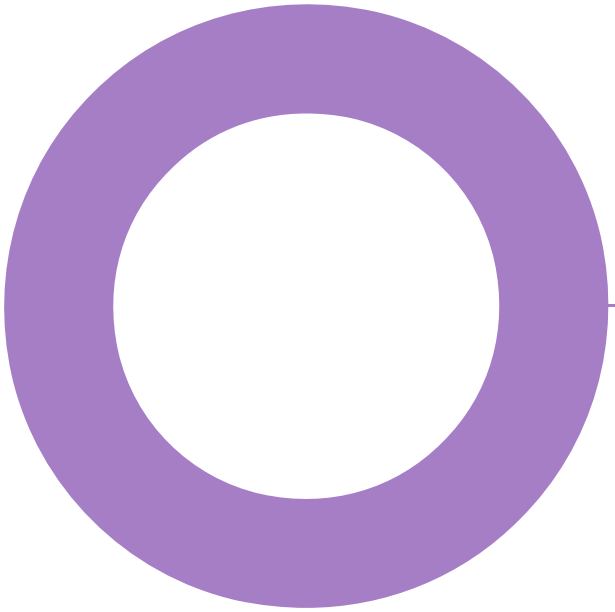
HOARE LEA

Lupin House.
London.
Aviv Riverview Ltd.

FIRE ENGINEERING
FIRE STATEMENT

REVISION 01 – 14 JUNE 2022



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	25/05/2022	Draft Fire Safety Statement	BM	SaB	
01	14/06/2022	Amendment to client name	BM	LG	

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Project number: 19/22458
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1. Introduction.

This fire safety statement has been prepared to accompany the planning application for the Lupin House development and respond to the London Plan 2021 Policy D5 (Inclusive Design) and D12 (Fire Safety).

The intention of the fire safety statement is to address the main fire safety principles and provide an overview of the requirements and recommendations that the scheme will meet.

2. Competency Statement.

All Hoare Lea design projects are headed by chartered engineers with proven experience on a wide range of fire safety consultancy projects. All work produced at Hoare Lea has been reviewed and approved by a senior chartered fire engineer.

Our staff have appropriate expertise and experience of fire safety design on a wide range of complex buildings, not only in the UK, but also world-wide. Whilst most of our work is conducted to satisfy safety regulations within the UK (e.g. Building Regulations and associated legislation), our staff have been responsible for developing fire safety strategies based on the NFPA standards and other international codes.

This statement has been produced, reviewed and approved by the following key individuals. The design and development of the fire safety strategy will be undertaken by the same individuals.

- Leo Girling BEng (Hons), CEng, MIFireE – Senior Associate
- Ben Morris MSc, MRICS, AIFireE – Principal Fire Engineer

3. Development Description.

This fire statement has been prepared by Hoare Lea to accompany a detailed planning application involving redevelopment of Lupin House, retaining the structure. The proposed building will be commercial/ office use with residential use on upper levels. The application is submitted on behalf of Aviv Riverview Ltd.

The proposed scheme primarily consists of an existing office building with commercial use on Level 0, mezzanine and level 1 and residential on levels 2 to level 5. The ground floor provides access to both commercial office units and residential ancillary space. The top residential occupied storey height above ground level is 16.99m. The mezzanine houses both commercial office unit and residential cycle stores.

Although there are elements of the building which remain as existing, the fire strategy will be developed in line with BS9991: 2015 and BS 9999:2017 to comply with the current Building Regulations.

As the top occupied storey of the building exceeds 11m above adjacent Ground level, the building will be provided with automatic fire suppression throughout.

Figure 1: First floor layout

4. London Plan Policies.

4.1 Policy D12 (Fire Safety)

The Draft London Plan Policy D12 states that in the interests of fire safety and to ensure the safety of all building users, development proposals must achieve the highest standards of fire safety and ensure that they:

1. Identify suitably positioned unobstructed outside space:
    a. For fire appliances to be positioned on
    b. Appropriate for use as an evacuation assembly point
2. Are designed to incorporate appropriate features which reduce the risk to life and the risk of serious injury in the event of a fire; including appropriate fire alarm systems and passive and active fire safety measures;
3. Are constructed in an appropriate way to minimise the risk of fire spread;
4. Provide suitable and convenient means of escape, and associated evacuation strategy for all building users;
5. Develop a robust strategy for evacuation which can be periodically updated and published, which all building users can have confidence in; and
6. Provide suitable access and equipment for firefighting which is appropriate for the size and use of the development.

All major development proposals should be submitted with a Fire Statement, which is an independent fire strategy, produced by a third party, suitably qualified assessor. The statement should detail how the development proposal will function in terms of:

1. The building's construction: methods, products and materials used, including manufacturers' details
2. The means of escape for all building users: suitably designed stair cores, escape for building users who are disabled or require level access, and associated evacuation strategy approach
3. Features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans
4. Access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and positioning of equipment, firefighting lifts, stairs and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these
5. How provision will be made within the curtilage of the site to enable fire appliances to gain access to the building
6. Ensuring that any potential future modifications to the building will take into account and not compromise the base build fire safety/protection measures.

4.2 Policy D5 (Inclusive Design)

Section B.5 of policy D5 is applicable to fire safety. It states development proposals should achieve the highest standards of accessible and inclusive design. They should be designed to incorporate safe and dignified emergency evacuation for all building users. In all developments where lifts are installed, as a minimum at least one lift per core (or more subject to capacity assessments) should be a suitably sized fire evacuation lift suitable to be used to evacuate people who require level access from the building.

5. Fire Safety Overview

5.1 The building's construction method and products and materials used

- The exact construction method has not been defined at the time of writing this planning statement, but it is understood that any new construction will consist of traditional construction.
- New construction within the building will be constructed with fire resisting partitions, where required, will be provided via fire resisting plasterboard panels.
- To limit the spread of fire within the building, all wall and ceiling linings will satisfy the appropriate classification stated within BS 9991:2015 and BS 9999: 2017.
- The fire safety strategy will include a space separation analysis to establish the necessary boundary distance around the building. Fire resisting external walls and a limit on the unprotected area or justification will be provided where the external walls is within 1m of the site boundary.
- The building external walls will either satisfy the necessary performance criteria described in BRE report BR 135 to meet the requirements of Clause 18.2 of BS 9991;2015. In addition, the external wall surface will achieve Class B-s3, d2 or better surface spread of flame classification, and cavity barriers in any external wall cavity are required in accordance with Clause 18.2 of BS 9991:2015 and Clause 33.1 of BS 9999.

5.2 Means of escape for all building users and evacuation strategy

- The residential apartments will operate a 'stay put' evacuation strategy. On activation of the fire detection and alarm system, only occupants within the apartment of fire origin will evacuate in the event of a fire. The occupants in neighbouring flats will remain in place, protected from the fire by a high level of fire compartmentation, unless otherwise advised by the fire service.
- The commercial office units will each adopt an independent simultaneous evacuation strategy. The commercial space is protected from the residential accommodation by a compartmented construction therefore, only the area of fire origin will evacuate in the event of a fire. Other occupants will remain in place, unless otherwise advised by the fire service.
- The design of the open plan apartments exceeds the maximum dimensions and will be assessed using Computational Fluid Dynamics to show that whilst the design is not in strict accordance with BS 9991, can still be considered reasonable. The location of the cooker will be positioned away from the escape routes between the bedrooms and the front door of the apartment.
- The travel distance within the common corridors does not exceed 15m, which is the maximum permitted travel distance where escape is in a single direction and apartments have sprinkler protection to BS 9251:2021.
- The residential common corridors will be provided with a means of smoke ventilation in line with BS 9991. This will consist of a mechanical smoke ventilation system in the corridor, extracting smoke from the level of fire origin. An AOV will be provided at the head of the residential stair.
- At levels 04 and 05 the apartments are on two levels. Level 05 has sleeping accommodation and at this level an alternative exit is via a bedroom and terrace to the residential stair. As the circulation area at this level is open to the living area at Level 04 the escape will need to be assessed using Computational Fluid Dynamics to show that whilst the design is not in strict accordance with BS 9991, can still be considered reasonable.
- At the mezzanine level the back of house circulation area is used by both the commercial office and residential occupancy for access to the cycle storage. This use of a space by both occupancies is not a within code of practice guidance; however, the space is only used for circulation and if it were to become unusable due to the effects of a fire in one of the stores then:
  - The mezzanine level commercial office unit has access to an accommodation stair to the ground floor part of the commercial unit.

  - The resident's evacuation lift is separated from the storage by a ventilated lift lobby and the back of house circulation area both of which are separated from each other.
  - The cycle storage spaces will be provided with sprinkler protection.
- In accordance with BS 9991, a residential building may be provided with a single escape stair irrespective of building height. The residential levels will be provided with a stair that discharges into the ground floor lobby and then to outside. As the lobby is a route for means of escape it should kept free of any combustible materials.
- The stair lobby and the lift lobby will be separated with fire resisting construction.
- The BS 9999 risk profiles which are used for the sprinklered commercial office spaces at ground, mezzanine and first floor level are A1 (awake and familiar with the building, slow fire growth rate).
- The occupancy levels for the commercial office space are calculated using a floor space factor which is dependent on the use of each space.
- Table 1 indicates the anticipated occupancy within each commercial space based upon BS 9999 floor space factors. The maximum permitted occupancy in each space based upon available stair and exit widths has also been included for reference. Table 1 sets out the occupancy levels and escape widths necessary (the largest exit has been removed from each space.

Table 1 – Maximum occupancies for commercial office space

Location	Area	Floor Space Factor	Anticipated Occupancy	Available Exit Width	Minimum Exit Width Requirements	Maximum permitted number of occupants
Level 00	120 m^2	6m^2/person	20	1750mm	3.3mm/person	60*
Mezzanine level	84 m^2	6 m^2/person	14	800mm	3.3mm/person	60*
Level 01	257 m^2	6 m^2/person	43	850mm	3.3mm/person	60*
* Note: 60 person limit as only one exit available.						

- Table 2 sets out the BS 9999 maximum permitted travel distances. Where the fit out of the space is not known, 2/3 of these values is used. As an automatic fire alarm and detection system is to be used instead of the minimum requirement of a manual system an increase in 15% for the travel distances has been applied. All travel distances are compliant.

Table 2 – Maximum travel distances

Location	One-Way Travel	Two-Way Travel
A1 Commercial office space	29.9m	74.75m
Plant, storage or Refuse Room	9m (within room)	18m (within room)

- There is a protected escape stair serving the commercial office spaces, as the building will be sprinklered there is no need to provide this stair with lobby protection.
- The maximum capacity of the 1,100mm stair serving two stories (Level 0 and mezzanine) is 323 occupants, based on a minimum width of 3.4mm/person, this is less than the maximum of 120 people permitted on the two levels.
- In order to facilitate the safe escape of mobility impaired persons, both the residential part and the commercial office parts of the building will be provided with disabled refuges and evacuation lifts at all

upper floor levels which is a requirement of the New London Plan Policy D12, to enable safe and dignified escape for disabled people.

- Suitable lighting will be provided to all premises to enable the safe movement of persons along escape routes to a place of relative or ultimate safety. Emergency escape lighting, when needed, will be provided in accordance with BS 5266-1 and BS EN 1838.
- Every doorway or other exit providing access to a means of escape, other than exits in ordinary use (e.g. main entrances), will be distinctively and conspicuously marked by an exit sign in accordance with BS ISO 3864-1 and BS 5499-4.
- Any door located on an escape route will meet the guidance of BS 9999.
- A fire assembly point should be agreed and included as part of the fire safety management plan for the building.

5.3 Passive and active fire safety measures

- As the residential flats adopt an open plan design, each apartment will be provided with an independent Grade D LD1 fire alarm and detection system, in accordance with BS 9991 and complying with BS 5839-6.
- A category L5 fire alarm and detection system will be provided within the residential common corridors, as a means of activation for the smoke ventilation system.
- Automatic fire detection will be provided within the cycle stores, to provide early warning to occupants within the commercial office spaces.
- An L2 fire alarm and detection system will be provided within the commercial office space. It is noted that the minimum level of system set out in BS 9999 for the office is M, however an automatic system would provide an early warning to occupants of a fire occurring.
- Suitable provisions will be made to prevent the unseen spread of fire and smoke through cavities or concealed spaces using cavity barriers in accordance with the guidance.
- The building has a top floor height over 5m and less than 18m and therefore will be provided with 60 minutes fire resistance.
- Table 3 states the fire resistance requirements to walls and floors within the building. Fire doors will be specified in accordance with BS 9999.
- Fire resistance will be provided to all floors at all levels. Within the commercial office units there are several voids that connect ground, mezzanine level and fist floor level; therefore, these units will be treated as one compartment.

Table 3. Compartmentation fire resistance for residential building

Location	Minimum Fire Resistance
Separation at floor level of each level	60 minutes
Protected shafts	60 minutes
Protected stair/lobbies	60 minutes
Separation between residential apartments	60 minutes
Refuse Storage / cycle stores	60 minutes
Boiler rooms	60 minutes
Electrical substation	120 minutes*
Transformer and switchgear rooms containing above low voltage equipment	60 minutes
Transformer, switchgear and battery rooms containing low voltage equipment	30 minutes

Location	Minimum Fire Resistance
Internal partitions within flats	Not fire resisting
Note: * UKPN 240 minutes	

- In order to prevent rapid flame spread throughout the development, the materials used in the construction of a building have specified periods of fire resistance. All wall and ceiling linings will meet the relevant classifications outlined in Table 4 below. Further information can be found in Section 35.1 of BS 9999 and 20.1 of BS9991.

Table 4. Surface spread of flame classification for wall and ceiling linings

Location	National Class	European Class Note 1.
Small rooms of area not more than: a. 4m2 in residential accommodation b. 30m^2 in non-residential accommodation	3	D-s3, d2
Other rooms	1	C-s3, d2
Circulation spaces within dwellings	0	B-s3, d2
NOTE Linings which can be effectively tested for "surface spread of flame" are rated for performance by reference to the method specified in BS 476-7:1987, under which materials or products are classified 1, 2, 3 or 4, with Class 1 being the highest. Class 0 is better than Class 1. It is not identified in any BS test standard. A Class 0 product is either: a) composed throughout of materials of limited combustibility; or b) a material having a Class 1 surface spread of flame and which has a fire propagation index (I) of not more than 12 and a sub-index (i1) of not more than 6. The fire propagation index is established by reference to the method specified in BS 476-6. European classifications are described in BS EN 13501-1:2007+A1.		

- Sprinklers will be provided within the residential building to BS 9251:2021 due to the open plan design of the apartments and the top floor is over 11m.
- Commercial spaces will be provided with sprinkler protection to BS EN 12845.
- The building has a top storey of less than 18m; therefore, the requirements of Regulation 7(2) are not applicable to this building.
- Where an external wall is within 1.0m of the site boundary, the following are applicable:
  - External wall will achieve the appropriate level of fire resistance (Refer to Table 4.) in terms of integrity and insulation from both sides.
  - Unprotected areas will be limited to those set out in figure 45 of BS 9999 and figure 25 of BS 9991.
  - Where windows (protected or size restricted) makes up part of the façade, these will not be permitted to be openable.
- With the exception of the two rear apartments at Level 04, all openings in the external walls greater than 1.0m from the relevant boundary. Where the openings are within 1m of the boundary they are existing openings that will be for residential apartments whereas previously they were for offices. As Level 04 will now be provided with compartmentation to separate the apartments and considering the lower expected level of radiant heat from an apartment than an office, these windows are considered to be no worse than before.
- It is recommended that no storage, or other fire risk should be erected externally on any balcony or terrace, to ensure that each balcony can be considered an area of limited combustibility. Sprinkler protection will not

be provided to the balconies, however fire compartmentation (60 minute minimum) will be provided between the balcony of one demise and an internal space of another demise or other part of the building on the same level, as though it were an internal space.

5.4 Access and facilities for the fire and rescue service

- As the building has a floor level less than 18m in height a firefighting shaft is not required; however, fire service access for the residential units will be internal, via a protected stair and lobby. A dry riser will be located within the stair. A dry riser inlet will be located at Level 00 and within 18m of fire service vehicle access.
- Due to the lack of perimeter access to the outside of the building, a dry riser will be located in the residential stair core with an outlet within the stair, at every level that it serves.
- As the top occupied storey of residential building is less than 18m, the stair will be not be specified as a firefighting shaft.

5.5 Site access for the fire and rescue service

- The vehicle access route adjacent to the site is via Macklin Street which is a public highway and complies with relevant fire safety guidance for vehicle access.
- There is access for a pumping appliance within 18m of each dry riser inlet connection. The inlet connection is typically located on the face of the building and should be visible from the appliance. The access route for the pump appliance will be in accordance with BS 9999 (table 20).

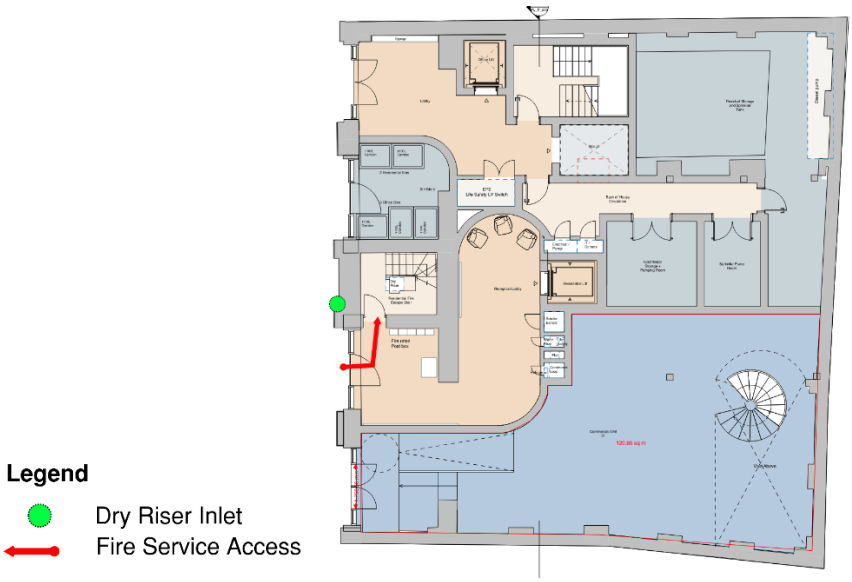

Figure 2: Fire Service ground floor access strategy

- Fire hydrants will be provided where building will be located more than 100m from an existing hydrant. New hydrants will be within 90m of the building.

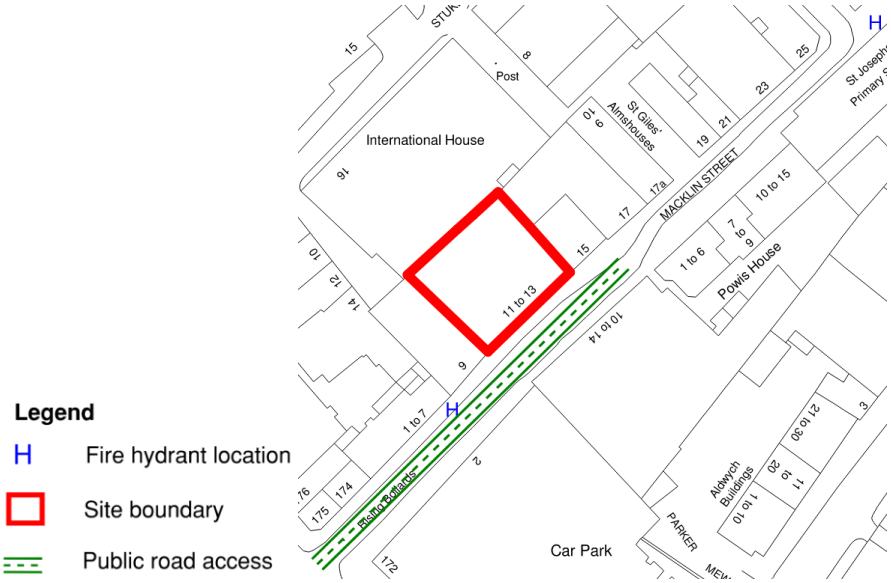

Figure 3: Hydrant location and fire service vehicle access

5.6 Future development

Any future modifications to the scheme will be subject to Building Regulations approval and should consider the base build fire strategy, such that fire safety measures are not compromised within the development.

6. Conclusion.

This fire safety statement has been prepared to outline the approach and provisions relating to fire safety at the Lupin House development against the requirements of London Plan D5 and D12.

This statement demonstrates that the proposals have considered fire safety at the earliest stage, and the further development of the fire strategy will be based upon these principles. The fire strategy will be further developed for submission to the Approving Authority at the appropriate time and will meet the functional requirements of the Building Regulations 2010 as amended, taking recommendations from BS 9999:2017 and Policy D5 and D12 of the London Plan.

Regulation 38 of the Building Regulations requires that fire safety information be given to the person responsible for the occupied building. Therefore, copies of the fire safety strategy, once agreed with the Approving Authority, and other relevant fire safety information should be issued to the responsible person. This will ensure publication of the proposed evacuation strategy and assist in evacuation of all building users.

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