Central Somers Town CIP

Adam Khan Architects

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Plot 1 Community Facilities - Fire Safety Strategy

Revision D1

DECEMBER 2015

Somers Town Community Investment Programme

Camden

Revision History

Issue No :	D1	Issue Date :	20/10/15
Reason for Revision:	First draft issue for comment.		

Prepared by:	Cate Cooney Senior Consultant (For and on behalf of Exova Warringtonfire)
Reviewed by:	Andrew Martyn Principal Consultant (For and on behalf of Exova Warringtonfire)

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Validity

This report is formulated on the basis of the 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 Exova Warringtonfire.

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1 Introduction

The redevelopment of the Central Somers Town area of Camden, London, will provide new housing, community facilities and a new school for the area. The redevelopment has been divided into specific 'lots', each containing a specific brief. This fire safety strategy refers to the buildings on the site which are allocated in Lot 3, as detailed below.

Lot 3 comprises of:

- A residential tower over five stories with independent access at ground floor.
- A nursery
- A community hall
- An external multi use games area (MUGA), located above the community hall.
- External play area.

The masterplan for the development shows Lot 3 to the North of Polygon Road, shown indicatively on the map extract below (Googlemaps).

Each area will form its own descrete occupancy and therefore each occupancy will be treated separately.

This report is prepared in accordance with information provided in the drawings provided by Adam Khan Architects on behalf of the London Borough of Camden, as detailed in table 1 below.

Drawing Title	Drawing Number	Revision
Proposed Site Plan 1:1000	057/3102	
Ground Floor Plan	057/3110	H
GFL Reflected Ceiling Plan	057/3115	C
Mezzanine Plan	057/3114	E
First Second & Third Floors Plan	057/3111	E
Third & Fourth Floors Plan	057/3112	A
Fourth & Fifth Floors Plan	057/3116	A
Roof Plan	057/3113	C
South Elevation	057/3120	E
North Elevation	057/3121	C
East Elevation	057/3122	C
West Elevation	057/3123	D
Section A	057/3160	C
Section B	057/3161	C
Section C	057/3162	C
Section D	057/3163	C
Section E	057/3164	A
Section F	057/3165	A
Site Section A	057/3166	

Table 1 – Drawings provided

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2 Statutory Legislation

2.1 The Building Regulations

With few exceptions, all buildings built in England and Wales must comply with the England and Wales Building Regulations 2010. Part B of Schedule 1 of the regulations sets out the 'requirements' for achieving a reasonable level of fire safety. These 'requirements' address the following:

- 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.

The principle aim of the Building Regulations is to ensure the health and safety of people in and around a building.

The 'requirements' set out the broad objectives or functions that the individual aspects of the building design and construction must set out to achieve. They are therefore often referred to as 'functional requirements' and are expressed in terms of what is 'reasonable', 'adequate', or 'appropriate'.

A number of guidance documents have been produced to help designers achieve the functional requirements given above.

2.2 Approved Document B – Fire Safety

The department of Communities and Local Government (CLG) has produced a number of guidance documents to assist designers in meeting the relevant requirements of the Building Regulations; these 'Approved Documents' provide guidance on different aspects of the Regulations. Approved Document B – Fire safety (ADB) provides general design guidance on ways in which the functional fire safety requirements can be satisfied.

The ADB recognises that an alternative 'fire-engineered' approach may be the only satisfactory way of achieving compliance with the Building Regulations. This 'fire-engineered' approach can be applied to the whole building design, encompassing all relevant requirements or may be applied to a specific aspect of the building design which otherwise follows the provisions in the ADB.

The Building Regulations 2000 require reasonable standards of health and safety for persons in or about the building to be provided.

However, as with many "deemed to satisfy" documents, the ADB is general in its approach and cannot contain sufficient detail for the multiplicity of building designs and varieties of building fire loads and occupancies encountered in practice.

The recommendations presented in the ADB provide guidance on how to satisfy the functional requirements of the Building Regulations. However, there is no obligation to adopt any particular solution contained in the document. The document recognises this and accepts that if the requirement can be demonstrated to have been satisfied by alternative solutions, then this is equally acceptable.

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2.3 The Regulatory Reform (Fire Safety) Order

The Regulatory Reform (Fire Safety) Order 2005 was approved by Parliament on 7 June 2005 and came into force on the 1 October 2006. With its introduction, the Workplace Regulations and the Fire Precautions Act 1971 ceased to have effect. The RRO operates in a similar manner to the Workplace Regulations in that it is still necessary to carry out a suitable and sufficient risk assessment of the risks to which relevant persons are exposed for the purpose of identifying the general fire precautions needed to comply with the requirements and prohibitions imposed by or under this order.

The Fire Safety Order will apply in England and Wales (Northern Ireland and Scotland will have their own laws). It covers “general fire precautions” and other fire safety duties which are needed to protect “relevant persons” in case of fire in and around most “premises”. The Order requires fire precautions to be put in place “where necessary” and to the extent that it is reasonable and practicable in the circumstances of the case.

Responsibility for complying with the Fire Safety Order will rest with the “responsible person” in a workplace. This is the employer and any other person who may have control of any part of the premises, e.g. the occupier or owner. In all other premises the person or people in control of the premises will be responsible. If there is more than one responsible person in any type of premises, all must take all reasonable steps to work with each other.

The responsible person will have to carry out a fire risk assessment which must focus on the safety in case of fire of all ‘relevant persons’. It should pay particular attention to those at special risk, such as the disabled and those with special needs, and must include consideration of any dangerous substance likely to be on the premises. The fire risk assessment will help identify risks that can be removed or reduced and to decide the nature and extent of the general fire precautions that need to be taken to protect people against the fire risks that remain.

If five or more people are employed, a record of the significant findings of the assessment must be kept.

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3 Purpose Group

Many of the provisions within the ADB relate to the use of the building. The use classifications are termed purpose groups and represent various levels of hazard. A building can consist of more than one purpose group provided that each is separated from the other by fire resisting construction.

The following purpose groups are within the site.

Residential - Purpose Group 1a

Assembly - Purpose Group 5

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4 B1 Means of Warning and Escape

4.1 Requirement

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

4.2 Residential Tower Means Of Warning

4.2.1 Individual Flats

All apartments, maisonettes and townhouses will be provided with an automatic detection and warning system. In accordance with ADB, the minimum standard fire alarm should comply with BS 5839*: Fire detection and fire alarm systems for buildings, Part 6: Code of practice for the design and installation of fire detection and alarm systems in dwellings* to at least an LD3 Grade D system.

All flats should be provided with a minimum of an LD3 smoke detection and alarm system to BS 5839-6.

4.2.2 Common Areas of the Flats

The design of the building is of a small single stair building having a ground floor entrance, independent of ancillary areas and separated from the nursery at ground floor below the residential floors. There are five floors of residential accommodation above ground.

An audible fire alarm is not required to common areas of residential buildings. Should there be an incident in the common areas, the 60 minute fire resisting compartment enclosing each flat unit will provide an area of relative safety, and the fabric of the building has been designed so that there is limited risk of fire spread. In accordance with BS 5588 pt 1, the risk of fire starting in corridors or stairways intended for use only as means of escape can be regarded as negligible as long as they are kept clear of obstructions and are not used for storage. Control of this would be a duty of the management under the Regulatory Reform (Fire Safety) Order 2005.

Evacuation of flats beyond the dwelling of fire origin would be carried out under the control of the attending fire service if necessary.

4.2.3 Activation of other fire systems

Operation of the automatic opening vents to the stair head and operation of vents within the lobbies of the residential floors will be signalled by the presence of point detection within the area of operation.

On activation of a single detector the AOV in the lobby should open to the smoke shaft / open the AOV in the roof plane.

The automatic ventilation in the stair and at the head of the shaft should open at the same time as the AOV on the fire floor into the shaft. The detection system should not be audible and should not automatically reset. The system should only be capable of being reset manually.

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4.3 Residential Means Of Escape

4.3.1 Apartments

The recommendations in Approved Document B support an evacuation strategy which is based upon the following assumptions:

- The fire is generally within a dwelling;
- There is no reliance on rescue for evacuation, other than via the escape corridors;
- Due to the high degree of compartmentation and therefore a low probability of fire spread beyond the dwelling of fire origin, simultaneous evacuation of the building is unlikely to be considered necessary; and,
- Although fires may occur in the common parts of the building, the materials and construction used there should prevent the fabric from being involved beyond the immediate vicinity.

It is recognised, however, that the occupants of neighbouring dwellings may feel a need to leave and will, in some circumstances, seek to find their way out of the building. For this reason, it is necessary to make certain provisions for securing the means of escape both within individual apartments and within the common circulation areas as a whole.

The requirements for residential property are sub divided into the common areas and flat internal layouts.

4.3.2 Internal Planning of Flats

The internal layouts of the flats are based around an internal corridor. This corridor need only be enclosed in materials affording 30 minutes fire resistance where the travel distances are such that the most remote part of the flat to the entrance door is more than 9m.

Should the travel distance in the protected entrance hall exceed 9m, an enhanced fire alarm standard to LD1 should be installed. Doors leading into a protected entrance hall should be rated to a minimum FD 20 standard but need not be self-closing. The entrance door to the flat from the common area should be FD 30S rated and requires a self-closing device.

4.3.3 Common Areas of the Residential Building.

The provisions for the common areas are detailed below. As a single stair building, separation between the stair and the residential floors is provided by the inclusion of a lobby. From these lobbies, all accommodation is accessed.

The maximum recommended distance allowed for travel along a corridor / lobby from the most remote flat entrance door to the door into the stair is 7.5m, where a single direction of travel is present. This is not exceeded in this residential block.

Each lobby is required to be ventilated and this is to be via a dedicated naturally ventilated smoke shaft. As described in Approved Document B, the following criteria should be met.

1. The shaft should have a minimum cross sectional area of 1.5m² (minimum dimension 0.85m in any direction), opening at roof level at least 0.5m above any surrounding structures within a horizontal distance of 2.0m. The shaft should extend at least 2.5m above the ceiling of the highest storey served by the shaft.

2. The minimum free area of the vent from the corridor / lobby into the shaft and at the opening at the head of the shaft and at all internal locations within the shaft should be at least 1.0m²

3. The smoke shaft should be constructed from non-combustible material and all vents should have a fire /smoke resistance performance at least that of an $E30S_a$ fire door. The shaft should be vertical from base to head, with no more than 4m at an inclined angle (maximum 30º); and

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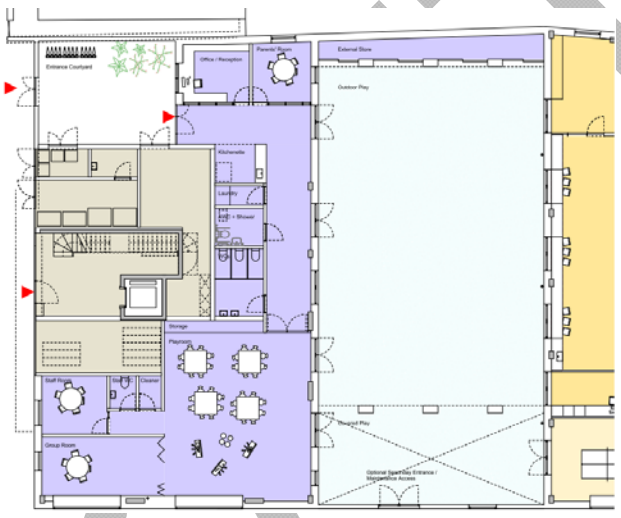
4. On detection of smoke in the common corridor / lobby, the vent(s) on the fire floor, the vent at the top of the smoke shaft and the vent to the stair should all open simultaneously. The vents from the corridors / lobbies on all other storeys should remain closed.

In this building, due to a restricted height between the ceiling of the uppermost floor and the roof, the smoke shaft will serve all floors except the top residential floor, to achieve the 2.5m clearance. An additional AOV, measuring 1.5m² will be provided within the lobby / corridor of the top storey. This is also to be linked to the fire alarm to open simultaneously with the vent to the stair.

4.4 Means Of Escape – Non Residential

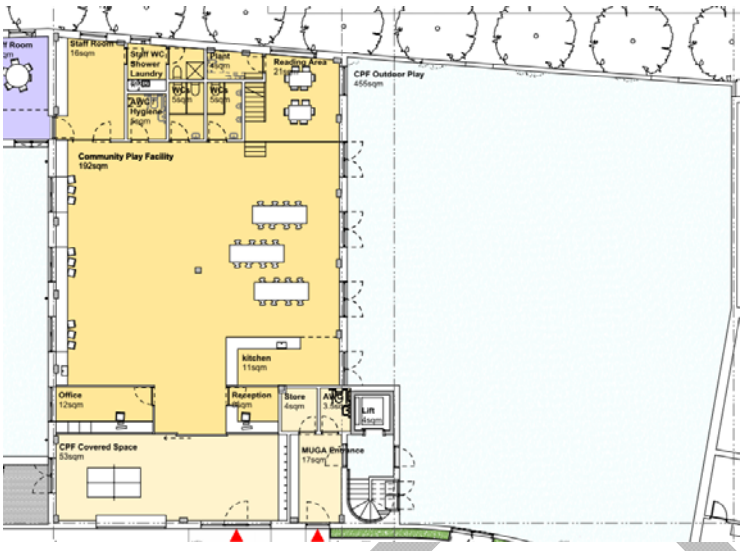
At ground floor level, both below and adjacent to the housing block, are the nursery and community facilities. An extract to the nursery is shown below.



The final exits to the nursery are via the external elevation leading to the entrance courtyard, and also the external elevation leading to the outdoor play area and maintenance entrance. All areas of the nursery are within 18m of a final exit. The gates into the outdoor play area open inwards. The occupancy of the building is expected to be less than 60 persons, therefore this is acceptable under guidance. The gates must be capable of being opened from the escape side without the use of a key at all material times.

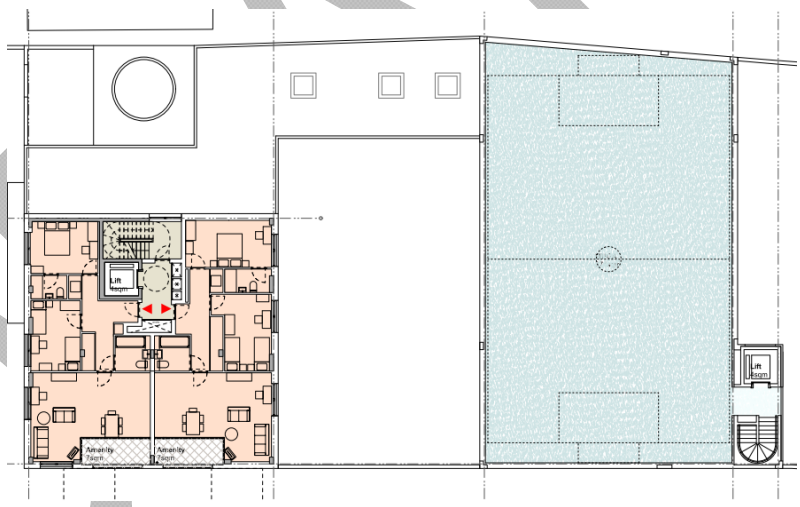
To the East of the nursery is the community hall, with the MUGA above. The extract below shows the layout of the community hall.

Above the cellular accommodation North of the community play facility is a small mezzanine level, accessed by the stairs, visible to the left hand side of the reading area in the above ground floor extract. The travel distance to the base of the stair, from which there is a choice of routes is available, is 17m, with a further 5.5m to a final exit. As the route is within the recommended travel distances of Approved Document B (ADB) and the building shall be fitted with a fire alarm system to an L2 standard, the presence of the mezzanine floor with an accommodation stair is no more onerous than an inner room condition and is considered to be acceptable.



Final exits are available via the CPF covered space and via the exit doors to the external elevation onto the CPF outdoor play area. All areas are within either 18m in a single direction of escape, or 45m where more than one direction of escape is available. The gates from the outdoor play areas must be capable of being opened from the escape side without the use of a key at all material times they are required.

On the roof of the community play facility (CPF), at a height of 4.95m, is the MUGA. This is accessed via a single stair adjacent to the CPF entrance. The extract below illustrates the layout at roof level.



There is also an intermediate level off the external stair, at c. 2.5m ab.g.l. This level contains two small changing rooms. The stair to the MUGA is open to the external environment and therefore it is proposed that the changing rooms are separated from the stair with 60 minute fire rated construction and FD30s doors to protect the escape route from the MUGA.

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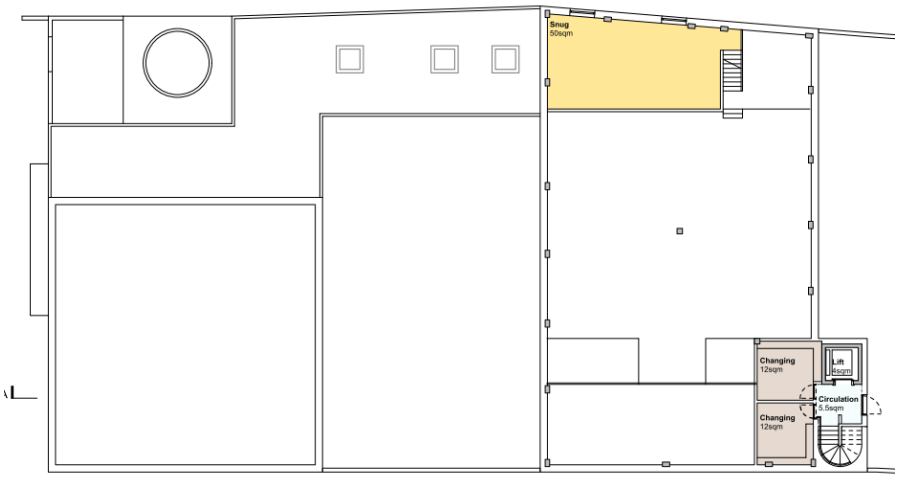

The maximum travel distance to the external stair is 25.5m in a single direction. As the MUGA is on the roof of the CPF and in external air, the travel distance is considered to be acceptable.

As there are lifting facilities to the MUGA, arrangements for the evacuation of disabled persons must be in place. The management policies and evacuation procedures must ensure that the evacuation of persons with disabilities using the MUGA are appropriately covered.

As the MUGA is in the open air, the whole of the roof area can be considered to be a place of relative safety and therefore a specific area within the area of the stair is not necessary. However, it should be ensured that the location of the refuge does not reduce the width of the escape route.

An emergency voice communication (EVC) system should be provided so that the occupants of the MUGA are able to alert other people that they are in need of assistance and for them to be reassured that assistance will be forthcoming. The system should comply with BS 5839: Part 9[(12)] and consist of Type B outstations which communicate with a master station. The master station should be located adjacent to the fire alarm panel, which will be most appropriately located in the CPF. It may also be acceptable for wireless technology to be used for the EVC system. If the MUGA is to be used out of CPF hours, alternative arrangements will be required to ensure that assistance for escape for persons unable to use the stair will always be available. Appropriate evacuation aids must also be provided.

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5 B2 Internal Fire Spread (Linings)

5.1 Requirement

"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, a rate of heat release which is reasonable in the circumstances.

In this paragraph "internal linings" mean material lining any partition, wall, ceiling or other internal structure."

The interior wall and ceiling surfaces in a building can have a significant influence on how fast a fire may develop. It is particularly important that, in circulation spaces including staircases, where the rapid spread of fire is most likely to prevent occupants from escaping, surface linings are restricted by making provision for them to have low rates of heat release and surface spread of flame.

The wall and/or ceiling linings will satisfy the following classifications given in the ADB, when tested under either the National Classifications, in accordance with BS 476: Part 7 or under the European classifications in accordance with BS EN 13501: Part 1

Location	**National Classification**	**European Classification**
Small rooms of area not more than $30m^2$ in non-residential accommodation	3	D-s3, d2
Other rooms	1	C-s3, d2
Circulation spaces	0	B-s3, d2

Table1: Classification of Surface Linings

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6 B3 Internal Fire Spread (Structure)

6.1 Requirement B3 (1) Load-bearing Elements

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

The period of fire resistance required is linked to the purpose group for the building taking into account the height of the top floor, depth of any basement and whether the building is sprinklered or not.

Where any element supports another the supporting element should possess at least the resistance of the other.

For the areas of the residential building where the height to the top habitable storey is less than 18m, the fire resistance is required to be 60 minutes.

For the areas of the non-residential buildings, where the height to the top habitable storey is less than 18m, the fire resistance is also required to be 60 minutes. This includes the structure supporting the MUGA, as the roof is being used as a floor level.

The following are excluded from the definition of an element of structure:

a) A structure that only supports a roof, unless:

i. it performs the function of a floor or as a means of escape;

ii. the structure is essential for the stability of an external wall which needs to have fire resistance;

b) the lowest floor of a building;

c) a platform floor; and

d) a loading gallery, fly gallery, stage grid, lighting bridge, or any gallery provided for similar purposes or for maintenance and repair.

If the single storey structure of the nursery also forms an element of structure for the residential block above, it should also be protected with 60 minutes fire resistance. Other areas where only a roof is supported does not require fire protection to the structure.

6.1.1 Residential Compartmentation

Residential buildings following a 'remain in place' philosophy for evacuation and as such have a high degree of compartmentation. Every floor in residential buildings are required to be to a compartment floor standard, equal to the resistance of the structural frame. In this building the standard for integrity and insulation ratings, is 60 minutes.

The walls between the flats and the common areas, between flats with adjacent flats and between flats any other part of the building are similarly required to be to a compartment standard as above for 60 minutes.

The separation of the building with any other adjacent building should also be by compartment standard walls / floors having a fire resistance of 60 minutes.

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6.1.2 Non - Residential Compartmentation

In buildings categorised 'Assembly' compartment sizes for single storey buildings are unlimited. There is therefore no requirement to compartment the nursery or CPF areas in terms of area. It is understood however, that the buildings will be separately managed, albeit under the general management of the London Borough of Camden.

To provide flexibility in the management of the buildings, and to provide a basic level of property protection, it is recommended that the community play facility and the nursery are compartmented from each other along their shared party walls.

The floor between the nursery and residential areas above is required to be to a 60 minute fire resistant standard.

The separation of the building with any other adjacent building should also be by compartment standard walls / floors having a fire resistance of 60 minutes.

6.1.3 Ancillary Areas.

Risers / cupboards

Riser / service cupboards are not located within the stair enclosure, however they can be located within the common corridors and stair lobbies, where they are required to be enclosed in fire resisting construction.

The risers are to be constructed as protected shafts with a minimum of 60 minutes fire resistance and shall be fitted with FD30 doors.

Places of special Fire Hazard

A place of special fire hazard is defined in Appendix E of ADB as:

'Oil filled transformer and switch gear rooms, boiler rooms, storage space for fuel or other highly flammable substances and rooms housing a fixed internal combustion engine'.

In this development, the areas which need to meet this requirement are the plant rooms. Places of special fire hazard require a minimum of 30 minutes fire resistance from adjacent areas.

Refuse Areas

Refuse areas should not be accessed from escape routes unless lobbied with 0.2m² of permanent ventilation and are not connected to a single stair. Ideally refuse stores should be accessed from external air. The enclosure of refuse rooms are required to met a minimum of 30 minutes separation from adjacent areas.

6.1.4 Protected Shafts

Shafts containing stairs and lifts, smoke shafts etc. need to be protected in their entirety if they pass through compartment floors or walls. Table A2 indicates this should be to a 60 minute, as per the heights referred to above for elements of structure.

Any doors into protected shafts should normally be FD30 self-closing fire doors with smoke seals. Lift doors in a protected shaft need not have smoke seals.

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6.1.5 Fire Stopping and Spread of Fire within Concealed Spaces

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

There are limits to the extent to which any cavities can exist, for example between walls and cladding and between ceilings and roofs.

Location of cavity	**Class of surface exposed in cavity**		**Maximum dimension in any direction in metres**
	National Class Rating	European Class	
Between a roof and a ceiling	Any	Any	20m
Any other cavity	Class O	Class A1 or Class A2-s3, d2 or Class B-s3, d2 or Class C-s3, d2	20m
	Not Class O or 1	Non of above	10m

Table 2: Classification of linings

Penetrations through fire resisting building fabric should be appropriately fire stopped to the same standard as the element through which it passes.

Openings for pipes and services shall be fire stopped in accordance with Section 10 of the ADB. There are three options available for fire stopping openings for pipes: proprietary seals, restricted diameters on pipes and sleeving.

6.1.6 Proprietary seals

This option applies to pipes of any diameter and involves providing a proprietary seal which has been shown by test to maintain the fire resistance of the wall, floor or barrier.

6.1.7 Pipes with a restricted diameter

Fire stopping may be used around pipes, provided that the internal diameter does not exceed the relevant dimension given in Table 14 of the ADB.

6.1.8 Sleeving

Pipes made from lead, aluminium, aluminium alloy, fibre cement or uPVC with a maximum nominal internal diameter of 160mm may be used with a sleeving of non-combustible pipe. The sleeving should cover the pipe for a distance not less than 1000mm on either side of the structure through which the pipe passes.

All joints between fire separating elements should be fire stopped. All openings for pipes, ducts, conduits or cables to pass through any part of a fire separating element should be kept as small as possible and be fire stopped. The number of such openings should be kept to a minimum.

To prevent displacement, materials used for fire-stopping should be reinforced with materials of limited combustibility where the unsupported span exceeds 100mm and in any other case where non-rigid materials are used.

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Proprietary fire-stopping and sealing systems may be used in addition to cement mortar, gypsum based plaster, cement or gypsum based vermiculite/perlite mixes, glass fibre and intumescent mastics.

6.1.9 Concealed Spaces (Cavities)

Concealed spaces or cavities in the construction of a building provide a ready route for smoke and flame spread, notably where there are voids above other spaces in a building. As the spread of fire is concealed, it presents a greater danger than would a more obvious weakness in the fabric of the building. In order to restrict the unseen spread of fire, concealed spaces shall be stopped with cavity barriers in the following locations:

1. At the junction between an external cavity wall and a compartment wall that separates buildings; and at the top of such an external cavity.

2. At the junction between an external cavity wall and every compartment floor and compartment wall.

3. At the junction between a cavity wall and every compartment floor, compartment wall, or other wall or door assembly which forms a fire resisting barrier.

4. In a protected escape route, above and below any fire resisting construction which is not carried out full storey height, or (in the case of a top storey) to the underside of the roof covering.

5. Where the corridor should be sub-divided to prevent fire or smoke affecting two alternative escape routes simultaneously, above any such corridor enclosures which are not carried full storey height, or (in the case of the top storey) to the underside of the roof covering.

6. Above any bedroom partitions which are not carried full storey height, or (in the case of the top storey) to the underside of the roof covering.

7. To sub-divide any cavity (including any roof space but excluding any underfloor service void) so that the distance between cavity barriers does not exceed the dimensions given in Table 4.

8. Within the void behind the external face of rainscreen cladding at every floor level, and on the line compartment walls abutting the external wall, of buildings which have a floor 18m or more above ground level.

NB the provisions in items (iv) and (vi) do not apply where the cavity is enclosed on the lower side by a fire-resisting ceiling which extends throughout the building, compartment or separated part.

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7 B4 – External Fire Spread

The requirement of Regulation B4 is that the external walls of the building shall resist the spread of fire over their surface and from one neighbouring building to another.

7.1 General Philosophy

The objective of this requirement is to ensure that there is sufficient separation between buildings to prevent fire spread and to ensure that fire does not spread up the building façade.

7.2 External Wall Construction

The external surface of the building, with areas is less than 18m above ground level, but more than 1m away from the relevant boundary should have a surface classification with an index (I) not more than 20 when tested in accordance with BS 476-6.

Where the building has areas above 18m (more than 1m away from the relevant boundary, the surface classification should be Class 0 (national class) or Class B-S3, d2 or better (European class),

Where the relevant boundary is less than 1m from the surface of the building and has a height of less than 18m, the surface classification should be Class 0 (national class) or Class B-S3, d2 or better (European class).

7.3 Roof Coverings

The performance of roof covering must take into account the spread of fire over their surface. This is particularly significant where buildings are close to a notional or relevant boundary. The performance of a roof covering should meet the classification of performance of BS476-3 or BS EN 13501-5 as shown below in table 17 and notes of ADB, for their relevant location.

Table 17 Limitations on roof coverings*

Designation †of covering of roof Or part of roof	Minimum distance from any point on relevant boundary			
	Less than 6m	At least 6m	At least 12m	At least 20m
AA, AB or AC	•	•	•	•
BA, BB or BC	o	•	•	•
CA, CB or CC	o	• (1) (2)	• (1)	•
AD, BD or CD (1)	o	• (2)	•	•
DA, DB, DC or DD (1)	o	o	o	• (2)

Notes:

See paragraph 15.8 for limitations on glass; paragraph 15.9 for limitations on thatch and wood shingles; and paragraphs 15.6 and 15.7 and Tables 18 and 19 for limitations on plastics rooflights.

*

† The designation of external roof surfaces is explained in Appendix A. (See Table A5, for notional designations of roof coverings.)

Separation distances do not apply to the boundary between roofs of a pair of semi-detached houses (see 15.5) and to enclosed! covered walkways. However. see Diagram 28 if the roof passes over the top of a compartment wall.

Polycarbonate and PVC rooflights which achieve a Class 1 rating by test, see paragraph 15.7, may be regarded as having an AA designation.

• Acceptable.

o Not acceptable.

1. Not acceptable on any of the following buildings:
   a Houses in terraces of three or more houses;
   b. Industrial, Storage or Other non-residential purpose group buildings of any size;
   c. Any other buildings with a cubic capacity of more than 1500m^3.
2. Acceptable on buildings not listed in Note 1, if part of the roof is no more than 3m^2 in area and is at least 1500mm from any similar part, with the roof between the parts covered with a material of limited combustibility.

7.4 Space Separation

The further apart that one building is from another the lower the potential for fire spread. When evaluating the potential for fire spread, one would normally use either the distance from a building facade to the site boundary or where appropriate a relevant boundary such as the centreline of a public road.

With residential buildings, the spread of fire between buildings on the same site must be considered.

The Enclosing Rectangles Method (sometimes referred to as the Geometric Method) was used to assess the space separation requirements of the development. This technique in described in the *BRE publication 187, "External Fire Spread: building separation and boundary distances"*

To determine the minimum position of the boundary from the building, the unprotected area of the relevant compartment is projected on to a plane of reference. This unprotected area projection can be enclosed in an 'enclosing rectangle'.

The minimum distance from the relevant boundary for a given building design can be calculated using the method described within BRE 187, which gives the following equation:

$$d = g\sqrt{(uwh)}$$

Where d = distance from the relevant boundary (m)

g = factor from Table 4 in BRE Report 187

u = unprotected area

w = width of enclosing rectangle (m)

h = height of enclosing rectangle (m)

The factor, g, is determined from Table 4 in BRE 187 and these values can be used to calculate d:

All physical boundary distances on site to be verified by Architect.

Analysis of permitted unprotected area from Appendix A of BR187

Lot 3 Somers Town	Façade 1	Façade 2	Façade 3	Façade 4
Inputs	Chalton St	Polygon St	Lot 1 /EN	incident
Distance to relevant boundary	5.5	10	23.5	
Height of enclosing rectangle	4.5	4.5	4.5	
Width of enclosing rectangle	8.27	14.85	20.8	
Use type (A or B) A=Residential, office, assembly & recreation B=Shop & commercial, industrial & other non-residential	A	A	A	
Calculation factors				
Higher of w/d or h/d	1.50	1.49	0.89	
Factor f	0.67	n/a	n/a	
Results				
Permitted unprotected area	100% 37.2sq m	100% 66.8sq m	100% 93.6sq m	0% 0sq.m*

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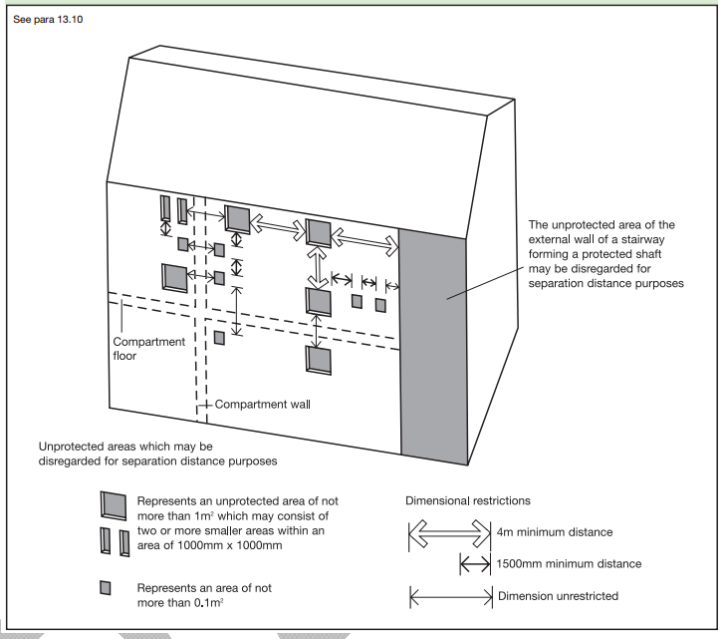
The elevation to Polygon Road first crosses a landscaped public realm which is very unlikely to be developed in the future. An arbitrary boundary distance of 10m has been used to calculate the amount of unprotected area.

The North elevation of the development is incident with the boundary of an existing school site. There may be unprotected areas within this elevation, however these are limited to areas not exceeding 1m² and arranged in accordance with the guidance in ADB paragraph 13.10 and diagram 44 replicated below.

Diagram 44 **Unprotected areas which may be disregarded in assessing the separation distance from the boundary**



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8 B5 – Fire Service Access

8.1 Requirement

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

Reasonable provisions shall be made within the site of the building to enable fire appliances to gain access to the building."

8.1.1 Residential

In accordance with ADB, there should be vehicle access for a pump appliance to blocks of flats to within 45m of all points within each dwelling. This does not appear possible in this design, so it is recommended that a dry riser be provided in the residential stair.

All dry rising mains should be designed, installed, certified and maintained to BS 9990

The inlet of a dry riser is to be provided in a location such that it can be accessed by a vehicle to within 18m. The outlet should be located within 45m of all points on each floor along a suitable hose laying route.

8.1.2 Non Residential

In accordance with ADB, there should be vehicle access to 15% of the perimeter of the non-residential areas of the site. This is achieved from the Chalton Street and park (Polygon Road) elevations within 20m of Chalton Road.

Hardstanding is required for the safe use of the perimeter route by fire service vehicles. Table 20 from ADB below gives the minimum width of the access route. Turning facilities should also be provided where the access route is greater than 20m.

Table 20 **Typical fire and rescue service vehicle access route specification**

Appliance type	Minimum width of road between kerbs (m)	Minimum width of gateways (m)	Minimum turning circle between kerbs (m)	Minimum turning circle between walls (m)	Minimum clearance height (m)	Minimum carrying capacity (tonnes)
Pump	3.7	3.1	16.8	19.2	3.7	12.5
High reach	3.7	3.1	26.0	29.0	4.0	17.0

Notes:

1. Fire appliances are not standardised. Some fire services have appliances of greater weight or different size. In consultation with the Fire and Rescue Service, the Building Control Body may adopt other dimensions in such circumstances.
2. Because the weight of high reach appliances is distributed over a number of axles, it is considered that their infrequent use of a carriageway or route designed to 12.5 tonnes should not cause damage. It would therefore be reasonable to design the roadbase to 12.5 tonnes, although structures such as bridges should have the full 17 tonnes capacity.

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9 Conclusions

The requirements of the Building Regulations, and the Regulatory Reform (Fire Safety) Order have been reviewed with respect to the proposed Lot 3 development at Somers Town in the London Borough of Camden.

It is considered that, provided the recommendations within this report are incorporated into the building design, an adequate level of fire safety will be provided within the building and the requirements of the legislation will be satisfied.

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