Fire Safety Design Strategy
Issue 1.3
August 2022

Client: KK4 Limited

Premises: Bird in Hand
12 West End Lane,
London NW6 4NX

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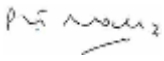
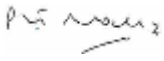
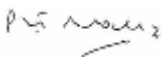
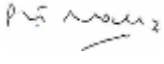
Issue	Reason	Date	Prepared by	Signature	Checked by	signature
1.0	First Draft Issue for comments	25.7.22	Paul Molloy BEng (Hons) MIFireE		Steve Johns MIFireE	
1.1	Incorporating minor amendments following architects comments.	30.7.22	Paul Molloy BEng (Hons) MIFireE		Steve Johns MIFireE	
1.2	Incorporating amended internal layouts	1.8.22	Paul Molloy BEng (Hons) MIFireE		Steve Johns MIFireE	
1.3	Final issue incorporating minor amendments to fig numbering.	2.8.22	Paul Molloy BEng (Hons) MIFireE		Steve Johns MIFireE	

Notes:
This document is provided for the purpose of enabling KK 4 Ltd., to demonstrate compliance with the appropriate fire safety performance levels required by the relevant building and its use as described herein. It should not be manipulated, abridged or otherwise presented without the formal written consent of the author.

1. Executive Summary

This report has been commissioned by KK 4 Ltd to ensure appropriate fire safety measures are introduced to the building at the former Bird in Hand 12 West End Lane London NW6 4NX. It can be used as part of the submission for planning and to the Building Control Body to demonstrate compliance with the relevant fire safety requirements for the refurbishment of the existing building consisting of a former public house, and new build apartment block to provide nine residential units over five floors.

The report has been developed to document the fire safety provisions in the building as a whole, the existing building will be refurbished and a new build residential block to provide a further nine residential units. There will be one common staircase provided, each flat will only have access to the stair, or an independent access as detailed within the report. The house will have a separate entrance and be separated from the rest of the building, by a compartment wall.

This strategy document should be used to provide a benchmark reference for fire safety matters, these must be considered whenever carrying out alterations to the design of the building or making other significant changes to its use or occupancy profile, and when undertaking fire risk assessments.

The document only considers life safety issues and any additional requirements regarding property protection are outside the scope of this document.

There is an inherent risk in all fire safety designs, including those that are or were code compliant and where fire engineering has been used to develop the fire strategy, however on-going fire safety management and fire risk assessment along with regular reviews with enforcing/approving authorities should enable this risk to be kept to a minimum.

2. Introduction

The fire safety design strategy report documents the fire safety arrangements and features within the building at the former Bird in Hand 12 West End Lane London NW6 4NX. The strategy outlines the critical fire safety features within the building so that these measures are not unintentionally altered, as part of the day-to-day design or management and benchmarks the fire safety provision should any further alterations or extensions be proposed.

2.1. Scope and Purpose

The report applies only to this address and is intended to provide the relevant persons such as building control body, architects, building owners and occupiers with all the necessary fire safety information; such that when refurbishments, alterations to the design or other changes take place they are fully aware of the critical fire safety features within the building so that they can ensure that these measures are not unintentionally altered.

2.2. Limitations

The opinions and findings noted in the report are made based solely upon the information and documentation provided, the draft report will form a discussion document to ensure the building offers a safe solution in respect to fire.

2.3. Site Description

The development consists of 10 residential units comprising of a separate three-bedroom house, five two-bedroom flats and four one-bedroom flats. It will include the refurbishment of a former public house to provide a single-family dwelling over three floors with a small basement area.

The house will be separate from the rest of the development, the house will have a protected stair enclosure providing 30 minutes fire resistance, and escape windows provided on the first floor where the sleeping accommodation is located, the top floor accommodates a gym and study.

Additionally, there will be a block of flats constructed over five floors, with a height to the top floor circa 13 metres. The flats will be served by a single common stair, and the lobby adjacent to the stair will be ventilated externally on each floor via an AOV located on the external wall providing a minimum of 1.5m^2 aerodynamic free area. The flats will be arranged so there is one flat on the ground floor and two flats located on each of the upper floors.

The ground floor comprises of an entrance lobby accessed from Abbey Lane, within this lobby there is a lift provided that will be an evacuation lift. The ground floor has access to one flat which is accessed from a lobby which also provides access to a plant room and cycle store. The flat is provided with escape windows and doors and is open plan in nature. There is a refuse store provided which has a separate external entrance from the rest of the building and is fitted with fire doors due to the proximity of the final exit.

The first, second, third and fourth floors are similar in layout with two flats per floor which are accessed from a ventilated lobby off the stairs. The stair enclosure is fitted with an AOV which is operated by smoke detection on each floor, an override switch is provided at

entrance level, for use by the fire service. The AOV will provide a minimum of 1.0 m^2 aerodynamic free area.

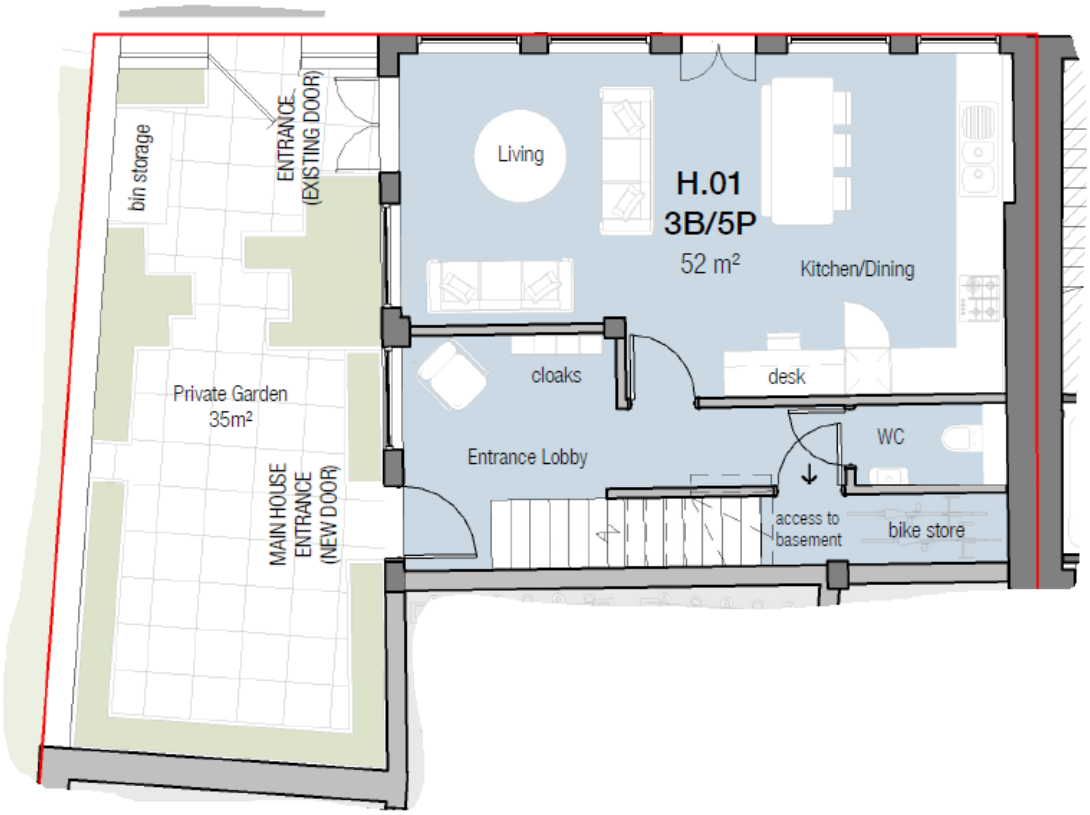
The flats will be provided with a residential sprinkler system throughout and will include the communal areas on the ground floor, as the building is over 11 metres.

2.3.1. Site Plan

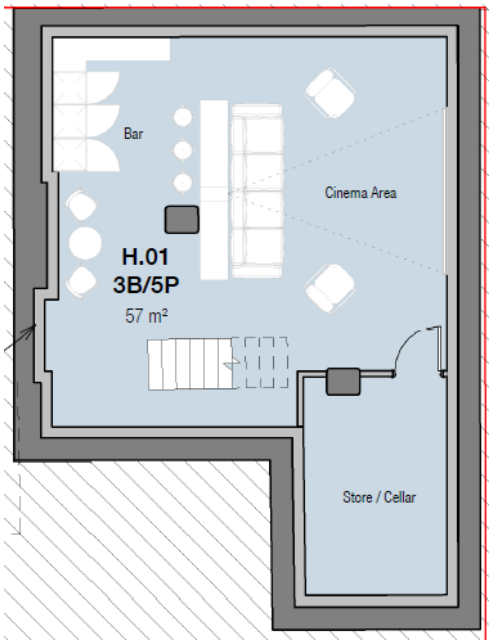
2.4. Building layout - House

2.4.1. *Figure 1:* Proposed Ground Floor & Basement Layout

Ground Floor



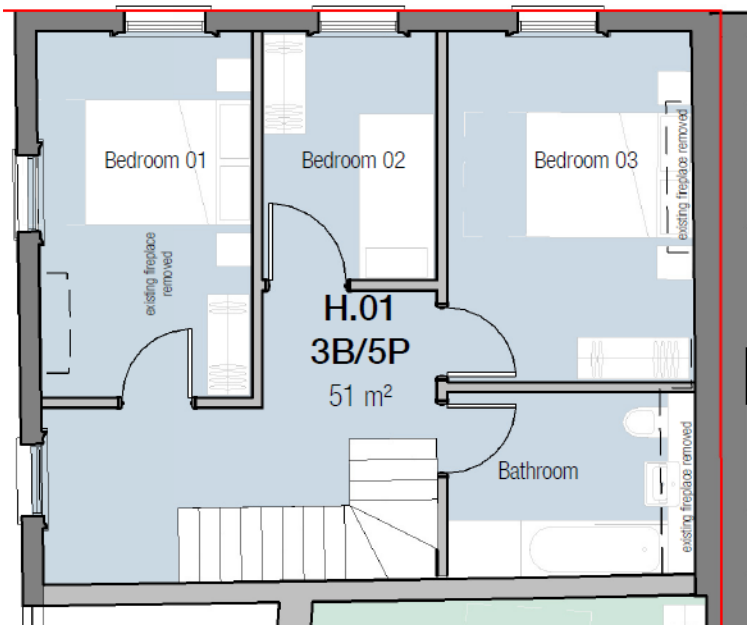
Basement



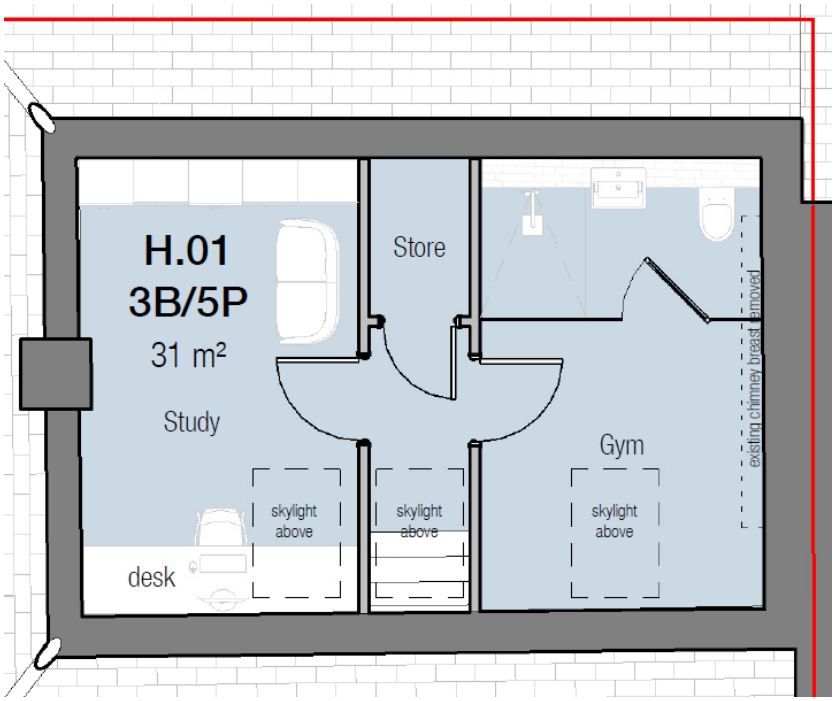
The house layout is such that a protected stair is provided from all of the upper floors which leads directly to the final exit. The basement is accessed from a separate stair that leads directly into the entrance lobby and ultimately to the final exit.

2.4.2. *Figure 2*: Proposed First & Second Floor Layout – House

First Floor



Second Floor



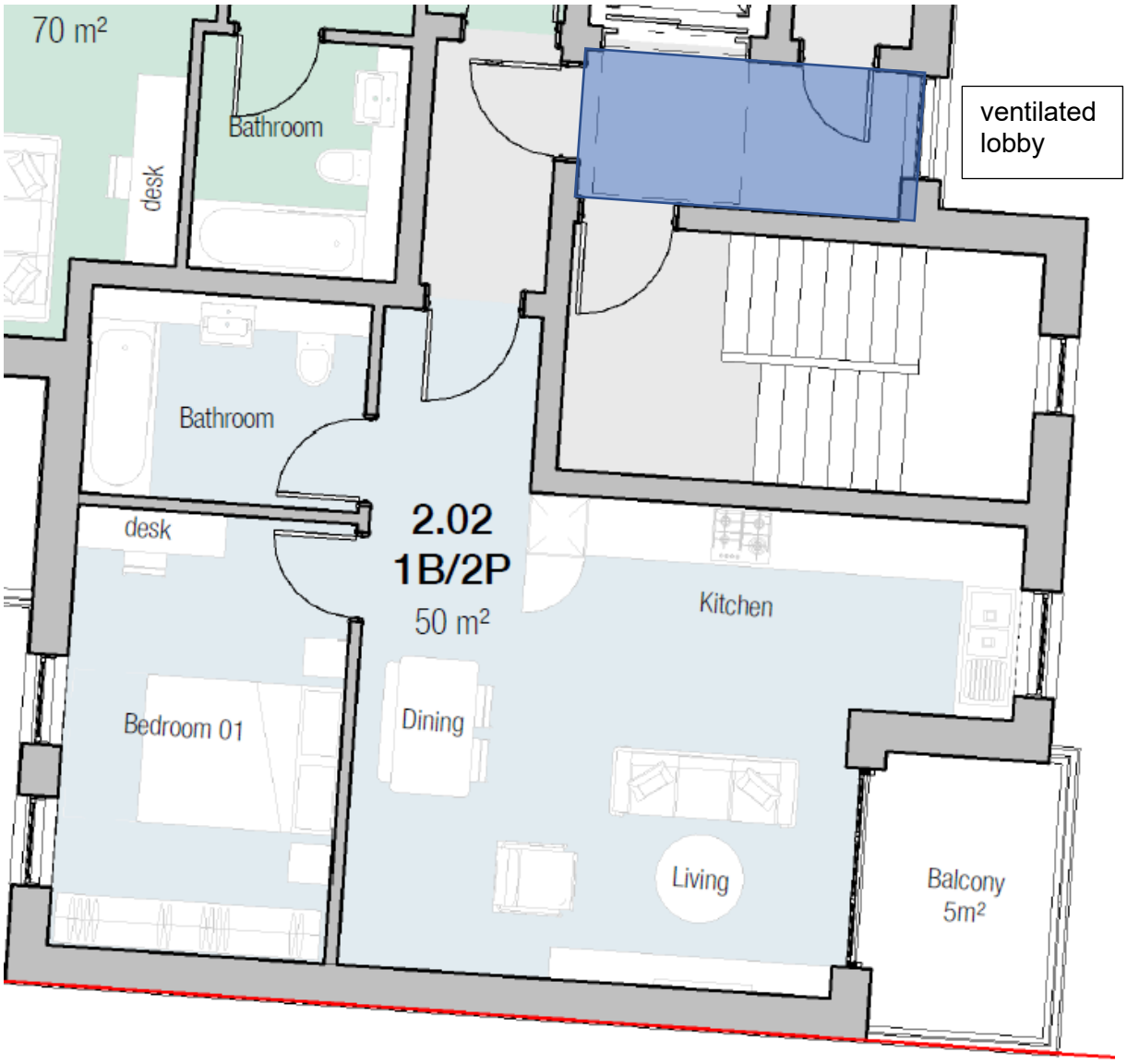
The first floor is provided with escape windows from the bedrooms, with the protected stair extending to the second floor.

2.4.3. *Figure 3*: Proposed Ground Floor Layout Flats

2.4.4. ***Figure 4*: Proposed Flats First Floor Layout.**

2.4.5. 1.1.1. Figure 5: Flats Second, Third and Fourth Floor Layouts.

2.4.6. *Figure 5*: Proposed 1 Bedroom Flat Layout



1 Bedroom Flat

The one-bedroom flats are approached from the stair via a ventilated lobby on each floor (shown above in blue). The flats are of an open plan design and are designed and fitted with a residential sprinkler system. The cooking facilities are not adjacent to the entrance of the flat. The flats will be fitted with a Grade D LD1 fire detection and alram system, and the ceiling height will be a minimum of 2.5 metres. They are provided with a main entrance door which is a 30 minute fire door fitted with a self closing device and smoke seals.

2.4.7. *Figure 6*: Proposed 2 Bedroom Flat Layout

2 Bedroom Flat

The two-bedroom flats are approached from the stair via a ventilated lobby on each floor (shown above in blue). The flats are provided with a protected entrance hall providing 30 minutes fire resistance (Shown in red). They are provided with a main entrance door which is a 30 minute fire door fitted with a self closing device and smoke seals.

Note the two bedroom flat on the ground floor is open plan design and are designed and fitted with a residential sprinkler system. The cooking facilities are not adjacent to the entrance of the flat. The flats will be fitted with a Grade D LD1 fire detection and alram system, and the ceiling height will be a minimum of 2.5 metres. They are provided with a main entrance door which is a 30 minute fire door fitted with a self closing device and smoke seals. Alternative exits are available via doors or escape windows.

3. Legislation

3.1. Building Regulations

Building Regulations require a building owner to provide adequate levels of life safety to the building by providing suitable:

i. Means of escape
ii. Means of warning occupants of a fire
iii. Limiting internal fire spread
iv. Limiting external fire spread, and protection to adjacent property from fire
v. Access and facilities for Fire Service operations.

For Flats, this is normally achieved by following the guidance in Approved Document B (ADB)[1]. Other documents are available and consist of a three-tier approach guidance; simple premises normally follow the guidance documented within (ADB), while other approaches are also acceptable as detailed in BS 9991 Code of Practice for Fire Safety in the Design, Management and Use of Residential Buildings[2], where the buildings are more complex in design. Alternatively, where more innovative solutions and fire safety concepts are involved, fire engineering may be used following the principles in BS 7974[3] in order to demonstrate an equivalent or better level of life safety is provided in the building(s). This development utilises the principles set out in ADB, with deviations justified.

3.1.1. Building Regulations Purpose Group

The building is used as Residential Dwellings and is classified as Flats 1 (a) and Dwellinghouse 1 (b) in accordance with the Building Regulations, Approved Document B: Fire Safety Table 0.1.

3.1.2. Current Approvals Position to date

It is understood the proposed building is being subjected to the necessary processes for planning. The purpose of this strategy is to allow the developer to present a design fire strategy document to the Local Authority and the Local Fire Authority, to ensure approval is achieved.

3.2. Regulatory Reform (Fire Safety) Order 2005

Upon occupation of the building “The Regulatory Reform (Fire Safety) Order 2005” (RR(FS)O 2005)[4] requires the “Responsible Person” to undertake a fire risk assessment to ensure adequate fire precautions are provided and maintained by introducing a comprehensive and robust fire safety management system. For flats this only applies to the common parts.

4. Supporting Drawings

Table 1 provides a summary of the drawing information supplied that should be read as part of this fire strategy.

Table 1: former Bird in Hand 12 West End Lane London NW6 4NX.

Drawing Title	Drawing Number	Date	Rev
Proposed Site Plan	2019-008-PL-2010	Mar 2022	A
Proposed Basement Floor Plans	2019-008-PL-2100	Nov 2021	-
Proposed Ground Floor Plans	2019-008-PL-2101	Nov 2021	A
Proposed First Floor Plan	2019-008-PL-2102	Nov 2021	A
Proposed Second Floor Plan	2019-008-PL-2103	Nov 2021	B
Proposed Third Floor Plan	2019-008-PL-2104	Nov 2021	A
Proposed Fourth Floor Plan	2019-008-PL-2105	Nov 2021	A
Roof	2019-008-PL-2106	Nov 2021	A
Elevations 1 of 2	2019-008-PL-2200	Feb 2022	A
Elevations 2 of 2	2019-008-PL-2201	Feb 2022	-
Sections 1 of 3	2019-008-PL-2210	Mar 2022	-
Sections 2 of 3	2019-008-PL-2211	Mar 2022	-
Sections 3 of 3	2019-008-PL-2212	Mar 2022	-

5. Emergency Escape Strategy

5.1. Emergency Evacuation Principle

5.1.1. Stay Put Policy

The escape strategy adopted for this building is based on a “stay put” policy. A stay put policy involves the following approach:

When a fire occurs in a flat, the occupants alert others in the flat, make their way out of the building and summon the fire and rescue service.

If a fire starts in the common parts, anyone in this area makes their way out of the building and summon the fire and rescue service.

All other residents not directly affected by the fire would be expected to “stay put” and remain in their flat unless directed to leave by the fire and rescue service.

5.2. Evacuation Strategy

The fire compartmentation between flats is analogous to the party wall separation between adjoining houses, which prevents fire spreading from one house to another. It also enshrines the principle that a person’s actions should not endanger their neighbours.

The fire compartmentation provided between flats is one hour, and between the stairs and communal facilities 30 minutes; additionally, apartments that are not open plan have a 30-minute fire protected hallway within the unit, it is proposed the building will be provided with a residential sprinkler system conforming to BS 9251[5] category 2 system.

6. Building Regulations compliance

6.1. Means of warning and escape B1.

The requirement –

The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times.

The intention –

a. There are sufficient means for giving early warning of fire to people in the building.
b. All people can escape to a place of safety without external assistance.
c. Escape routes are suitably located, sufficient in number and of adequate capacity.
d. Where necessary, escape routes are sufficiently protected from the effects of fire and smoke.
e. Escape routes are adequately illuminated and exits are suitably signed.
f. There are appropriate provisions to limit the ingress of smoke to the escape routes, or to restrict the spread of fire and remove smoke.
g. For buildings containing flats, there are appropriate provisions to support a stay put evacuation strategy.

The extent to which any of these measures are necessary is dependent on the use of the building, its size and its height. Building work and material changes of use subject to requirement B1 include both new and existing buildings.

6.1.1. Proposals

6.1.1.1. Automatic Fire Detection System

The development consists of individual flats, each flat will be fitted with a fire alarm and detection system in accord with BS 5839 – 6 Grade D2 Category LD1[6]. This will provide smoke detection in the escape routes and all habitable rooms, not including bathrooms, as well as a heat detector in the kitchen.

6.1.1.2. Fire detection in the common parts

It is proposed to fit the development with a common fire detection system in accord with BS 5839 – 1[7]. This will result in smoke detectors in the means of escape, at each level in the common staircase, the purpose of this system is to operate the smoke control system within the common area. There will be no sounders attached to the system, to support the stay put evacuation policy. The AOV's fitted at each floor level and at the head of the stair will ensure the common stair is kept relatively clear of smoke and the products of combustion during the initial evacuation phase of the incident and to assist in firefighters tackling the fire.

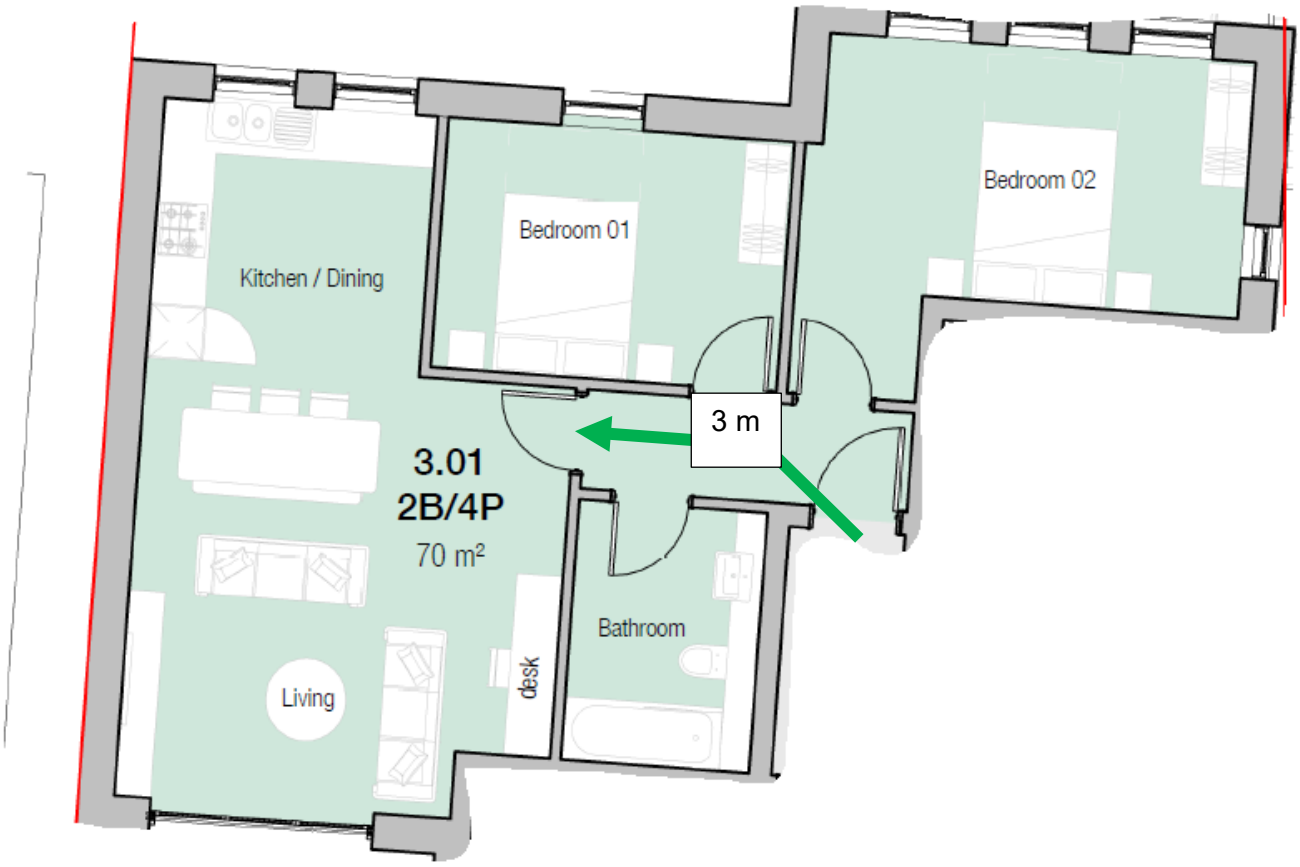
6.1.1.3. Residential Sprinkler System

It is proposed to fit a residential sprinkler system throughout the development to conform to BS 9251 Category 2, with a Category 3 system fitted to the communal areas consisting of the plant room and cycle store on the ground floor. It will not be necessary to sprinkler the adjacent house, as it is completely separate from the rest of the development.

6.1.1.4. Travel Distances

The development is laid out so the travel distances in a flat where a protected hallway is provided is less than 9 metres, in accord with diagram 3.2 of ADB.

6.1.1.5. *Figure 7*: Maximum travel distance where an entrance hall is provided.

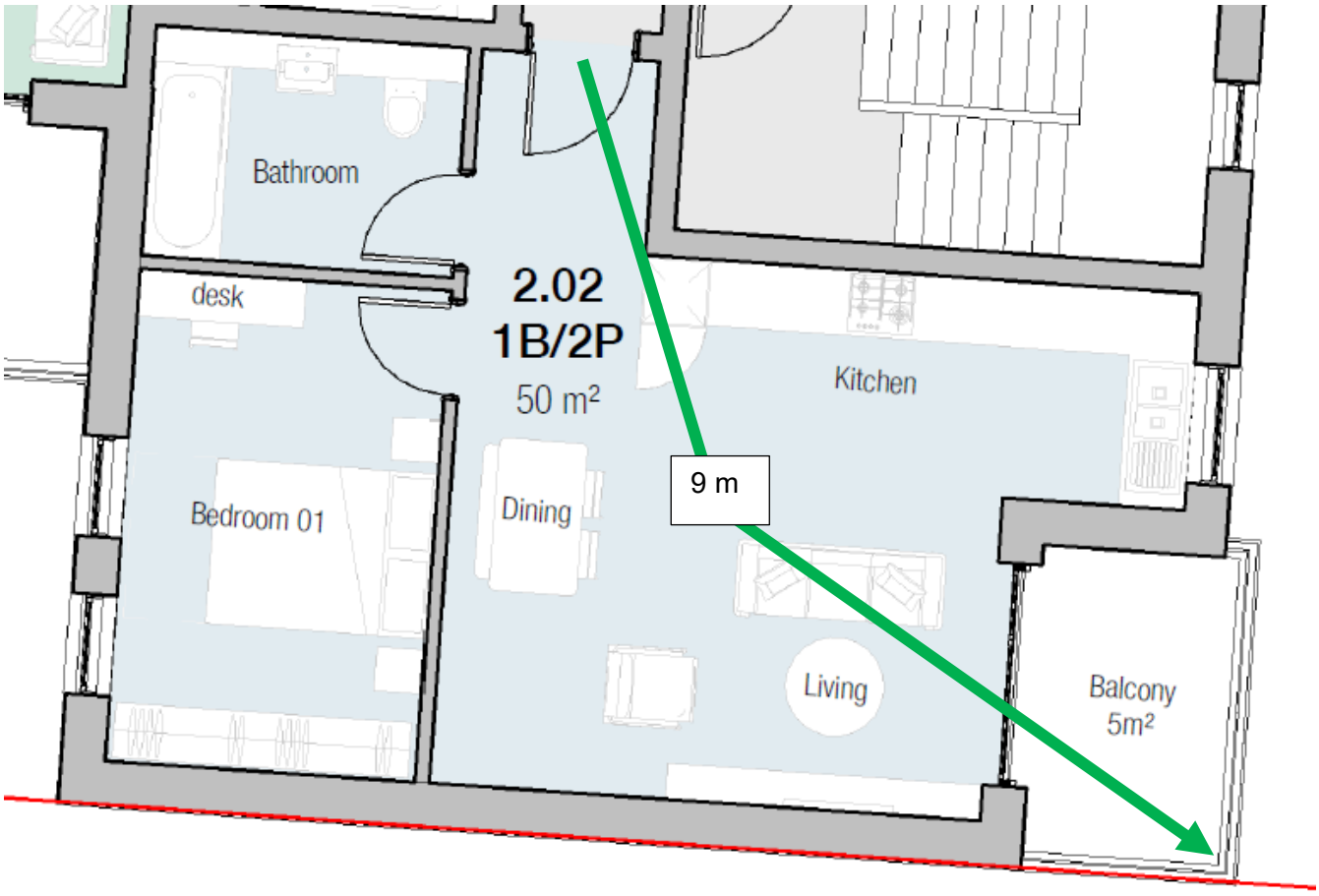


It is proposed the building will be provided with a residential sprinkler system conforming to BS 9251 category 2 system. This should ensure any fires will be contained within the room of origin.

All residential units with a floor height of less than 4.5 metres have alternative means of escape from escape windows and doors.

The maximum travel distance within the open plan flats is circa 9 metres in accord with Diagram 3.3 of ADB.

6.1.1.6. *Figure 8*: Maximum travel distance where an entrance hall is not provided.



6.1.1.7. Automatic opening Vents (AOV's)

A vent is proposed at the head of the common stairs with a free area of at least 1 m^2 to assist in firefighting operations as well as keeping the single stair relatively clear of smoke and products of combustion. This is operated automatically by smoke detectors situated on each floor level, or by an override switch for use by the fire service situated at the entrance to the building. This vent should be tested monthly by operating the provided switches and should be inspected and serviced at least annually by a competent person using the smoke detectors to actuate it.

Vents are provided at each upper floor level to the stair lobby, these will be operated automatically by smoke detection provided on each level and will have a free area of at least 1.5 m^2 to assist in firefighting operations as well as keeping the single stair relatively clear of smoke and products of combustion

6.1.1.8. Evacuation Lift and Mobility Impaired Evacuation

An important Aspect of modern building design is the evacuation of mobility impaired persons. The development is fitted with a lift so access to upper floors will be available for those with severe mobility impairment. The lift provided will be an evacuation lift, in accord with the policy requirement of the London Plan.

The evacuation strategy for the residential building is based on a stay put procedure. This will negate the need to evacuate significant numbers of mobility impaired persons.

6.1.1.9. Exit Capacity

The exit capacity for the development is far in excess of any predicted occupancy for this type of accommodation, assuming 5 two-bedroom 4 person flats, and 4 one-bedroom 2 person flats the maximum occupancy will be 28 persons.

6.1.1.10. Emergency Lighting

The development will be provided with emergency lighting in accord with BS 5266[8]. Generally, emergency lighting should be provided to give adequate luminance near each exit door and where it is necessary to emphasise potential danger as outlined below:

i. Exit doors intended to be used in an emergency
ii. Near stairs so each flight of stairs receives direct light
iii. Near any change in level
iv. Mandatory emergency exits and safety signs
v. Changes of direction
vi. Intersection of corridors
vii. Outside each final exit
viii. Near firefighting and first aid equipment.

6.1.1.11. Emergency Escape Signage

Fire escape signs are not necessary for this development as there is a single stair serving the development, therefore residents and visitors have no alternative that requires signage. ‘Fire Door Keep Locked’ signs should be provided to the service riser doors situated within the common stair.

6.1.1.12. Manual Firefighting Equipment

Manual fire extinguishers are not necessary in the common parts of blocks of flats. Such equipment should only be used by those trained in its use; it is not considered practicable for residents to receive such training.

Additionally, the provision of such equipment in the common parts could encourage occupants to enter the common part of the building to get the equipment and return to their apartment to fight the fire; such a procedure is inappropriate.

6.2. Internal fire spread (linings) B2.

The requirement –

(1) To inhibit the spread of fire within the building, the internal linings shall—
(a) adequately resist the spread of flame over their surfaces; and
(b) have, if ignited, either a rate of heat release or a rate of fire growth, which is reasonable in the circumstances.
(2) In this paragraph "internal linings" means the materials or products used in lining any partition, wall, ceiling or other internal structure.

Intention –

B2 is met by achieving a restricted spread of flame over internal linings. The building fabric should make a limited contribution to fire growth, including a low rate of heat release.
The choice of materials for walls and ceilings can significantly affect the spread of fire and its rate of growth, even though they are not likely to be the item ignited first. It is particularly important in circulation spaces where rapid fire spread is more likely to prevent the escape of occupants that surface linings are restricted by limiting the surface spread of flames and minimising heat release rates.

ADB Table 4.1 outlines the requirement for wall and ceiling internal linings.

Table 2: Classification of Internal Linings

Location	European Class
Circulation spaces, including the common areas of blocks of flats	B-s3, d2
Other rooms (including garages) circulation spaces within a dwelling	C-s3, d2
Small rooms of maximum internal floor area of 4 m^2	D-s3, d2

Wallcoverings which conform to BS EN 15102, achieving at least class C-s3, d2 and bonded to a class A2 – s3, d2 substrate, will also be acceptable.

6.2.1. Proposals

All wall and ceiling coverings will ensure the requirements outlined are achieved. All works are to be completed to a high standard following manufacturer's instructions.

Internal fire spread (structure) B3.

The requirement –

(1) The building shall be designed and constructed so that, in the event of fire, its stability will be maintained for a reasonable period.

(2) A wall common to two or more buildings shall be designed and constructed so that it adequately resists the spread of fire between those buildings. For the purposes of this sub-paragraph a house in a terrace and a semi-detached house are each to be treated as a separate building.

(3) Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following—

(a) sub-division of the building with fire-resisting construction.

(b) installation of suitable automatic fire suppression systems.

(4) The building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited.

Intention – requirement B3 is met by achieving all of the following.
a. For defined periods, loadbearing elements of structure withstand the effects of fire without loss of stability.
b. Compartmentation of buildings by fire resisting construction elements.
c. Automatic fire suppression is provided where it is necessary.
d. Protection of openings in fire-separating elements to maintain continuity of the fire separation.
e. Inhibition of the unseen spread of fire and smoke in cavities, to reduce the risk of structural failure and spread of fire and smoke, where they pose a threat to the safety of people in and around the building.

The extent to which any of these measures are necessary is dependent on the use of the building and, in some cases, its size, and on the location of the elements of construction.

6.2.2. Proposal – provisions of compartmentation

Compartmentation is fundamental to containing a fire in one flat. Modern construction methods can ensure compartmentation is achieved and maintained.

In buildings containing flats, the following should be constructed as compartment walls or compartment floors:

I. Every floor (unless it is within a flat, i.e. between one storey and another within one individual dwelling).
II. Every wall separating a flat from any other part of the building
III. Every wall enclosing a refuse storage chamber.

This development should be provided with one-hour compartmentation to the stair enclosure and between flats, and 30 minutes compartmentation to the protected entrance hallway within the flats. Any services passing through the fire compartment are to be suitably protected to maintain the appropriate fire resistance.

Additionally, the flats in the new building will have a residential sprinkler system fitted this should ensure a fire will be contained within the room of origin.

It is recommended that consideration should be given to the layout of the vents from bathrooms and kitchens, to avoid where possible, penetration through fire resistant walls. Doors from cupboards opening into the staircase, for meters and services should be FD30s fire doors to maintain the compartmentation to the stair.

Typical compartmentation provided, is shown in Figure 9 below with:

60 minutes - represented by red infill.

30 minutes - represented by blue infill.

Figure 9: Typical compartmentation

6.2.3. Maintenance of Fire Doors (and information to residents)

The Fire Safety (England) Regulations 2022[9], which come into force 23 January 2023 make the following requirements:

In residential buildings with storeys over 11 metres in height, responsible persons will be required to undertake annual checks of flat entrance doors and quarterly checks of all fire doors in the common parts.

In all multi-occupied residential buildings with two or more sets of domestic premises, responsible persons will be required to provide residents with information relating to the importance of fire doors (and provide relevant fire safety instructions to their residents, which will include instructions on how to report a fire and any other instruction which sets out what a resident must do once a fire has occurred, based on the evacuation strategy for the building).

Regardless of the height of the residential building, residents of all blocks of flats and other multi-occupied residential buildings with common parts will be given fire safety instructions as well as information on the importance of looking after fire doors, to help make them feel safer in their own homes.

It is recommended that the following actions are taken in relation to fire doors, regardless of building height:
All flat entrance doors and communal fire doors should be checked periodically - annual checks of flat entrance doors and quarterly checks of all fire doors in the common parts.

These checks are aimed at identifying defects that could affect the ability of the doors to prevent smoke or fire spread, such as:
missing or ineffective self-closing devices (not required on cupboards)
damaged doors or frames
removal of locks without suitable repairs to the integrity of the doors
poorly fitting doors caused by distortion, shrinkage, or wear and tear
newly fitted, but inappropriate, door furniture
doors which have been replaced using non-fire-resisting types (as part of the periodic checks, owners should be reminded of the importance of not replacing flat entrance doors without approval, to avoid inadvertently installing doors that are not fire doors).

Note: Where entrance doors require replacement, they should only be replaced with a FD30sSC fire door (30 minutes fire resistance, smoke seals and self-closer) and certification and/or labelling on the door, kept as evidence of compliance.

6.2.4. Protection of Openings and Fire Stopping

To ensure all fire separating elements are effective, every joint or imperfection of fit, or opening to allow services to pass through the element should be suitably fire stopped. Vertical service risers are to be enclosed in a fire protected shaft or fire stopped at each compartment floor level.

All openings for pipes, ducts, conduits or cables that pass through and / or any joints between fire separating elements should be appropriately fire stopped with consideration for any potential thermal movement of pipes and ducts.

Where non-rigid materials are adopted or unsupported spans of 100mm are used, then the fire stopping material should be reinforced with materials of limited combustibility.

6.2.5. Openings for Pipes

Where services pass through a fire separating element, the following three fire stopping measures should be considered to evaluate the most appropriate fire protection measure.

i. Proprietary Seals - provide a system such as an intumescent collar which has been tested to maintain the fire resistance of the wall, floor for a pipe of any diameter.
ii. Pipes with restricted diameter - if the pipe satisfies the requirement of the Table below, the fire stopping can be made from cement mortar or intumescent mastic around the pipe.
iii. Sleeving - of lead, aluminium alloy, fibre cement or uPVC with dimensions as outlined in the Table below can be used.

Table 3: Maximum Diameter of Pipes Passing Through a Compartment

Situation	Non-combustible materials	Lead, Aluminium alloy, uPVC, fibre cement	Any other material
Structure enclosing a protected shaft which is not a stairway or lift shaft.	160mm	110mm	40mm
Compartment wall or compartment floor between clusters	160mm	160mm (stack pipe) 110mm (branch pipe)	40mm
Any other Situation	160mm	40mm	40mm

The basement area will potentially require particular attention to bring the fire stopping up to a satisfactory level, particularly if the incoming services originate in this space. The ceilings and walls within the basement will require 60 minutes fire separation this can be achieved by being double over boarded and proprietary fire stopping materials used to achieve a satisfactory level of fire stopping.

6.3. External fire spread B4.

The Requirement –

(1) The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building.

(2) The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.

6.3.1. Space separation

Buildings should be constructed to ensure a fire is unlikely to involve an adjacent building. This is achieved by restricting the unprotected area in an external wall. There are some openings shown next to adjacent buildings, these should be assessed when the exact size of the openings are known, when window and door schedules are available and consideration given to the sprinkler system installed.

6.3.2. External walls

External walls should be constructed to achieve the classification requirements outlined in Table 10.1 of ADB.

6.3.3. External fire spread over the external faces of buildings

External walls should be constructed using a material that does not support fire spread and therefore endanger people in or around the building. This should include balconies, and it is strongly recommended that only materials of A2 or A1 fire rating are used in their construction.

Flame spread over, or within, an external wall construction should be controlled to avoid creating a route for rapid fire spread bypassing compartment floors or walls. Combustible materials should not be used in cladding systems and extensive cavities.

External wall surfaces near other buildings should not be readily ignitable, to avoid fire spread between buildings. External walls should therefore either meet the performance criteria given in BRE Report BR 135 [N1] for cladding systems using full scale test data from BS 8414-1 or BS 8414-2, or meet the recommendations as set out in BS 9991.

The building appears to be predominately brick faced, it should be confirmed that all facades of the building including any balconies comply with the information contained within the MHCLG document “Advice for building owners of multi-storey, multi occupied residential buildings”, January 2020.

Note: The installation of appropriately fire rated cladding is acceptable and can be evidenced by supplier information but providing the evidence to mortgage lenders of appropriate fire stopping between the external walls and cladding can be potentially difficult, and photos taken by installers may not be sufficient.

It is recommended that prior to installing cladding, consideration is given as to how evidence of fire stopping will be provided, if required, by mortgage lenders.

6.4. Access and facilities for the fire service B5.

The requirement –

(1) The building shall be designed and constructed so as to provide reasonable facilities to assist fire fighters in the protection of life.

(2) Reasonable provision shall be made within the site of the building to enable fire appliances to gain access to the building.

Intention –

Provisions covering access and facilities for the fire service are to safeguard the health and safety of people in and around the building. Their extent depends on the size and use of the building. Most firefighting is carried out within the building. In the Secretary of State’s view, that requirement B5 is met by achieving all of the following:

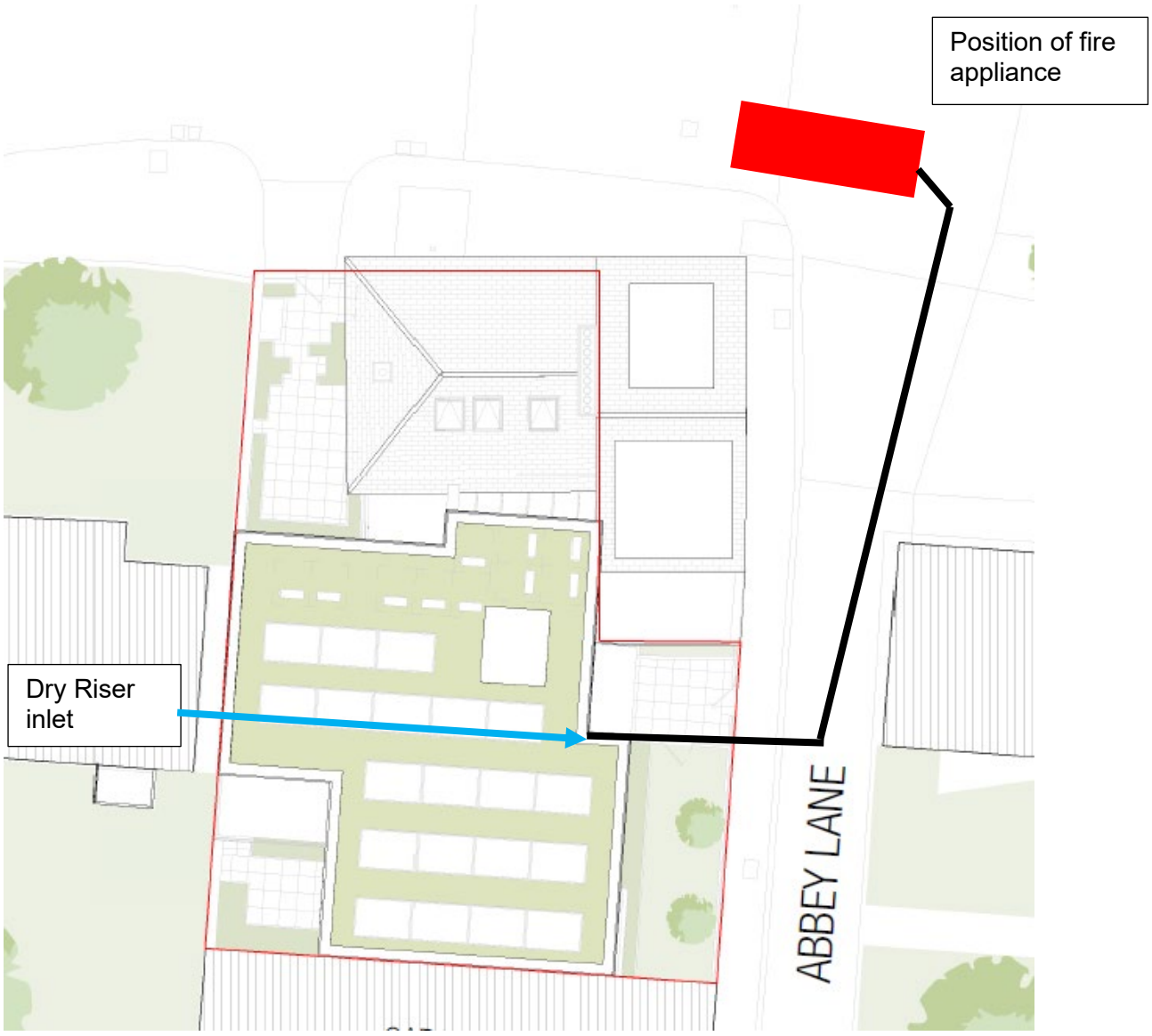
a. External access enabling fire appliances to be used near the building.
b. Access into and within the building for firefighting personnel to both:
   i. search for and rescue people
   ii. fight fire.
c. Provision for internal fire facilities for firefighters to complete their tasks.
d. Ventilation of heat and smoke from a fire in a basement.

6.4.1. Proposal

There is good access to the front façade of the building, from West End Lane, the hose distance from the parking position of the appliance to the furthest points of the flats will be more than 45 metres resulting in the requirement for a dry rising main. The main should have outlets on all floors and the inlet should be within 18 metres of the position of the appliance parking position and within sight. Automatic Opening vents are proposed to the main stair enclosure.

The fire service access arrangements are shown in figure 10, with good access available to the main house and the new extension area.

Figure 10: Fire Service access arrangements.



Access is available to the main entrances to the development.

6.4.2. Location and access to external water supply

All premises should be provided with a supply of water for firefighting. Firefighters must lay out hose between the water supply and the fire appliance, so these distances should be kept to a minimum.

Hydrants should be located in positions that are near to building entry points (including entry points to fire-fighting shafts containing fire mains) and fire appliance parking positions as follows:

i. For buildings provided with dry fire mains, hydrants should be provided within 90 m of dry fire main inlets,
ii. For buildings not provided with fire mains (or where the building is fitted with a wet fire main), hydrants should be provided within 90 m of an entry point to the building and not more than 90 m apart.

Water mains and hydrants should be capable of delivering a sufficient flow of water to enable effective firefighting to be undertaken. If the water supply takes the form of a static tank or dam, the capacity should be related to the size of the building and the risk involved. An unlimited and guaranteed natural water source providing the right quantities is also expected to be acceptable, subject to access and hardstanding for the fire appliances being provided.

The water supply should comprise of one or a combination of the following:

i. hydrants provided by the water supply company on the street mains.
ii. private hydrants designed and installed in accordance with BS 9990[10], ideally forming part of a ring main system.
iii. a static or natural water supply.

There has been no change to the provision of water supplies for firefighting purposes, with a hydrant provided on west End Lane adjacent to the development.

6.5. Building Regulations Conclusion

The proposals appear to meet the functional requirements of the Building Regulations, in so much as the requirements B1 to B5 are satisfactory.

7. Fire safety Management

7.1. Assessing Fire safety Management

Managing fire safety is addressed in BS 9999[11] and BS 9991, the principles of fire safety management contained within both BS 9999 and BS 9991can be considered best practice for managing fire safety, although with the simple nature of the development and the lack of any permanent employees many of the recommendations may not be relevant. The standard of fire safety management required for a building is a critical component to be considered when determining how an emergency event involving fire will be dealt with.

7.2. Considerations of fire safety management

i. Ensure a suitable and sufficient fire risk assessment is undertaken by a competent person.
ii. Appoint a person to manage fire safety, although they will not be on site on a day-to-day basis, they will be responsible for the general management, and should have the appropriate training.
iii. Engage with residents, outlining key messages on fire prevention, ensuring the security of the block. The use and storage of hazardous materials should be prohibited. What actions are required on the discovery of a fire and what the evacuation strategy means. What they need to do to safeguard escape routes, ensuring doors close correctly and are not wedged, held or tied open. Keeping common parts clear of combustibles and obstructions. How they can test their fire alarm systems and assist the Fire and Rescue service by not parking in restricted areas. They also need to understand the procedure for reporting essential repairs. This information can be provided within a resident's handbook.
iv. Fire Action Notices are a useful method of summarising the actions in the event of a fire and reinforcing the stay put evacuation policy.
v. Controlling hazardous activities, the management should have procedures in place to ensure hazardous activities such as 'hot work' is controlled and a 'permit to work system' is adopted.
vi. Inspection testing and maintenance; fire safety systems should be regularly tested and inspected. This will include fire doors, means of escape is kept fire sterile, emergency lighting systems, fire alarm systems, fire dampers where fitted and automatic ventilation systems.
vii. Periodically inspect fire separating construction to ensure there are no breaches in fire compartmentation.
viii. Maintain records to demonstrate the fire precautions are being regularly inspected and maintained.
ix. On completion a fire safety package of information should be handed over to the responsible person in accord with Regulation 38.

8. Environment

Many fires or emissions from combustion processes damage the environment. The contents of a building, and the activities carried on within any building catching fire are likely to cause pollution to a greater extent than products used in the fabric of the building itself.

Regarding accidental fires, the main area for consideration in respect to environmental impact of such fires is the loss of control of pollutants as a consequence, for example from smoke and firefighting water run-off.

Appropriate steps at the design stage of any building can minimise the impact of accidental fires on the environment and, whist the emphasis is likely to be on the potential contents of the building, it would be responsible to consider the effects of using combustible materials in the building specification.

9. Conclusion

The existing building will be refurbished, the new building constructed and designed using modern methods to provide inherent and appropriate fire resistance and fire compartments, coupled with an automatic fire suppression system, which should ensure that a fire is contained within the room or flat of origin.

The house is separated from the flats and has a completely independent access. A protected stair is provided within the house, and a fire alarm system to BS 5839 – 6 Grade D2 Category LD2.

Each flat is fitted with a comprehensive fire detection and alarm system to BS 5839 – 6 Grade D2 Category LD1. This will result in any fire being discovered in the incipient stages, giving the occupiers early warning allowing more time for escape.

A residential sprinkler system will be installed due to the height of the building.

An automatic opening vent with at least 1 m^2 free area is provided to the head of the common stair which is operated with smoke detection situated on each storey of the stair or alternatively via a firefighter switch located in the entrance.

The stair lobbies will be ventilated externally by automatic opening vents with at least 1.5 m^2 free area.

An evacuation lift will be provided to comply with the requirements of the London Plan.

A dry rising main will be provided, to ensure firefighters have adequate means of firefighting within the new building.

Therefore, the escape strategy adopted for this building is based on a ‘stay put evacuation” policy. A stay put policy involves the following approach:

When a fire occurs in a flat, the occupants alert others in the flat, make their way out of the building and summon the fire and rescue service.

If a fire starts in the common parts, anyone in this area makes their way out of the building and summon the fire and rescue service.

All other residents not directly affected by the fire would be expected to “stay put” and remain in their flat unless directed to leave by the fire and rescue service.

Any alterations, or refurbishments undertaken in the future should not compromise the inherent fire resistance provided. Any fixed fire protection measures should be subjected to routine testing and maintenance in accord with the manufacturer’s recommendations or the relevant British Standard guidance where appropriate.

The building should be subjected to a fire risk assessment by a competent person on occupation.

10. References

1. Approved Document B Volume 1 Dwellings 2019
2. BS 9991:2015 Code of Practice for fire safety in the design, management and use of buildings.
3. BS 7974 Application of fire safety engineering principles to the design of buildings.
4. Regulatory Reform (Fire safety) Order 2005
5. BS 9251 Residential Sprinkler Systems Code of Practice 2021
6. BS 5839 – 6 Fire detection and fire alarm systems for buildings: Part 6 Code of Practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises. 2019
7. BS 5839 – 1 Fire detection and alarm systems for buildings: Part 1 Code of Practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in non-domestic premises. 2017
8. BS 5266 Emergency Lighting – Part 1 Code of Practice for the emergency lighting of premises. 2016
9. The Fire Safety (England) Regulations 2022. 2023 (proposed)
10. BS 9990 Non-automatic firefighting systems in buildings – Code of practice. 2015
11. BS 9999 Fire Safety in the Design, Management and Use of Buildings – Code of Practice. 2017