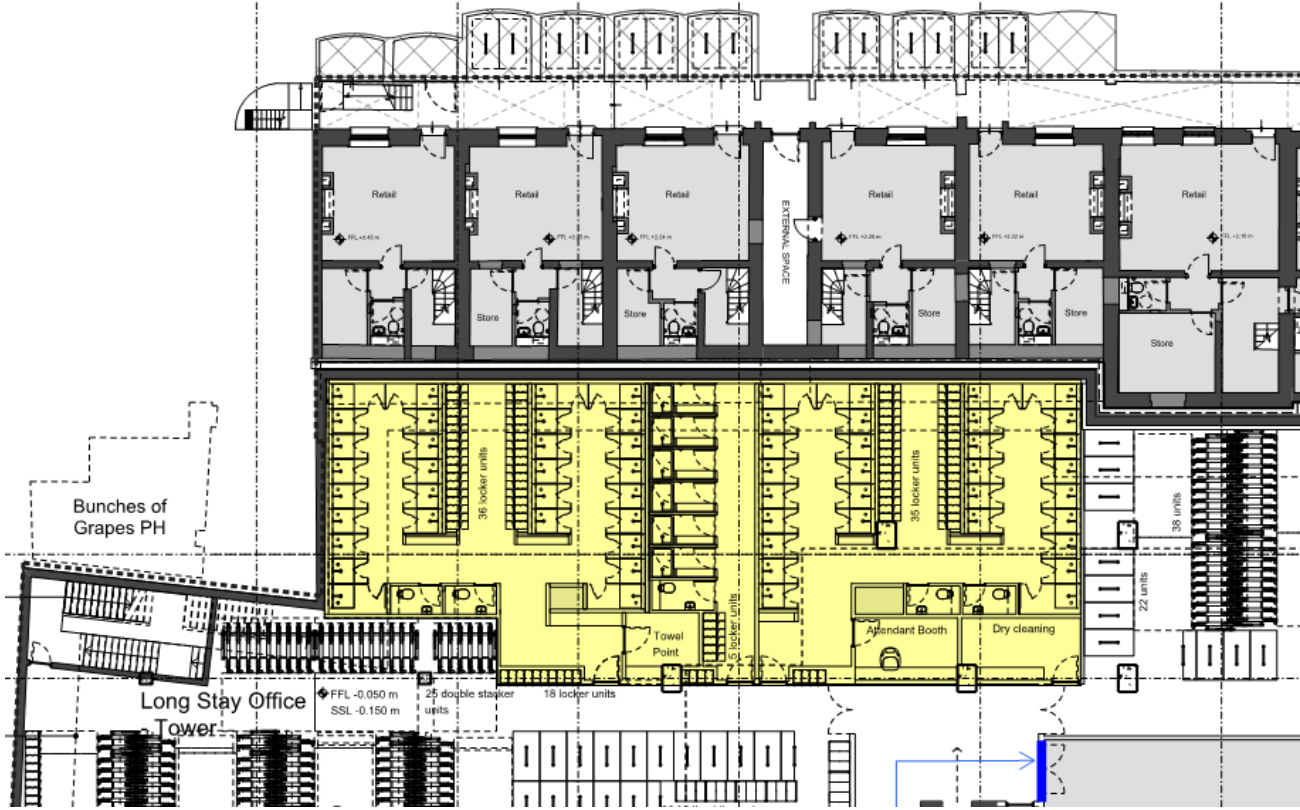


Image 06: Location of showers served by Louvre L00\_I\_03 in LB1.

The supplied air in both the basement levels is extracted via risers which are located next to the vehicle lifts which runs from LB2 to L00.

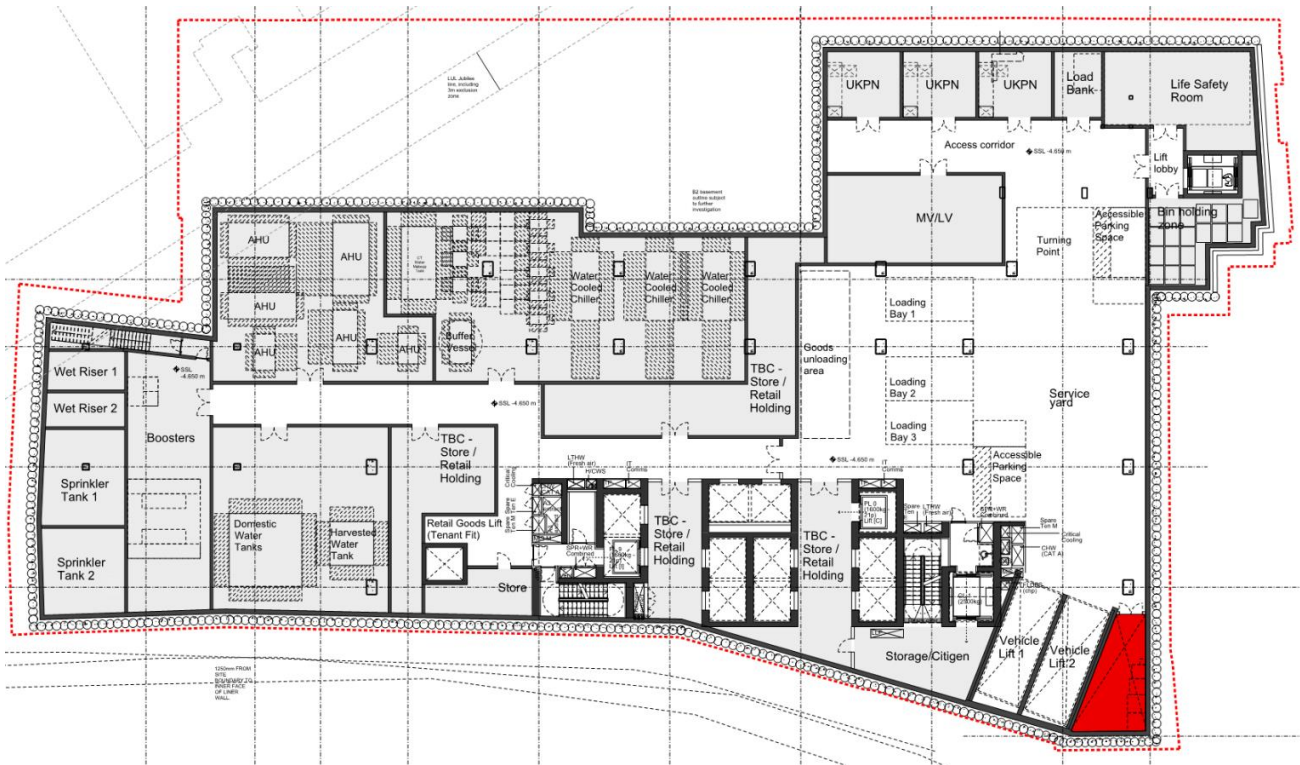


Image 07: Location of extract riser in LB2.

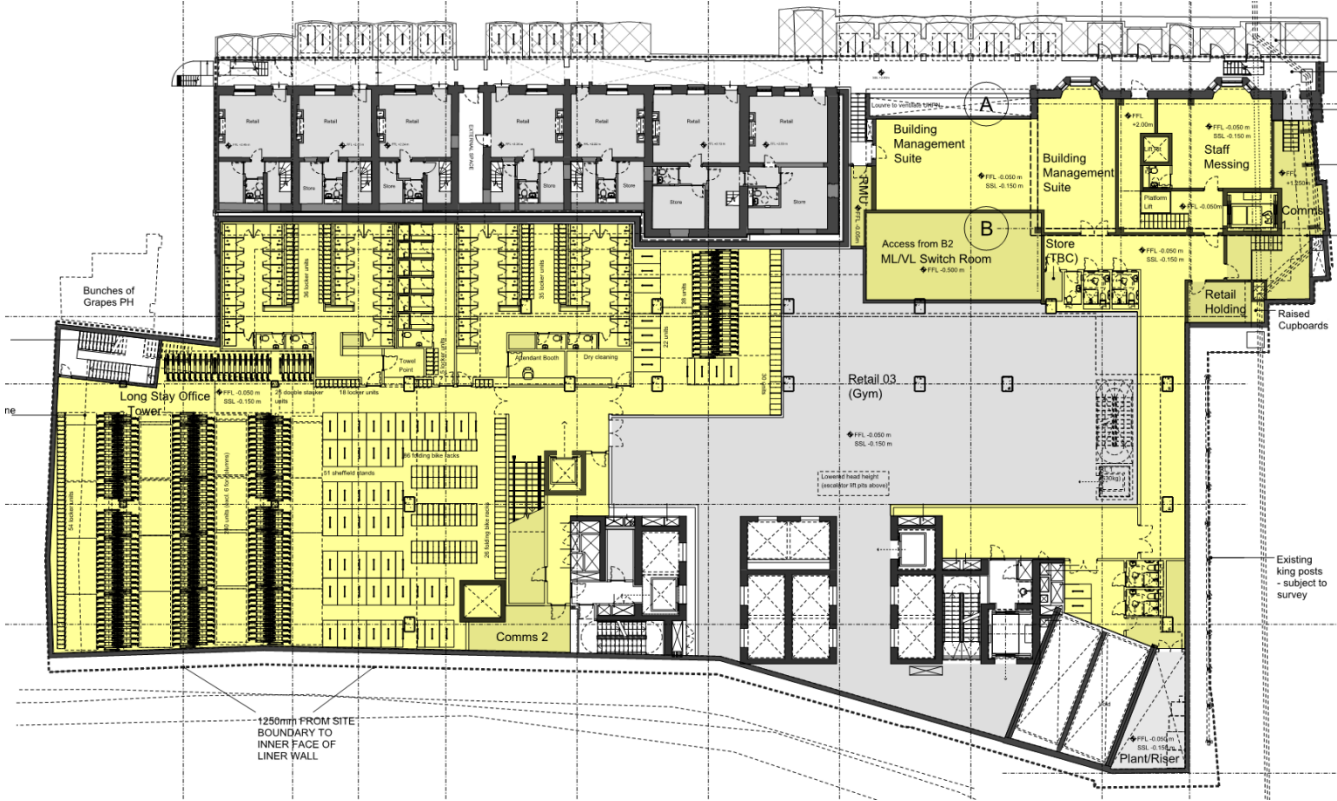


Image 04: Areas served by Louvre L00\_I\_02 in LB1.

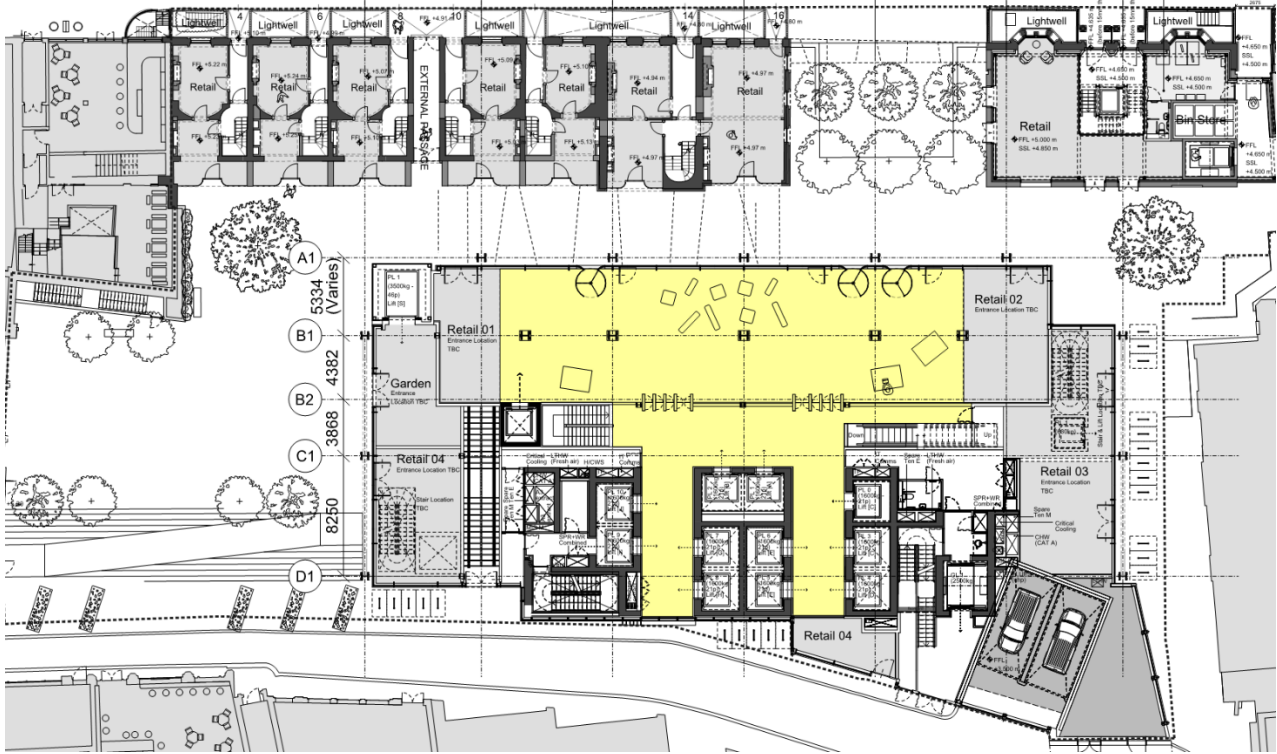


Image 05: Areas served by Louvre L00\_I\_02 in L00.



The air is then exhausted via a common louvre labelled L00\_E\_01 (location highlighted in Image 01).

The UKPN substations located in LB2 will be serviced via natural ventilation which will be provided by connecting them to the lightwells directly above them on level B1 (final design of substation location subject to UKPN approval).

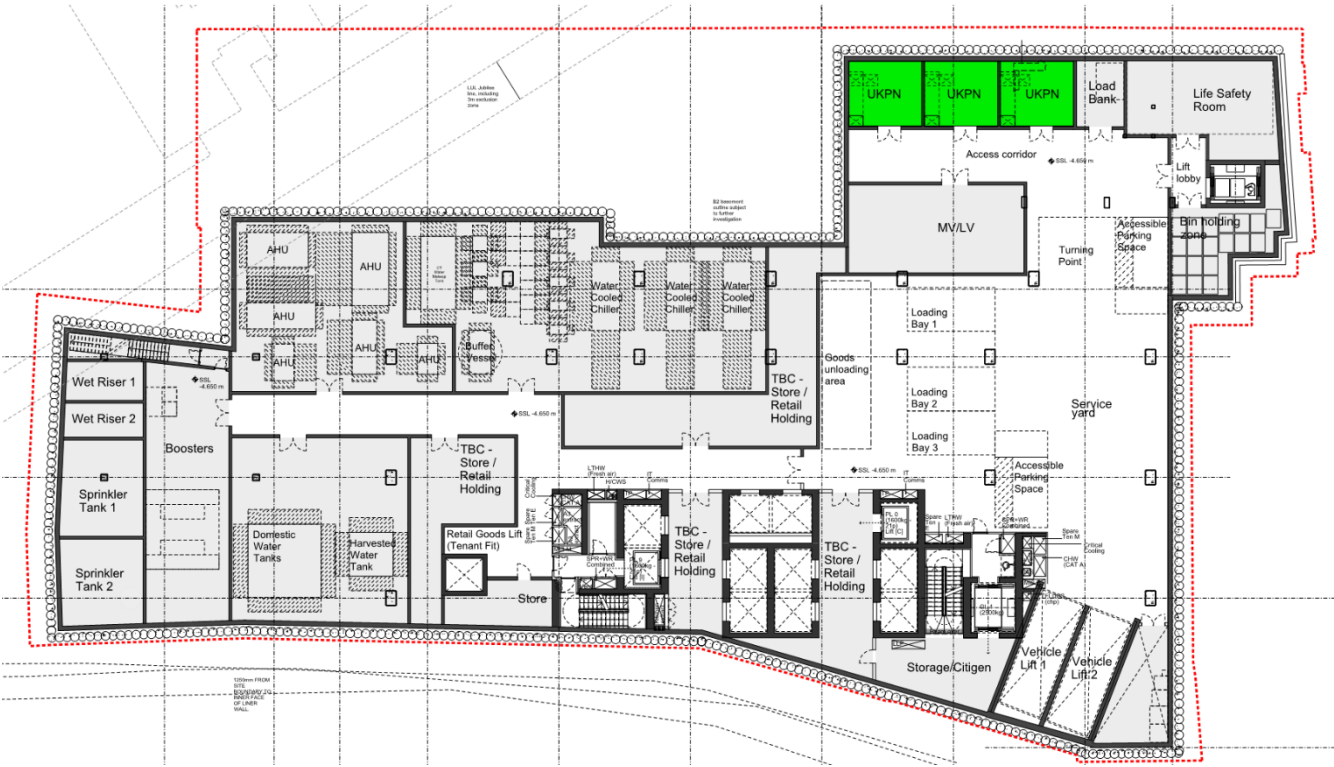


Image 08: Location of naturally ventilated UKPN Substations in LB2.

3.1.2 Retail

Each individual retail unit will have its own dedicated supply and extract louvre which will be located locally on the façade. This will segregate each tenant and provide a local fresh air supply and exhaust air connection to which each tenant can connect their own plant.

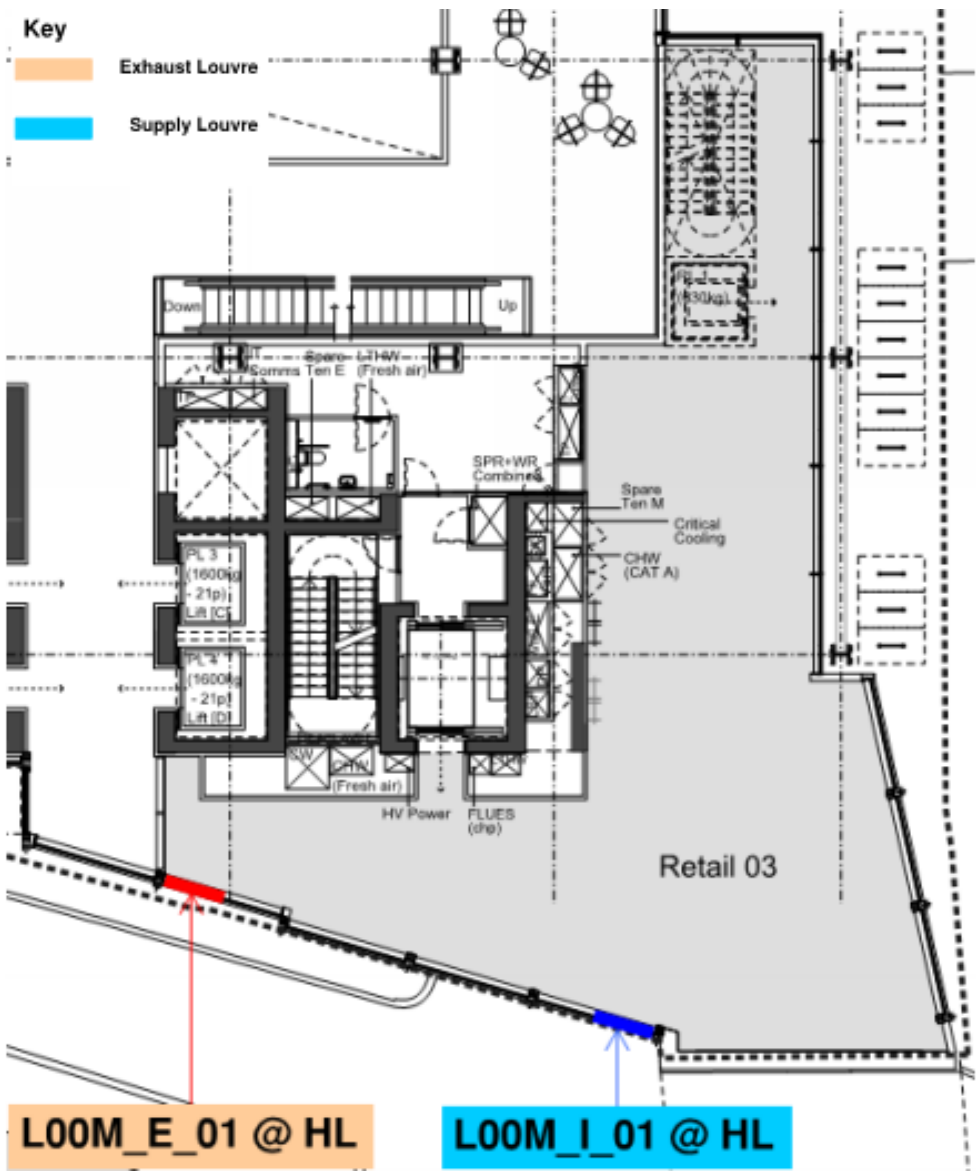


Image 09: Ventilation strategy for a typical retail unit.

Additionally, the A3 retail units are to be provided with dedicated fire rated hot kitchen extract risers which terminate at roof level (access panels to be provided every 3m). A space provision has been allocated in L34 for two future tenants to locate their kitchen extract fans (space allocations for fans are based on the assumption that 30% of the total floor area of the A3 retail units will be hot kitchens which will then be extracted at a rate of 40 ACH across the assumed kitchen area).

The retail unit (Gym) located in LB1 is ventilated in a different way to the strategy highlighted above. Whilst it does have its own dedicated supply louvre (LB1\_I\_01) the return air is extracted via a riser located next to the vehicle lifts at LB1 and exhausted through the common landlord exhaust louvre (L00\_E\_01). This strategy has been necessitated by the fact that the retail unit is located below ground and it requires a large volume of fresh air to function as a gym.

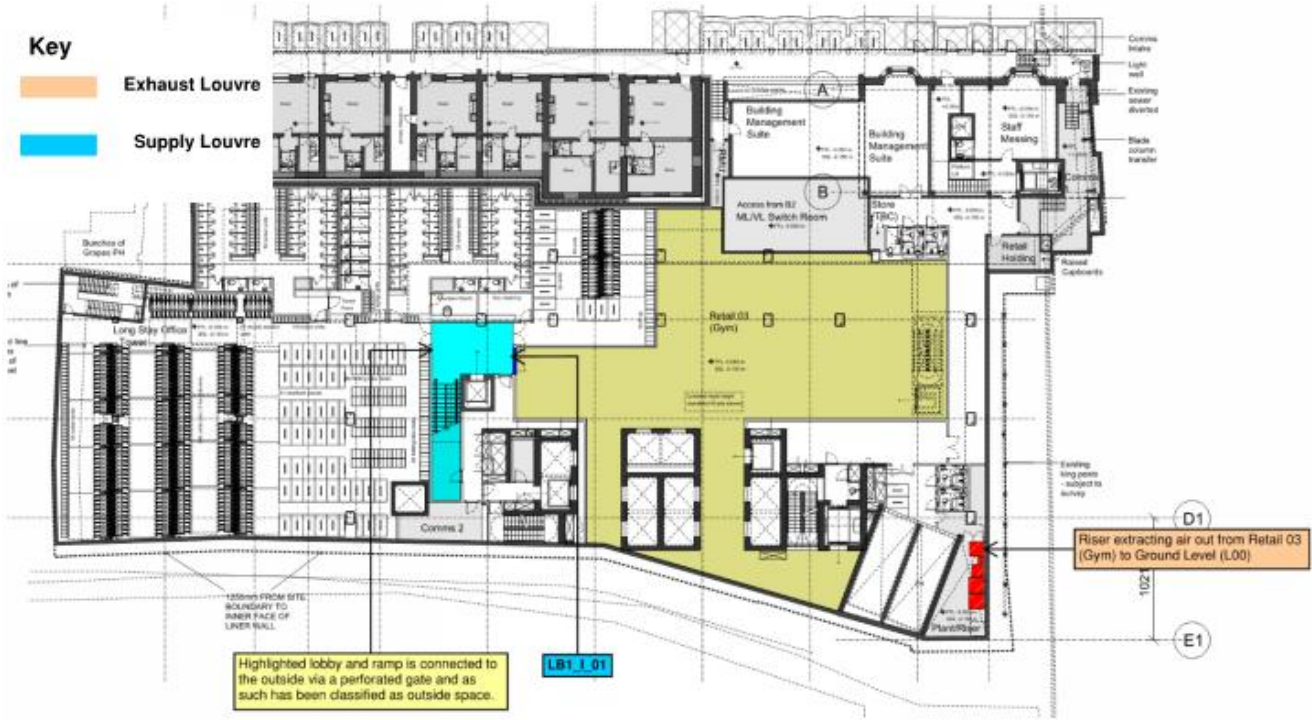


Image 10: Ventilation strategy for retail unit (Gym) located in LB1.

### 3.1.3 Offices

Each office floor is supplied fresh air via its own dedicated air handling unit (AHU) located in a plantroom on each office level (AHU backpack plantroom). Both supply and exhaust louvres serving each office AHU are facilitated within the AHU backpack plantroom. Additionally, the air from the W/Cs on each office floor is extracted by fans located at high level within the ceiling void of the W/C's.

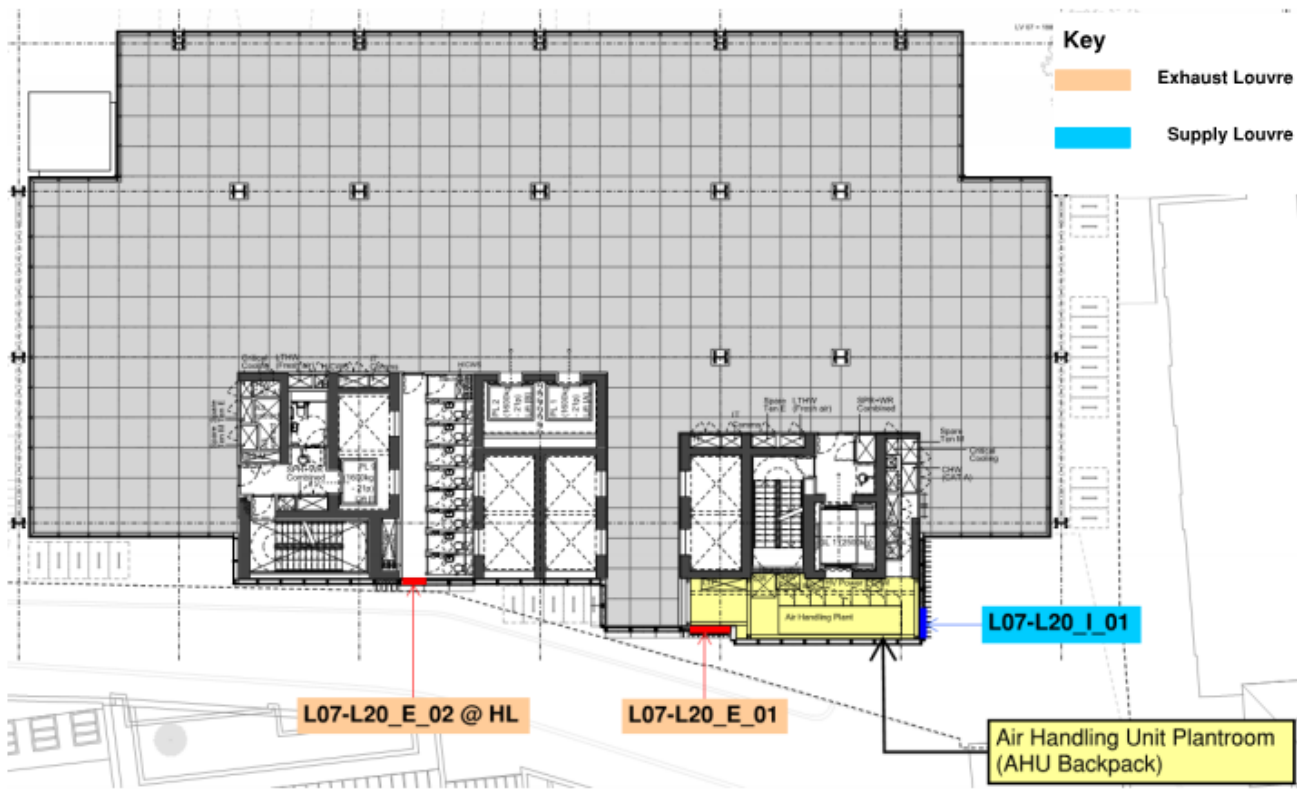


Image 11: Ventilation strategy for a typical office floor.



3.1.4 Garden Levels

Levels 5 and 6 within the Tower house a public elevated garden and an A3 retail unit. As per the landscape consultant's strategy report the temperature, air movement and humidity are all provided via passive systems (openings in the façade).

The A3 retail unit will be ventilated as per the retail ventilation strategy highlighted in section 3.1.2 with a slight variation in that the extract air from the dining and back of house areas will be exhausted out via L06\_E\_01. The hot kitchen extract will be exhausted at roof level. The louvre location for the A3 retail unit on these levels is highlighted in Image 13.

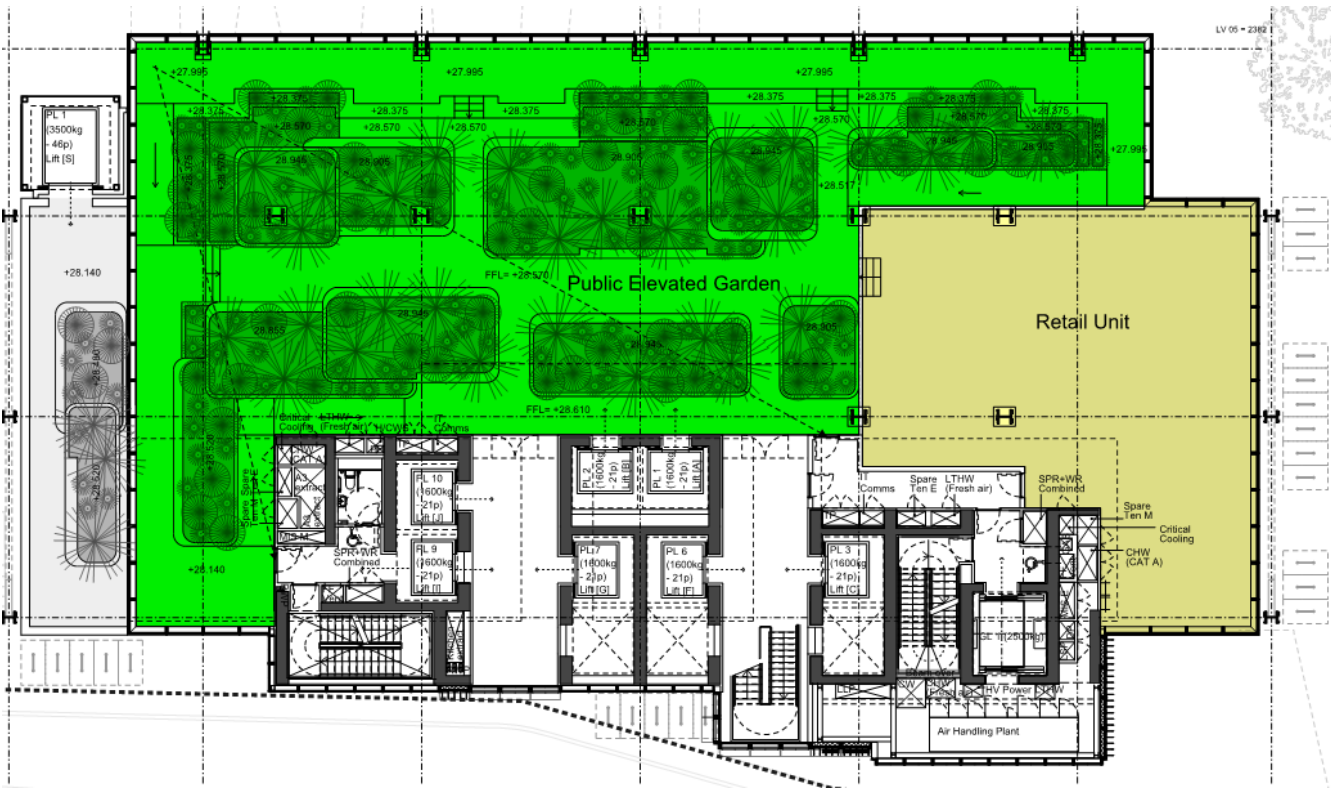


Image 12: Level 05 – Double height public elevated garden and first level of A3 retail unit.

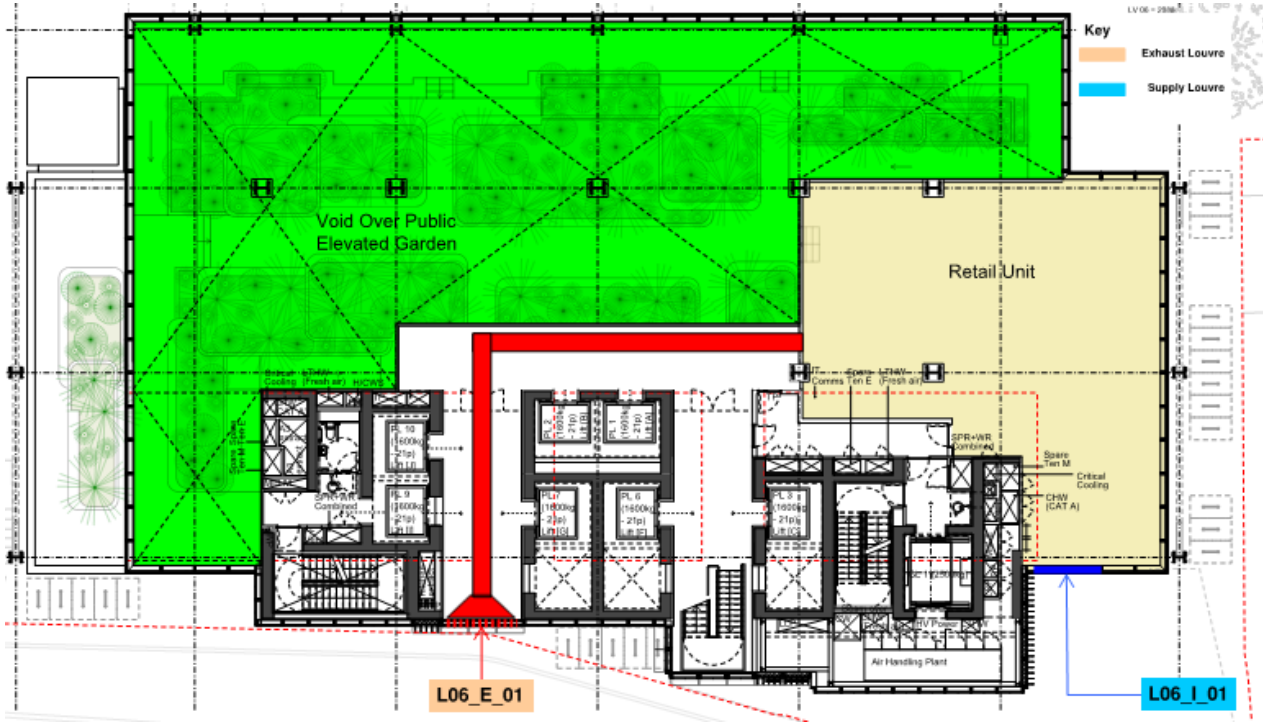


Image 13: Level 06 – Double height public elevated garden and second level of A3 retail unit.

### 3.1.5 Auditorium/Hub

Levels 21 and 22 within the Tower contain a double height auditorium alongside two foyer levels. These floors also contain two office units which take up half of each floorplate. As these floors contain two separate domains they will be ventilated as per the strategy stated below to ensure independent operation.

- Fresh air is supplied to the L21 and L22 auditorium/hub levels via the AHU located in the L21 AHU backpack (L21\_I\_01);
- The Office units in L21 and L22 to be served via the AHU located in the L22 AHU backpack (L22\_I\_01);
- Control systems will be used to ensure that the supply of fresh air switches from the hub to the auditorium as required;
- The displacement system in the auditorium requires supplementary fresh air which is provided via a louvre (L22\_I\_02) located at high level in L22 which feeds into an independent air handling (location TBC) and the air is then exhausted out via louvre L21\_E\_02;
- The extracted air from the W/C's will be exhausted via a louvre located in L22 (L22\_E\_02).

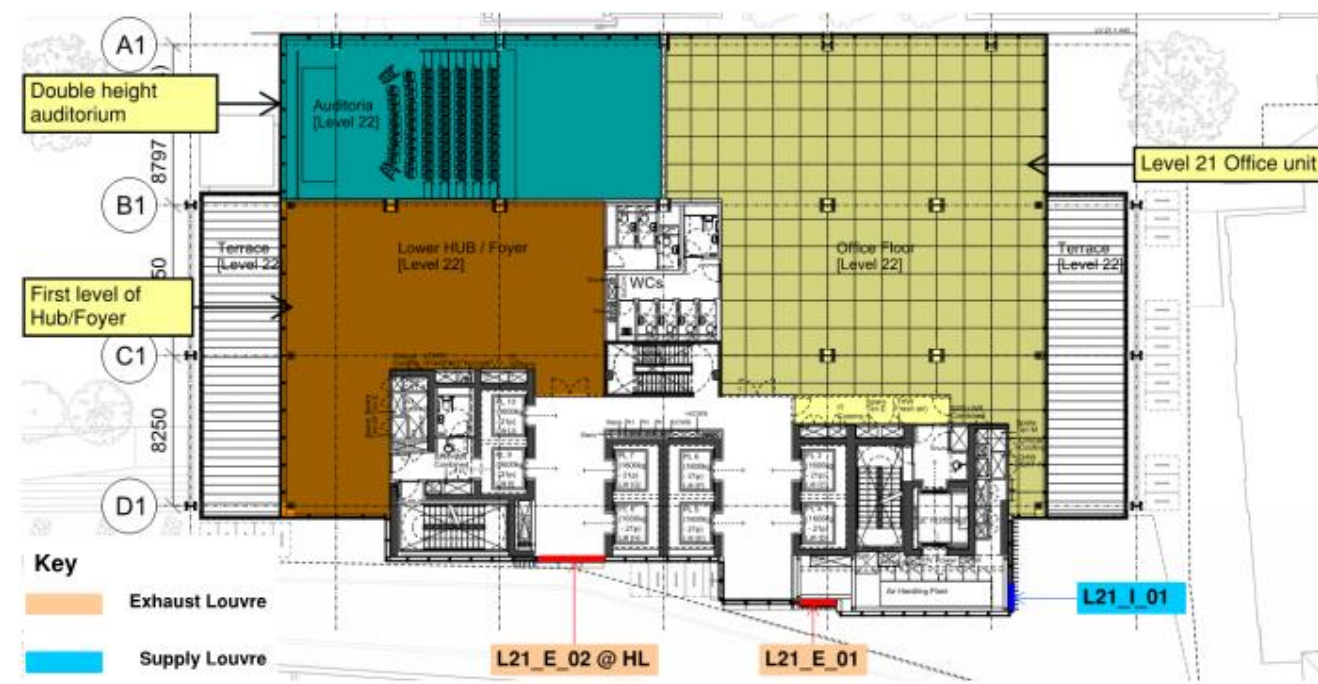


Image 14: Level 21 – Locations of Auditorium, Hub/Foyer and Office units.

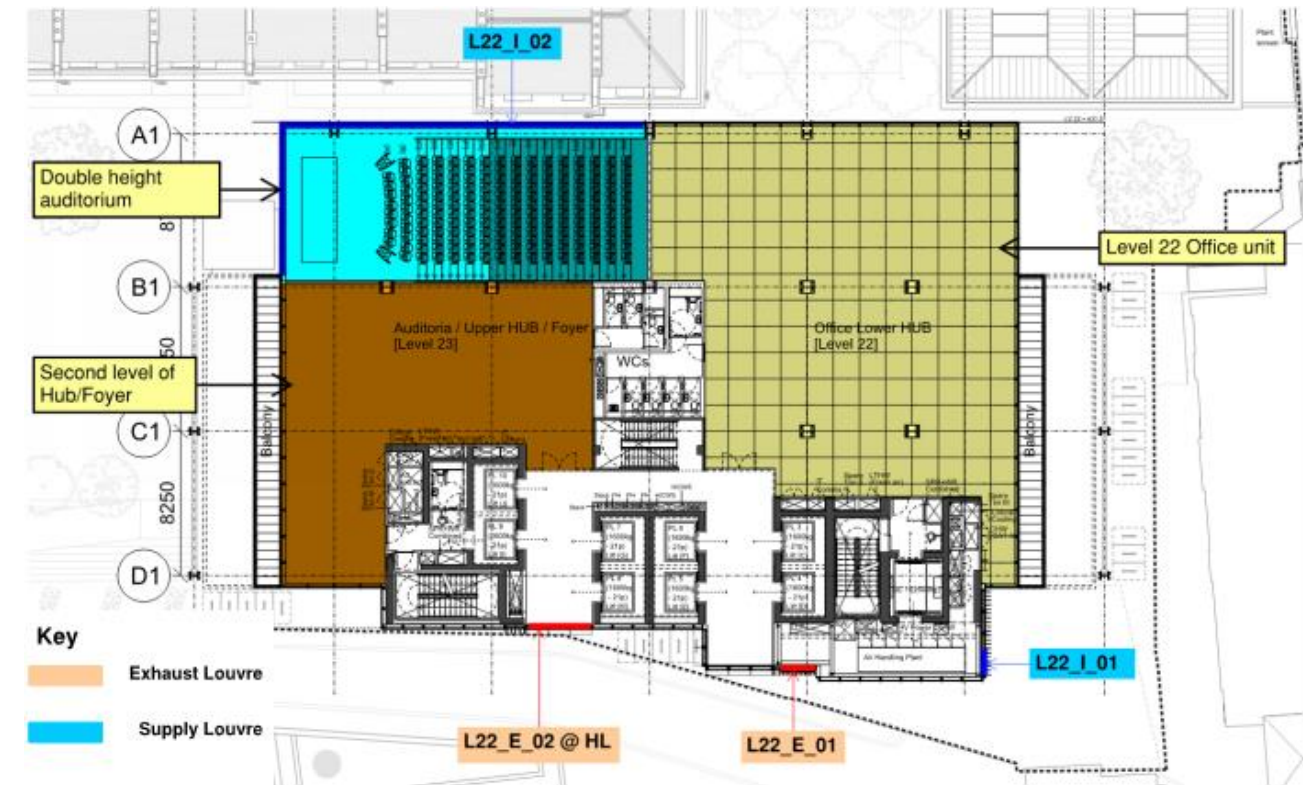


Image 15: Level 22 – Locations of Auditorium, Hub/Foyer and Office units.



### 3.1.6 Roof Levels

Levels 34 and 35 contain the roof plant for the Tower (energy centre). The required louvres and plant they service are stated below:

- Inlet louvres on both L34 and L35 around the cooling towers (L34\_I\_01, L34\_I\_02, L35\_I\_01, L35\_I\_02);
- An inlet louvre located in the ceiling of L34 (L35\_I\_03) provides the required air for the generators, L34 AHU and Load Bank;
- The air from the generators is exhausted via a louvre provided in the north façade (L34\_E\_01);
- The retail unit 04 kitchen extract air is exhausted via louvres provided in the north façade of L34 (L34\_E\_02);
- The air from the L34 AHU to be exhausted via a louvre provided on the east façade (L34\_E\_03);
- The garden retail unit kitchen extract air is to be exhausted via a louvre provided on the east façade (L34\_E\_04).

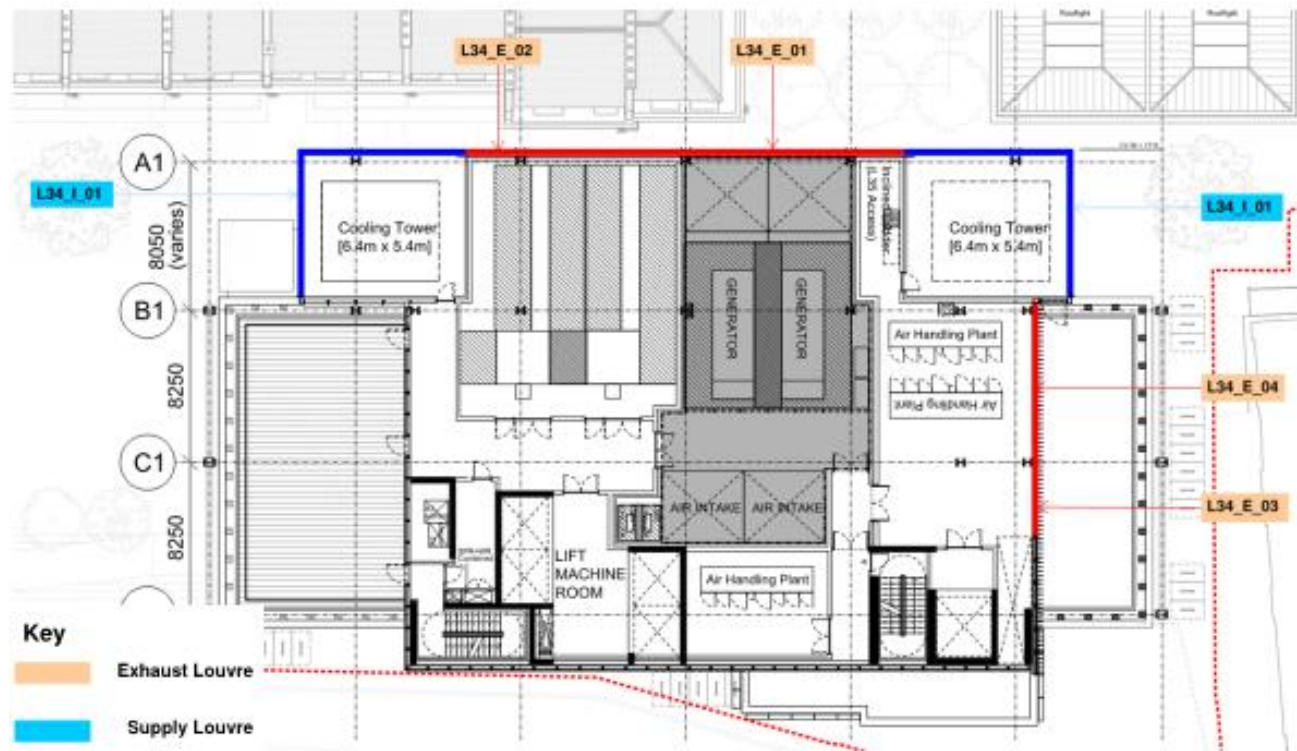


Image 16: Level 34 – First level of roof plant and louvre locations.

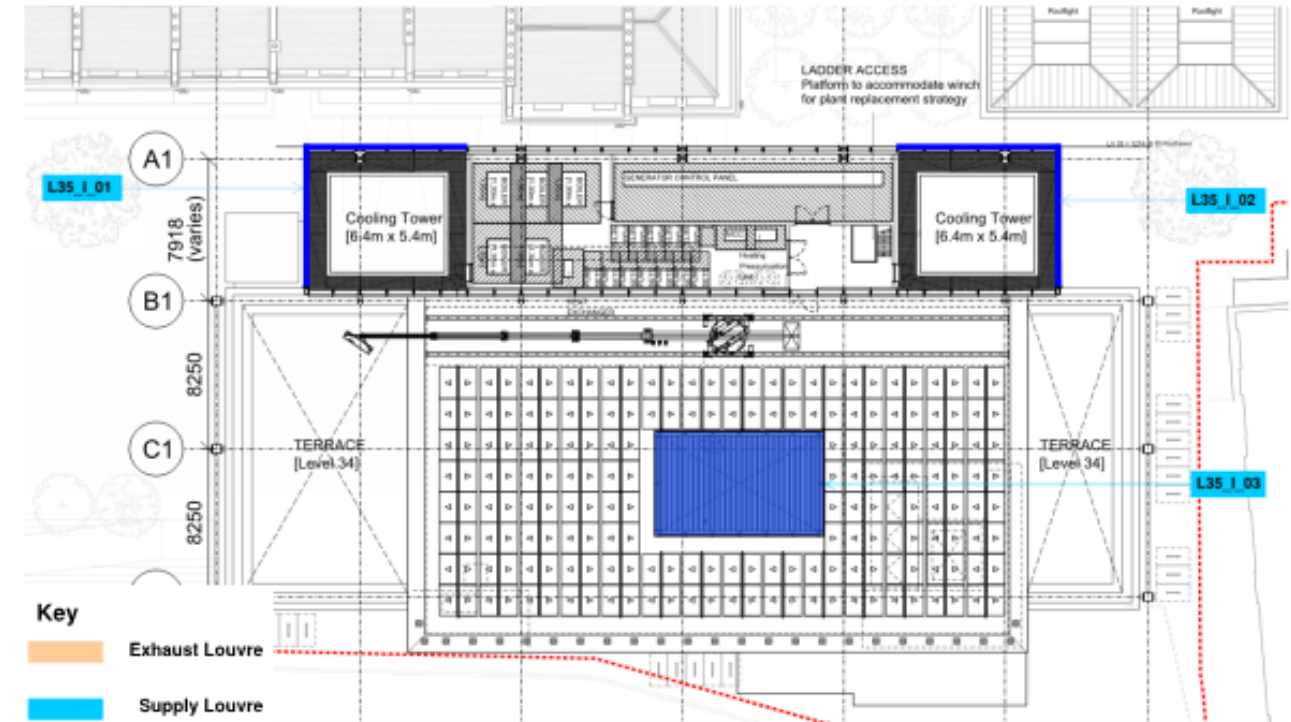


Image 17: Level 35 – Second level of roof plant and louvre locations.



### 3.1.7 Mechanical Ventilation vs Natural Ventilation

Mechanical systems have been used to provide fresh air to all the office and retail units within the Tower. This is due to the fact that the floor plates are too deep for natural ventilation to be effective.

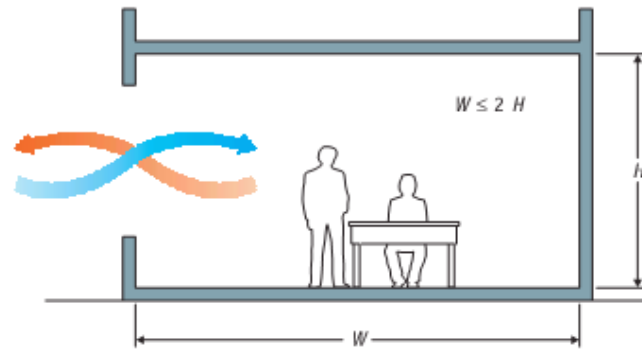


Figure 2.18 Single sided ventilation, single opening

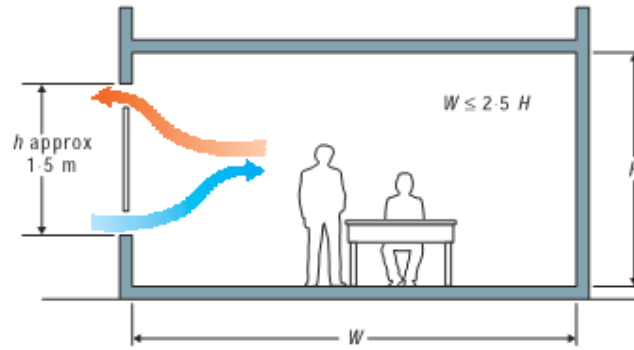


Figure 2.19 Single sided ventilation, double opening

Image 18: The limiting floor depth for effective natural ventilation (CIBSE AM10).

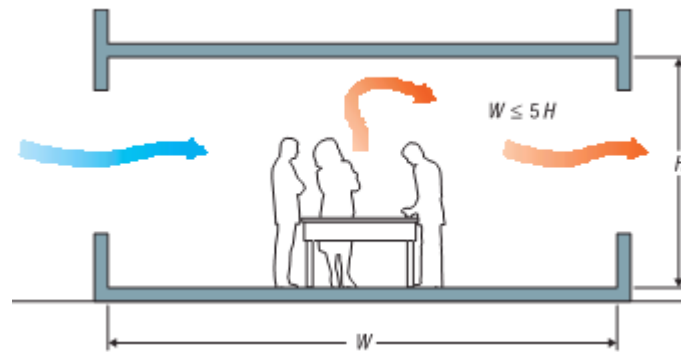


Image 19: The limiting floor depth for effective cross ventilation (CIBSE AM10).

Images 18 and 19 highlight the rules of thumb for estimating the effectiveness of natural or cross flow ventilation relative to floor widths and heights. The typical height of an office unit in the Tower is 3.7m and taking the best scenario (ventilation openings on both side of the space allowing for cross ventilation) the maximum width of the floor plate where natural ventilation would be an effective strategy would be 18.5m. Image 20 shows that the width of the floor plate exceeds the maximum width.

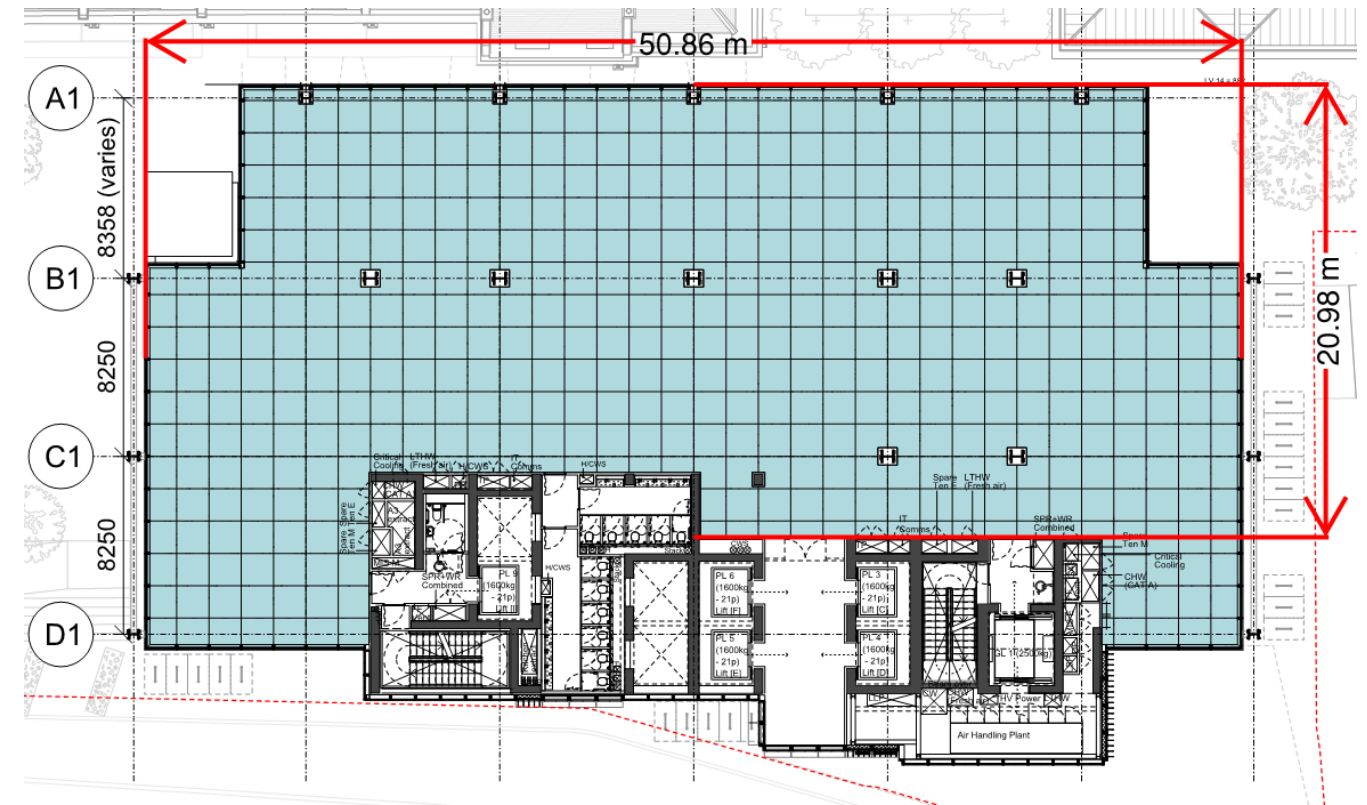


Image 20: Floor plate depths of a typical office unit.

3.2 Keats House

3.2.1 Retail

The ground level (L00) and the first floor (L01) of Keats House contains an A3 retail unit. The required fresh air for the dining area, back of house and kitchen area is provided by a common louvre located at the roof level of Keats House (K\_L05\_I\_01). The fresh air is then treated by an air handling unit located within the retail unit floorplate at Level 01. The extracted air from the dining area and back of house is extracted via a common extract riser and exhausted at the roof level (K\_L05\_E\_01) whilst the air from the kitchen is extracted and then exhausted via an independent riser and louvre (K\_L05\_E\_02). All three of the louvres stated above will be weather protected to stop the ingress of water.

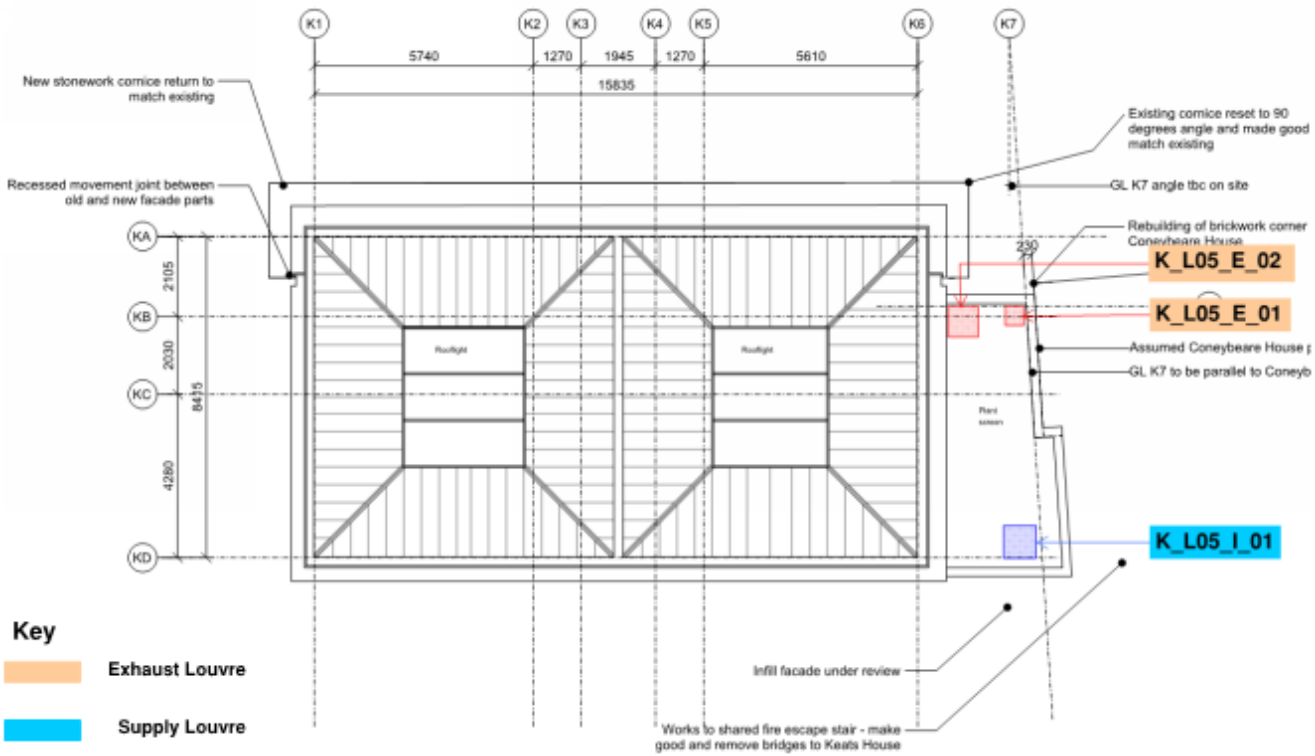


Image 21: Locations of supply and exhaust louvres for Keats House A3 unit.

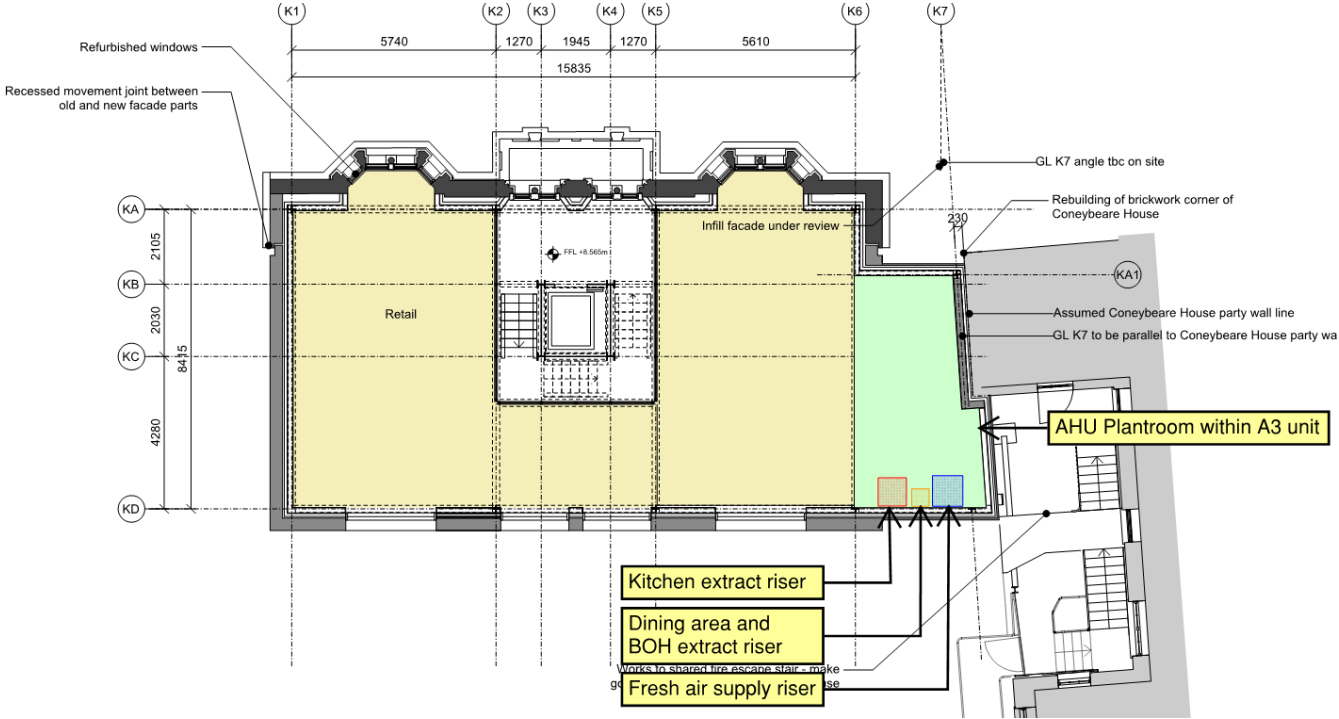


Image 22: Keats House A3 unit on floor plant room.

3.2.2 Offices

Levels 2 and 3 in Keats House are office units. The fresh air for the offices in Keats House is provided via natural ventilation (openable windows on both sides allowing for cross ventilation). As per the design criteria, stated in section 3.1.7 (Image 18, 19) denoting the requirements for natural ventilation to be effective, the narrow floor plates in Keats House lends itself to be effectively served by a natural ventilation strategy.

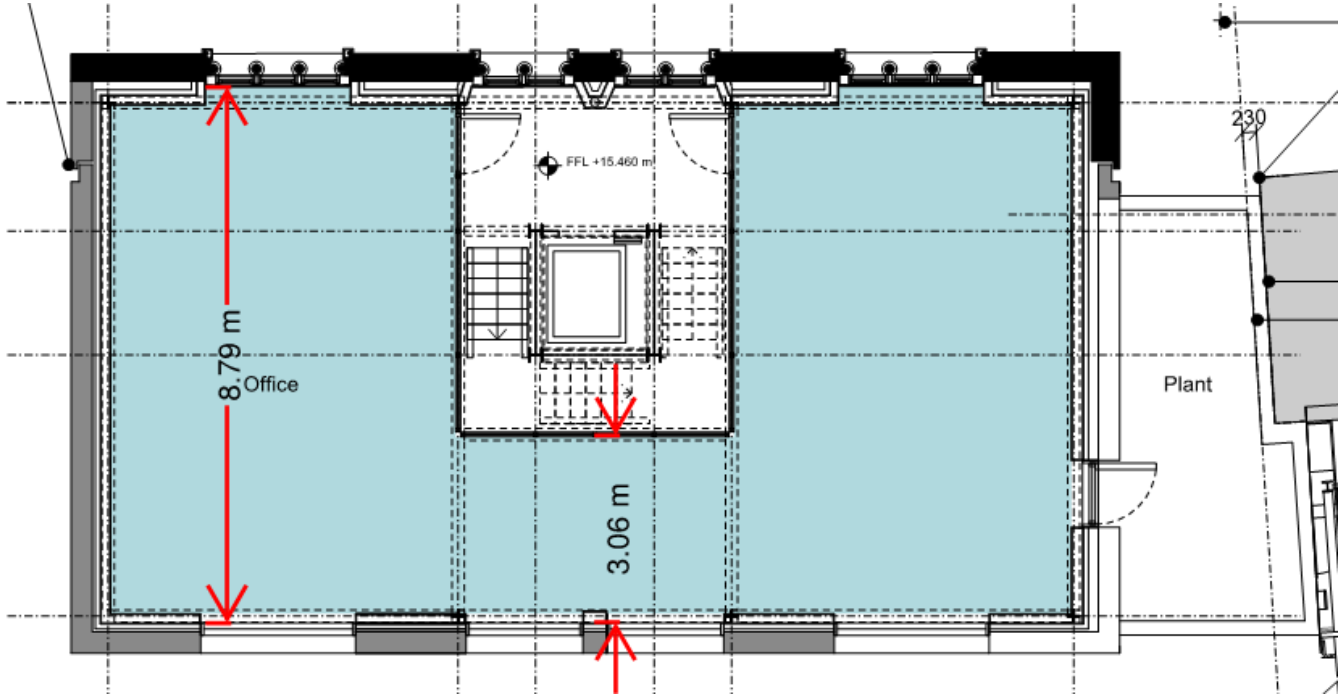


Image 23: Typical office floor plate in Keats House

Assuming a worst case height of 3m for the office units a natural ventilation strategy with cross ventilation would be effective up to a maximum floor width of 15m.

3.3 Georgian Terrace

The Georgian Terrace contains a total of 7 independent townhouses (Units 4, 6, 8, 10, 12, 14, 16). The basement and ground floors for all the townhouses are retail units whilst levels 1, 2 and 3 are office units. Unlike Keats House the retail units in the Georgian Terrace are not classified as A3 units and as such the ventilation requirements are not as onerous. As such both the retail and office units in the Georgian Terrace are being serviced by natural ventilation.

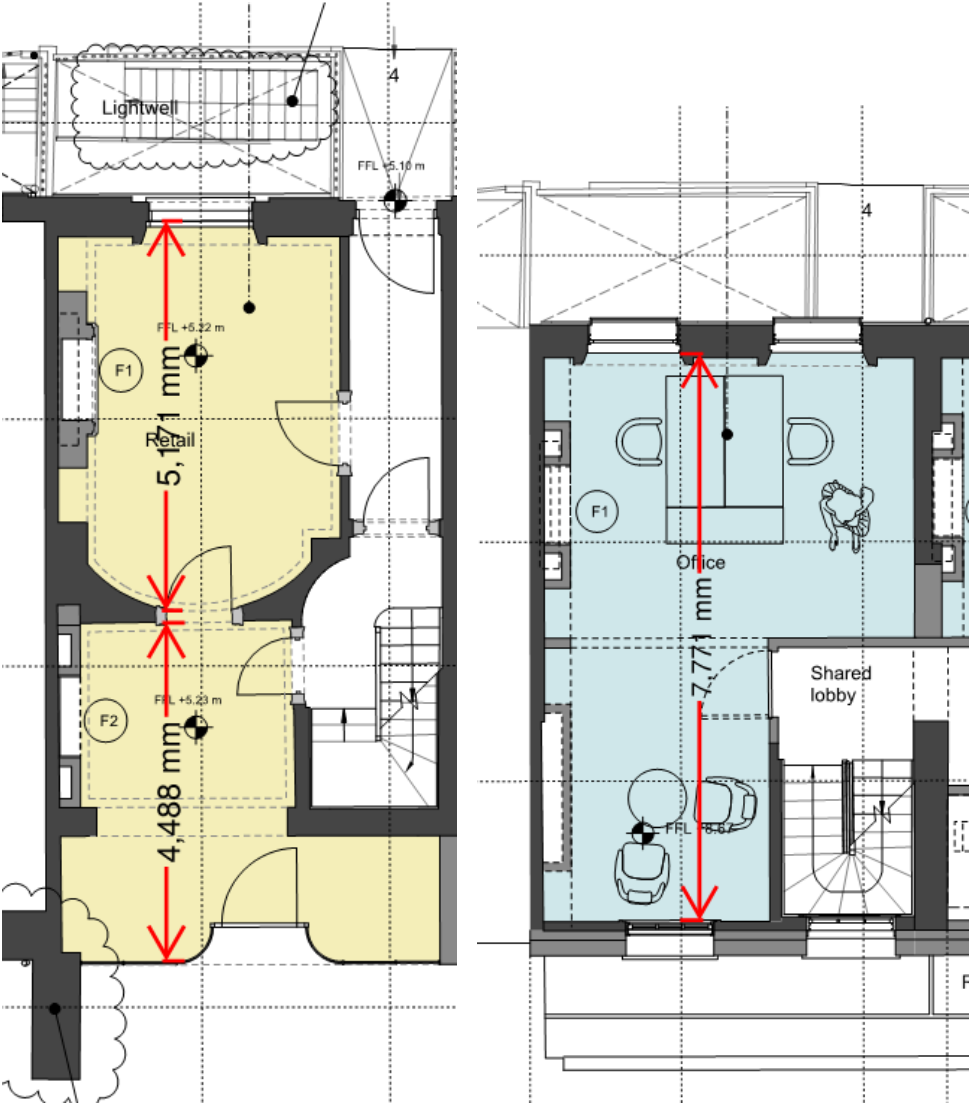


Image 24: Typical retail and office floor plate in the Georgian Terrace for Units 4, 6, 8, 10, 12.

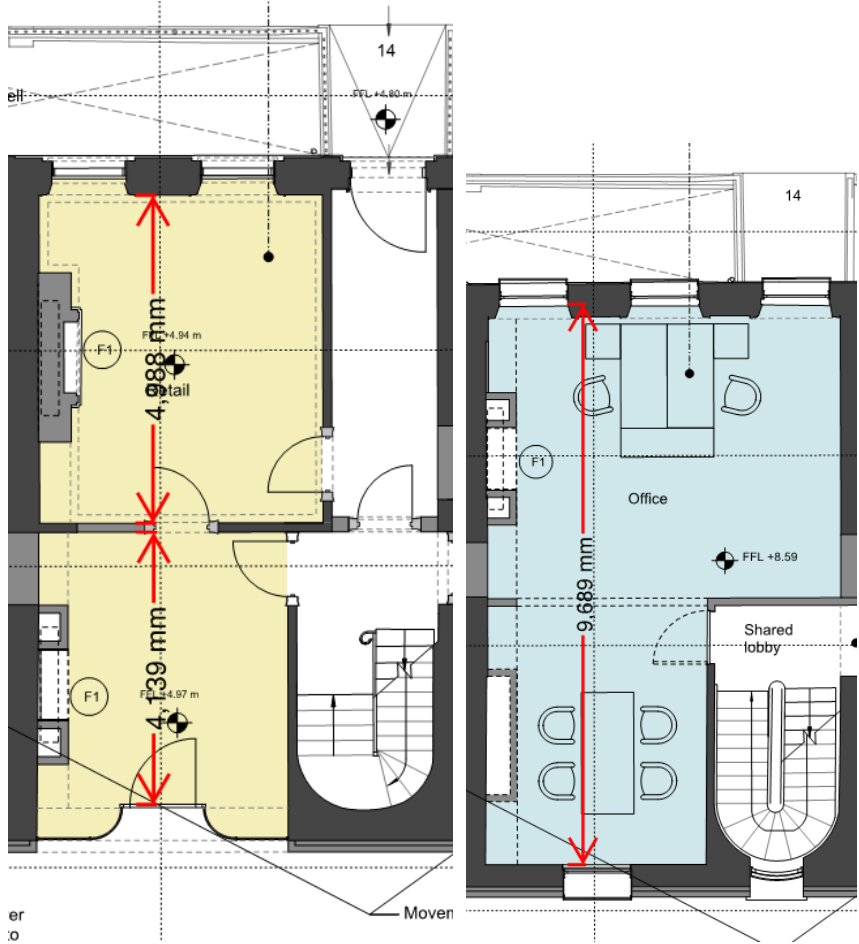


Image 25: Typical retail and office floor plate in the Georgian Terrace for Unit 14.



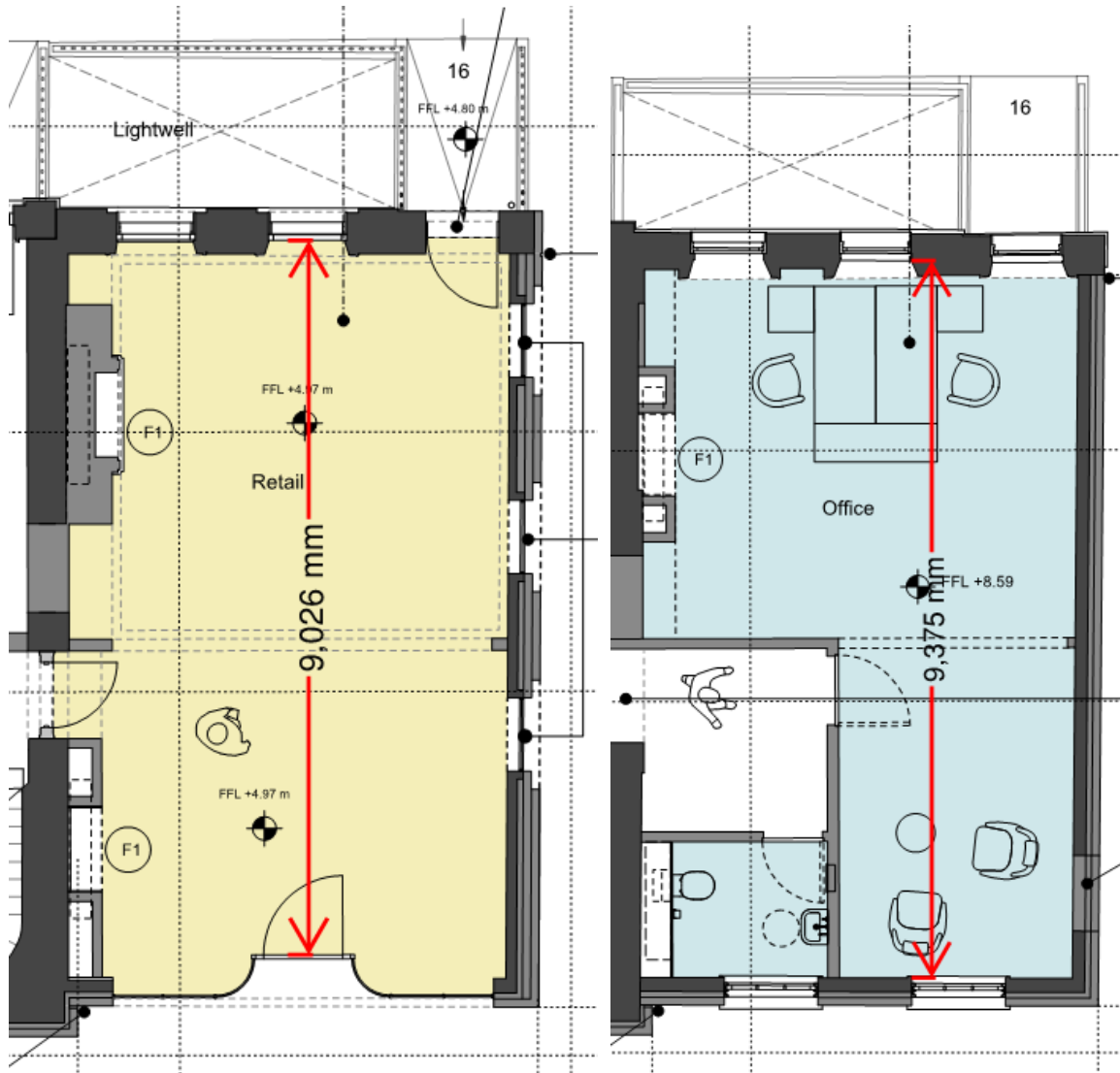


Image 26: Typical retail and office floor plate in the Georgian Terrace for Unit 16.