EUSTON TOWER

Ventilation Statement

December 2023

British Land

ARUP

British Land Property Management Limited

Euston Tower

Ventilation and Extraction Statement

Reference: EST-ARP-XX-XX-RP-M-00001

P04 | 30 November 2023

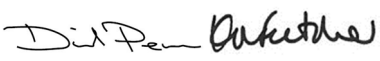
Job number 281835

Ove Arup & Partners Limited
8 Fitzroy Street
London
W1T 4BJ
United Kingdom
arup.com

ARUP

Document Verification

Project title	Euston Tower
Document title	Ventilation and Extraction Statement
Job number	281835
Document ref	EST-ARP-XX-XX-RP-M-00001
File reference	EST-ARP-XX-XX-RP-M-00001

Revision	**Date**				
P01	13/10/2023	**Filename**	Ventilation and Extraction Statement – First Draft		
		Description	Draft issue for comments		
			Prepared by	**Checked by**	**Approved by**
		Name	JP	DP	KF
		Signature			
P02	03/11/2023	**Filename**	Ventilation and Extraction Statement – Second Draft		
		Description	Revised to address comments on First Draft and issued to EHO ahead of scheduled meeting		
			Prepared by	**Checked by**	**Approved by**
		Name	JP	DP	KF
		Signature			
P03	20/11/2023	**Filename**	Ventilation and Extraction Statement – Third Draft		
		Description	Revised to capture outcomes of EHO meeting.		
			Prepared by	**Checked by**	**Approved by**
		Name	JP	DP	KF
		Signature			
P04	30/11/2023	**Filename**	Ventilation and Extraction Statement		
		Description	Final issue for planning submission		
			Prepared by	**Checked by**	**Approved by**
		Name	JP	DP	KF
		Signature			

Issue Document Verification with Document ☑

Contents

1. Introduction

1.1 Purpose

This Ventilation and Extraction Statement provides a summary of the ventilation proposals developed for the site known as Euston Tower. It describes the approach taken in the Proposed Development and details the responses to planning guidance.

1.2 Description of Development

This Ventilation and Extraction Statement has been prepared in support of an application at Euston Tower, 286 Euston Road, London, NW1 3DP

Full planning permission for the following development: -

"Redevelopment of Euston Tower, including the partial retention (retention of existing core, foundations and basement), disassembly, reuse and extension of the existing building, to provide a 32-storey building for use as offices and research and development floorspace (Class E(g)) and office, retail, café and restaurant space (Class E) and learning and community space (Class F) at ground, first and second floors, and associated external terraces. Provision of public realm enhancements, including new landscaping, and provision of new publicly accessible steps and ramp. Provision of short and long stay cycle storage, servicing, refuse storage, plant and other ancillary and associated works"

This is referred to throughout as the **"Proposed Development".**

1.3 The Applicant

The applicant for this application is British Land Property Management Limited (Hereafter, British Land)

1.4 Description of Existing Site

Euston Tower is an existing 36-storey tall building standing on the northern edge of central London, situated in the south-west of the London Borough of Camden.

Located on the corner of Euston and Hampstead Road, at the top of Tottenham Court Road the tower shares a busy intersection with The UCL Hospital campus and is directly opposite Warren Street Station. The current tower has a prominent presence, given its status as the tallest building in the borough aside from the nearby BT Tower, and as such acts as a physical landmark for London Euston, Euston Square and Warren Street stations as well as wayfinding for the wider neighbourhood.

Completed in 1970, Euston Tower was designed in the 'International Style'. Above a two-storey extruded glazed podium, the tower has a pinwheel plan clad in aluminium curtain walling with green reflective tinted glazing. It was designed as an office building to provide cellular office accommodation typical of the period and formed part of a wider masterplan known as The Euston Centre. It now stands on the eastern edge of the pedestrianised Regent's Place Campus.

Since its completion, it has undergone a minor refurbishment with the addition of secondary glazing in the 1990s, but beyond this its external form and façade remain as originally constructed. These elements of the building are in a generally poor condition, due to a combination of wear in use and the quality of the original detailing. Gradually the existing tower has been vacated, and since 2021, with the exception of the retail floorspace at grade level, the building is vacant.

2. Proposed Strategy

The ventilation and extraction strategy of the Proposed Development is described in this section. The strategy for each area of the building is described separately.

2.1 General

The overall ventilation strategy is to locate ventilation intakes on the North and South façades and exhausts on the West and East façades, across all floors, as shown below in Figure 1.

This strategy is centred around achieving appropriate separation distances between intake and exhaust airstreams as required by industry best practice, various accreditation schemes such as BREEAM and the WELL Building Standard and by British and European Standards such as PD CEN/TR 16798-4:2017 Energy performance of buildings.

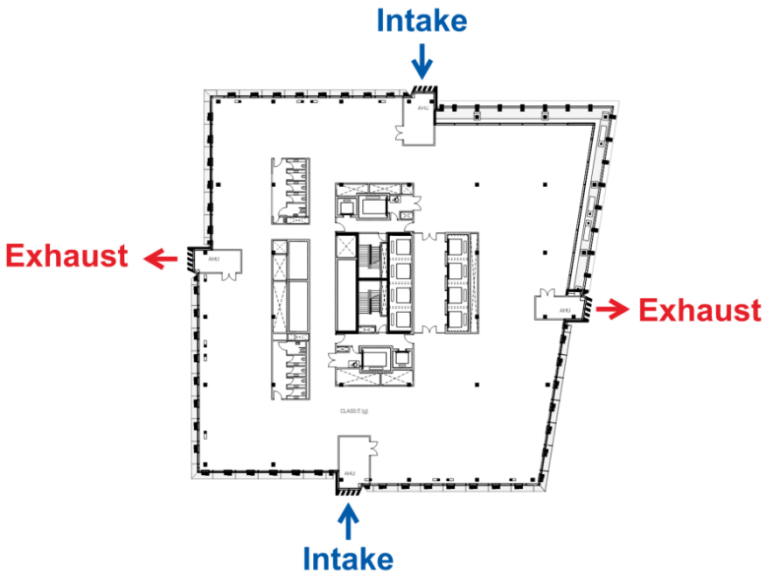


Figure 1 - Intake/Exhaust strategy for whole building

For the purposes of this document, the Proposed Development is considered in three general zones, the Tower; comprising of office floors, lab-enabled spaces and amenity areas, the Podium; containing café, public amenity spaces and accelerator spaces and the Basement, which contains shower rooms, cycle storage, plant rooms and other back of house areas. The aforementioned general zones are associated with the following floors:

- Tower
    - Office Floors – Level 12 to Level 30
    - Lab Enabled Floors – Level 04 to Level 11
- Podium – Level 00 to Level 03
- Basement – Level -1

The following sections will describe the ventilation strategies relevant to each of these areas.

2.2 Tower

2.2.1 Design Criteria

The design criteria that apply to the various space uses within the office levels have been based on various sources including industry recommendations such as those found in Chartered Institution of Building Services Engineers (CIBSE) guidance, values stipulated by statutory requirements such as The Building Regulations - Approved Document F, Volume 2, 2021 and the clients requirements outlined in the British Land Building Design Guide.

Ventilation design criteria for each general space type in the office levels is summarised in Table 1 below.

Table 1 - Tower spaces ventilation strategy design criteria

Space Type	Ventilation parameters			
	Part F Requirement	Ventilation rate	Supply	Extract
Office	10 l/s/person or 1 l/s/m^2	min of 16 l/s/person max of 3 l/s/m2*	Yes	Yes
Lab enabled areas	N/A	6 ACH	Yes	Yes
Lift lobby**	0.5 l/s/m^2	0.5 l/s/m^2	Yes	Yes
WC's***	6 l/s per WC pan	15 l/s/cubicle	Yes	Yes
Goods lift lobby & Risers	N/A	N/A	No	No
Protected corridors	N/A	N/A	No	No

* Maximum ventilation rate governed by peak cooling required, system will be controlled to ensure a minimum ventilation supply of 16 l/s/person is maintained.

** Mechanical supply and extract to lift lobbies provided as per Approved Document F 2021

*** Mechanical supply and extract provided direct to WC's

2.2.2 Office Spaces

General office spaces are planned for Levels 12 – 30. The ventilation and mechanical conditioning of these office spaces is delivered using 'on-floor' Air Handling Units (AHU) arranged on each aspect of the tower, adjacent to the façade. Sufficient louvre separation is achieved horizontally by grouping together intake/supply and return/exhaust AHU sections in separate rooms.

The louvre 'spines' form a major visual aspect of the scheme and run vertically through the height of the tower. The vertical architectural louvres that form the spine will conceal weather louvres behind that will be appropriately sized for the intake and exhaust AHU air flowrates plus an additional allowance for intake and exhaust air that could be used by tenants to serve supplementary demands on the floor plate which may include tea points or printing areas.

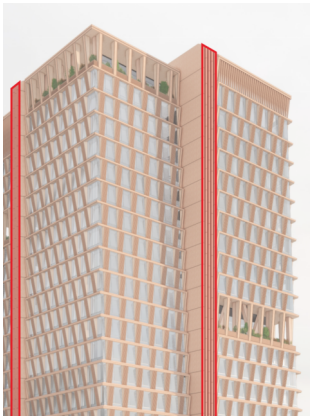


Figure 2 – 'Breathing Spine' Location of louvres on the Tower

A high efficiency run-around coil heat recovery system will connect the supply and extract AHUs to allow for energy transfer between the airstreams, as indicated in Figure 3.

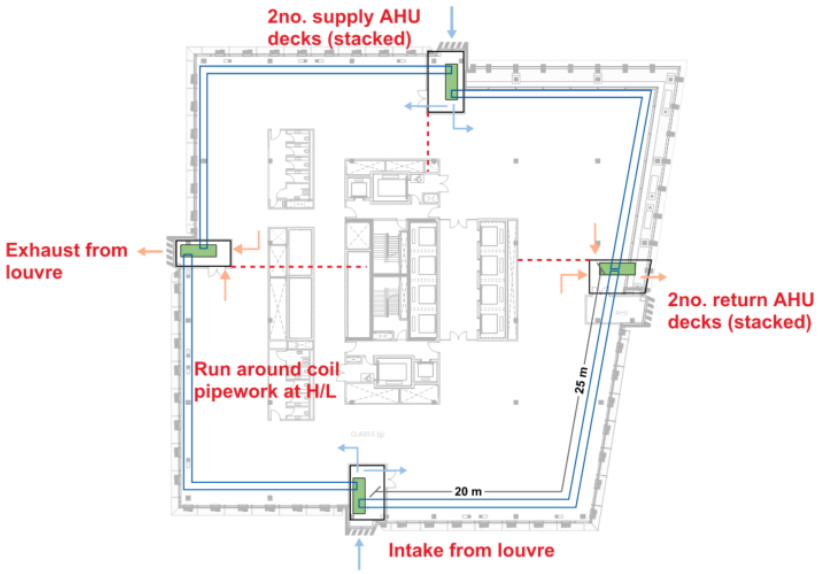


Figure 3 - Office AHU arrangements

Outside air will be drawn in through appropriately sized weather louvres concealed behind an architectural façade louvre that runs the height of the tower and is an important part of the architectural intent.

Office spaces will be supplied via a pressurised underfloor plenum utilising swirl diffusers placed at appropriate intervals. Extract of air will occur at a single point, at high level on the AHU room.

To enhance occupant satisfaction and wellbeing, natural ventilation openable panels, integrated with the façade design are being explored. These panels will allow for additional natural ventilation to be supplied to perimeter zones of the floorplate. Further analysis in later design stages will confirm the expected ventilation levels delivered and the estimated energy savings achievable through reducing mechanical ventilation levels, if appropriate and a decision will be made on if these are to be integrated into the base-build or allowed as a future option for tenant installation.

A centralised ventilation system will provide supply and extract of air to both the WC areas and lift lobbies on each floor, via ductwork routed in the central core.

2.2.3 Lab-Enabled Spaces

The north portion of the floorplate of Levels 04 to 11 are planned to provide a Lab-Enabled tenant offering. The strategy for Lab Enabled areas is similar to the standard office floors, but instead of ventilation being supplied at low level from the underfloor plenum, overhead ductwork will supply through high level diffusers. This is to reflect lab tenants' typical preference for overhead ventilation. The volume of air supplied is also greater than in the office levels, and for this reason the AHU rooms serving lab enabled spaces are larger, to contain the larger units required.

An allowance for the provision of fume cupboards has been made within the base-build design. Working on best practice guidance from lab specialists, an allowance of 1no. fume cupboard per 100m^2 of NIA in lab-enabled areas has been made. It is proposed that fume cupboards will be connected to vertical risers through high level ductwork and a diversity of 60% across the system has been assumed in the sizing of the vertical riser ducts.

High-velocity entrainment type fans, such as those manufactured by Strobic Air Technologies, will be installed at roof level and discharge the contaminated air extracted from the fume cupboards by diluting it

with large quantities of entrained outside air and projecting it in a high-velocity jet to a vertical height well above the occupied area.

This strategy means that a tall discharge stack is not required, which would impinge on the planning height boundary.

The southern portion of the floorplate of the Lab-Enabled levels is planned as write-up space, considered within the design as being equivalent to the office areas and provided with the same underfloor all-air system as the office areas.

2.2.4 WC Spaces

Supply and extract ventilation will be provided to WCs in the Tower core, supplied by centrally location AHUs.

WCs on levels 03 to 12 will be served by an AHU located in a plantroom at Level 02 in the Podium. WCs on levels 13 to 30 will be supplied by an AHU located in the MEP space at Level 30.

Exhaust of air extracted from WC spaces will be discharged on the West elevation, at roof and podium levels, sufficiently distant from any intake louvres.

2.2.5 Amenity Spaces

There are a number of amenity spaces distributed through the height of the tower. It is intended that these areas are served by on-floor AHUs in a similar way to the office spaces.

Whilst the final function of these spaces is still to be concluded, they could possibly contain small cafés or concessions that would require a kitchen for food or beverage preparation. Any kitchens required will contain all-electric equipment and it is likely that any cooking activity will be limited. For this reason, it is intended that additional extract ventilation from these areas can be discharged through the louvre spine adjacent to the amenity space.

If the space use changes and the kitchens and cooking activity is deemed to be more significant, it is possible that a kitchen extract duct could be routed to rise to roof level in the Tower core.

2.2.6 Office kitchens

As mentioned in Section 2.2.2, the intake and exhaust louvres on the vertical spines include a spare capacity allowance that could be used by office tenants for additional ventilation requirements such as those arising from printing areas or small tea-point type kitchens within their demise.

Any kitchens within the office spaces will be limited to a re-heat style only food preparation and will be all electric. An assessment will need to be made by the tenant of the activities that will be undertaken in the kitchen and they may be required to install enhanced filtration or treatment devices to treat the air before it is discharged through the louvre spine.

2.3 Podium

2.3.1 General

The air intake and exhaust strategy for the Podium levels aligns with that of the Tower as far as possible, aiming to keep intakes to the North and South elevations, and exhausts to the East and West. This is to ensure sufficient separation distance between louvres in both horizontal and vertical directions. Within the Podium façade there will also be louvres facilitating the intake and exhaust of air from spaces within the Basement.

Figure 4 below details the locations of louvres on each elevation at podium level.

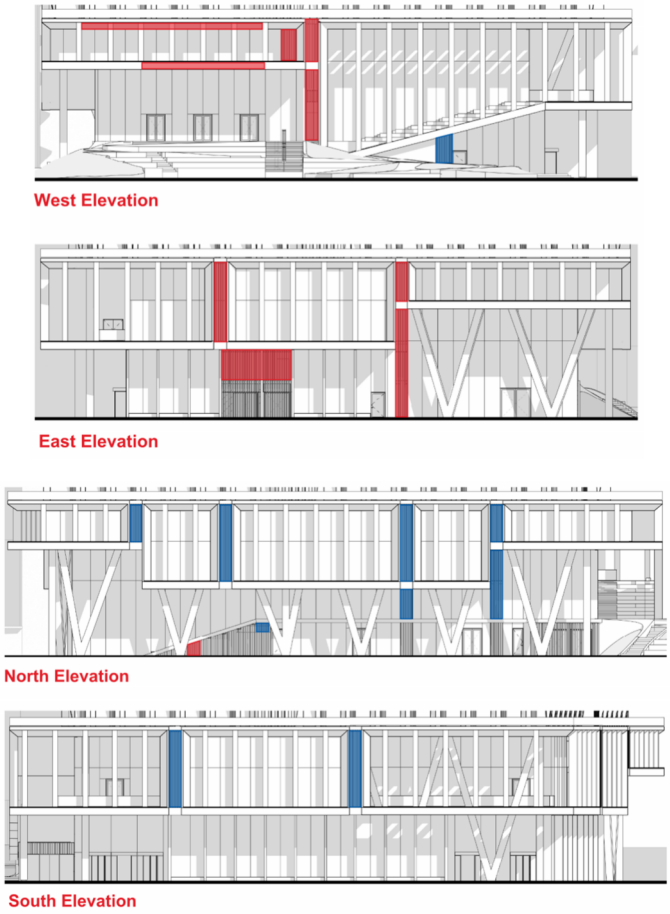


Figure 4 – Location of louvres on each elevation of the Podium (Exhaust in red, Intake in blue)

2.3.2 Public Spaces

Although final space uses are still to be concluded, the areas on the North side of the Podium are expected to be public areas that could be used for events, exhibitions and community use. To maximise the amount of available floor area, ceiling mounted AHUs are intended to provide ventilation to these spaces, alongside additional space conditioning equipment such as Fan Coil Units.

High-level ducts will connect the ceiling mounted AHUs to façade intake and exhaust louvres. Where possible, intake louvres are situated as far above street level as possible to reduce the risk of entraining polluted air. Similarly, exhaust louvres have been situated away from occupied outside spaces to avoid discharging stale air from within the building into these areas.

2.3.3 Lobby Spaces

The entrance lobby space will be provided with ventilation air supplied by separate supply and return AHU decks located on different levels, with heat recovery provided by a run around coil.

The supply AHU will be located at Level 01 within the Podium and will intake fresh air from a louvre located on the South elevation of the podium. The AHU will be connected to the louvre via a duct routed at high level across the lobby.

Supply ventilation will be provided to the lobby space through ductwork, concealed within the ceiling bulkhead below Level 02.

2.3.4 Café Kitchen

A Café is planned for Level 01 of the Podium, with the commercial kitchen serving this, located at Level 00. The kitchen will be all electric and the current intent is that the kitchen extract from the space be discharged through louvres on the West elevation of the podium, as indicated on the image below in Figure 5.

Figure 5 – Location of proposed Kitchen exhaust louvres

Discharge of kitchen exhaust at Level 31 roof was explored but deemed to be unfavourable owing to the increased fan energy required, additional space take within the core areas throughout the height of the building and increased maintenance required of the significant duct run and larger fans required.

For this reason, discharge at the Podium is preferred and has been designed carefully to mitigate any possible impacts on the surrounding environment. As this solution is yet to be fully agreed with relevant parties, a space allowance has been made to take the exhaust to Level 31 if the preferred option is deemed unfeasible.

Louvres will be located with sufficient separation from the various intake louvres on the North and South and it is proposed that the kitchen extract will be discharged at high level above street level, which could pose a risk of odour issues for local receptors if not properly designed.

To mitigate this risk, it is proposed that the extract system from the Café Kitchen be fitted with enhanced filtration and odour treatment devices, such as a Kitchen Ecology (KEU) or Pollution Control Unit (PCU), similar to that shown in Figure 6 below.

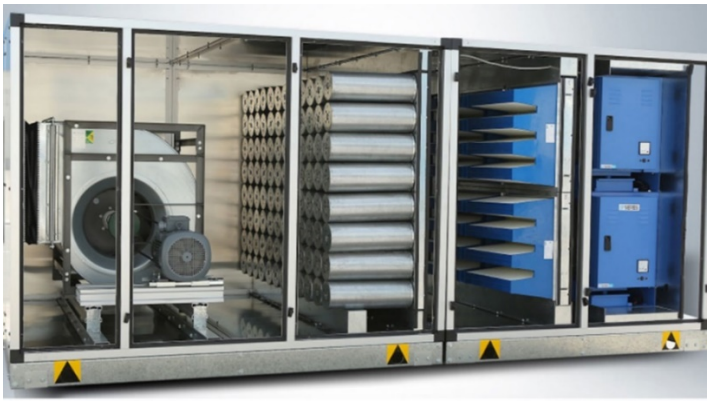


Figure 6 – Example of a Kitchen Ecology Unit

These units help to maintain air quality by removing grease and smoke particulates through mechanical filtration and the reduction of odours through removal of volatile organic compounds using activated carbon filters.

These units require the periodic cleaning or replacement of filters. To ensure that these are regularly maintained at proper intervals the kitchen exhaust fan would be interlock with the pressure sensors around the filters to ensure that the system cannot operate with inappropriately maintained or clogged filters.

2.3.5 Accelerator Space

Level 03 will be designated as 'accelerator space' which will be fitted out lab spaces and let to scale-up companies to encourage the growing industry by removing the barrier of high fit-out costs.. As such, the design criteria for this space is taken to be the same as other lab-enabled spaces within the Tower.

The space will also be served by on-floor AHUs, but located adjacent to the core, rather than the façade as per the Tower floors to allow for more vision glazing at this level. Figure 7 below shows the location of the AHUs and intake and exhaust louvre locations.

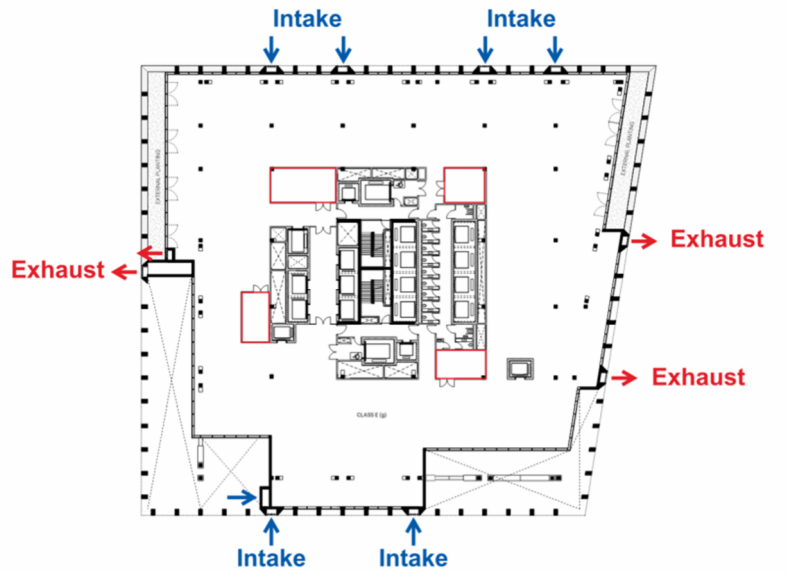


Figure 7 – Intake and exhaust louvre locations at Level 04

Intake louvres on the North and South elevations and exhaust louvres on the East and West are located within solid façade panels at this level, with high-level ductwork connecting these to the AHUs at the core.

2.3.6 Retail kiosks

There are currently no standalone Retail units planned for the Proposed Development, however there may be 'kiosk' style retail stands located within the Lobby areas. These will likely not be undertaking any cooking activities and should not require additional ventilation.

2.3.7 Laboratory Gases Delivery Room

A Laboratory Gases Delivery Room is planned at the North-West corner of the Podium, at ground level. This space will facilitate the delivery and storage of lab gases required by lab tenants. Although the exact gases delivered and stored are not yet determined, the possible impacts of gas leaks have been considered as part of the design.

To avoid any leakage of heavier than air gases collecting in the Basement, any low-level louvres serving the Basement are situated as far as possible from the Laboratory Gases Delivery Room. Equally, any intake louvres on the level above also situated as far as possible from the room, avoid drawing in any lighter than air leaked gases.

The room will be design with appropriate natural and mechanical ventilation as required by best practice and regulatory requirements, and leakage detection and alarm systems will be installed as appropriate.

2.4 Basement

2.4.1 Basement Spaces

The existing basement of Euston Tower is predominantly naturally ventilated, including the adjacent loading bay and car parking areas that serve the adjacent Regent's Place buildings. There are no physical demise lines separating the loading bay and adjacent car parking areas from the Euston Tower spaces.

The internal spaces that are mechanically ventilated have been split into different ventilation zones with each zone being served by separate air handling units. Fresh air is drawn into the Basement through intake louvres at Podium level on the North façade. Exhaust air is ducted to louvres at Podium level on the West and East façades.

Figure 8 below outlines the current proposed general ventilation strategy.

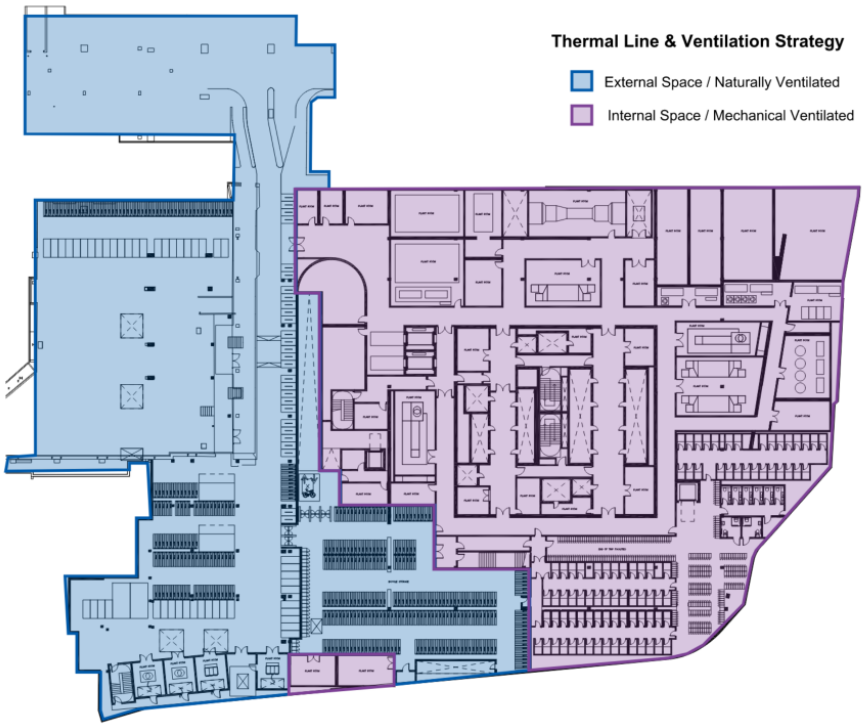


Figure 8 - Basement general ventilation strategy

2.4.2 Smoke control strategy

As the basement area of Euston Tower is existing and currently connects to the demise of a number of surrounding buildings on Regent's Place, the smoke ventilation strategy depends heavily on the existing provision.

A new, mechanical smoke ventilation extraction system is proposed to serve mechanically conditioned spaces within the Euston Tower basement demise including showers, some plant rooms and ancillary spaces. The general ventilation ductwork will have dual purposes. One mode will supply normal ventilation rates to conditioned spaces and emergency mode will provide 10 air changes per hour of smoke extract to single fire compartment as described by the Fire Statement.

Smoke extract fans, sized to deliver at least 10 air changes of the largest fire compartment they serve, will be connected, via bypass ductwork, to the general ventilation system. Damper control panels will allow actuation of dampers to achieve the appropriate smoke extract from the affected fire compartment.

Non-conditioned areas that do not have sufficient free area for natural ventilation, such as the loading bay and car parking areas will also be served by the mechanical smoke extract system. Further design investigation and co-ordination is required to determine if natural smoke exhaust can be retained/modified which will be completed in the next design stage.

Smoke extracted from affected fire compartments by the smoke fans will be exhausted through louvres situated on the East façade, away from any fire escapes and well above the occupied zone at street level, as indicated in Figure 9 below.

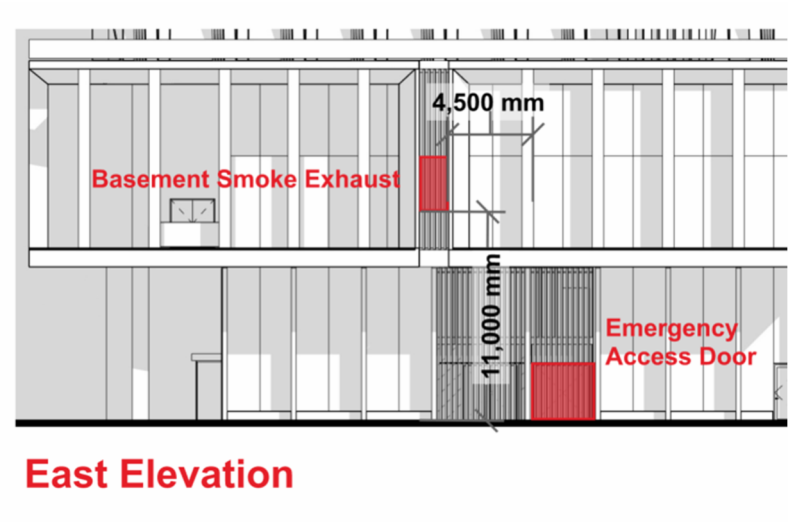


Figure 9 – Basement smoke exhaust louvre location

2.4.3 Generators

There are currently two options being investigated as part of the design stages. The final decision on which option will be taken forwards will depend on further liaison with UK Power Networks (UKPN) and the relevant authorities. Until a final decision is made, both options are being considered within the design to ensure that either one would form a compliant solution. The options are as follows.

Option 1 – Life Safety Generator & Future Tenant Generator

Option 1 includes a generator, located in the Basement, to provide standby power to a range of life safety systems in the building. Air intake and discharge plenums with grillage at street level will provide ventilation air to satisfy the engine cooling and combustion air requirements of the unit.

Refer to Figure 10 for the generator plantroom location in the basement of Euston Tower. Refer to Figure 11 for the location of the generator ventilation grillage on Brock Street.

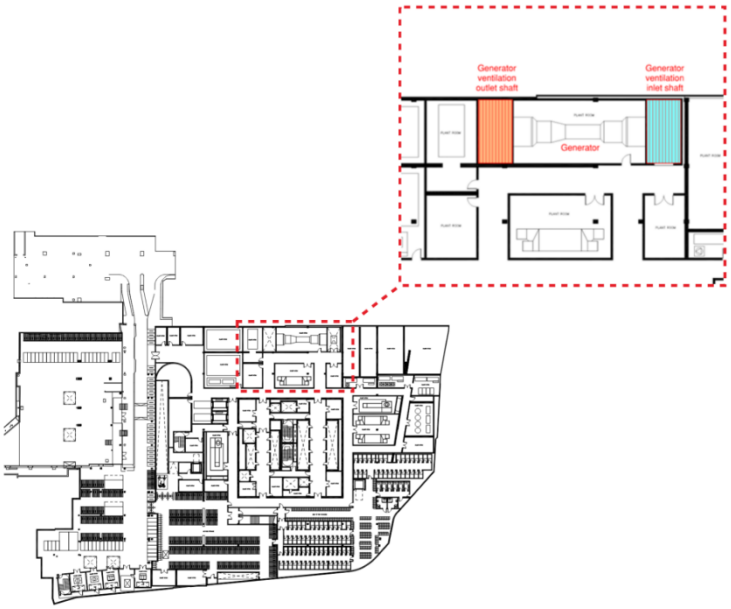


Figure 10 – Image showing the generator plantroom location in the basement of Euston Tower

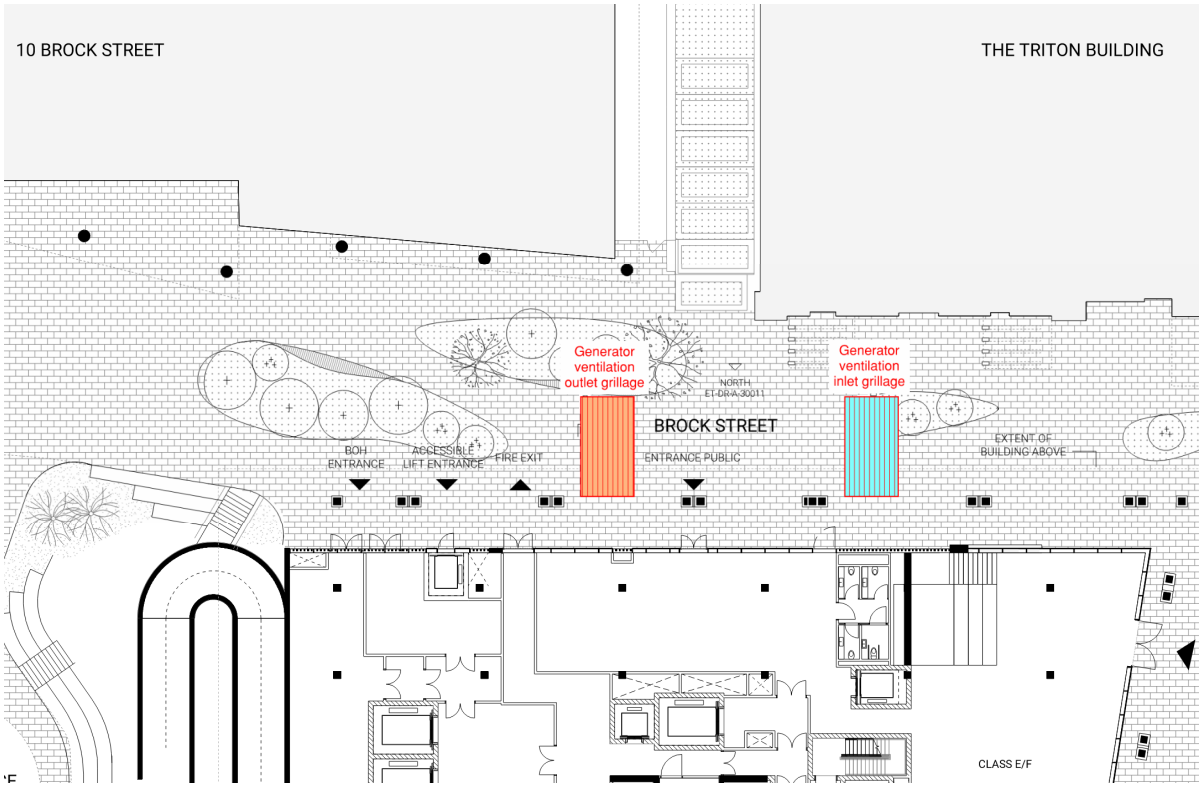


Figure 11 – Image showing the generator ventilation grillage locations on Brock Street

It is proposed that generator exhaust flue gases will be discharged from the Podium levels, approximately 16m above street level through a projecting discharge on the East side of the Podium, adjacent to Hampstead Road, which is approximately 45m from any adjacent buildings. Refer to Figure 12 for the elevation showing the life safety generator exhaust flue discharge point on the Eastern elevation.

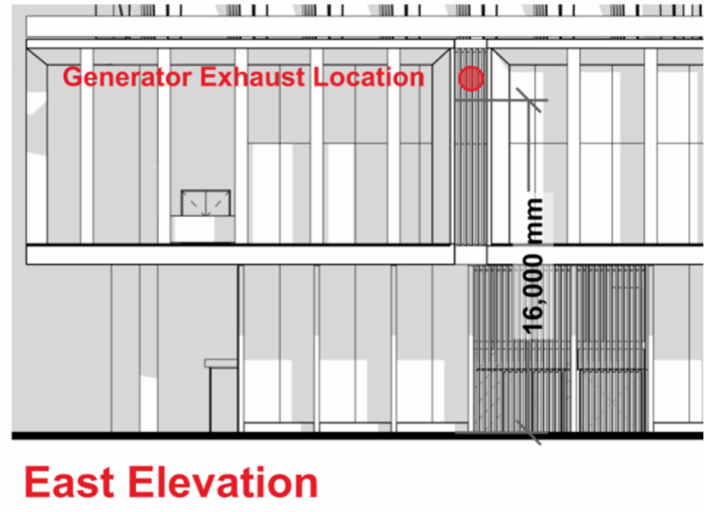


Figure 12 – Location of Life Safety Generator exhaust flue location

Whilst this solution requires final sign off from the Environmental Health Officer, a number of considerations have been made to mitigate the risk of having an adverse effect on local air quality.

For example, it is intended that the generator be specified to use a HVO (Hydrogenated Vegetable Oil) rather than diesel. This prevents the direct consumption of fossil fuels onsite and instead uses a fuel that is widely considered sustainable due to its derivation from waste cooking oils. Compared with diesel fuels, HVO NOx emissions can be up to 30% lower with a reduction of particulate matter by up to 87%.

As the life safety generator is for emergency use only, with limited planned testing, it is envisaged that compliance with the Medium Combustion Plant Directive (MCPD) is not required as running hours will be less than the 500 hours per year stipulated by the directive.

As the Proposed Development contains lab enabled levels, it has been considered that some lab tenants may require the installation of a future generator to support business critical uses within their tenancies. As the Basement areas are heavily congested, and space for an additional tenant generator is not available, it is proposed that already allocated generator space from an adjoining building, 10 Brock Street, will be used.

Figure 13 below shows the location of 10 Brock Street in relation to the existing Euston Tower.

Figure 13 – Image showing 10 Brock Street in relation to the existing Euston Tower

The space allocated within the basement of 10 Brock Street was originally intended for tenant generators serving the above building and as such already has a generator exhaust flue installed to the roof level. There are existing ventilation systems in place for the cooling and combustion air-flow requirements for the generators in the basement of 10 Brock Street, additional connections may be required to the existing lightwell to facilitate the installation of an additional generator. The common basement between 10 Brock Street and the Proposed Development would facilitate the services connections required between the buildings.

It is envisaged that the generator would be up to 1500kVA standby rated (or 1350kVA prime rated), would be emergency use only and would also operate using HVO fuel.

Option 2 – Dual Utility Supplies

An alternative option is also being developed in conjunction with the previously detailed option 1. This option looks to provide dual utility power supplies of 11kV each to the building, from two diverse UKPN primary substations, which would remove the requirement for a life safety generator as the dual utility supplies would provide primary and secondary supplies to life safety equipment.

Arup have engaged with UKPN who have confirmed that dual supplies are a viable option for the site and UKPN have prepared the utility connections quotations. The design team has engaged with the Building Control Officer to discuss the proposal who have confirmed the arrangement is feasible but require further information about the UKPN upstream infrastructure of each utility connection to verify how diverse the connections are. These investigations are ongoing and will be confirmed in later design stages, with one of the two options outlined being taken forwards.

In option 2, the space in the Basement of the Proposed Development currently allowed for, as detailed in the description of option 1, would be used for the installation of a future tenant generator of up to 1500kVA standby rated (or 1350kVA prime rated). In this case, as the generator function will be business continuity, rather than life safety, it is intended that the exhaust flue would be routed to the Tower roof, Level 31, instead of exhausting at Podium level, as the operating and testing hours could be more frequent. The exhaust flue would extract the combustion discharge gases at 4000mm above the FFL of Level 31.

The generator space in the adjoining building, 10 Brock Street, would not be used for this option.

3. Planning context and assessment of the proposed strategy

This section provides an overview of the relevant planning policy, as well as an assessment of the proposed strategy against each element. Relevant clauses and text from each policy are reproduced below in italics, with an assessment provided against each in the grey box.

3.1 National Planning Policy Framework (2023)

3.1.1 15: Conserving and enhancing the natural environment

Paragraph 174: Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.

Assessment:

Where areas have been designated for kitchen use, exhaust routes have been selected that maximise feasible separation between street level, openable windows and other ventilation intakes (refer to Section 2 for specific locations and strategy). Lower-level catering exhausts will be provided with best practice odour and containment control systems subject to approval by Building Control and Environmental Health (see Sections 2.2.5 and 2.3.4).

The design of all mechanical equipment will be in line with the acoustic limits described in the Noise and Vibration chapter within the Environmental Statement standalone Acoustic Report.

3.2 London Plan (2021)

3.2.1 Policy SI 4 Managing heat risk

Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:

1) reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure

2) minimise internal heat generation through energy efficient design

3) manage the heat within the building through exposed internal thermal mass and high ceilings

4) provide passive ventilation

5) provide mechanical ventilation

6) provide active cooling systems

Assessment:

Information on the energy strategy and the integration of mechanical and passive ventilation is explained in more detail in the Energy Statement provided as part of this application.

3.3 Camden Local Plan (2017)

3.3.1 A1: Managing the impact of development; Section 6.22

We will require all development likely to generate nuisance odours to install appropriate extraction equipment and other mitigation measures. These should be incorporated within the building where possible. External extraction equipment and ducting should be sited sensitively, particularly on listed buildings and within conservation areas.

Assessment:

Where areas have been designated for kitchen use, exhaust routes have been selected that maximise feasible separation between street level, openable windows and other ventilation intakes (refer to Section 2 for specific locations and strategy). Lower-level catering exhausts will be provided with best practice odour and containment control systems subject to approval by Building Control and Environmental Health (see Sections 2.2.5 and 2.3.4).

3.3.2 A4: Noise and vibration; Section 6.99

Planning conditions will be imposed to require that plant and equipment which may be a source of noise is kept working efficiently and within the required noise limits and time restrictions. Air conditioning will only be permitted where it is demonstrated that there is a clear need for it after other measures have been considered (Policy CC2 Adapting to climate change). Conditions may also be imposed to ensure that attenuation measures are kept in place and are effective throughout the life of the development.

Assessment:

The design and operation of all mechanical equipment will be in line with the acoustic limits described in the Noise and Vibration chapter within the Environmental Statement and the standalone Acoustic Report.

Ventilation equipment will be installed with appropriate attenuation as required to mitigate noise breakout to local receptors.

3.3.3 D1: Design; Section 7.34

Building services equipment, such as air cooling, heating, ventilation and extraction systems, lift and mechanical equipment, as well as fire escapes, ancillary plant and ducting should be contained within the envelope of a building or be located in a visually inconspicuous position.

Assessment:

Where possible, all mechanical equipment and distribution relating to ventilation and extraction systems is concealed within the envelope of the building. Some equipment will be located at roof level, such as stair pressurisation fans and ductwork, although this will be architecturally screened and visually inconspicuous.

3.3.4 CC2: Adapting to climate change; Sections 8.41-8.43

All new developments will be expected to submit a statement demonstrating how the London Plan's 'cooling hierarchy' has informed the building design. Any development that is likely to be at risk of overheating (for example due to large expanses of south or southwest facing glazing) will be required to complete dynamic thermal modelling to demonstrate that any risk of overheating has been mitigated.

Active cooling (air conditioning) will only be permitted where dynamic thermal modelling demonstrates there is a clear need for it after all of the preferred measures are incorporated in line with the cooling hierarchy.

The cooling hierarchy includes:

- *Minimise internal heat generation through energy efficient design;*
- *Reduce the amount of heat entering a building in summer through orientation, shading, albedo, fenestration, insulation and green roofs and walls;*
- *Manage the heat within the building through exposed internal thermal mass and high ceilings;*
- *Passive ventilation;*
- *Mechanical ventilation; and*
- *Active cooling.*

Assessment:
The proposed approach to ventilation has been assessed as part of the Sustainability Statement and Energy Statement, with the associated energy impact of the proposed ventilation system included in the analysis.

3.3.5 CC4: Air quality; Section 8.82

Developments will also be expected to include measures to ensure that the exposure of occupants to air pollution is reduced to within acceptable levels. In addition to mitigation, major developments in these areas will be expected to address local problems of air quality which may include various design solutions and buffers.

Assessment:

The impact on local air quality has been assessed during the design process and the strategy for the arrangement of intakes and exhausts has been based on ensuring maximal internal quality whilst having a minimal impact on external air quality around the Proposed Development.

Spaces within the Proposed Development that are provided with mechanical ventilation include appropriate filtration to remove pollutants. High levels of fresh air are proposed for office and lab-enabled spaces ensuring healthy internal air quality for occupants. Refer to Section 2 for an overview of the proposed strategies.

3.3.6 CC4: Air quality; Section 8.85

We will expect developments to focus on energy efficiency and an efficient energy supply. CHP will only be accepted if it is shown to be the most appropriate choice, it must also be of the highest standard in terms of NOx emissions and it must adhere to the latest emissions standards contained in the Mayor's Supplementary Planning Guidance 'Sustainable Design and Construction'. An AQA with full dispersion modelling is required for all proposed Biomass and CHP boilers and this must demonstrate that its impact on nearby receptors is minimal.

Assessment:

The energy strategy of the Proposed Development does not include a CHP or Biomass boiler. Refer to the Energy Statement for further details on the strategy.

3.3.7 TC4: Town centre uses; Section 9.40

Where food, drink and entertainment uses are permitted, they will need to be managed to protect the amenity of residents. To ensure such uses do not harm amenity or the character of an area, either individually or cumulatively, we will consider applying controls on:

- *hours of operation;*
- *refuse and litter;*
- *noise/vibration;*
- *fumes;*
- *customer area;*
- *local management issues; and*
- *changes of use.*

Assessment:

See response to Section 3.1.

3.4 CPG: Air Quality (January 2021)

3.4.1 Building location and design; Section 4.12

Indoor air quality needs early consideration in building design. The location of ventilation inlets, flues, opening windows should be on higher floors away from the sources of air pollution at ground level, but also stationary sources of plant. If mechanical ventilation (air conditioning) is considered acceptable […], they should be fitted with proven filtration technology appropriate for the pollutants of concern and should be maintained. Developments should also consider the location of neighbouring receptors.

Assessment:

See response to Section 3.1. For further information, see the overall description of the strategy included in Section 2.

3.4.2 Building location and design; Section 4.13

The location of outside space is also an important consideration and any exposure of gardens and roof terraces should be screened and, where practicable, minimised through appropriate positioning and orientation. Applicants should take care not to locate flues and exhaust vents in close proximity to recreational areas such as roof terraces or gardens.

Assessment:

See response to Section 3.1. For further information, see the overall description of the strategy included in Section 2.

3.5 CPG: Amenity (January 2021)

3.5.1 Plant and other noise generating equipment; Section 6.27

Developments proposing plant, ventilation, air extraction or conditioning equipment and flues will need to provide the system's technical specifications to the Council accompanying any acoustic report. 'BS4142 Method for rating Industrial and Commercial Sound' contains guidance and standards which should also be considered within the acoustic report.

Assessment:

The design and operation of all mechanical equipment will be in line with the acoustic limits described in the Noise and Vibration chapter within the Environmental Statement.

3.5.2 Plant and other noise generating equipment; Section 6.29

Plant, ventilation, air extraction or conditioning equipment and flues can cause disturbance to residential properties. The Council would therefore welcome the use of long-term maintenance agreements to ensure that equipment maintains acceptable noise levels over its lifetime and the use of timers to limit any unnecessary operation of the equipment.

Assessment:

The design and operation of all mechanical equipment will be in line with the acoustic limits described in the Noise and Vibration chapter within the Environmental Statement.

3.6 CPG: Energy Efficiency & Adaptation (January 2021)

3.6.1 Making buildings more efficient; Section 3.3

Energy efficient (passive) design measures should be considered prior to the inclusion of any active measures to ensure that the energy demand for developments is reduced as far as possible. This helps to reduce the size of building services and energy consuming technologies needed in developments.

Assessment:
Natural ventilation is considered for Office spaces within the Tower, please refer to Section 2.2.2 for further information.
Further description of the passive energy efficiency measures employed are detailed in the Energy Statement.

4. Conclusions

4.1 Current design status

The proposals within the Ventilation and Extraction Statement for the Proposed Development address national, regional, and local policies and guidance, including the Camden Local Plan (2017). The consideration of this information has informed the sizing and positioning of ventilation equipment, intakes and exhausts, across the Site. The proposals were discussed with the Building Control Officer on 26th April 2023, and there has been no adverse comment. A meeting was held with the Environmental Health Officer and other LBC members on 16th November 2023 to discuss the proposals for kitchen exhaust and generator flue exhaust specifically. Notes and outcomes from this meeting are included in Appendix A.1.

4.2 Next steps

The following next steps are proposed to ensure that the Proposed Development is aligned with the strategies laid out within this Ventilation and Extraction Statement.

- Royal Institute of British Architects (RIBA) Stage 3 (Spatial Coordination) to further refine the design proposals with detailed equipment selections, system design and modelling and evolved spatial coordination.
- Noise assessment of detailed ventilation system design to ensure that agreed noise limits are achievable.
- Testing and verification of installed equipment to ensure that agreed noise limits are achieved on-site.
- Continued engagement with LBC Environmental Protection Officers as the scheme develops.
- Development of guidance for operators or tenants within the Proposed Development to ensure that the strategies laid out within this document and all statutory guidelines are followed. Guidance to include operation and maintenance requirements, as well as on-going testing regimes.

A.1 Notes from EHO meeting

ARUP

Minutes

Project title	Euston Tower
Job number	281835
Meeting name & number	Euston Tower - EHO meeting, 1
File ref	
Time and date	14:00 16 November 2023
Location	Teams
Purpose of meeting	To discuss proposals with LBC EHO's
Present	Jamie Pendle – Arup Craig Harkness – Arup Harry Howat – Gerald Eve Sophie Hinton – Gerald Eve Jessica Pennell – G&T Gavin Williams – G&T Kate Henry – LBC Katherine Frost – LBC Edward David – LBC
Apologies	
Circulation	Those present

Topic **Action**

1. Kitchen Extract

- Kitchen exhaust strategy for the development was summarised as the following:
  - Office level kitchenette / tea points extract air will be discharged through exhaust louvres on the same level at East and West facades
  - Amenity space kitchen areas extract air will be discharged through exhaust louvres on the same level at East and West facades
  - L00 Café / Restaurant kitchen exhaust will be discharged through louvres above L03 of the Podium on the West façade.
- The proposed treatment of L00 Café / Restaurant kitchen exhaust with UVC & ozone treatment was detailed to mitigate the risk of odours and remove grease and smoke pollutants.
- The strategy was agreed in principle on the proviso that further analysis is undertaken in later design stages to assess the dispersion of any odorous air and the impact on local receptors.
- Camden EHO also raised the requirement that the cooking activities of the L00 Café / Restaurant kitchen are limited to not include any gas-fire equipment

or wood-fired equipment, such as pizza ovens, that could cause pollution issues.

2. Generator Exhaust

- Explained strategy options, including the following:
  - Preferred option - Dual utility supply - no life safety generator. Tenant generator to exhaust to L31 roof. Subject to agreement with building control and building insurers.
  - Alternative option - Single utility supply, life safety generator and tenant generator. Life safety generator to exhaust to the East side onto Hamstead Road at the Podium level 03, approximately 13m above the street level. Tenant generator to exhaust to the roof.
- The dual utility supply option, with no life safety generator is the EHO preference.
- There is a concern that 20m radius clearance is required from the exhaust flue from any receptacles. Including Euston Tower intakes/openable windows, any adjacent or opposite building intakes or from the Street level. The current proposal is 20m clear or any intakes and openable windows, but is only 13m above the street level, so the flue would need to be raised to approximately level 05.
- Hamstead road is quite a polluted area so Podium generator exhaust would add to the pollution levels, even if only emergency levels and tested approximately 12 hours per year. An air quality assessment would be required on Hampstead Road with the effects of adding the generator exhaust summarised for approval by the EHO.
- Providing a selective catalytic exhaust system could help reduce the emissions, but noted that it will not be instantaneously effective upon generator use.
- Agreed that any tenant generators will need to exhaust to the roof.
- Arup to send through recommended generator annual testing regime. See below. CH
  - Every month, 30 minute test to simulate power outage (approx 25% load)
  - Every 6 months, simulate power failure for 3 hours and test the smoke control systems (approx 50% load)
  - Annually, load testing of the generator for 3 hours (some of which at 100% load.
  - Total: 11-12 hours.
- **Next steps**:
  - Agree strategy options which requires UKPN quotes to be accepted, further UKPN information obtained and the strategy agreed with Building Control and Building Insurers.
  - If dual supply option, no further assessments required.
  - If life safety generator, then air quality assessment on Hamstead Road required to determine if L05 East exhaust is feasible. If not feasible, then roof exhaust required.

3. Generator Exhaust

- It was confirmed that any fume extract from lab-enabled spaces is to be discharged at Level 31 level through the use of appropriate high velocity discharge fans to ensure dispersal of contaminants well above any occupied zones.

ARUP

Project title	Euston Tower
Job number	281835
Date of Meeting	16 November 2023