

CCCG Tottenham Centre

FIRE STATEMENT AND STRATEGY FOR PLANNING

January 2024



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1 Introduction

Introba has been engaged by Capital City College Group (CCCG) as a specialist fire and life safety consultant to support the planning application for the College of Haringey, Enfield and North East London, Tottenham Centre. This document also demonstrates that the New London Plan (March 2021) policies have been considered. This fire Statement and strategy has been taken to RIBA Stage 3 Fire Strategy for the development.

The following sections outline the key fire safety features that will be incorporated within the development.

1.1 Scope

This document is intended for discussion between the design team and to assist the design team in supporting the planning application for the development to ensure that once a Building Regulations application is made, all of the fire safety elements will be incorporated into the plans.

This report is based on the guidance in Approved Document B (ADB), 2019 edition incorporating the 2020 and 2022 amendments.

This guidance has been developed to ensure the highest standard of fire safety is designed into the building development at an early stage of design.

Consideration has also been given to the New London Plan dated March 2021, which replaces all previous versions. The London Plan is legally part of each of London's Local Planning Authorities' Development Plan and must be taken into account when planning decisions are taken in any part of Greater London. Planning applications should be determined in accordance with it, unless there are sound planning reasons (other material considerations) which indicate otherwise. Any sections within the report that are part of a recommendation from the New London Plan shall be highlighted in blue.

1.2 The London Plan 2021 – Policy D5

Policy D5 of the London Plan states that boroughs, in preparing their Development Plans, should support the creation of inclusive neighbourhoods by embedding inclusive design, and collaborating with local communities in the development of planning policies that affect them.

The development proposal should achieve the highest standards of accessible and inclusive design. They should:

1. Be designed taking into account London's diverse population.
2. Provide high quality people-focused spaces that are designed to facilitate social interaction and inclusion.
3. Be convenient and welcoming with no disabling barriers, providing independent access without additional undue effort, separation or special treatment.
4. Be able to be entered, used and exited safely, easily and with dignity for all.
5. Be designed to incorporate safe and dignified emergency evacuation for all building users. In all developments where lifts are installed, as a minimum at least one lift per core should be a suitably sized fire evacuation lift suitable to be used to evacuate people who require level access from the building.

Design and Access Statements, submitted as part of development proposals, should include an inclusive design statement.

1.3 The London Plan 2021 – Policy D12

1.3.1 Declaration of Compliance

In the interests of fire safety, the proposed technical design content produced for the planning application complies with all the relevant legislation and requirements of London Plan Policy D12 and D5(B5) as summarised in the following sections.

1.3.2 Competency and Qualifications of Assessors

The authors of this report comply with Section 3.12.9 of Policy D12 of the London Plan and Section 5.2.3 of the London Plan Fire Safety Guidance as outlined below.

Cheri Ho – Fire Engineer

Cheri Ho is a Fire Engineer with 2 years' experience and is an Associate Member of the Institution of Fire Engineers (AIFireE).

She has detailed knowledge of Approved Document B (ADB) and BS9991 and a robust understanding and experience of mixed-use residential developments including early stage and construction design stages. Cheri has worked on many similar schemes in the past, incorporating elements such as smoke control and firefighting facilities into designs, as well as experience working on buildings of over 18m in height.

Andy Baker – Associate Fire Engineer

Andy has over 15 years' experience working as a designer/consultant within the fire life safety sector. He has extensive experience designing solutions for high- and low-rise residential developments, commercial properties including high rise offices, warehousing and retail spaces as well as enclosed and multi-level underground car parks.

He has worked on many projects applying guidance from Approved Document B and the British Standards from conception to completion and is also a qualified Fire Risk Assessor.

Michel Wizenberg – Senior Principal, Head of Fire Engineering

Michel has a BEng (Hons) Mechanical Engineering and done the MSc Modules in Fire Safety Design. He was a board member of both the FIA Fire Engineering Council and the Smoke Control Association. He currently has a membership with the Institution of Fire Engineers (IFE).

He has 15 years' experience, with vast experience on a variety of high-rise residential developments for major housing clients across the UK. He is the lead author of fire strategies and responsible for all stages of the fire engineering design from the initial client contact through the tendering phase, across construction and the ongoing management and maintenance of fire safety systems and passive fire protection. Michel has a wealth of experience in working across various sections (such as residential, commercial, etc.) as well as working in the design of active and passive fire protection systems, both in design and remedial schemes, specifically for buildings over 18m in height.

1.3.3 The Building's Construction Method and Products and Materials Used

Structural fire protection will be provided in accordance with ADB. Further information is provided in Sections 5.1 and 5.2.

No requirements for surfaces of external walls of the building as discussed in Section 6.2.

1.3.4 Means of Escape for All Building Users and Evacuation Strategy

Means of escape will be based simultaneous evacuation that upon activation of an alarm the entire building will evacuate at once.

To assist with the evacuation of disabled occupants as recommended in the New London Plan dated March 2021, an evacuation lift will be provided which will be utilised by trained staff to assist with the evacuation of disabled occupants in the event of a fire. The designated evacuation lift will be suitably designed so it is routinely used as a passenger lift resulting in both lifts within the building being utilised for day to day purposes.

This is discussed in detail in Section 3.6.

1.3.5 Passive and Active Fire Safety Measures

The building will be provided throughout with a fire detection and alarm system in accordance with ADB and be of an L2 standard. Manual call points shall be installed at final exits from the building as discussed in Section 3.7.

The building contains floor plates up to 600m² with a height of less than 30m and does not contain any basement, therefore the building has no limit for size of compartment.

Staircase, lifts, risers and areas of special fire hazard will be enclosed in fire rated construction with fire doors as discussed in detail in Section 5.2.

Any penetrations through the compartment walls shall be fire stopped. This is discussed in detail in Section 5.3.

As the building has a height of less than 30m, sprinkler protection is not required.

1.3.6 Access and Facilities for the Fire and Rescue Service

The building is less than 18m in height so firefighting shafts are not required. However, dry risers will be provided to satisfy the hose laying distances requirements as discussed in Section 7.2.

Hydrants will be provided within 100m of the dry riser inlets as discussed in Section 7.5.

1.3.7 Site Access for the Fire and Rescue Service

Fire tender access will be provided in accordance with ADB and LFB guidance as discussed in Section 7.1.

1.3.8 Future Development of the Asset and the 'Golden Thread' of Information

A Regulation 38 pack shall be submitted to the end users upon handover. This will contain all of the details of the building fire safety / protection measures. Further details are provided in Section 8.3.

1.4 Building Description

The proposed building Tottenham College a demolition and refurbishment of an existing school to create a new Construction and Engineering Centre. It will be a standalone building that has a height of 15.8m with an area around 180m²-600m² on each floor. The building will consist of teaching areas, staff offices, storage and plant spaces. The rest of the site are existing buildings.

This report only focuses on the proposed building that is highlighted in green in the site plan as shown below. The proposed building will comply with the latest applicable Building Regulations.



Figure 1 – Site plan and proposed building

1.5 Fire Strategy Summary

The proposals outlined in this document demonstrate a level of fire safety equal to or greater than the general standard implied by compliance with the recommendations in ADB. This level of safety therefore satisfies the functional requirements of the Building Regulations relating to fire safety.

The main elements of the fire strategy are summarised below:

- The building shall implement a simultaneous evacuation strategy.
- All the travel distances comply with ADB.
- Fire alarm system within the building will be an L2 Standard.
- The structure and compartmentation will achieve 60 minutes fire resistance.
- The building is less than 18m in height so firefighting shafts are not required. However, dry risers will be provided in a protected staircase / lobby to satisfy the hose laying distances requirements.

2 Legislation

2.1 Building Regulations 2010

The development will consist of new buildings, hence, will be undergoing building works as defined in Regulation 3 of The Building Regulations 2010. All buildings will therefore have to comply with the requirements of Schedule 1 of the Regulations.

The requirements of the Schedule relating to fire safety are:

- 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 broad objectives or functions, which 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'.

2.2 Approved Document B (ADB)

The Department for Levelling Up, Housing and Communities (DLUHC) 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 Building Regulations 2020 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.

2.3 Regulatory Reform (Fire Safety) Order

Once the buildings are occupied, the Regulatory Reform (Fire Safety) Order (RRO) becomes the controlling fire safety legislation.

The Order came into force on 1st October 2006 and revoked the existing Fire Precautions Act and the Workplace Regulations. Under this order it will be necessary for the owner/ occupier of the building to carry out and maintain a fire safety risk assessment.

The building management team will also be responsible under this order to ensure that the buildings' fire safety provisions are appropriately managed, maintained and tested over the whole life of the building.

2.4 Construction, Design and Management Regulations

Projects undertaken in the UK are subject to the requirements of the Construction (Design and Management) Regulations 2015 (CDM) or within the European Union, that particular country's interpretation of the European Union Directive.

This report defines the strategy for meeting the functional and performance requirements for fire safety in the finished building. It is intended to form part of the submission for approval under the Building Regulations, Part B (Fire safety). Where any conclusions or recommendations contained within this report specify particular materials, products or forms of construction these will have been assessed, in accordance with CDM Regulations 11 and 18 (duties for designers).

In the event that these involve significant residual risks or health and safety critical assumptions, this information will be made available to the CDM Coordinator in line with the latest CDM requirements. Where the architect or other consultants use all or part of this report to specify works, they are understood to be competent in alerting the Client, CDM Coordinator, Designers, Contractors and Building Occupier of issues arising under the CDM Regulations.

2.5 Statutory Consultation

During the Building Regulations application process, the building control body is required to formally consult with the local fire authority. The purpose of this consultation is to give to fire authority the opportunity to make observations with respect to the Building Regulations and to provide an opportunity to make the applicant aware of action that may have to be taken to meet the requirements of the Fire Safety Order.

The consultation should allow both parties to reach mutually compatible views on whether the building meets the requirements of both pieces of legislation. In the exceptional event that the fire authority propose to require physical changes to the building to meet the requirements of the Fire Safety Order, the building control body should make the applicant aware.

2.6 New London Plan

The New London Plan was published by the Mayor in March 2021. It forms the statutory spatial development strategy for Central London. This report addresses the recommendations in Policy D5 (Inclusive Design) and Policy D12 (Fire Safety).

3 Means of Warning & Escape

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of 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.”

The general principle to be followed when designing for means of escape is that any person confronted by a fire within a building can turn away from it and make a safe escape and therefore alternative means of escape should be available from most parts of the building.

3.1 Evacuation Strategy

The building will operate a simultaneous evacuation strategy. The purpose of such a strategy is that upon activation of an alarm the entire building will evacuate at once. Evacuation of the building will occur upon the activation of a single smoke / heat detector or a manual call point.

3.2 Travel Distances

Travel distances are generally measured from every part of a floor plan to a final exit or a protected stair. The travel distances are set out in the table below.

Location		Maximum Travel Distance	
		Single direction	More than one direction
General		18m	45m
Places of special fire hazard		9m	18m
Plant	Escape within room	9m	35m
	Enclosed escape route	18m	45m
	Escape route in open air	60m	100m

Table 1 – Travel distance requirements

Places of special fire hazard are described as:

- Boiler rooms,
- Storage spaces for fuel or other highly flammable substances or chemicals
- Laboratories,
- Workshops with open heat sources,
- Kitchens,
- Oil filled transformer and switch-gear rooms, and
- Rooms housing fixed combustion engines.

3.3 Escape from Accommodations

At all floors, the travel distances within the rooms are acceptable as shown in the following figures.

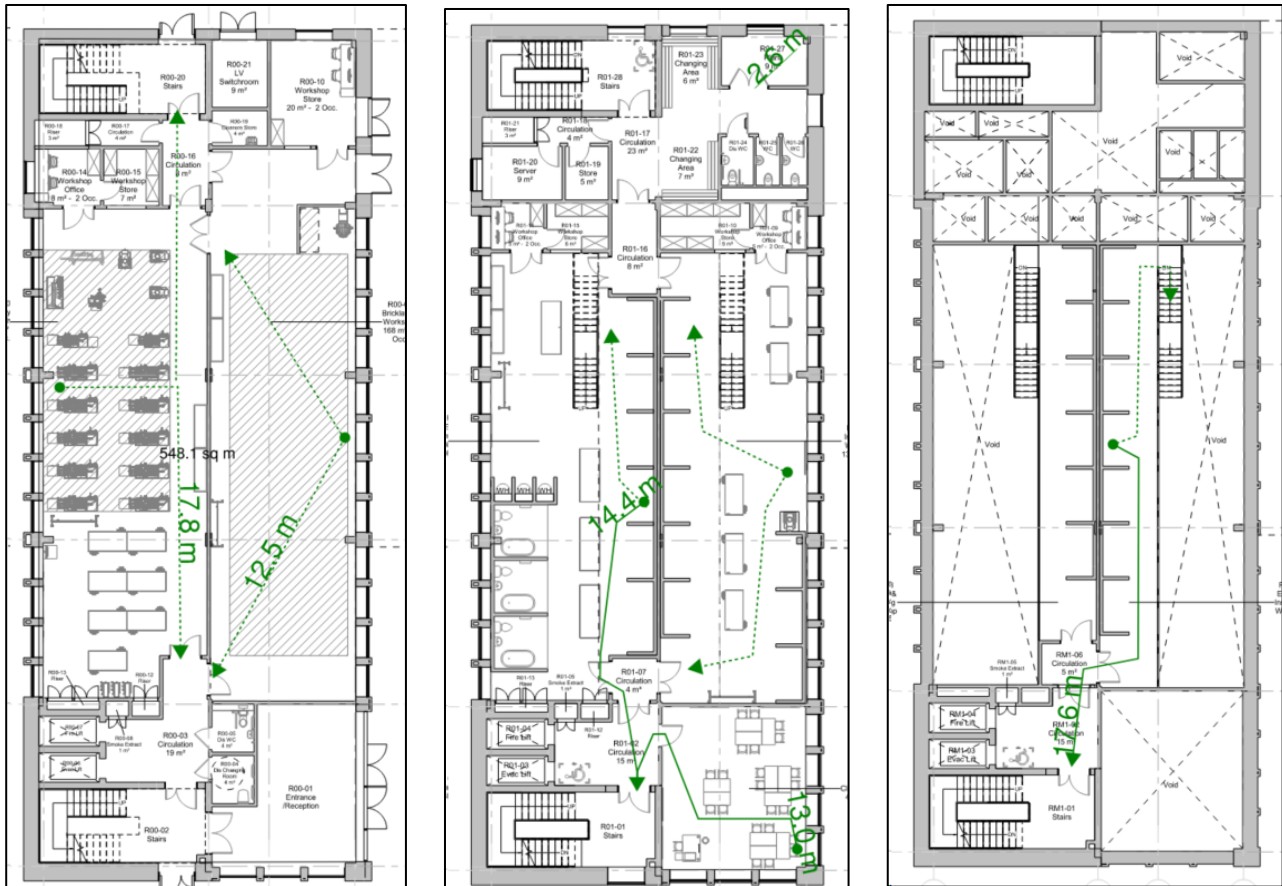


Figure 2 – Travel distances of Ground (left), First Level (middle) and First Mezzanine Level (right)



Figure 3 – Travel distances of Second Level (left) and Third Level (right)

3.3.1 Inner Rooms

Throughout the building there are inner room scenarios, such as the workshop offices and staff office. The arrangement of these rooms is designed to ensure that the following conditions will be met:

- The occupant capacity of the inner room will not exceed 60 people.
- The inner room will be accessed directly off the access room and not via an intermediate corridor.
- The escape route from the inner room will not pass through more than one access room.
- The travel distance from any point in the inner room to the exit from the access room will not exceed 18m in a single direction and 45m where more than one route is available.
- The access room will not be a place of special fire hazard as outlined in Section 3.2.
- The access room will include automatic smoke detection and alarms to provide early warning in the event of a fire. Alternatively, the door or walls of the inner room contain a vision panel with a minimum area of 0.1m² so occupants can see if a fire starts in the access room.

3.4 Exit Widths

An adequate number of suitably sized escape routes will be provided from the building to ensure that occupants can escape within an acceptable time. There will be an adequate number of escape routes based on the proposed number of occupants within the building at any one time, whilst making sure travel distances are within those permitted.

To ensure all occupants are able to escape during a fire situation, the largest exit will be discounted, this is to simulate an exit being blocked by fire, the remaining exits will provide sufficient exit capacity for the calculated number of occupants in that space.

In general, these will comply with the following tables.

Occupancy numbers	Exit widths (mm)
<60	750
61-110	850
111-220	1050

Table 2 - Occupancy based on stair widths.

Occupancy numbers	Minimum number of exits
60	1
600	2
600+	3

Table 3 - Number of occupants per exit

Recommendations of ADM	
Direction and width of approach	Exit widths (mm)
Straight on (Without a turn or oblique approach)	800
At right angles to an access route at least 1500mm wide	800
At right angles to an access route at least 1200mm wide	825
External doors to building used by the general public	1000

Table 4 - ADM minimum widths

The minimum required width of exit is 850mm where unassisted wheelchair access is required. The escape door can swing inward provided that the number of occupants using that door is less than 60.

All final exits should lead directly to the outside.

The following table summarises the calculated occupancies of the building based on the estimated occupancy, and the details and the number of seats/equipment provided in the architectural drawings.

Floor	Room	Occupancy	Minimum Required Exit widths
Ground floor	R00-09 Bricklaying Workshop	24	1 x 750mm
	R00-11 Engineering Workshop and R00-14 Workshop Office	26	1 x 750mm ^{Note 1}
	Total	50	1 x 750mm ^{Note 1}
Ground (with direct exits to outside)	R00-01 Entrance	40 ^{Note 2}	1 x 750mm
	R00-10 Workshop store office	2	1 x 750mm
First floor	R01-01 Heating & Plumbing and R01-14 Workshop Office	26	1 x 750mm ^{Note 1}
	R01-08 Electrical Installation and R01-09 Workshop Office	26	1 x 750mm ^{Note 1}
	R01-06 General classroom	23	1 x 800mm
	Total	87	2 x 850mm
Mezzanine floor	RM1-08 Heating & Plumbing (6 x 4 student working stations + 2 teaching staff)	26	1 x 750mm ^{Note 1}
	RM1-07 Electrical Installation (7 x 4 student working stations + 2 teaching staff)	30	1 x 750mm ^{Note 1}
	Total	56	1 x 750mm ^{Note 1}
Second floor	R02-07 Staff room and R02-08 Staff office	16	1 x 750mm
	R02-09 ICT classroom	23	1 x 750mm
	R02-12 ICT classroom	23	1 x 750mm
	R02-13 General classroom	23	1 x 750mm
	R02-14 ICT classroom	23	1 x 750mm
	R02-15 General classroom	23	1 x 750mm
	R02-17 Cleaners store	1 ^{Note 3}	1 x 750mm
	R02-25 Plant room	1 ^{Note 3}	1 x 750mm
	Total	133	2 x 1050mm

Third floor	R03-06 Project based learning space	40	1 x 750mm
	R03-08 Engineering & Technology Lab	23	1 x 750mm
	R03-12 Technician room	2	1 x 750mm
	R03-11 General classroom	23	1 x 750mm
	R03-13 Engineering & Technology Lab	23	1 x 750mm
	R03-14 ICT classroom	23	1 x 750mm
	R03-16 Cleaners store	1 ^{Note 3}	1 x 750mm
	R03-24 Plant room	1 ^{Note 3}	1 x 750mm
	Total	136	2 x 1050mm
Roof floor	External plant	7 ^{Note 3}	1 x 750mm
	R04-07 Enclosed plant	1 ^{Note 3}	1 x 750mm
	Total	8	1 x 750mm

Table 5 – Exit requirements

^{Note 1} Although single exit is required for the occupancy load, alternative exits are still required to satisfy the travel distance requirements as outlined in Section 3.2.

^{Note 2} Occupancy density for Entrance = $40\text{m}^2 \times 1$ (based on floor space factor of $1\text{m}^2/\text{person}$ for common area) = 40 people.

^{Note 3} Occupancy density is based on floor space factor of $30\text{m}^2/\text{person}$ for stores and plant rooms.

3.5 Vertical Escape

The figure and table below summarize the capacity of the two escape stairs before the discounting of stairs.

Stair	Minimum Required Width (mm)	Storeys Served	Capacity (persons)
Stair North	1100	First, Second and Third	300
Stair South	1100	First, First Mezzanine, Second, Third and Plant roof	380

Table 6 - Stair Capacity

Since the North stair is not provided with a protected lobby, this will be discounted for the vertical escape calculation.

At all upper floors, after discounting a stair, the remaining stair is able to cope with the number of people at each level as shown in Table 7 in Section 3.4. Therefore, the staircase provisions are sufficient to cater for the maximum calculated occupancy loads.

3.6 Disabled Evacuation

The evacuation of disabled occupants plays an important role in the overall evacuation of the building. Where the escape is not direct to outside from the building, provisions are required for disabled occupants to reach a place of refuge before being fully evacuated by staff.

The building operates on levels above the ground floor from where direct escape is not provided directly to outside and therefore disable refuges will be required for each stair at all upper levels including the First Mezzanine level.

The refuge will comprise a notional area, 1400mm x 900mm located out of the escape route within either the stair enclosure or in a protected lobby leading directly to the staircase. In accordance with ADB, the refuges will contain a means for occupants to communicate to the building management that they are in need of assistance, such as an Emergency Voice Communication System (EVCS). This will be provided within the refuge with an indication at a suitable management area.

Policy D5 Inclusive design of the New London Plan outlines that emergency carry down or carry up mechanical devices or similar interventions that rely on manual handling are not considered to be appropriate, for reasons of user dignity and independence. It suggests that the installation of lifts which can be used for evacuation purposes (accompanied by a management plan) provide a dignified and more independent solution.

Furthermore, Policy D12 Fire Safety recommends that in all developments where lifts are installed, Policy D5 Inclusive design requires as a minimum at least one lift per core (or more, subject to capacity assessments) to be a suitably sized fire evacuation lift suitable to be used to evacuate people who require level access from the building.

To facilitate this, an evacuation lift will be provided which will be utilised by trained staff to assist with the evacuation of disabled occupants in the event of a fire. The designated evacuation lift will be suitably designed so it is routinely used as a passenger lift resulting in both lifts within the building being utilised for day to day purposes.

The evacuation lift will be provided with a switch clearly marked "Evacuation Lift" and situated adjacent to the lift landing door at the final exit level. Operation of this switch will cause the evacuation lift to operate.

The building management forms an integral part of the design and on-going functionality of the building after occupation. The building will have a management team whose responsibilities will include ensuring the fire safety strategy is adopted and enforced. One of the responsibilities of this team will be to develop a management strategy for the building. This strategy will incorporate details of how the building satisfies the requirements of the Equality Act 2010. The management strategy should include information on staff training, how disabled occupants will be evacuated in the event of a fire and identify key roles in ensuring they are assisted in a fire situation.

3.7 Fire Alarm and Detection Systems

The entire building will be provided with an automatic fire alarm and smoke detection designed in accordance with BS5839 Part 1 of L2 standard.

Manual call points will be positioned by all storey exits into the stair core and final exits from the building.

Fire alarm sounders and beacons will be provided to ensure an audibility level of 65dBA or 5dBA above background level (whichever is greater) is achieved in these areas. Operation of the fire alarm system will shut down all HVAC systems.

3.7.1 Access Control Measures

Measures to restrict access the buildings should not adversely affect fire safety provisions. Measures should remain for occupants to safely evacuate the building in the event of a fire.

Electrically powered locks should return to the unlocked position in all of the following situations:

- a) If the fire detection and alarm system operates.
- b) If there is loss of power or system error.

c) If the security mechanism override is activated.

3.8 Emergency Lighting Systems

Emergency lighting as backup lighting meeting the recommendations of BS5266 Parts 1 and BS EN 1838 will be provided in the following areas:

Use	Areas requiring escape lighting
School Building	All common escape routes Stairways serving a central core Windowless accommodation Internal corridors more than 30m long Open-plan areas exceeding 60m ²
Ancillary Accommodation	Windowless accommodation Toilet accommodation with a minimum floor area of 8m ² Electricity and generator rooms Switch room / battery room for emergency lighting system Emergency control rooms Open-plan areas of more than 60m ² All escape routes to which the public are admitted

Table 8 - Emergency Lighting Locations

Luminaries will be provided appropriately spaced to provide the light levels suggested within British Standard BS5266 that is to say:

Defined escape routes	1lux
Open Areas	0.5lux

Table 9 - Emergency Lighting Required Lux Levels

Siting and illuminance levels of emergency escape lighting luminaires will be in accordance with BS EN 1838. Emergency escape lighting will be provided in escape routes, open areas, high risk task areas, and points as outlined in BS5266 Part 1.

3.9 Escape Signage

Escape signage will be provided above storey exits. Emergency escape signage will be required to meet the requirements of the Regulatory Reform (Fire Safety) Order. Such signage will meet the recommendations of BS5499 Part 4 and will be located as follows, except for escape routes which are in ordinary use:

- All designated escape routes or escape routes across open areas will be provided with signage, especially in stairs and other changes in level and direction.
- The position of all doors and other exits sited on escape routes, including storey exits and final exits will be identified by signs.
- Where an escape route from a room is not conspicuous or confusion could occur, the route will be indicated by a sign, including intermediate signs where necessary.

- All changes of direction in corridors, stairways and open spaces forming part of an escape route will be marked with intermediate signs. Each intermediate door or junction will be similarly signed.

3.9.1 Other Signage

Fire resisting doors, fire exit doors and escape routes will be provided with signage meeting the recommendations of ADB and BS 5499-10:2014.

Method of Closure	Signage	Sign Diameter	Letter Height	Location
Self-closing device		60mm	5mm	Fire doors in corridors, off staircases and refuse lobbies
Keep locked shut				Within the inside door of the riser cupboards and maintenance access cupboards

Table 10 -Fire Door Signage Requirements

3.10 Manual Fire Fighting Equipment / Fire Extinguishers

Manual firefighting equipment is not necessary under Building Regulations. However, the Regulatory Reform (Fire Safety) Order 2005 does request that first aid firefighting facilities should be provided in places of work.

At this stage a general guide for the extent of fire extinguisher provisions would be typically one extinguisher per 200m² of floor area with the type appropriate for the risk (i.e. Liquid fires – Powder or CO₂, General fires – Water etc.). They are generally to be located by the exits.

4 Internal Fire Spread (Linings)

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B2, Internal fire spread (linings):

“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.”

4.1 Surface Linings

The interior wall and ceiling surfaces in buildings 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 ceilings linings within the building should meet the recommendations outlined in the table below.

Location	Class of Lining
	European Class*
Small Rooms of area less than 30m ²	D-s3,d2
Other Rooms	C-s3,d2
Other circulation spaces	B-s3,d2
Note: * The European classifications are described in BS EN 13501-1.	

Table 11 – Surface lining requirements

For the purpose of these requirements, a wall includes the internal surfaces of internal and external glazing as well as any part of a ceiling which slopes at an angle greater than 70 degrees to the horizontal. Doors, door frames, window frames and frames in which the glazing is fitted, architraves and skirting are also exempt from these limitations.

The class of linings can be downgraded (but not less than Class D-s3,d2) in walls of rooms providing the total area of those parts in any one room does not exceed one half of the floor area of the room and subject to a maximum of 60m².

5 Internal Fire Spread (Structure)

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B3, Internal fire spread (structure):

1. *The building shall be designed and constructed so that, in 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.*
3. *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.*
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.*

The requirements will be met;

- If the loadbearing elements of structure of the building are capable of withstanding the effects of fire for an appropriate period without loss of stability;
- If the building is sub-divided by elements of fire-resisting construction into compartments;
- If any openings in fire-separating elements are suitably protected in order to maintain the integrity of the element; and
- If any hidden voids in the construction are sealed and sub-divided to inhibit the unseen spread of fire and products of combustion, in order to reduce the risk of structural failure and the spread of fire, in so far as they pose a threat to the safety of people in and around the building.

The extent to which these measures are necessary is dependent on the use of the building, its size and on the location of the element of construction.

5.1 Fire Resistance of Elements of Structure

Premature failure of the structure can be prevented by provisions for loadbearing elements of structure to have a minimum standard of fire resistance, in terms of resistance to collapse or failure of load bearing capacity.

The period of fire resistance required in accordance with ADB is linked to the risk profile of the building taking into account the height of the top floor 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. Approved Document B defines an element of structure as:

- a member forming part of the structural frame of a building or any other beam or column;
- a loadbearing wall or loadbearing part of a wall;
- a floor;
- a galley
- an external wall; and
- a compartment wall.

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

- Structure that supports only the roof, unless:
 - the roof performs the function of a floor, such as for parking vehicles, or as a means of escape, or
 - the structure is essential for the stability of an external wall which needs to have fire resistance.

Since the building contains a floor over 11m in height but not more than 18m, the elements of structure for the building will be fire protected to 60 minutes fire resistance.

Any elements which only support themselves and or a roof can be non-fire rated.

5.2 Compartmentation

The building contains floor plates up to 600m² with a height of not more than 30m. Therefore, in accordance with ADB, the building has no limit for size of compartment.

Both staircases will be enclosed in 60 minutes fire resisting construction and FD30S self-closing doors.

Areas of special fire hazard will be enclosed in 30 minutes fire resisting construction with FD30 fire doors and be permanently locked. Where this is not possible, doors will be fitted with self-closing devices. The places of fire special fire hazards are:

- Boiler rooms,
- Storage spaces for fuel or other highly flammable substances or chemicals
- Laboratories,
- Workshops with open heat sources,
- Kitchens,
- Oil filled transformer and switch-gear rooms, and
- Rooms housing fixed combustion engines.

Any service risers will be separated from the rest of the accommodation by at least 60 minutes of fire resisting construction with FD30 doors.

Plant rooms and stores should be enclosed in 30 minutes fire resisting construction with FD30 fire doors and be permanently locked. Rooms containing any life safety systems will be enclosed in 120 minutes fire rated construction.

5.3 Fire Stopping

Any openings for services breaching compartment walls will be fire stopped (unless protected throughout their entire length with fire resisting material). The required fire stopping for services is illustrated in the following figure.

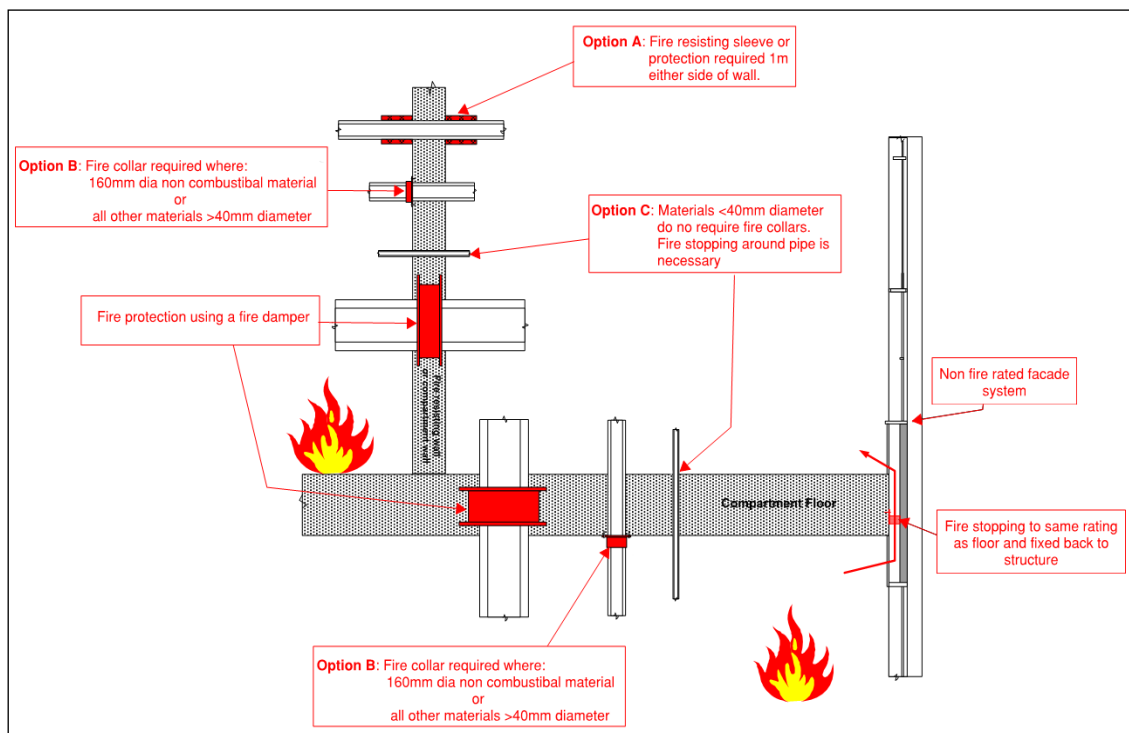


Figure 4 - Fire stopping requirement of services

This is to prevent the passage of fire and assist in retarding the movement of smoke. Joints between elements of structures that serve as barriers to fire will be fire-stopped to prevent the passage of fire and smoke.

The requirements for the fire stopping requirements of pipes are further detailed below.

Situation	Pipe material and maximum nominal internal diameter (mm)		
	High melting point material	Lead, Aluminium, aluminium alloy, uPVC, fibre cement	Any other material
Structure (but not a wall separating buildings) enclosing a protected shaft which is not a staircase or a lift shaft	160	110	40
Compartment Wall or Compartment floor between flats	160	160 (stake pipe) 110 (branch pipe)	40
Any other situation	160	40	40

Table 12 - Pipe Material and Nominal Internal Diameter (mm)

Where air handling ducts pass through compartmentation or fire rated enclosures the integrity of these compartments should be maintained. There are three basic methods:

- Method 1 – Protection using fire dampers;
- Method 2 – Protection using fire resisting enclosures;
- Method 3 – Protection using fire resisting ductwork

Fire dampers activated by fusible links are not suitable for protecting escape routes. In this instance, a fire and smoke damper, which is activated by a suitable fire detection system should be used.

5.4 Cavity barriers

Cavity barriers will be included in any cavity where there is a potential for unseen fire spread. The key areas that require cavity barriers are as follows:

- At the junction between an external cavity wall and a compartment wall that separates buildings; and at the top of such an external cavity wall;
- At the junction between an external cavity wall and every compartment floor and compartment wall;
- At the junction between a cavity wall and every compartment floor, compartment wall, or other wall or door assembly that forms a fire-resisting barrier;
- In a protected escape route, above and below any fire-resisting construction that is not carried full storey height;
- At the edges of cavities (including around openings, i.e. windows).

In addition to the above locations cavity barriers are also required in cavities (including ceiling voids and under floor service voids) where the cavity exceeds 20m in accordance with ADB.

The cavity barriers will achieve 30 minutes fire resistance (i.e. 30 minutes integrity and 15 minutes insulation). Any penetrations through the cavity barriers will be either:

- Fitted with a proprietary sealing system, or
- Pipes of limited diameters that are sealed with fire-stopping, or sealed with sleeving of non-combustible pipe material.

5.5 Sprinklers

As the building has a height less than 30m, sprinkler protection is not required.

6 External Fire Spread

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B4, External fire spread:

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 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.

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.

6.1 Unprotected Areas

The unprotected areas are the areas of the façade that are not fire rated (i.e. glazing, etc.), which should be sized so that fire spread is unlikely to occur to buildings on adjacent sites.

Since the entire site is owned and operated by a single organisation a simultaneous evacuation policy is adopted. This would include all buildings on the site regardless of the location of the detected fire. Consequently any spread of fire between the building on the site would pose no risk to life.

6.2 External Wall Construction

The external envelope of the building should not be a medium for fire spread.

As the building is under 18m in height and more than 1000mm from the boundary there are no restrictions for the materials used in the external wall construction in accordance with ADB.

In order to protect the staircases from a fire on the floor plate any wall construction perpendicular to the stair core within 1.8m of the staircase should be fire rated equal to that of the fire protection to the stairs.

6.3 Roofs

Roof coverings should be designed in accordance with Table 12.1 of ADB as shown in the figure below.

Table 12.1 Limitations on roof coverings				
Designation ⁽¹⁾ of covering of roof or part of roof	Distance from any point on relevant boundary			
	Less than 6m	At least 6m	At least 12m	At least 20m
B _{roof} (t4)	●	●	●	●
C _{roof} (t4)	○	●	●	●
D _{roof} (t4)	○	● ⁽²⁾⁽³⁾	● ⁽²⁾	●
E _{roof} (t4)	○	● ⁽²⁾⁽³⁾	● ⁽²⁾	● ⁽³⁾
F _{roof} (t4)	○	○	○	● ⁽²⁾⁽³⁾

● Acceptable.
○ Not acceptable.

NOTES:

Separation distances do not apply to the boundary between roofs of a pair of semi-detached dwellinghouses and to enclosed/covered walkways. However, see Diagram 5.2 if the roof passes over the top of a compartment wall.

Polycarbonate and uPVC rooflights that achieve a class C-s3, d2 rating by test may be regarded as having a B_{roof}(t4) designation.

1. The designation of external roof surfaces is explained in Appendix B.

2. Not acceptable on any of the following buildings.

- a. Dwellinghouses in terraces of three or more dwellinghouses.
- b. Any other buildings with a cubic capacity of more than 1500m³.

3. Acceptable on buildings not listed in (1) if both of the following apply.

- a. Part of the roof has a maximum area of 3m² and is a minimum of 1500mm from any similar part.
- b. The roof between the parts is covered with a material rated class A2-s3, d2 or better.

Figure 5 - Limitations on Roof Coverings

7 Access & Facilities for the Fire Service

Schedule 1 of the Building Regulations requires the following functional requirement to be met in respect of B5, Access and facilities for the fire service:

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

The following discusses the implications of these requirements on the proposed design with regard to access and facilities for the Fire Service within and around the building.

7.1 Vehicle Access

Fire Service access is required to provide access for fire personnel and a water supply to within a reasonable distance of the building entrances.

Due care should be given to ensure that the vehicle access route meets the requirements for a pump appliance as shown in the table below (which is taken from London Fire Brigade – Guidance Note 29).

Appliance Type	Minimum width of road between kerbs	Minimum width of gateways	Minimum turning circle between kerbs	Minimum turning circle between walls	Minimum clearance height	Minimum carrying capacity
Pump	3.7m	3.1m	16.8m	19.2m	3.7m	14.0t

Table 13 – Vehicle Access Requirements

Any access / security measures in and around the site (especially any bollards preventing vehicle access) should be bypass-able by the fire service. The details of the bypass arrangements should be developed and agreed with the fire service as applicable.

Where there are dead end routes within the site, these should either be limited to approximately 20m or a turnaround (turning circle or hammerhead) facility provided.

The following figure highlights the site access provided for the fire service.

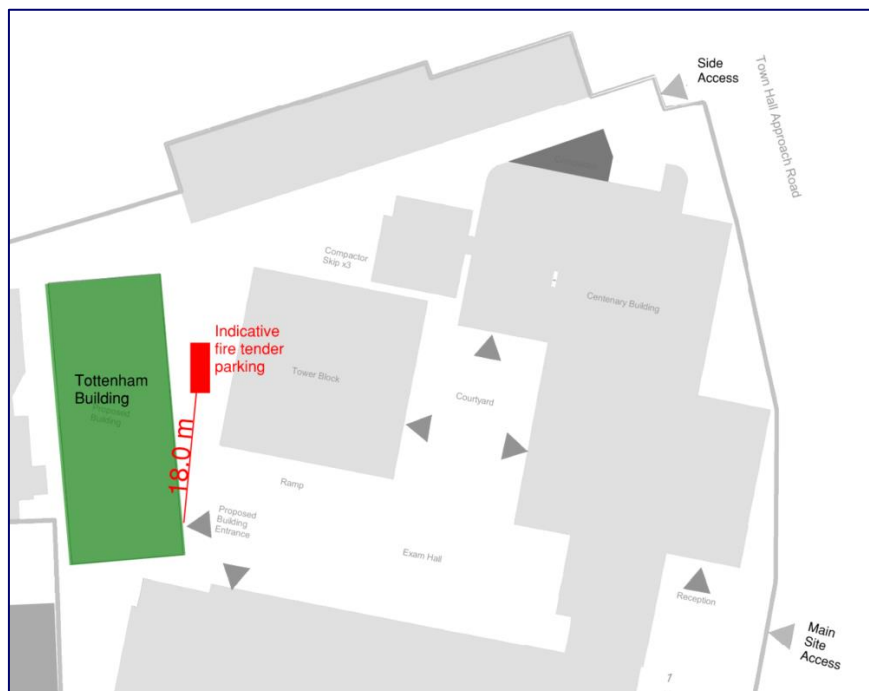


Figure 6 – Indicative fire tender parking location

7.2 Dry Riser

The building is less than 18m in height so firefighting shafts are not required. However, dry risers will be provided to satisfy the hose laying distances requirements.

The dry riser inlets shall be adjacent to the building entrance and be visible from the fire appliance (plus accessible within 18m of the fire appliance parking location), as shown in Figure 7 in Section 7.1.

All parts of the floor plates should be covered within 45m when measured along a route suitable for laying a hose from a dry riser outlet within the protected staircase/lobby.

7.3 Smoke Venting

Since the building shall undertake a simultaneous evacuation strategy and the travel distances are deemed to be acceptable, it is not necessary to provide smoke ventilation to the building. Furthermore, since the building is not provided with firefighting shafts, no smoke ventilation shall be provided to staircase lobbies.

7.4 Hydrants

ADB requires that buildings with dry fire mains should be within 100m from an existing fire hydrant. Where the existing hydrants cannot achieve this, then a private hydrant should be provided within 90m to the dry riser inlet.

7.5 Emergency Power Supplies

Each life safety system provided within the building will have an independent power supply which would operate in the event of a failure of the main supply.

Secondary power supply should be provided to the following life safety systems:

- Fire Alarm System, and
- Emergency lights and signs.

8 Fire Safety Management

8.1 General

Given the use and likely occupancy of the building, management procedures will assist in the prevention and control of fires and the evacuation of occupants.

Good housekeeping standards will be enforced to ensure that the effectiveness of the fire safety provisions is not affected.

Maintenance procedures will be developed to ensure that all equipment and services within the building are able to operate effectively.

A full Fire Risk Assessment should be carried out by the occupier of the building nearer to the development completion and be in place on occupation to meet the Regulatory Reform Order (RRO). The assessment should be maintained and act as a record of the provision and measures, passive and active, used to minimize fire risk within and around the building.

8.2 Key Management Issues

This section describes each of the key management areas that will need to be implemented and maintained during the lifetime of the building:

- All necessary fire safety systems must be regularly maintained and tested.
- The building management will regularly monitor and control the specification and use of combustibles within the escape routes and circulation areas. These areas will generally be maintained free of all combustibles and the escape routes will be unobstructed at all times.
- A full Fire Risk Assessment will be developed for the building.
- All building staff and commercial tenants will receive regular training including roles and responsibilities for key members of staff.

8.2.1 Control of Evacuation and Fire Safety Planning / Implementation

A detailed fire safety plan will be drawn up by the building management, which will provide clear simple advice for the occupants in the event of an emergency.

The fire safety plan will be prepared, maintained and implemented by the fire personnel responsible for the building in question and will include:

- The procedures to be adopted in the event of a fire signal being given
- Procedures for evacuation of occupants (including disabled occupants)
- Procedures for equipment maintenance
- Frequency and nature of fire drills
- Staff training
- Procedures for recording and monitoring equipment maintenance and any fire incidents

Expanding on the information given above the fire strategy includes a number of risk critical areas resulting in the need to formalize the fire safety management in the building. In order to develop and maintain the safety of the building, the building management should formulate a policy statement appropriate to the building configuration, location, occupation, and if relevant, to the building users. The policy statement should include:

- General safety issues related to the use of the building
- Possible fire scenarios
- Aims and objectives of the proposed management system and its methodology

This policy should be endorsed by the highest level of management.

8.3 Regulation 38

To satisfy Regulation 38 to the Building Regulations it is proposed that a full package of building design information is passed to the end users. It is therefore proposed that the following information is provided to the end users:

- The fire strategy report
- Any management information proposed in addition to that contained in this strategy
- Details of all passive fire safety measures (including compartmentation, cavity barriers, fire doors, self-closers etc.)
- Details of the fire alarm and detection systems, emergency lighting, emergency signage, access controls, door hold open devices
- Details of all active fire safety measures including sprinkler systems design, including isolating valves and control equipment
- Details of the dry risers, fire hydrants
- Any high risk rooms and equipment present
- As built plans for the building
- O&M Manuals for the building systems, including commissioning information and certification
- Any provision incorporated into the building to facilitate the evacuation of disabled people.

This information will be transferred as a package of information by the main contractor at handover of the building.

9 Conclusions and Recommendations

This report outlines the fire safety strategy proposals for CCCG Tottenham and seeks to demonstrate compliance with the Building Regulations (generally in the form of the recommendations of Approved Document B).

The designs of the building, such as travel distances etc., comply with the recommendations of the ADB.

The building is proposed to be provided with an automatic fire alarm and detection system designed in accordance with BS5839 Part 1 and be at least of an L2 standard.

Elements of structure to the building should achieve 60 minutes fire resistance.

The building is less than 18m in height so firefighting shafts are not required. However, dry risers will be provided in a protected staircase / lobby to satisfy the hose laying distances requirements.

A full Fire Risk Assessment should be carried out by the occupier of the building or nearer to the building completion and be in place on occupation to meet the requirements of the Regulatory Reform Order. The assessment should be maintained and act as a record of the provision and measures, passive and active, used to minimize fire risk within and around the building.

Based upon the above proposals it is considered that adequate measures are provided to meet the functional requirements of the Building Regulations.

