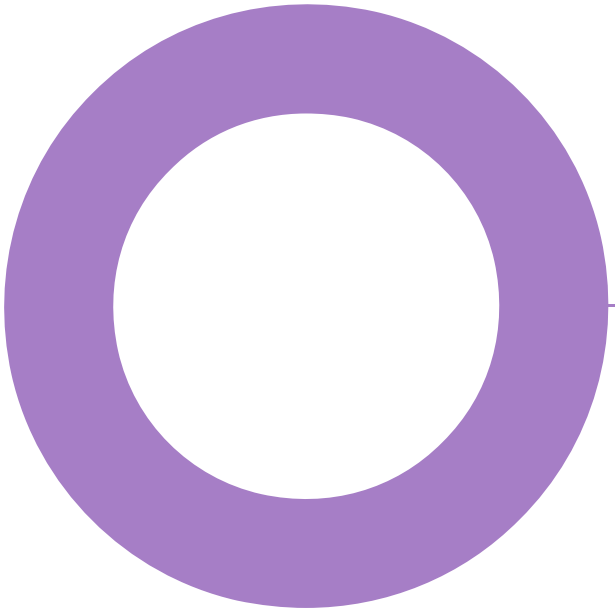
HOARE LEA

Stag Brewery.
London.
Reselton.

FIRE ENGINEERING
FIRE STRATEGY PLANNING STATEMENT

REVISION 02 – 14 JULY 2020



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	21/05/2020	Fire strategy statement for planning	ES	MH	MH
01	29/05/2020	Fire strategy statement for planning	ES	MH	MH
02	14/07/2020	Minor updates to introduction wording	ES	MH	MH

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Contents.

1. Introduction

This Fire Strategy Planning Statement has been prepared by Hoare Lea Fire Engineering as a submission document submitted under Applications A, B and C (refs. 18/0547/FUL, 18/0548/FUL and 18/0549/FUL) ('the Applications'), in respect of the former Stag Brewery Site in Mortlake ('the Site') within the London Borough of Richmond Upon Thames ('LBRuT'). The Applications are for the comprehensive redevelopment of the Site. This document has been prepared on behalf of Reselton Properties Limited ('the Applicant'). A summary of the Applications is set out below:

- Application A – hybrid planning application for comprehensive mixed use redevelopment of the former Stag Brewery site consisting of:
  - Land to the east of Ship Lane applied for in detail (referred to as 'Development Area 1' throughout); and
  - Land to the west of Ship Lane (excluding the school) applied for in outline (referred to as 'Development Area 2' throughout).
- Application B – detailed planning application for the school (on land to the west of Ship Lane).
- Application C – detailed planning application for highways and landscape works at Chalkers Corner.

The original Applications were submitted in February 2018 to LBRuT. The Applications are related and were proposed to be linked via a Section 106 Agreement. In May 2019, a package of substitutions was submitted to LBRuT for consideration, which sought to address comments raised by consultees during determination. On 29 January 2020, the Applications were heard at LBRuT's Planning Committee with a recommendation for approval. This scheme is thereafter referred to as "the Original Scheme".

The Committee resolved to grant Applications A and B, and refuse Application C. The granting of Applications A and B was subject to the following:

- Conditions and informatives as set out in the officer's report, published addendum and agreed verbally at the meeting;
- Amendments to the Heads of Terms and completion of a Section 106 Legal Agreement which was delegated to the Assistant Director to conclude;
- No adverse direction from the Greater London Authority ('GLA'); and
- No call in by the Secretary of State for Housing, Communities and Local Government.

The Applications have been referred to the GLA and the Mayor has given a direction that he will take over the determination of the Applications and act as local planning authority in relation to all three applications.

The Applicant has engaged with the GLA in respect of the proposed amendments to the scheme, referred to throughout this document as the 'Revised Scheme'. As a result of these discussions, a number of changes have been made to the scheme proposals which are summarised as follows:

- Increase in residential unit provision from up to 813 units (this includes the up to 150 flexible assisted living and / or residential units) to up to 1,250 units;
- Increase in affordable housing provision from up to 17% to up to 30%;
- Increase in height for some buildings, of up to three storeys compared to the Original Scheme;
- Change to the layout of Buildings 18 and 19, conversion of Block 20 from a terrace row of housing to two four storey buildings;
- Reduction in the size of the western basement, resulting in an overall reduction in car parking spaces of 186 spaces, and introduction of an additional basement storey beneath Building 1 (the cinema);
- Other amendments to the masterplan including amendments to internal layouts, re-location and change to the quantum and mix of uses across the Site, including the removal of the nursing home and assisted living in Development Area 2;
- Landscaping amendments, including canopy removal of four trees on the north west corner of the Site; and
- Associated highways works may be carried out on adopted highways land.

The submission documents have tested an affordable housing provision of 30%. However, it should be noted that the final affordable housing level is subject to further viability testing and discussions with the GLA.

Minor amendments have also been made to the road and pedestrian layouts for the school (Application B). No other amendments are proposed to Application B. No amendments are proposed to the physical works proposed under Application C, although alternative options within the highway boundaries for mitigating the highway impact of the amended proposals have been assessed within the relevant substitution documents for Applications A and B and are the subject of ongoing discussions with the GLA and TfL.

A more detailed summary is included within the Planning Statement Addendum and Design and Access Statement Addendum submitted with the Revised Scheme documents.

These changes are being brought forward as substitutions to Applications A, B and C (refs. 18/0547/FUL, 18/0548/FUL and 18/0549/FUL), which are related applications (to be linked via a Section 106 Agreement).

It is important to note that no changes are proposed to the physical works proposed under Application C – the only change to this application is that the supporting documents (which include all documents submitted under Applications A and B) have been updated in the context of the proposed changes to the scheme as sought under Applications A and B. Application C was resolved to be refused by LBRuT at Committee on 29 January 2020. As a result, whilst the works proposed in Application C are still an available option, the Applicant has progressed alternative approaches for addressing and mitigating the impacts on surrounding highways, and these have been tested within the relevant substitution documents for Applications A and B. All of these options are subject to ongoing discussions and testing with TfL. They are all within the existing highway boundaries and if agreed would not, in themselves, require planning consent.

Accordingly, Application C remains 'live' within this substitution package.

This fire safety statement has been prepared to accompany the planning application for the Stag Brewery development in Richmond, London and respond to the Draft London Plan (Intent to Publish) 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.

It is recommended that the development be designed in accordance with BS 9991:2015 (for residential) and BS 9999:2017 (for non-residential). For the hotel, Approved Document B (ADB) will be utilised. The school will be designed to the requirements listed in BB100[4]; other guidance documents, e.g. BR 187 will be used where appropriate.

2. Intend to Publish London Plan Policy D12 (Fire Safety).

The Intend to Publish 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 the 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 site to enable fire appliances to gain access to the building; and
6. Ensuring that any potential future modifications to the building will take into account and not compromise the base build fire safety/protection measures

These items will be addressed in the following sections for the Stag Brewery development.

3. 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.

- Miller Hannah BEng (Hons), CEng, MIFireE – Partner
- Eric Swainson MEng (Hons), AIFireE – Fire Engineer

4. Development description.

The full development consists of a total of twenty-three standalone blocks, these are divided into nine mixed use residential blocks with flexible space on the ground level, eleven standalone residential blocks, an office/cinema, a school and a hotel. The top occupied storey of each of the blocks is highlighted below in Table 1, the height of the top occupied storey has been estimated based on an indicative floor to floor height of 3.5m for residential and 4m for school/office.

Table 1: Building heights

Block No.	Use	No. of storeys (above ground)	Estimated height (m)
1	Cinema/office	5	>18
2	Residential with flexible space at ground	10	>30

Block No.	Use	No. of storeys (above ground)	Estimated height (m)
3	Residential	7	>18
4	Residential with flexible space at ground	8	>18
5	Hotel and residential	4	<18
6	Residential with flexible space at ground	5	<18
7		10	>30
8		9	>30
9		5	<18
10		6	>18
11		9	>30
12		8	>18
13	Residential	7	>18
14		6	>18
15		8	>18
16		8	>18
17		8	>18
18		7	>18
19		4	<18
20		4	<18
21		4	<18
22		4	<18
23	School	3	<18

Figure 1 gives an overview of the block numbers corresponding to those within Table 1 above.

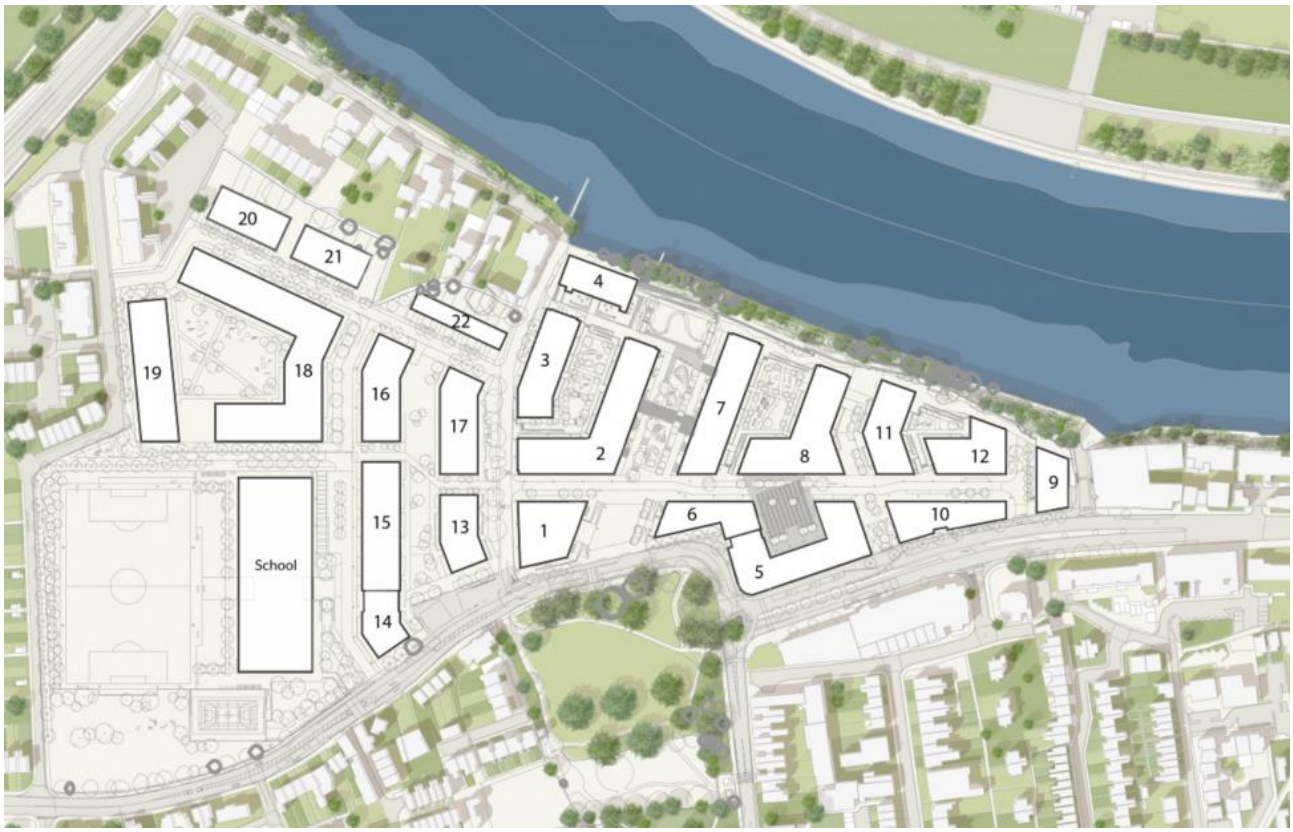

Figure 1: Proposed Stag Brewery Site Numbering Plan.

5. Fire safety overview.

5.1 Building construction

The exact construction method has not been defined at the time of writing this fire strategy planning statement but it will consist of traditional construction.

The buildings will be constructed with concrete cores and the fire resisting partitions between apartments and common corridors will be provided via fire resisting plasterboard panels.

To limit the spread of fire within the buildings, all wall and ceiling linings will satisfy the appropriate classification stated within BS 9991:2015.

The RIBA Stage 2 fire safety strategy will include a space separation analysis to establish the necessary boundary distance around each building and whether any fire protection to the external façade is required. At this stage, it is not considered that there is any significant risk of spread of fire between buildings from the accommodation; however, detailed analysis will be provided during the RIBA Stage 2 design stage.

In accordance with Regulation 7(2), each residential block which has a storey height in excess of 18m above the lowest adjacent external ground level Blocks 2-4,7,8,10-18), the external wall construction, and specified attachments including balconies, solar shading or solar panels, will achieve European Classification A2-s1, d0 or Class A1. Where multiple blocks are connected by a shared basement carpark or podium and one of those blocks has a storey height in excess of 18m all connected blocks should be designed to meet the requirements of Regulation 7(2).

The cinema/office building is expected to have a storey that exceeds 18m in height, although it is not considered to be a relevant building under Regulation 7(2) and, therefore, either the external walls should satisfy the performance criteria described in BRE report BR 135 or each element of the external wall build up, including any insulation product, filler material (not including gaskets, sealants or similar) etc. should be Class A2-s3, d2 or better (European Classification).

5.1.1 Construction, design and management regulations

Design projects undertaken in the UK are subject to the requirements of the Construction (Design and Management) Regulations 2015, the objective of which is to ensure that health and safety issues are properly considered during a project's design and development so that the risk of harm to those who have to construct, use and maintain the building is reduced.

As a designer, in accordance with Regulation 9 of the CDM regulations, Hoare Lea have taken into account the general principles of prevention in the preparation of this report and where reasonably practicable, eliminate, minimise and/or control foreseeable hazards associated with the design. Where elimination is not reasonably practicable, Hoare Lea will be required to provide 'pre-construction' information in respect of any significant and/or unusual project-specific hazards that remain.

5.2 Means of escape provisions

It is proposed to adopt a 'stay put' evacuation strategy for the residential floors of each of the blocks. That is, only the occupants of the apartment of fire origin will evacuate on activation of the fire detection and alarm system. The occupants of other apartments will remain in place, protected by a high level of compartmentation, unless they choose to escape or are instructed otherwise by the fire and rescue service. The design team will consider additional evacuation control measures such as providing facilities for simultaneous evacuation in case a fire becomes out of control. The residential amenity spaces will adopt a simultaneous evacuation strategy.

The cinema, office and school areas will operate a simultaneous evacuation strategy. That is, upon activation of the fire detection and alarm system, all occupants will evacuate immediately and simultaneously.

5.2.1 Residential

The apartment layouts are proposed to be open plan and can be designed based on the following principle.

- Open-plan flats do not have a protected entrance hall but have bedrooms that are inner rooms and are accessed directly from the living room or kitchen. In accordance with BS 9991:2015, open-plan apartments should be provided with a Category LD1 fire detection and alarm system and a residential sprinkler system. The open-plan flats should meet the following recommendations:
  - The size of the open-plan flat should not exceed 16m x 12m if the kitchen is enclosed separately;
  - The size of the open-plan flat should not exceed 8m x 4m if the kitchen is not enclosed;
  - Open-plan flats should be situated on a single level only; and
  - The ceilings should have a minimum height of 2.25m
- However, it is also proposed to have apartments that exceed the maximum size recommended in BS 9991:2015 for an open plan design. A fire engineered solution supported by a Computational Fluid Dynamics (CFD) analysis will be required to justify the apartments layouts. This would need to be discussed and agreed with the Approving Authorities.

The final exit from the stairs will lead directly to the outside via a protected passageway to the outside. The protected passageway will be treated as an extension of the stairs provided with the same standard of fire protection (i.e. fire resistance and smoke ventilated lobby protection). The protected passageway will be at least as wide as the stairs and any apartments located off this passageway will be accessed via a smoke ventilated lobby. If this protected passageway forms a reception area for the residential buildings this reception area will be kept sterile and free from combustibles at all times.

Where flexible spaces are provided at ground level means of escape from these areas will be provided independently from the residential means of escape. There will be no communication between the residential means of escape routes and flexible spaces.

The travel distances in some blocks in a single direction in the common corridors will be limited to 15m with all residential common corridors proposed to be provided with either a natural or mechanical smoke ventilation system (mechanical should be provided within blocks >30m). All of the stairs will be provided with an AOV with 1.0m^2 free area at the top of their enclosure and all apartments will be provided with residential sprinklers. It is understood that most blocks are provided with a single stair, however, the travel distance where multiple directions of escape are available should be limited to 60m. It is noted that in some blocks the 15m travel distance in a single direction is exceeded, up to a maximum of 30m. A fire engineered arrangement will need to be adopted in these blocks consisting of two mechanical smoke ventilation extract shafts, known as a Double Reversible Mechanical Extract (DRME). This may have to be justified by means of a CFD analysis. This is to be discussed and agreed with the Approving Authorities.

Furthermore, one lift per block will be provided as a lift with enhanced facilities for evacuation to facilitate the evacuation of mobility impaired occupants and meet the recommendations of Policy D5 (inclusive design) of the Draft London Plan. The management procedures of the evacuation lifts will be developed during the design stage.

5.2.2 Hotel

It is recommended that an automatic detection and alarm system is installed to a L1 standard in accordance with BS 5839-1:2017.

Escape travel distance within hotel corridors will be limited to 9m in a single direction and 35m where two directions are available.

The means of escape from the hotel should be independent of the means of escape from any residential accommodation within the same block.

The final escape route from each stair will lead directly to outside or via fire sterile corridor afforded the same level of fire resistance as the stair itself as described above for the residential final escape routes.

5.2.3 Office and Cinema

The cinema and office will be designed in accordance with BS 9999. The risk profiles given in Table 2 will be assigned for each of these areas.

Table 2: Summary of risk profiles.

Purpose area	Occupancy characteristic	Fire growth rate	Sprinkler protection	Risk profile
Office	Awake and familiar (A)	Medium (2)	No	A2
Cinema	Awake and unfamiliar (B)	Medium (2)	No	B2

It is proposed to provide a Category L2 fire detection and alarm system in accordance with BS 5839-1:2017 throughout the building. This is to provide the earliest warning of fire to initiate the evacuation. This is considered to be an enhancement compared to the Manual system that is recommended as a minimum for buildings with a Risk Profile A2.

The maximum recommended travel distances for each area are specified in Table 3, as per BS 9999. The internal layout should take consideration of the recommended travel distances listed below.

Table 3: Maximum recommended travel distances.

Risk profile	Actual travel distances [m]	
	Single direction	Multiple directions
A2	25.3 Note 1	63.2.7 Note 1
B2	23.0	57.5

Note:
1. These are the maximum distances specified with considering additional benefits of automatic fire detection, i.e. 15% increase in travel distances.
2. Should the interior layout not be shown, 2/3 of the travel distances should be applied as the maximum direct travel distances.

As the top occupied storey is proposed to be over 11m it is recommended that the upper levels are provided with one protected escape stair and one firefighting stair. It is recommended that these stairs are at least 1100mm wide and any storey exits leading into the stair are provided with a minimum clear width of at least 1050mm.

It is proposed to provide a disabled refuge on all escape routes where level egress to the outside is not available. This can be provided either within the stair or lobby enclosure. The refuge spaces should have the following minimum dimensions: 1400mm by 900mm. Emergency voice communication (EVC) systems should be provided next to the refuge areas.

5.2.4 School

It is proposed to provide a Category L2 fire detection and alarm system in accordance with BS 5839-1:2017 throughout the building.

The maximum recommended travel distances for each area are specified in Table 3, as per BB100.

Table 4: Maximum recommended travel distances.

Risk profile	Actual travel distances [m]	
	Single direction	Multiple directions
Areas of special fire hazard Note 1	9	18
Seating in rows	15	32

Risk profile	Actual travel distances [m]	
	Single direction	Multiple directions
Other areas	18	45

Note:
1. These are defined as: boiler rooms, storage spaces for fuel or other highly flammable materials, lab spaces, technology rooms with open heat sources, kitchens, oil filled transformer and switchgear rooms and rooms housing fixed internal combustion engines, cloakrooms.
2. Should the interior layout not be shown, 2/3 of the travel distances should be applied as the maximum direct travel distances.

It is understood that the school will be provided with a minimum of two protected means of escape stairs serving every level. It is recommended that these stairs are provided with a protected lobby separating them from the accommodation on every level. The minimum clear width of the escape stair should be 1100mm, however, this may be increased to increase the number of persons accommodated by the stair.

It is proposed to provide a disabled refuge on all escape routes where level egress to the outside is not available. This can be provided either within the stair or lobby enclosure. The refuge spaces will have the following minimum dimensions: 1400mm by 900mm. Emergency voice communication (EVC) systems will be provided next to the refuge areas.

5.3 Features incorporated to reduce the risk to life

Either an LD1 fire detection and alarm system (in open plan designs) or an LD2 fire detection and alarm system (in protected entrance hall designs), designed and installed in accordance with BS 5839-6:2019 will be provided

Non-residential areas will be provided with a category L2 fire detection and alarm system in accordance with BS 5839-1:2017 throughout. The exception to this will be the hotel which will be provided with a category L1 fire detection and alarm system in accordance with BS 5839-1:2017.

A residential sprinkler system to BS 9251:2014 will be provided to all apartments. In residential blocks over 30m all flexible spaces and carparks will be provided with a commercial sprinkler system designed and installed in accordance with BS EN 12845:2015.

It is noted that an updated version of Approved Document B was issued on 26th May 2020 which provides additional requirements for residential sprinklers to be provided in residential buildings with a top occupied storey over 11m.

A commercial sprinkler system will also be provided in the school designed and installed in accordance with BS EN 12845:2015.

It is recommended that the development should have management on site 24/7. This could be provided via a fire control centre that covers the whole development. If the fire control centre is provided the alarm system for each block should be linked to the fire control centre and management will be present to assist evacuation if required.

It is recommended that Emergency voice communication devices will be provided within each stair core (in both residential and non-residential stairs) at all levels to contact management in case of an emergency.

Each member forming part of the structural frame of the building or any other beam or column will be provided with the following fire resistance, based on the height of each block.

Table 5: Fire resistance of elements of structure

Block	Height [m] Note 1	Fire resistance of elements of structure [minutes]
1	>18	90
2, 7, 8, 11	>30	120
3, 4, 10, 12-18	>18	90
5, 6, 9, 19-22	<18	60
School	<18	60

The stairs will be enclosed in fire resistant construction equivalent to the elements of structure. Where firefighting stairs are provided these will be provided with 120 minutes fire resistance. The corridor and apartments will be enclosed in 60 minutes fire resistance construction.

5.4 Fire-fighting access within the building

All blocks (both residential and non-residential) with a top occupied storey 18m above fire service access level will be provided with firefighting shafts. The fire-fighting shafts will comprise of:

- A fire-fighting stair at least 1100mm clear width;
- A fire-fighting lift;
- A fire main with an outlet at all levels;
- A ventilated common corridor;
- 120 minutes fire resistance enclosure around the fire-fighting stair and lift;
- 60 minutes fire resistance construction between fire-fighting stair and lift; and
- An AOV with at least 1.0m^2 free area at the top of the stairs.

All residential and hotel cores, where the 60m hose laying distance from the fire tender parking position is not achieved, will be provided with a dry riser main. Coverage from the dry main outlet will be provided in order to achieve a hose laying distance of 60m to all parts of the floorplate on a route suitable for laying hose.

Suitable dry fire mains will be provided within a protected stair lobby within the cinema/office and school such that all areas of the floorplate can be reached within 45m (in the office) and 60m (in the school)

Furthermore, the design team will consider additional evacuation control measures such as providing facilities for simultaneous evacuation and mobility impaired evacuation via lifts in case a fire becomes out of control.

Where basements are provided which are greater than 3m in depth or in excess of 200m^2 they will be provided with basement smoke ventilation in accordance with the recommendations in BS 9999 and BS 9991. All basement carparks will be provided with smoke ventilation in accordance with BS 7346-7.

5.5 Fire-fighting access to the building

Access for the Fire Service will be provided at Ground Floor for each separate block. A suitable parking position will be provided within 18m of the fire main inlet in each block, the distance from the inlet to the firefighting core will be provided within 18m internally. All access routes shown in Figure 2 will meet the specifications for the pumping appliance listed in Table 12 below.

Table 6: Road specifications for pumping appliance access

Appliance type	Min. width of road between kerbs [m]	Min. width of gateways [m]	Min. turning circle between kerbs [m]	Min. turning circle between walls [m]	Min. clearance height [m]	Min. carrying capacity [t]
Pump	3.7	3.1	16.8	19.2	3.7	14Note 1

Appliance type	Min. width of road between kerbs [m]	Min. width of gateways [m]	Min. turning circle between kerbs [m]	Min. turning circle between walls [m]	Min. clearance height [m]	Min. carrying capacity [t]
Note 1: 12.5 tonnes in accordance to ADB; however, 14t in accordance with the LFEPA Fire safety guidance Note, Access for Fire Appliances, GN29 [13].						

Hydrants will be provided within 90m of the fire service parking positions.

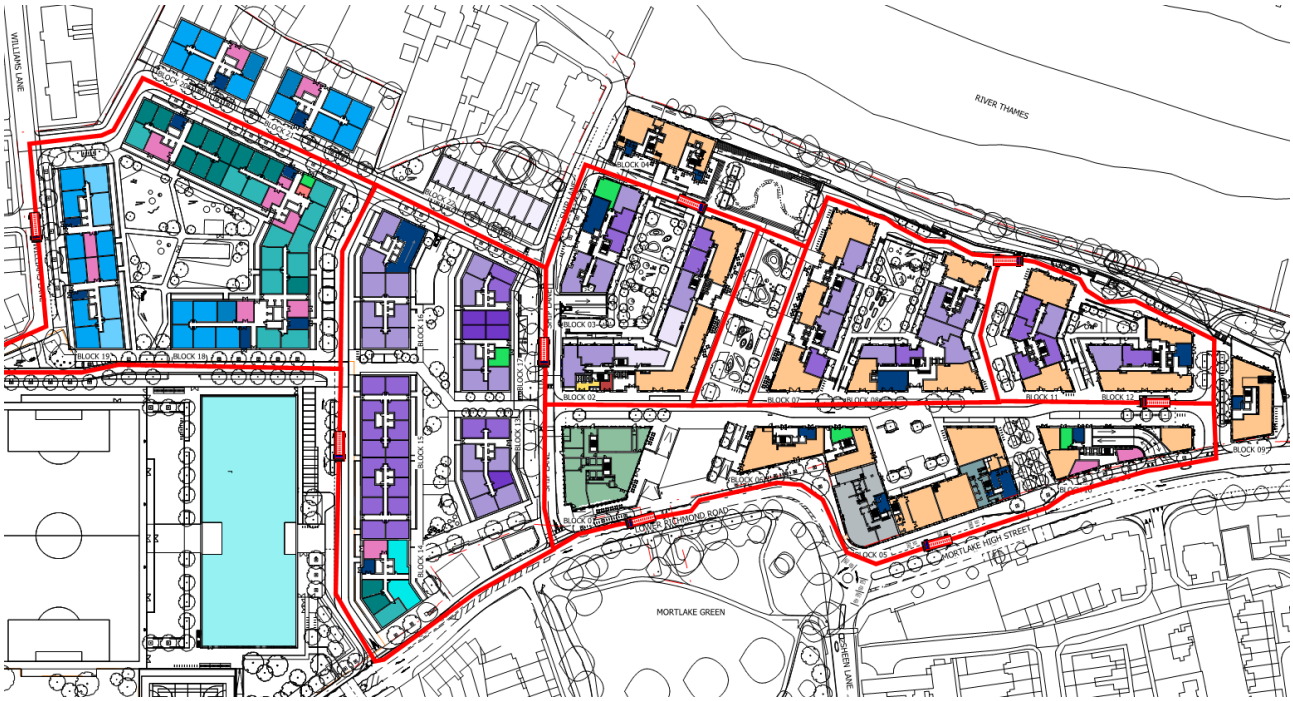

Figure 2: Fire service access around the proposed development

5.6 Measures to protect the base build fire safety strategy

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.

This scheme consists of build-to-rent apartments and will be highly managed development. The tenants will not be allowed to modify any passive and active fire protection measures implemented without consent of the building management.

6. Conclusion.

This fire safety statement has been prepared to outline the approach and provisions relating to fire safety for the Stag brewery development for compliance with the Draft London Plan Policy 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, taking recommendations from BS 9991:2015, BS 9999:2017, ADB and BB100 and the requirements of Policy D5 and D12 of the Draft 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.

Any future modifications to the scheme will be subject to Building Regulations approval and should consider the base build fire strategy.

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