



PLANNING FIRE SAFETY STRATEGY REPORT REV 1.0

68 Carysfort Rd, London N8 8RB

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Author Credentials

Nadim has a first-class honors MEng in Aerospace Engineering, an international Diploma in Risk Management including having studied at Oxford University (Exploring the Universe) and Imperial College Business School (Business Economics.).

Nadim is ex Technical Director of Arcadis and ex Associate Director of Arup (both global engineering design firms) where he headed up the Safety Risk and Human Factors teams. Nadim is dual Chartered through the Institute of Mechanical Engineers (IMechE) and Chartered Institute of Building Service Engineers (CIBSE).

Nadim became a Chartered Engineer in an unprecedented three years and then followed this up by becoming one of IMechE's youngest Fellows. Nadim is a full member of the Institute of Fire Engineers (IFE) and has specialist experience in Safety, Reliability, Fire and Risk having worked in this field for over 15 years. His experience covers a range of industries including rail, nuclear, defence and the built environment. Nadim has established himself as a technical risk leader and has won numerous industry awards (4-won, 8 finalist positions) testifying to this including being nominated for the prestigious, Royal Academy of Engineering (RAE) Silver Medal Prize.

Nadim has served time as a Non-Executive Director on 2 separate Risk and Audit boards, written numerous technical publications and has frequently spoken at international conferences including being invited on to expert panels. Nadim currently sits on the Institute of Fire Engineers working group for fires in electric vehicles.

Revisions

Revision	Date	Prepared By	Comments	Signature
1.0	13.04.2023	Nadim Choudhary	Issued for Comment and Acceptance	

This report has been prepared for the sole benefit, use and information of the client named in this report only and the liability of Rockland Safety Services Ltd, its directors, and Employees in respect of the information contained in the report will not extend to any third party.

This report is formulated based on information and experience available at the time of preparation. It is applicable to the above-mentioned project only in accordance with the client's instructions. It is only valid provided no other modifications are made other than those for which a formal opinion has been sought and given by Rockland Safety Services Ltd.

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1. Purpose of Document

Fire Safety Services trading under Rockland Safety Services Ltd have been instructed in the development of a Planning Fire Safety Strategy (this document) for the development at 68b Carysfort Rd, London N8 8RB. This report should be updated and coordinated further with the design team at the detailed design stage.

This report covers the duplex residential unit (flat 68b) in the finished building condition. The flat at the ground floor level falls beyond the scope of this report.

1.1. Fire Safety Objectives

The primary objective of this report is to help provide a design that minimises the fire risks to people within the building. To achieve this, the design aims to:

- Prevent fires in the first place by minimising sources of ignition.
- Minimise fire escalation by all means possible including the facilities fabric and materials.
- Minimise hazards from a fire - smoke, toxic fumes, damage to structures that could lead to unsafe structural conditions (e.g., avoiding structural collapses).
- Provide a means by which the conditions that might lead to a fire are detected early enough for preventive action (e.g., thermal detection on machines).
- Provide a means to initiate the evacuation (includes alarms).
- Prevent people entering or re-entering the building during the fire.
- Provide the means by which people can escape from the fire hazards (including whilst evacuating) and reach a place of relative safety without undue exposure to fire hazards (escape routes from all areas that are ideally familiar).
- Provide a design that minimises the time to extinguish the fire safely and remove fire hazards.
- Ensure Fire-fighters can operate in reasonable safety.

1.2. Legislation

The main fire legislation applicable to this building includes The Building Regulations, The Regulatory Reform (Fire Safety) Order 2005 and the Fire Safety Order 2021.

This document forms a concept approach for fire matters, the design team must ensure the contents of this report are incorporated in the building. This concept will not prevent a fire occurring and good housekeeping will be encouraged to reduce the risk. This strategy is mainly concerned with getting occupants out of the building safely and providing measures, where necessary, to assist the fire fighters in their operations.

The concept is only valid where the systems are designed correctly and maintained in an operating condition. If there is a failure in the management approach and a fire occurs, this concept will not reduce the impact on contents and building damage.

Following occupation, the developer / management of the premises are required under current legislation to carry out a fire risk assessment.

1.2.1. Building Regulations 2010 (as amended to date)

The construction or modification of any building in England & Wales needs to comply with the statutory requirements of the Building Regulations. These regulations deal with the minimum standards of design and building work for the construction of residential, commercial, and industrial buildings. The Building Regulations contain a list of requirements, referred to as Schedules, which are designed to ensure the health and safety of people in and around buildings. There are 14 Parts, which cover subjects such as structure, fire safety, ventilation, drainage, etc.

In the case of fire, the regulations are dealt with under the functional requirements B1 to B5 of Schedule 1 of the Building Regulations.

- B1 - Means of Warning and Escape.
- B2 - Internal Fire Spread (Linings).
- B3 - Internal Fire Spread (Structure).
- B4 - External Fire Spread.
- B5 - Access and Facilities for the Fire Service.

There are several prescriptive documents, which can be adopted to show compliance with the Schedules. These include Approved Document B Volume 1 (ADB) and BS 9991 which are considered as adequate to provide general guidance for residential buildings.

1.2.2. Regulatory Reform (Fire Safety) Order 2005 and Fire Safety Order 2021

In this development, the Regulatory Reform (Fire Safety) Order 2005 and the Fire Safety Order 2021 will apply once the building works are completed, and the building is occupied. The responsible person must ensure a fire risk assessment is carried out which focuses on the safety of all relevant persons in the event of a fire. It is vital that this includes the consideration of external wall systems, fire doors as well as occupants with different needs (such as people with disabilities) to ensure that the fire safety measures adopted are easily and readily accessible for all.

The fire risk assessment must include consideration of any dangerous substances likely to be on the premises and identify risks that can be removed or reduced. This informs the nature and extent of the general fire precautions that need to be taken to protect all relevant persons against the fire risks that remain.

The building management team will be responsible for the appropriate management of the fire safety provisions, and that they are to be maintained and tested over the whole life of the building.

1.2.3.Regulation 7

Regulation 7 has been recently amended in 2018 and 2022 to identify buildings with a floor in excess of 18 as being 'relevant buildings'. 'Relevant buildings' are allowed to include only specific low risk materials as part of the external wall system.

Albeit this building is assumed to not include a floor in excess of 18m, therefore not classed as a 'relevant building', it is proposed to comply with the requirements of Regulation 7 for 'relevant buildings' for all new external walls as a robust way to indicate compliance with the functional requirement B4 (external fire spread), to reduce the approval's risk overall and to reduce the sale or insurance risk with respect to the property.

This is also in accordance with the amendment to ADB dated June 2022, reducing the top floor height threshold from 18m to 11m for external wall materials to achieve Class A2-s1, d0 or better.

Additionally, Regulation 7(1A) has been introduced to prohibit the use of relevant metal composite materials forming part of the external wall systems or specified attachments of the building. Relevant metal composite materials are defined as any panel or sheet, having a thickness of no more than 10mm which is composed of a number of layers two or more of which are made of metal, alloy or metal compound and one or more of which is a substantial layer made of a material having a gross calorific value of more than 35MJ/kg when tested in accordance with BS EN ISO 1716. A substantial layer is defined as a layer which is at least 1mm thick or has a mass per unit area of at least 1kg/m.

1.2.4.Regulation 38

Regulation 38 of the Building Regulations states that, where building work involves the erection or extension of a relevant building, or a relevant change of use of a building which affects fire safety, it is necessary that the fire safety information for the building shall be given to the responsible person at the completion of the project or when the building or extension is first occupied.

The information will facilitate the production of fire risk assessment which is a requirement of the Regulatory Reform (Fire Safety) Order. The fire safety information in this strategy may be used to supplement the information required to be given to the responsible person. As a minimum it will be necessary for the occupiers of the building to be given the detailed fire strategy document and all as built fire safety plans.

1.3. Property Protection

The guidance and recommendations herein are primarily concerned with the protection of life and preventing conflagration. However, the life safety objectives of this fire safety strategy will

also aid in protecting the property by minimizing damage to the building and contents caused by heat, smoke, and firefighting.

The provision of fire safety systems for life safety does not necessarily give adequate protection to property or to the continuity of the business carried out in the building. It is therefore recommended that if the potential for property and business loss is considered important, an additional assessment should be undertaken, so that the risks are understood and addressed.

2. Type of Property

2.1. Description

The site is flanked by the Carysfort Road towards the North and other residential buildings towards the East, South and West.

The existing block consists of three storeys (G+2), with a top occupied storey (second floor) less than 11m above the lowest adjoining ground and is served by one stair core. The block will be designed as a small single stair building. The ground floor includes an individual flat. The above ground floors include a duplex flat.

The works proposed include only the extension of the second floor in the duplex flat (68b). to increase the size of the living / kitchen areas and to add a small terrace. In the finished building condition, the top occupied floor (second floor) will still be less than 11m above ground, and the first floor will still be less than 4.5m above ground.

This report covers the duplex residential unit (flat 68b) in the finished building condition. The flat at the ground floor level falls beyond the scope of this report.

Phased or temporary arrangements fall beyond the scope of this report. All occupants are assumed to be able to evacuate independently at all material times.

The design team should immediately inform Rockland Safety Services Ltd if the understanding of the project, or any assumptions within this report are not accurate.

2.2. Design Approach

Approved Document B Volume 1 (ADB Vol1) has been employed as the guidance document to develop this planning fire strategy. This report is not exhaustive in nature. Therefore, where not specifically stated, all fire safety provisions should be in accordance with ADB, and the documents referenced therein.

2.3. Purpose Group

The residential block will be used as flats therefore the purpose group selected will be Flats [1(a)], as described in Table 0.1 of ADB (see extract below).

Volume 1 purpose groups

Title	Group	Purpose for which the building or compartment of a building is intended to be used
Residential (dwellings)	1(a) ⁽¹⁾	Flat.
	1(b) ⁽²⁾	Dwellinghouse that contains a habitable storey with a floor level a minimum of 4.5m above ground level up to a maximum of 18m. ⁽³⁾
	1(c) ⁽²⁾⁽⁴⁾	Dwellinghouse that does not contain a habitable storey with a floor level a minimum of 4.5m above ground level.

3. Requirement B1: Means of Warning and Escape

“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.” - Part B of Schedule 1 of the Building Regulations 2010.”

3.1. Evacuation Strategy

The residential units should employ a ‘defend-in-place strategy’, whereby only the residential unit of fire origin should evacuate immediately upon activation of the fire alarm therein. Occupants from the other residential unit should be able to evacuate if they wish to do so or if prompted by the Fire Service, however the other residential unit will not receive an automated evacuation signal.

3.2. Fire Detection

The residential unit should include a Grade D1 Category LD1 fire detection and alarm system designed, installed and maintained in accordance with BS 5839-6. These should include smoke detection in all rooms and all areas and heat detection in the kitchen.

The fire detection and alarm engineer should ensure the cause-and-effect is fit-for-purpose for all parts of the residential unit. On completion of commissioning, a certificate must be issued with the recommendations of the fire detection and fire alarm systems.

3.3. Automatic Fire Suppression

As the block does not include a floor in excess of 11m above the ground, automatic fire suppression does not represent a minimum requirement in accordance with ADB. Therefore, this fire strategy has been developed without relying on this provision.

3.4. Escape Signage

Escape signage should be designed and installed in accordance with BS ISO 3864-1, BS EN ISO 7010, and BS 5499-4. It is expected that escape signage should be provided to the communal staircase.

3.5. Emergency Lighting

Emergency lighting should be designed and installed in accordance with the recommendations of BS 5266-1 and BS EN 1838. It is expected that emergency lighting should be provided to the communal staircase.

3.6. Escape within the Duplex Flat

The duplex flat should be designed as a multi-storey flat with protected entrance hall / protected internal staircase as per Diagram 3.6 of ADB as extracted below.

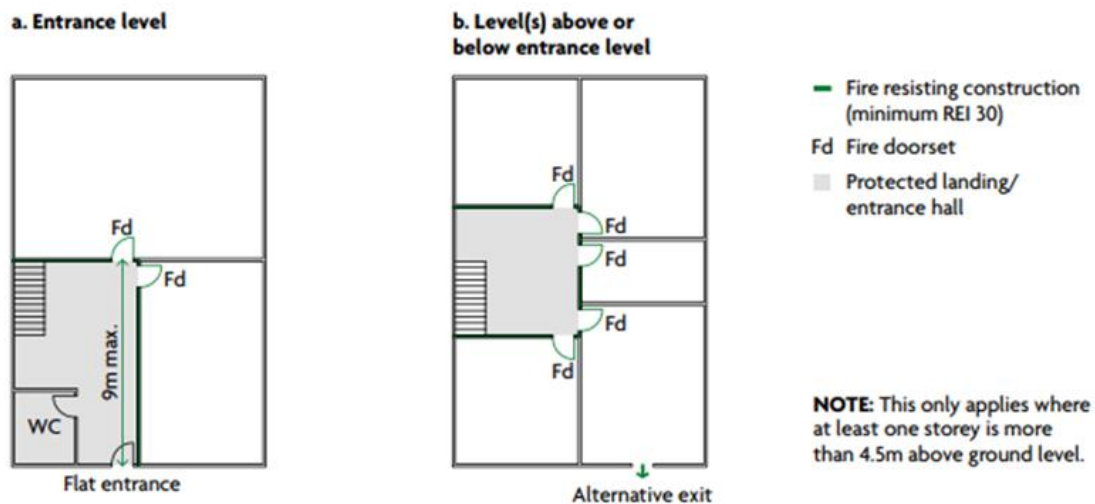
The protected entrance hall / protected internal staircase should achieve 30 minutes fire resistance, include FD30 fire doors and serve all habitable rooms.

The maximum travel distance in the protected entrance hallway should be 9m as measured from the furthest room up to the communal staircase door.

The maximum travel distance within any room should also be 9m, as measured from the furthest point, up to the protected entrance hall / protected internal staircase door. This also includes travel from the furthest point on the terrace up to the protected internal staircase door.

Bedroom 1 should include an emergency escape window in accordance with Section 3.9 serving the duplex flat as an alternate escape route considering the lack of smoke ventilation for the communal staircase (see Section 3.8).

Kitchen hobs or other similar high risk cooking appliances should not be located within 1.8m of the escape route from the living / kitchen areas (or any terrace / balcony served by these area). Special care should be employed when selecting the hob location to comply with this requirement.



3.7. Inner Rooms

Inner rooms are rooms accessed only via another room, called an access room. Bedrooms and living rooms are not permitted as inner rooms. The only rooms permitted to be inner rooms should be:

- A kitchen.
- A laundry or utility room.

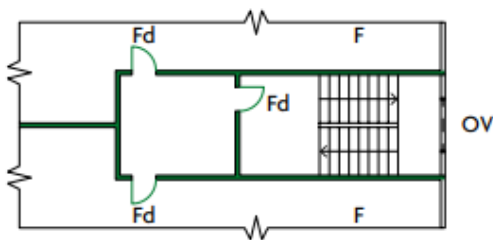
- A dressing room.
- A bathroom, WC or shower room.

3.8. Escape in Common Parts of the Block of Flats

The common stair core should follow the guidance of Section 3.28 of ADB and Diagram 3.9.b (as extracted below) for a small single stair building with unventilated common corridors. The following requirements should be adhered to in accordance with ADB recommendation:

- The building should not include a floor in excess of 11m above ground.
- The building should not include more than 3 storeys above ground.
- The staircase should not connect to ancillary areas.
- All flats should include protected entrance halls.
- A maximum of two flats per storey should be provided.
- The staircase should include smoke ventilation in accordance with Section 3.10 (i.e., 1.0m² AOV).

**b. Small single stair building
with no more than two flats per storey**



The door between stair and lobby should be free from security fastenings.

If the flats have protected entrance halls, the lobby between the common stair and flat entrance is not essential.

NOTES:

1. The arrangements shown also apply to the top storey.
2. If the travel distance across the lobby in diagram (a) exceeds 4.5m, Diagram 3.7 applies.
3. Where, in Diagram (b), the lobby between the common stair and the flat is omitted in small single stair buildings, an automatic opening vent with a geometric free area of at least 1m² is required at the top of the stair, which is operated on detection of smoke at any storey in the stair.
4. For further guidance on the fire rating of the fire doorsets from the corridor to the flat and/or stairway refer to Appendix C, Table C1.

It is noted that the existing building design does not include smoke ventilation to the staircase, with up to 11m single direction travel distance up to the door serving the duplex flat on the first floor, and up to 7m single direction travel distance up to the door serving the ground floor flat. However, this non-compliance is not made any less satisfactory by the proposed extension on the second floor as those areas do not impact on the communal staircase.

In order to provide a robust escape strategy for the duplex flat accessed on the first floor and in order to afford conservatism to the design overall, it is assumed that the existing condition included escape windows for the duplex flat. Escape windows should be provided on the first floor in Bedroom 1, which is less than 4.5m above the adjoining ground floor outside the building. This is considered risk proportional in accordance with Section 3.16 of ADB. Escape windows should be in accordance with Section 3.9.

3.9. Emergency Escape Windows

Emergency escape windows and external doors should comply with all of the following:

- Windows should have an unobstructed openable area that complies with all of the following:
 - A minimum area of 0.33m²;
 - A minimum height of 450mm;
 - A minimum width of 450mm;
 - The bottom of the openable area is a maximum of 1100mm above the floor.
- People escaping should be able to reach a place of ultimate safety (muster point) without being exposed to the fire or having to re-enter the building or pass within 1.8m of the building.
- Windows should be capable of remaining open without being held.

3.10. Smoke Ventilation

As discussed in Section 3.8, smoke ventilation protection has not been provided in the existing condition for the communal staircase. Therefore, alternate escape has been proposed via an escape window from Bedroom 1 of the duplex flat (see Section 3.8).

3.11. Travel Distance

The maximum travel distance in the protected entrance hallway should be 9m as measured from the furthest room up to the communal staircase door.

The maximum travel distance within any room should also be 9m, as measured from the furthest point, up to the protected entrance hall / protected internal staircase door. This also includes travel from the furthest point on the terrace up to the protected internal staircase door.

3.12. Provision of Refuges

There is generally no requirement for refuge locations for residential buildings, therefore the building is not proposed to include refuge areas. Additionally, Lift access is not provided for the first and second floors, therefore disabled occupants are not expected within the duplex flat. The design team should confirm how the building complies with The Equality Act.

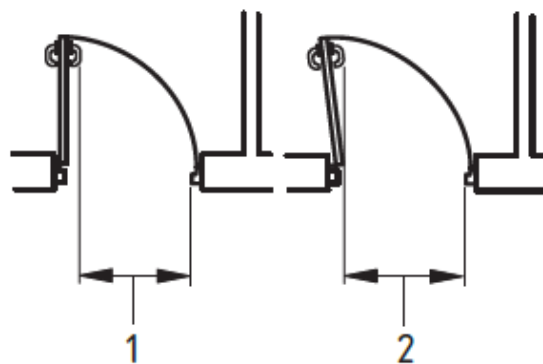
3.13. Provision of Muster Points

Suitable muster points must be identified once occupants leave the building. The route to the muster point shall be clear of the building, well defined, and if necessary, suitably guarded from possible traffic. The selection of the muster point should not adversely impact on Fire Service access and facilities.

3.14. Escape Doors

Escape doors should not be fitted with a lock, latch or bolt fastening. These should always be easily openable from the inside by occupants making their escape. Any security devices should release the door upon activation of the fire alarm.

The minimum clear exit width will be 750mm for all doors. The clear width is measured as extracted from ADB below.



Key

- 1 Effective clear width (door stop to projecting building hardware)
- 2 Effective clear width (door stop to door leaf)

3.15. Vertical Means of Escape

The staircase does not serve a floor in excess of 18m; therefore, it does not have to be designed as a firefighting core.

The common staircase should be enclosed in 60 minutes fire resisting construction (and FD30S fire doors) up to a final exit at ground floor level. The staircase should discharge directly to a final exit leading to a place of safety.

The internal protected staircase within the duplex flat should be enclosed in at least 30 minutes fire resisting construction.

Only fire resisting letter boxes achieving 30 minutes and constructed of materials achieving Class A2-s3, d2 or better are permitted in the main entrance lobby at ground floor level. Furniture or combustibles are not permitted.

3.16. Service Risers (if applicable)

Service risers should be enclosed in 60 minutes fire resisting construction (and FD30s fire doors), including adequate 60 minutes fire stopping in line with each floor. Service risers should only open into a common corridor.

Service risers should not be used for storage; therefore, the service / store should be only used for services and / or meters. These should be designed in accordance with BS 8313.

3.17. Escape Beyond Final Exits

Travel beyond final exits should not be adversely impacted upon by unprotected areas within the building façade. Therefore, one of the three options below should be employed:

- Escape is directly away from the building.
- Escape is possible in both directions along the building façade along the perimeter, with at least one escape route available in a fire scenario.
- The building façade is protected to 60 minutes fire resistance within 1,800mm of the escape route.

4. Requirement B2: Internal Fire Spread (Linings)

“To inhibit the spread of fire within the building, the internal linings shall adequately resist the spread of flame over their surfaces; and have, if ignited, either a rate of heat release or rate of fire growth, with is reasonable in the circumstances.” - Part B of Schedule 1 of the Building Regulations 2010.”

In this context, “internal linings” means the materials or products used in lining any partition, wall, ceiling, or other internal structure. The interior wall and ceiling surfaces in a building may have a significant influence on how quickly a fire may develop. It is particularly important that in circulation spaces, where the rapid spread of fire is most likely to prevent occupants from escaping, the surface linings are restricted by making provision for them to have low rates of heat release and surface spread of flame.

The materials used in construction, walls and internal linings of the walls and ceilings should be classed in accordance with the requirements of Table 4.1 in ADB as a minimum, and tested in accordance with the national classifications, BS 476-7 or under the European Classifications in accordance with BS EN 13501-1, as outlined in the extract below.

Location	Classification
Small rooms of maximum internal floor area of 4m ²	D-s3, d2
Garages (as part of a dwellinghouse) of maximum internal floor area of 40m ²	
Other rooms (including garages)	C-s3, d2
Circulation spaces within a dwelling	
Other circulation spaces (including the common areas of blocks of flats)	B-s3, d2 ⁽¹⁾

NOTE:

1. 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.

5. Requirement B3: Internal Fire Spread (Structure)

“The building shall be designed and constructed so that, in the event of a fire, its stability will be maintained for a reasonable period. 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. To inhibit the spread of fire within the building, it shall be sub-divided with fire-resisting construction to an extent appropriate to the size and intended use of the building. 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.” - Part B of Schedule 1 of the Building Regulations 2010”

5.1. General

The fire resistance of building components and constructions are classified in different fire resistance classes or combinations of those, which specify different performance criteria. These classes include:

- The ability to maintain load-bearing capacity during a fire (classification “R”).
- The ability to prevent the spread of fire and smoke directly by maintaining the integrity of the element (classification “E”).
- The ability to insulate against radiation across the element (classification “I”).

Normally the fire resistance classification is followed by a time limit in minutes (15, 30, 45, 60, 90, 120 etc.) which shows the time the performance criteria is fulfilled during a standardized fire test.

5.2. Structural Fire Resistance

The early failure of the load-bearing structural elements of the building during a fire represents a risk to:

- Occupants, some of whom may need to remain within the building during evacuation.
- Firefighters, who may be engaged on operations within the building during the fire; and,
- People in the vicinity of the building could be hurt by falling debris or building collapse.

This can be prevented by providing such load-bearing structural elements with a minimum standard of fire-resistance, in terms of resistance to collapse or failure of load bearing capacity when exposed to fire (classification “R”).

In accordance with ADB, the building should include 60-minute structural fire resistance considering the top occupied floor is less than 11m.

Any structural element that provides support to other fire rated elements should achieve at least the same fire rating as those elements they support. There is no requirement to provide structural fire protection to any structure solely supporting a roof, although any structure

supporting a roof top plant or escape route from a plantroom (unless solely used for maintenance access) should be provided with the appropriate period of fire resistance.

Load-bearing elements of structure should continue to the underside of the roof. In the currently proposed plans, some walls are indicated to be removed.

5.3. Minimum Fire Resistance Standards

Fire resistance periods are taken as per Table B3 and B4 of ADB. The period of fire resistance is based on the height and purpose group of the building. The fire resistance periods and classifications should be tested in accordance with the relevant parts of BS 476.

The overall compartmentation strategy is presented in Table 1. For fire doors, “30” refers to the period of fire resistance with respect to Integrity (E) only, and “S” refers to the ability to resist the passage of smoke by means of intumescent strips and smoke seals as necessary.

Table 1 - Compartmentation Strategy

Building Element	Minimum Fire Resistance (minutes)	Fire Doors
Elements of structure	60R	N/A
Compartment floors (all floors)	60REI	N/A
Protected shafts (communal staircase)	60REI	FD30S
Protected shafts (service risers)	60REI	FD30S
Fire resisting external walls / Party walls	60REI	N/A
Compartment walls (flats)	60REI	FD30S
Compartment walls (communal corridor)	60REI	FD30S
Protected entrance hall	30REI	FD30
Protected internal staircase	30REI	FD30
Cavity Barriers	-	30

5.4. Fire Compartmentation

For the block of flats, all floors should be constructed as compartment floors achieving 60 minutes fire resistance. Any shaft penetrating compartment floors should be constructed as a protected shaft achieving 60 minutes fire resistance (i.e., communal staircase, service risers, etc.).

Each flat should be a standalone, independent fire compartment achieving 60 minutes fire resistance.

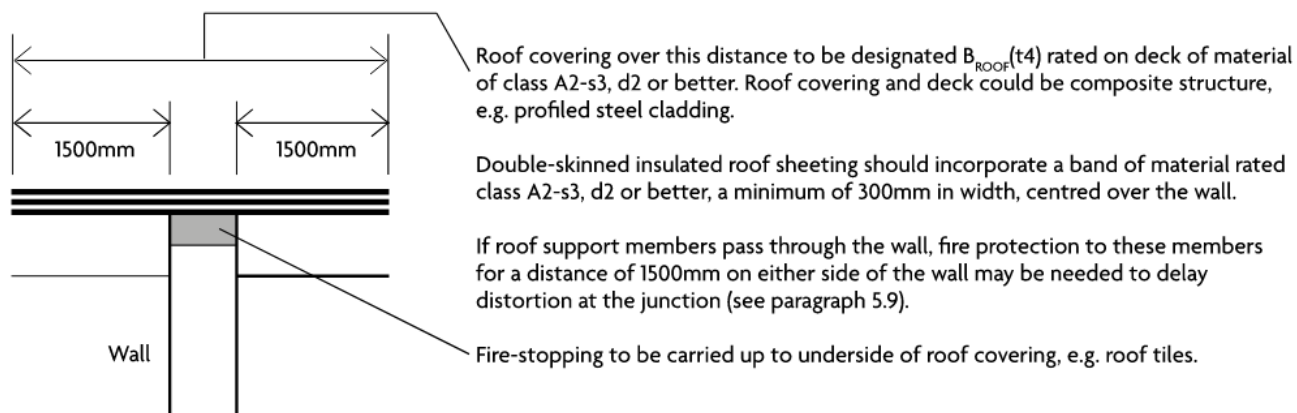
The protected entrance hall / protected internal staircase in the duplex flat should include 30 minutes fire resistance as separation from any other area within the same flat.

Any external wall which falls within 1000mm of a relevant boundary should be constructed as a party wall achieving 60 minutes fire resistance from both sides. This will apply towards the East and West where the building adjoins other properties.

Fire resisting construction should be continued up to the underside of the structural floor above (or roof) and below the floor served (i.e., through ceiling or floor voids).

The junction of a compartment wall with a roof should be in accordance with Diagram 5.2 of ADB (as extracted below).

a. ANY BUILDING OR COMPARTMENT



5.5. Fire Doors

Doors in fire-separating elements are some of the most important features of a fire protection strategy. They protect escape routes from the effects of fire so that occupants can reach a final exit; and they protect occupants, fire-fighters, and the contents and/or structure of a building by limiting the spread of fire.

The fire door ratings should be as per Table C1 of ADB, when tested in accordance with BS 476-22 in accordance Table 1 with above. Fire doors should be self-closing unless they give access to cupboards or service risers, in which case they should be kept locked.

Fire doors should also be marked with the appropriate fire safety signage complying to BS 5499-5. Fire doors to cupboards and service ducts should be marked on the outside, all other fire doors marked on both sides (except within flats).

5.6. Fire Stopping

In order to ensure that fire compartmentation is efficient, all junctions with fire resisting construction and fire resisting elements as well as penetrations for services should include fire stopping which should be fit-for-purpose. The rating of fire stopping should achieve as a minimum the rating of the fire resisting enclosure in which the penetration is proposed.

5.7. Fire Resisting Dampers / Ductwork

Where a penetration in fire resisting construction is proposed for ventilation systems, this should be provided with a fire / smoke damper or fire resisting ductwork that is fit-for-purpose (and connected to the fire alarm system). The rating of the fire / smoke damper or ductwork should achieve as a minimum the rating of the fire resisting enclosure in which the penetration is proposed. Fire / smoke dampers are not permitted in common escape staircases, and fire resisting ductwork should be employed instead.

5.8. Concealed Spaces

In order to ensure that fire does not spread within the building via cavities, cavity barriers should be provided in the following locations and in accordance with Diagram 8.1 of ADB:

- At the junction of an external cavity wall with a party wall, compartment floor, compartment wall, or other fire resisting construction.
- At the junction of an internal cavity wall with a protected entrance hall, protected internal staircase or other fire resisting construction.
- Around all openings (i.e., windows and doors) within an external cavity wall.
- Around the edges of cavities.
- To limit the size of extended cavities to 20m where materials in the cavity achieve Class C-s3, d2 linings.
- To limit the size of extended cavities to 10m where materials in the cavity do not achieve Class C-s3, d2 linings.

6. Requirement B4: External Fire Spread

“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; 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.” - Part B of Schedule 1 of the Building Regulations 2010.”

6.1. External Wall Materials

The building is assumed to not be a ‘relevant building’ in accordance with Regulation 7(4) as it is assumed to not include a floor in excess of 18m above ground. However, in order to employ a robust way to indicate compliance with the functional requirement B4 (external fire spread), to reduce the approval’s risk overall and to reduce the sale or insurance risk with respect to the property, it is proposed that new external walls comply with Regulation 7(2) for the building.

This is also in accordance with the amendment to ADB dated June 2022, reducing the top floor height threshold from 18m to 11m for external wall materials to achieve Class A2-s1, d0 or better.

Therefore, materials forming part of new or refurbished external walls (including specified attachments and balconies) should achieve Class A2-s1, d0 or A1 in accordance with BS EN 13501-1. Attention is drawn to the exceptions to this requirement, as listed in Regulation 7(3). For clarity, even if exempt, membranes should still achieve Class B-s3, d0 or better.

Additionally, Regulation 7(1A) has been introduced to prohibit the use of relevant metal composite materials forming part of the external wall systems or specified attachments of the building. Relevant metal composite materials are defined as any panel or sheet, having a thickness of no more than 10mm which is composed of a number of layers two or more of which are made of metal, alloy or metal compound and one or more of which is a substantial layer made of a material having a gross calorific value of more than 35MJ/kg when tested in accordance with BS EN ISO 1716. A substantial layer is defined as a layer which is at least 1mm thick or has a mass per unit area of at least 1kg/m.

6.2. Cavity Barriers in External Walls

Cavity barrier requirements are presented in Section 6.2. Cavity barriers should be provided in the following locations of external walls:

- At the junction of an external cavity wall with a party wall, compartment floor, compartment wall or other fire resisting construction.
- Around all openings (i.e., windows and doors) within an external cavity wall.
- Around the edges of cavities.
- To limit the size of extended cavities to 20m where materials in the cavity achieve Class C-s3, d2 linings.

- To limit the size of extended cavities to 10m where materials in the cavity do not achieve Class C-s3, d2 linings.

6.3. Roof Coverings

A roof is any external wall with a slope of more than 70° from the horizontal.

Roof coverings are proposed to achieve a performance of $B_{ROOF}(t_4)$, as the relevant boundaries are less than 6m from the building on the East and West elevations and as good practice.

The roof should include a deck of material of limited combustibility (Class A2-s3, d2 or better, see Section 4).

6.4. Separation Distances

Any external wall which falls within 1000mm of a relevant boundary should be constructed as a party wall achieving 60 minutes fire resistance from both sides. This will apply towards the East and West where the building adjoins other properties.

Separation distance calculations have been undertaken in accordance with the tabulated solutions of BR187. The relevant boundaries have been selected as presented below, noting the elevations in the figure below:

- Towards North, the middle of the adjoining public road.
- Towards South, East and West, the actual site boundaries.

BR 187 indicates that for areas with reduced fire load densities ($<25\text{kg/m}^2$), a radiation intensity of 84 kW/m^2 should be used (i.e., residential).

The overall calculations are presented in Table 2, with elevations presented in the figure below. The design team should confirm the dimensions employed are accurate and that the maximum unprotected areas are achieved.

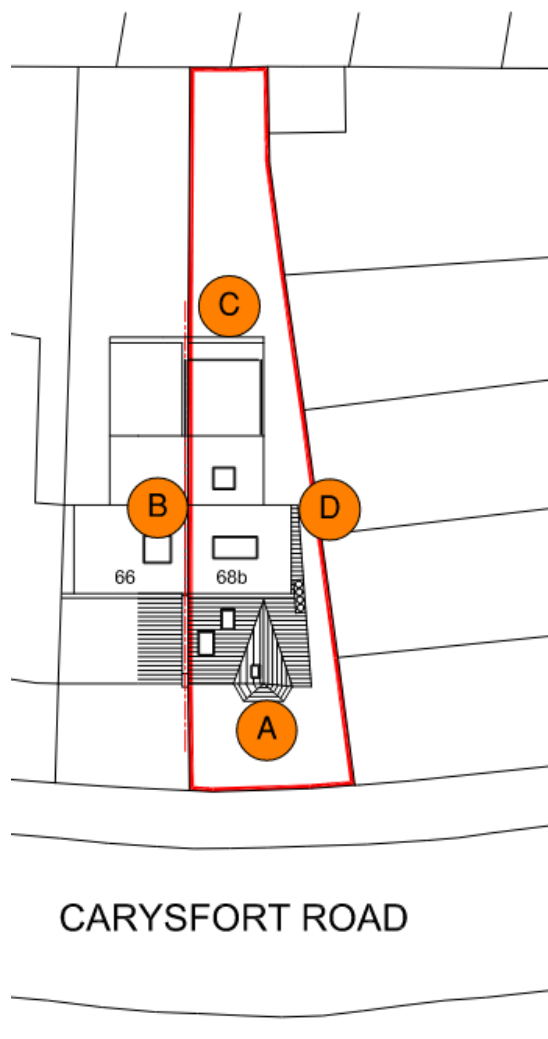


Table 2 - Separation Distance Calculations for the Block

Elevation	Radiator Height (m)	Radiator Width (m)	Radiation Intensity (kW/m ²)	Assumed Boundary Distance (m)	Maximum Unprotected % Elevation Allowed
A	6.0	6.0	84	>4.0	100%
B	6.0	15.0	84	<1.0	0% (Party wall)
C	6.0	6.0	84	>4.0	100%
D	6.0	18.0	84	<1.0	0% (Party wall)

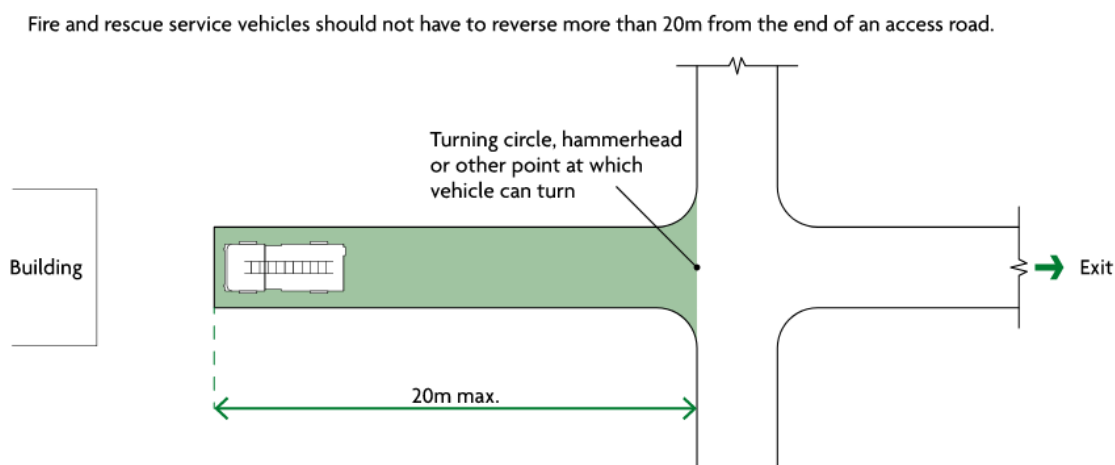
7. Requirement B5: Access and Facilities for Fire and Rescue Service

“The building shall be designed and constructed so as to provide reasonable facilities to assist fire fighters in the protection of life; Reasonable provision shall be made within the site of the building to enable fire appliances to gain access to the building.” - Part B of Schedule 1 of the Building Regulations 2010.”

7.1. Vehicle Access

Vehicle access to the exterior of the building is needed to enable a pumping appliance to supply water and equipment for firefighting and rescue activities.

Pump appliance vehicle access to the building should be via Carysfort Road. A pump appliance should not have to reverse more than 20m, without a suitable turning point, in accordance with Diagram 13.1 of ADB as extracted below.



All areas in the duplex flat are within 45m along a route suitable for laying hose for the pumping appliance. Therefore, a dry rising main is not required.

The size and mass of fire appliances is not standardized. The dimensions of access routes and hard standings vary according to the fire appliances that are used in a particular fire authority area.

The typical access route specifications for a pumping appliance (as detailed in the extract below) is taken from Guidance Note 29 published by the London Fire Brigade. The vehicle access roads servicing the building should satisfy these requirements.

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 (tonnes)
Pump	3.7	3.1	16.8	19.2	3.7	14.0

7.2. Access into the Building

The door providing access into the building should achieve a minimum width of 750mm (unless otherwise specified in this report) in support of firefighting operations.

Any security provisions providing access to the building should enable the responding fire service to conduct their operations effectively.

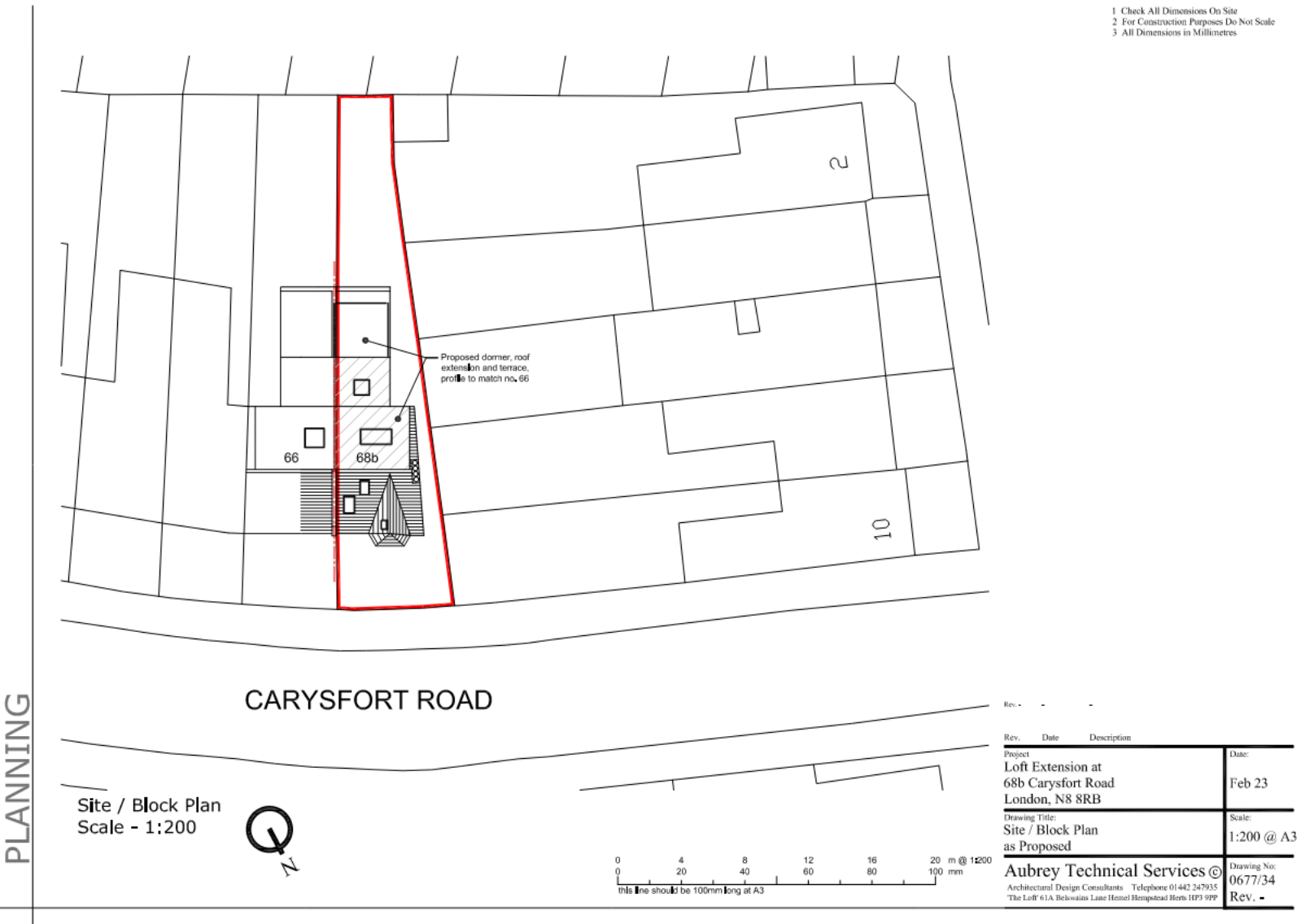
7.3. Water Supplies

The building should include suitable operational hydrants within 90m of the building entrance. The design team should survey the water supplies in support of firefighting operations and ensure these are adequate.

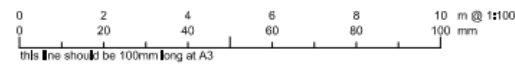
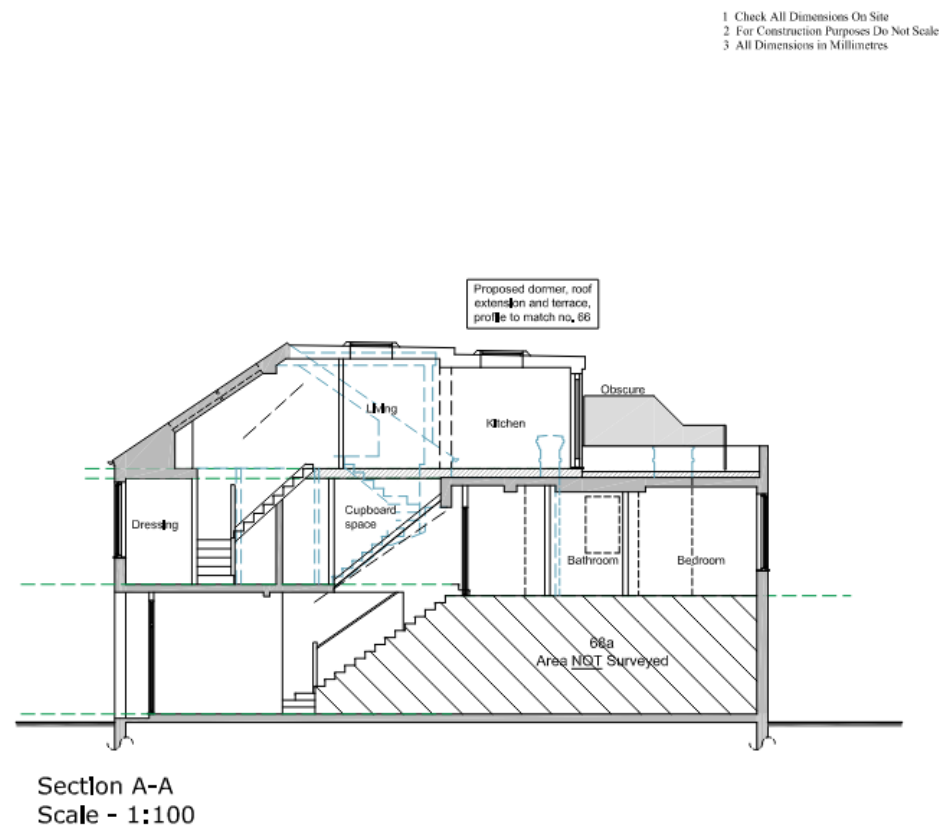
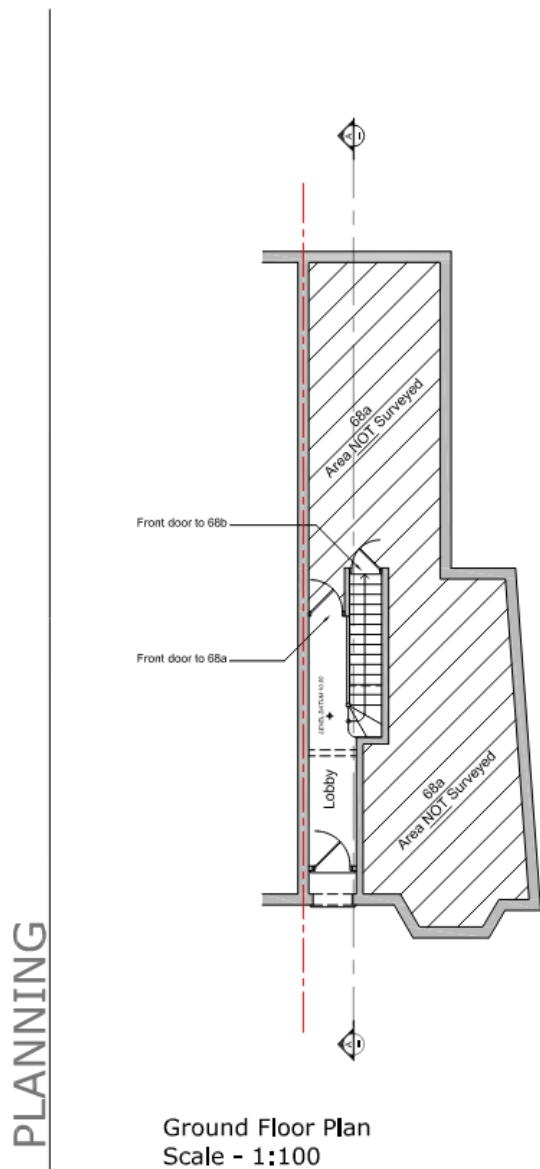
If not appropriate, these should be made good, or a new private hydrant should be provided. Water supplies should be in accordance with BS 9990.

8. Appendix A – Drawing Plans

Site location plan



Existing Ground Floor



Rev.	Date	Description	Date
Project			
Loft Extension at			Feb 23
68b Carysfort Road			
London, N8 8RB			
Drawing Title:			Scale:
Ground Floor Plan and Section A-A			1:100 @ A3
as Proposed			
Aubrey Technical Services ©		Drawing No:	
Architectural Design Consultants Telephone 01442 247935		0677/33	
The Loft 61A Belknap Lane Heston Heston HP3 9PP		Rev.	

Proposed First and Second Floor and Roof Plan

- 1 Check All Dimensions On Site
- 2 For Construction Purposes Do Not Scale
- 3 All Dimensions in Millimetres

