



Fire Statement

Prepared by Jensen Hughes Company
Submitted on behalf of Lab Selkirk House Ltd

Selkirk House, 166 High Holborn and 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR

September 2022

Rev 01

SELKIRK HOUSE, 166 HIGH HOLBORN AND 1 MUSEUM STREET, 10-12 MUSEUM STREET, 35-41 NEW OXFORD STREET AND 16A-18 WEST CENTRAL STREET, LONDON, WC1A 1JR

FIRE STATEMENT

EL6941/ks/251ice
08th September 2022

AUTHORS

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The development must be carried out in accordance with the provisions of the Fire Statement prepared, checked and approved by the authors in this document dated 08th September 2022 unless otherwise approved in writing by the Local Planning Authority.

The Fire Statement defines the fire safety objectives and performance requirements of the development, and the methods by which these objectives will be provided/ satisfied. It is intended to ensure that the development incorporates the necessary fire safety measures in accordance with the Mayor's London Plan Policy D12.

INFORMATION

Overview of Development

The project involves the redevelopment of the existing NCP car park and former Travelodge Hotel at 1 Museum Street with a mixed-use scheme, providing office, residential, and town centre uses at ground floor level. Remodelling and extension of 166 High Holborn and 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London to provide further town centre ground floor uses and residential floorspace, including affordable housing provision. Provision of new public realm including a new pedestrian route through the site to link West Central Street with High Holborn. Relocation of cycle hire docking stations on High Holborn.

Building Use

The proposed development falls within a one red line area and comprises of the following components:

- **Museum Street** - a single new building rising to 19 storeys, providing office (Class E(g)(i)) accommodation on upper levels and a range of flexible town centre uses (Class E) at ground level.
- **High Holborn** - a single new building rising to 6 storeys, providing residential (Class C3) accommodation on upper levels and a flexible town centre use (Class E) at ground level.
- **Vine Lane** - a single new building rising to 5 storeys, providing market residential units with a flexible town centre use (Class E) at ground level.
- **West Central Street** - a series of new and refurbished buildings rising to 6 storeys, providing residential accommodation (market, LCR and Intermediate) on upper levels (Class C3) and flexible town centre uses (Class E) at ground level.

The site is indicated in Figure 1.

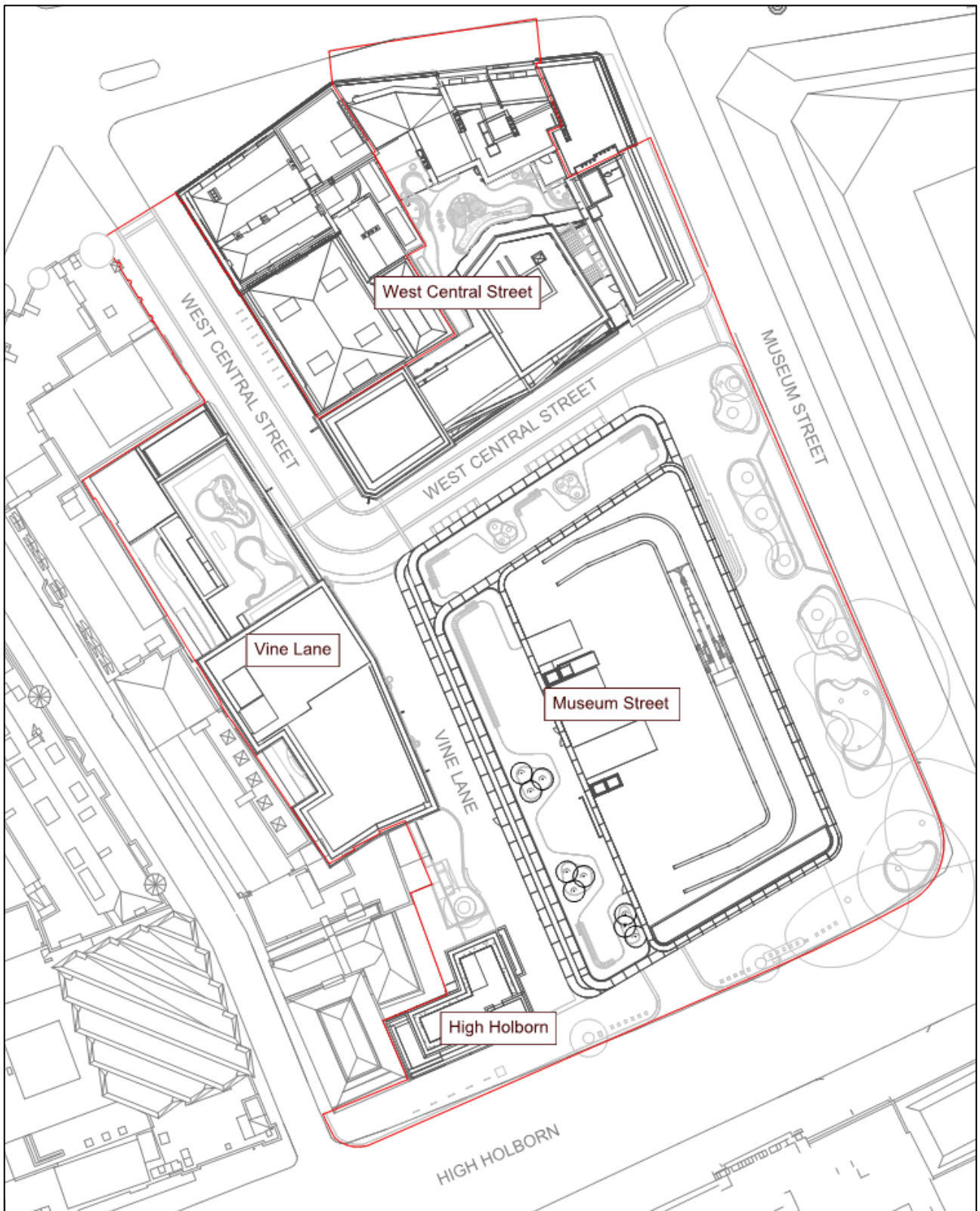


Figure 1 – Site Plan

QUALITATIVE DESIGN REVIEW (QDR)

The current design has been reviewed to the guidance of BS 9999:2017 for the office buildings and BS 9991:2015 for the residential buildings. These British Standards can be applied to a build of any height, however for very tall buildings i.e. over 50m in height a Qualitative Design Review (QDR) needs to be undertaken to ensure the guidance is appropriate for the specific building.

For the development, a QDR report has been prepared for the high rise Museum Street Block.

A range of fire scenarios have been identified in the QDR process. These cover all areas of the building from the upper office floors to the basement areas and external fires. The hazards and consequences for each fire scenario are also identified.

A list of the mitigating measures has been identified for each of the hazards. The purpose of the QDR is to review the scenarios, risks, and consequences to establish if the fire strategy designs are appropriate or if additional measures are needed.

From the QDR, it is concluded that the recommendations in BS 9999: 2017 are appropriate for the high-rise Museum Block.

ACTIVE FIRE SAFETY SYSTEMS

Sprinklers

The Museum Street Block, including the basement levels, will be provided with a sprinkler system designed and installed in accordance with BS EN 12845, including the recommendations of Annex E and Annex F for a high rise and enhanced reliability systems, respectively. As part of the QDR process, it is identified that the sprinkler system should be to an Ordinary Hazard Class 3. The hazard classification identified will need to be agreed with the Fire Service and also the client insurers.

The residential blocks i.e. Vine Lane, West Central Street and High Holborn will be provided with sprinklers designed and installed in accordance with BS 9251.

Sprinkler protection is provided to all buildings. Additional design allowances have been used as per the recommendations of the guidance, including reducing the BS 9999 risk profile, and supporting open plan flat layouts.

Automatic Fire Detection

The high-rise Museum Street Block will be provided with Category L1 automatic fire detection and alarm systems designed and installed in accordance with BS 5839-1. The system serving the Museum Street Block will incorporate a voice alarm system designed to BS 5839-8. The alarm system will provide a 15% benefit to the stair widths, storey exit widths, and travel distances in line with BS 9999 guidance.

At Vine Lane, West Central Street and in the High Holborn Block, each flat will be provided with a Category LD1 automatic fire detection and alarm system to meet BS 9991. The domestic fire alarm systems between flats will not be interlinked. Fire detection system designed to a Category L5 system in accordance with BS 5839-1 will be provided within the common areas of the flats to operate the automatic openable vents.

Smoke Control

Smoke control systems will be provided in each block in accordance with the guidance. These are summarised as follows:

- A mechanical smoke venting system achieving 10 air changes per hour will be provided to the basement areas of the development i.e. under the Museum Street and the West Central Street Buildings. The extract rate is sized based on the largest compartment served.

- The stairs of the Museum Street Block will each be provided with a 1m² automatically opening vent (AOV) at the head of the stair. The stair lobbies will be smoke vented via a mechanical smoke extract shaft.
- The common lobbies accessed from the single stair at each upper level of the High Holborn Block will be smoke vented. This will be achieved via a 1.5m² AOV located on an external wall, direct to outside. A 1m² AOV will also be located at the top of the common staircase.
- At West Central Street, the single stair serving the New Oxford Street Block will be provided with a 1m² AOV at the head of the stair and a mechanical smoke shaft with an AOV into the shaft on each floor. A 1m² openable vent will be provided at the top of the stair of the West Central Street Block.
- At Vine Lane, a 1m² AOV will be provided at the head of the stair and the stair lobby will on the top floor will be served by a mechanical smoke shaft.

Emergency Voice Communication (EVC) Systems

All disabled refuges/firefighting lobbies in the high-rise Museum Street Block will be provided with Type A two-way Emergency Voice Communication (EVC) system in accordance with BS 5839-9. It is proposed that an EVC master panel be located next to the main fire alarm panel in the ground floor fire control room.

Evacuation Alert System (EAS)

An EAS designed to BS 8629 will be provided to the residential buildings i.e. Vine Lane, West Central Street and the High Holborn Block.

Fire Curtains

Automatic fire curtains will be provided at the following locations:

- Museum Street Block
 - A single curtain at ground level to separate the designated firefighting access route to the South core from the adjacent office ancillary areas (120 minutes fire resistance).
 - Two curtains at ground level to separate the centre lift lobby from the adjacent office ancillary areas (60 minutes fire resistance)
- West Central Street
 - A single curtain at basement Level to separate the lift from the adjoining circulation area (60 minutes fire resistance).

All fire curtains will be specified in accordance with the BS 8524 standards.

Emergency Lighting

Emergency lighting will be provided in accordance with BS 9999, BS 9991 and BS 5266-1.

The provision of emergency lighting will cover the following areas:

- Ancillary accommodation normally accessible to the occupants
- All plant rooms
- Common escape routes
- Underground or windowless accommodation
- Open plan area of more than 60m²
- All toilet accommodation with a floor area over 8m²
- Location of fire safety equipment e.g. fire control and indicating panels, manual call points, fire extinguishers etc.

Signage

Signage will be provided throughout the buildings and in accordance with the recommendations of BS 9999, BS 9991 and BS ISO 3864-1:2011.

Directional, action and identification signage will be provided throughout the building to:

- Illuminated exit signage to show the location of storey exits
- Outline the action to be taken in a fire alarm situation, or if a fire is discovered
- Show the location of fire safety measures e.g. fire mains inlet/outlet points
- Fire doors will be marked "FIRE DOOR KEEP SHUT" or "FIRE DOOR KEEP LOCKED SHUT"
- "AUTOMATIC FIRE CURTAIN - DO NOT OBSTRUCT" signs will be provided next to each fire curtain.

To assist the fire service in identifying each floor in a block of flats, wayfinding signage for the fire service will be provided to the residential buildings in accordance with Clause 52 of BS 9991 and Paragraphs 15.13 to 15.16 of ADB Volume 1.

EVACUATION STRATEGY

Museum Street Block

The Museum Street Block will adopt a phased evacuation strategy, where only the fire affected floor and the floor above will be evacuated at one instance. In the first instance, the phased evacuation strategy will be designed with the fire affected floor and the floor above to evacuate in one stage. The remaining office floors will evacuate two floors at a time, progressing upwards from the fire affected floor. Further details of phased evacuation will be provided in accordance with Annex M of BS 9999.

Occupants at the Ground Floor accommodation, Basement areas or the roof will evacuate at the first stage.

Residential Buildings

The flats/maisonettes of the Vine Lane and High Holborn Blocks and at West Central Street will operate on a "defend in place" evacuation strategy; where only the flat on fire will evacuate initially and subsequent evacuation may occur through the fire service notification if necessary or if the residents are concerned or fire or smoke affects their home.

Retail Units

The retail units located at Ground Floor of Vine Lane, West Central Street, Museum Street and High Holborn will form individual fire compartments. On this basis, each retail unit will evacuate in the event of a fire within that unit.

Evacuation Zones

Given the fire separation between buildings, each block/building will be designed as an individual evacuation zone. Only the affected zone will be evacuated. For example, the Museum Street Block will not be initially signalled to evacuate in the event of a fire within the adjacent buildings (Vine Lane Block, High Holborn Block) or vice versa.

MEANS OF ESCAPE – OFFICE ACCOMMODATION

Storey Exits

The upper floors of the Museum Street building will largely be open plan office space. The storey exits provided, at least two per office floor, will be sufficient in serving the proposed occupancies.

Stair Widths

The Museum Street building will be provided with two escape stairs, measuring at least 1200mm wide. Based on typical office use, this is sufficient in serving the evacuation strategy for the building.

Stair Final Exits

Each stair will discharge to outside via a protected corridor. Where the stair final exit corridor also serves as a fire service access route, the corridor will be at least 500mm wider than the stair it serves.

Travel Distances

Travel distances within the office floors of the Museum Street and Vine Lane Blocks will be limited to 29m in a single direction, and 74m overall. These limits will be achieved post fit-out.

MEANS OF ESCAPE – BASEMENT AND RETAIL AREAS

Basement Storeys

The basement levels beneath the Museum Street Block will be separated from the adjacent Vine Lane Block.

3 escape stairs (north, south and northwest stairs) will be provided to serve the basement levels, with the north and south stairs connecting to the Museum Street Block. The basement levels will contain primarily plant, storage and loading areas, with several smaller office amenity areas. As a result, the expected occupancy of these areas will be low, and the proposed exits and stairs will be sufficient to serve the basement.

Travel distances within the Museum Street basement will be limited to 25m in a single direction, and 63m overall. Travel distances within the West Central Street Basement will be limited to 18m in a single direction and 45m overall. These limits will be achieved post fit-out.

Two plant rooms at second basement will be accessed from the loading bay and will be considered inner rooms; visual panels will be provided to the door/wall of the plant rooms to provide occupants in the inner rooms with an early warning of a fire in the Loading Bay.

Retail Units

Museum Street / High Holborn

There are 4 retail units proposed at the Ground Level of the Museum Street Block and 1 retail unit at the Ground Level of the High Holborn Block. The retail units will be provided with exits direct to outside.

The southeast unit of the Museum Street Block (largest unit) comprises two levels connected with an open accommodation stair. The floor area at Ground and Lower Ground levels will be 110m² (i.e. 55 occupants) and 50m² (i.e. 25 occupants) respectively. Therefore, a single means of escape at both levels will be sufficient; via the main entrance at Ground Floor and via a protected stair to the Museum Street Basement at the lower floor.

West Central Street

4 retail units are proposed at Ground Level of West Central Street, with exits provided direct to outside. Due to the large floor area, two exits will be provided to the central Retail Unit to Museum Street and New Oxford Street, with doors on escape routes opening in the direction of escape.

The central Retail Unit extends to basement level; the retail area at Basement Floor will serve less than 60 occupants, and therefore the single escape route via the enclosed stair (swinging against the direction of escape) will be sufficient.

The Retail Unit to the northeast of the development extends to basement level via an open accommodation stair, in line with BS 9991 guidance for a small premise. The retail area at Basement Floor will serve less than 60 occupants.

No connection is proposed between the retail units and the remainder of the basement accommodation.

Travel Distances

Travel distances within the retail units will be limited to 18m in a single direction, and 45m overall. These limits will be met after fit-out.

MEANS OF ESCAPE – RESIDENTIAL BUILDINGS

Escape within Common Areas

Common lobbies Approach

Where common lobbies are provided in the residential buildings, the travel distances within the common lobbies will be within the 15m limit recommended in BS 9991 guidance.

Balcony Access Approach

Open access balconies will form the primary access and egress routes to the flats of the WCS and Vine Lane Blocks. As the balconies will form a single route of escape from the flats, the following will be provided:

- The balconies will have vertical openings equivalent to 50% of the vertical section,
- The walls of the flats will achieve at least 30 minutes fire resistance up to a height of 1.1m above the deck, without non-fire rated windows/glazing below 1.1m,
- The flat entrance doors access from the balcony will be FD30 fire doors, and
- Surface materials of the facing wall, balcony soffit and balustrade will achieve a Class A1/A2 rating
- Balcony floor structure will be 30 minutes fire resistance

Further fire engineering analysis i.e. Computational Fluid Dynamics (CFD) smoke modelling study will be carried out to support the open railing and floor void designs of the common balconies. The objective would be to demonstrate that the proposed open railing design and floor voids would not have adverse implication for means of escape from the buildings.

Escape within Flats

Open Plan Flats

The flats within West Central Street and the High Holborn Block will be designed with an open plan arrangement. To accommodate this, the following will be met in accordance with BS 9991:

- The flats will be provided with sprinklers and a Category LD1 automatic fire detection and alarm system.

- Travel distances within the flats will be limited to within 20m,
- The cooking hobs/kitchens will be located at least 2m from the flat entrance doors and escape routes.

Maisonettes

Maisonette flats are proposed across Fourth and Fifth Floors of the High Holborn Block and West Central Street. To support this layout, the following will be met in accordance with BS 9991:

- The flats will be provided with sprinklers and a Category LD1 automatic fire detection and alarm system.
- The internal stair will be enclosed in 30 minute fire rated construction and discharge directly to either balcony or the common stair lobby.
- Travel distances within the maisonette will be limited to within 20m,
- Travel distances within the stairway will be limited to 9m.

DISABLED EVACUATION

Disabled Refuges

Refuge spaces will be provided to the Museum Street Block, within each stair lobby and central lift lobby at every storey except ground floor, measuring at least 900mm x 1400mm. An emergency voice communication system will be provided to each refuge space in accordance with BS 5839-9. A master station provided at the fire and rescue access level within the fire control centre will allow for the management and fire and rescue service to coordinate the phased evacuation of the building.

Evacuation Lifts

In order to facilitate disabled evacuation in the high-rise Museum Street Block, there will be 4 lifts available to be used for evacuation purposes when needed. These include two firefighting lifts and two designated evacuation lifts. These lifts will be accessed from the disabled refuge points located in the firefighting lobbies.

The residential blocks at Vine Lane and West Central Street are also proposed to be provided with an evacuation lift to facilitate disabled evacuation when required.

FIRE FIGHTING

Fire Fighting Facilities

Museum Street Block

The two stairs serving the Museum Street Block will be designed as firefighting shafts:

- As the firefighting lobbies will be inbound, they will be provided with a mechanical smoke extract system on all storeys including basements. The proposed mechanical extract system will be designed to meet BS 9999 and the Smoke Control Association (SCA) guidance.
- The fire fighting shafts will be provided with wet rising mains. All parts of the Museum Street Block will be within 60m hose coverage of a riser outlet in one of the firefighting cores.
- A fire control centre will be provided within the building, to enable the fire and rescue service to more efficiently assist management to control an incident on their arrival. The fire control centre is to be located adjacent to the south firefighting shaft.
- Each firefighting shaft will be provided with a firefighting lift designed in accordance with BS EN 81-72: 2015. The firefighting lift located within the north firefighting shaft will be used to serve the back of house areas at basement levels.

Vine Lane and High Holborn Blocks

The single stairs serving the Vine Lane and High Holborn Blocks will be provided with a dry rising main, with dry riser outlets located at each level within the stair enclosure.

Firefighting shaft is not required in the buildings as the storeys are less than 18m high.

West Central Street

The WCS and NOS Blocks will be provided with dry riser mains, with outlets located within the stair cores at each floor. The inlet to the dry rising main serving the WCS Block will be located adjacent to the stair entrance on West Central Street. The dry riser inlet for the NOS Block will be located adjacent to the alternative entrance on Museum Street. Hose coverage will be achieved to all flats in both buildings within 60m of a dry riser outlet.

Firefighting shaft is not required in the buildings as the storeys are less than 18m high.

Fire Hydrant Provision

The site is well covered by the existing street hydrants and additional private hydrants are not required.

Fire Vehicle Access

Fire vehicle access will be sufficient to serve the development from the surrounding roads.

The dry riser inlets for the Vine Lane and High Holborn Blocks will be provided adjacent to the fire fighter access route, and within 18m of a vehicle parking position. Fire vehicle parking positions will also be within sight of the Museum Street Block wet riser emergency replenishment point and foam inlet serving the basement fuel storage room.

STRUCTURE AND COMPARTMENTATION

Construction Materials

The structure of each building in the development generally comprises a steel frame with precast concrete planks. The floor structures are proposed to be solid concrete slabs; timber floor joists are proposed to the West Central Street Building.

Elements of Structure

Elements of structure of the Museum Street Block will achieve at least 120 minutes fire resistance.

Elements of structure of the Vine Lane, High Holborn and West Central Street Blocks, i.e. the remaining buildings, will achieve at least 60 minutes fire resistance.

Fire protection to the concrete elements will be achieved by providing adequate cover to the reinforcement and minimum concrete section sizes as recommended in BS EN 1992-1-1. Fire protection to steel elements is assumed by intumescent paint or encapsulation as specified by Architect.

Fire protection to steel and timber elements will be provided through encapsulation by the architect.

Compartmentation

Each floor of the Museum Street Block, including the floor separating the basements and ground level, will be designed as a compartment floor achieving 120-minute fire resistance. Each floor of the remaining buildings will be designed as a compartment floor achieving 60-minute fire resistance.

The firefighting shafts of the Museum Street Block will be enclosed in 120-minute fire rated walls, with 60-minute fire doors. Internal partitions within the firefighting shafts, e.g. between the firefighting lobby and the stair, will achieve at least 60 minutes fire resistance. The enclosures to the escape stairs and common lobbies of the remaining buildings will achieve at least 60 minutes fire resistance.

Flats will be separated from the open access balconies of the WCS Block with 30 minute fire rated construction for a height of 1.1m above the balcony floor. Flats will be enclosed with 60-minute fire rated walls/floors. The protected entrance hallways/stairways of the flats/maisonettes will achieve 30 minutes fire resistance.

Retail Units will be separated from the rest of the adjoining buildings with 120-minute fire resisting construction.

Basement plant rooms (except for life safety plant rooms or fuel storage room) and the basement Loading Bay will be enclosed in at least 60-minute fire resisting construction. Life safety plant rooms e.g. sprinkler tank room, generator room etc or fuel storage rooms will be enclosed at least 120-minute fire resisting construction. Substations will be enclosed in 240 minutes fire resisting enclosure to meet the specific UKPN requirements.

EXTERNAL FIRE SPREAD

Fire Spread to Adjacent Buildings

The extent of unprotected openings within external walls have been determined based on the methodology within BR 187. The elevations of the buildings generally need not be fire rated to address external fire spread, except for the following areas which will be 100% fire rated:

- South and west elevations of the Vine Lane Block,
- North and west elevations of the High Holborn Block, and
- The east-facing external wall of the WCS Block that overlooks the external stair to the First Floor Courtyard, including the walls of the stair.

Small, unprotected areas are permitted in an otherwise protected façade, following the guidance outlined in BS 9999 Figure 45.

External Wall Construction

The external wall construction for all buildings will be non-combustible i.e. European Class A1 or A2-s1, d0. This includes any thermal insulation materials within external wall cavities and specified attachments such as balcony. Sealants, gaskets, doors and windows (including frames) are exempted; (see regulation 7(3) for the full list of exemptions). Membranes within the external wall will achieve a minimum Class B-s3, d0.

Cavity barriers will also be provided within the external wall construction in accordance with the guidance.

Roofs

Based on the separation distances between the buildings and the boundaries (less than 6m), the roof coverings including the terrace will require a B_{roof} European classification.

Green roofs are proposed to the Vine Lane Block and the WCS Block of the West Central Street Building. The green roofs will be designed following guidance provided in the Government document *Fire Performance of Green Roofs and Walls*.

FIRE SAFETY MANAGEMENT

It is a fundamental assumption that features described in this Fire Statement will require management and maintenance throughout the life of the building. This is to ensure any potential future modifications to the buildings will take into account and not compromise the base build fire safety/protection measures.

Managing fire safety is the whole process throughout the life of a building, starting with the initial design, which is intended both to minimize the incidence of fire and to ensure that, when a fire does occur, appropriate fire safety systems (including active, passive and procedural systems) are in place and are fully functional.

The building management is expected to comply with Level 1 management from BS 9999.

MODIFICATIONS TO THE DEVELOPMENT AND THE 'GOLDEN THREAD'

In line with the recommendations for providing a 'golden thread' of information, digital records of the fire safety components during the design and construction phases will be recorded. Records will be initiated by the relevant duty holders during the design and construction phase. On completion of work the records will be handed over to the building owners to maintain for the life of the building.

A Fire and Emergency File (FEF) will be established for this development to record prevalent information throughout the design, construction and life of the building. The FEF will include this fire statement and subsequent fire strategies as outlines of the key fire safety design provisions of the building, including assumptions of fire loads, occupant characteristics, evacuation strategies, passive fire safety measures, active fire safety systems, fire safety equipment, key fire properties of building materials, access for fire and rescue services. As the design develops relevant documents shall be recorded including technical specifications and product datasheets, detailing specific information on the building materials, safety systems and equipment. On completion of construction the commissioning documents and the operation and maintenance manuals shall be recorded. Throughout the life of the building regular inspections and maintenance are required to ensure the fire strategy is upheld and fire safety systems are operational. Records of inspections, fire risk assessments and maintenance work shall be recorded.

The details of the information retention systems will be determined by the client.

Modification of the following elements of the building may adversely affect the original fire safety strategy:

- Fire detection and alarm systems
- Fire suppression systems
- Smoke clearance and control systems
- Increasing population
- Changing the use of the areas
- Escape routes
- Number and dimension of escape stairs
- Refuge areas
- Wall and ceiling linings
- Fire protection of the building structures
- Changing fire and smoke doors
- Changing, penetrating fire compartments, cavity barriers
- Increasing fire load in certain areas
- Creating, changing openings on the external envelope
- Changes in the external envelope of the building
- Changes in the environment of the building related to the fire service access points and parking.