Richmond and Wandsworth Councils

North Lane Depot/East Car Park, Teddington
Elleray Hall

Stage 4 Fire Strategy

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Richmond and Wandsworth Councils

North Lane Depot/East Car Park, Teddington
Elleray Hall

Stage 4 Fire Strategy

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1 INTRODUCTION

1.1 General Description of the Development

The new two storey community centre, Elleray Hall, will comprise of a ground and first floor levels. At ground floor level there will be a main hall, a kitchen, café space, lounge, office, storage and plant. On the first floor there will be activity rooms, a staff room and enclosed plant rooms. The first floor is served by a single protected stair and a lift (which will be an evacuation lift) which provides access from the ground floor reception to the first-floor corridor.

The general layout of each floor can be seen below, with larger scale drawings within Appendix A.

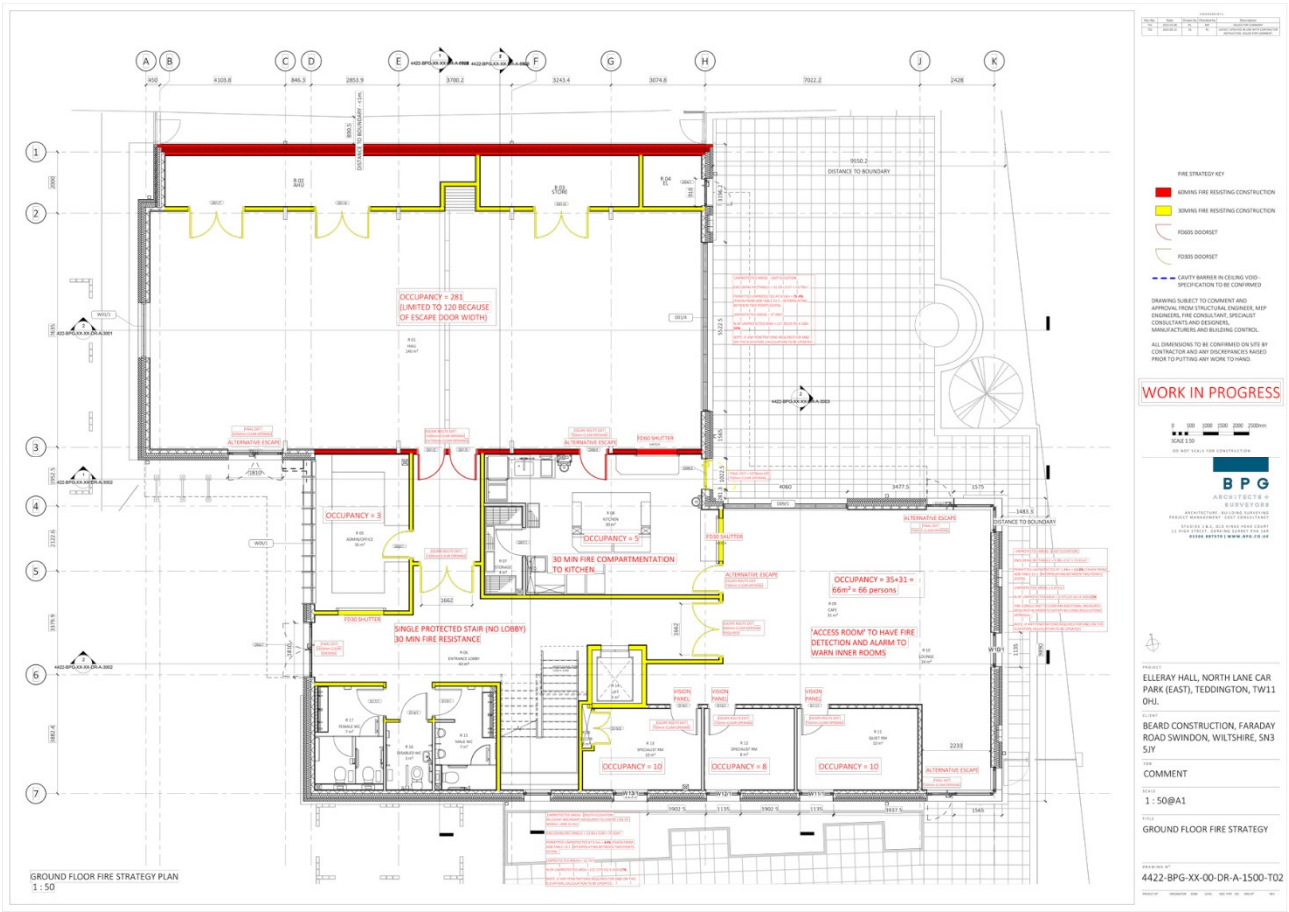


Image 1 Ground Floor Fire Strategy plan.

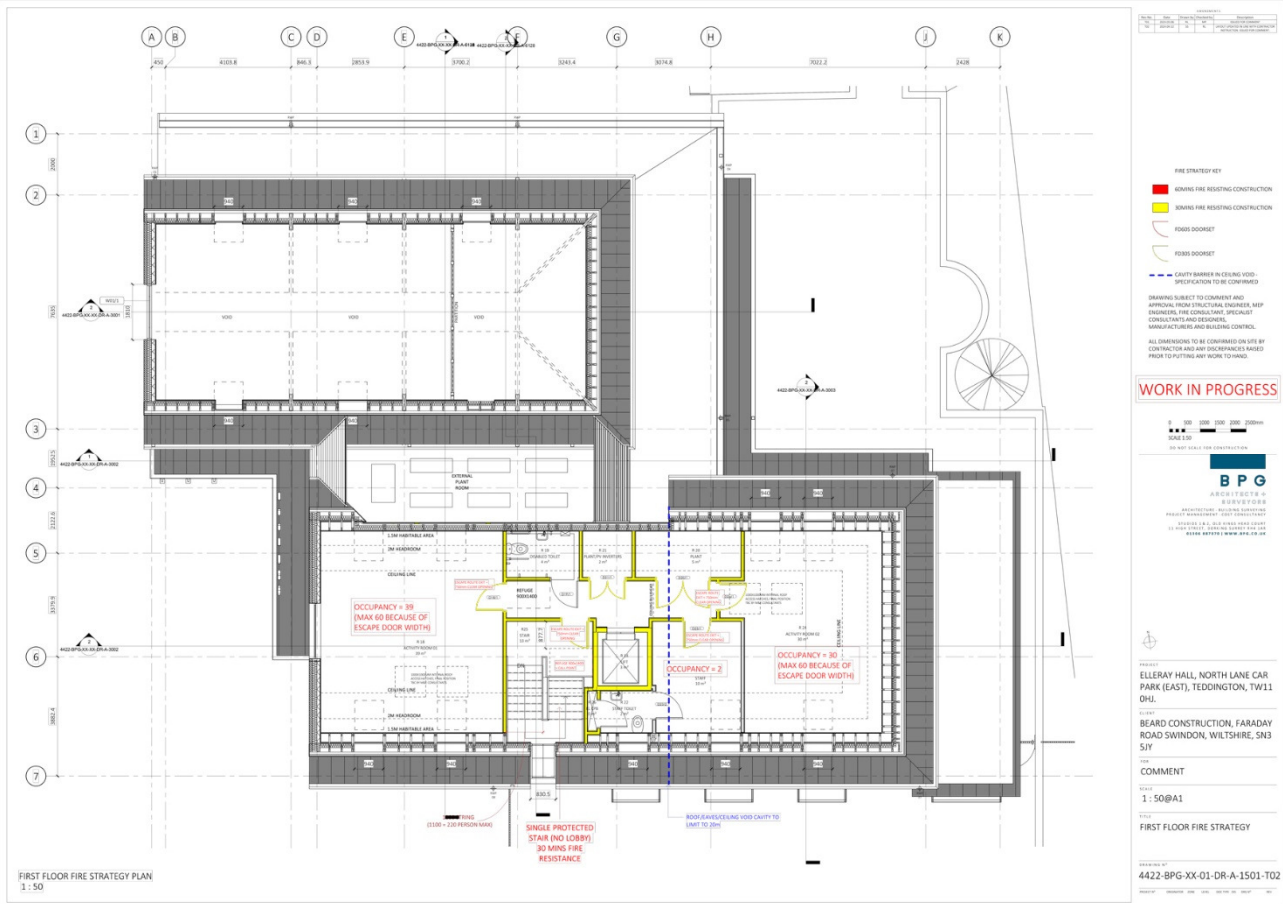


Image 2 First Floor Fire Strategy plan.

1.2 Purpose and Scope of the Report

The purpose of this Fire Strategy is to provide strategic design and performance criteria which, when met by the design of the development, are proposed to meet the functional requirements of Part B of Schedule 1 to the Building Regulations, and any other relevant stakeholder requirements.

Determination of compliance with the requirements of the Building Regulations is under the jurisdiction of the Building Control Body who will need to consult with the Enforcing Authority, and all design guidance or performance criteria set out within this report are at approvals risk until agreed with the approving authorities.

For the purpose of this report and in line with the Building Regulations, the report makes recommendations for life safety only; property protection is not an objective of the Building Regulations and has not been specifically identified as one of the project design objectives by the client.

1.3 The Building Regulations 2010

The Building Act 1984 is the primary legislation under which the Building Regulations and other legislation are made. The Building Regulations 2010 is the Statutory Instrument which seeks to ensure that the policies set out in the Act are implemented.

Part B of Schedule 1 to the Building Regulations includes functional requirements that need to be met with regards to fire safety. Part B of Schedule 1 to the Building Regulations includes five parts, B1 to B5.

1.3.1 Basis for Compliance

Compliance with the functional requirements of B1 to B5 may be demonstrated by meeting a suitable guidance document. The principal guidance document used for the evaluation of the fire safety precautions for the building within this scheme is Approved Document B Volume 2 2019 edition incorporating 2020 and 2022 amendments. Reference will also be made to other relevant British and European standards where appropriate.

It should also be noted that there is no obligation to adopt any particular solution in guidance if it is suitably demonstrated that the functional requirements can be met in another way.

As outlined in Table 0.1 of ADB, the premises falls under Purpose Group 5 (assembly and recreation). The office spaces are less than 1/5th of the total floor area of the building and are therefore classed as ancillary.

1.4 The Regulatory Reform (Fire Safety) Order 2005

The Regulatory Reform (Fire Safety) Order (FSO) requires that reasonable steps are taken by the 'responsible person' to reduce the risk of a fire, including adequate management and maintenance of fire safety measures. The FSO applies or will apply after the completion of building work.

Under Regulation 38 of the Building Regulations, this Fire Strategy and all other relevant fire safety information will be provided to the 'responsible person' not later than the date of completion of the work, or the date of occupation, whichever is earlier.

1.5 Limitations

The limitations and assumptions used in the preparation of this report are described below:

- This report has been prepared for the sole benefit, use and information of Richmond and Wandsworth Council and other members of the design team, and the liability of LWF, its directors and employees, in respect of the information contained in this report, will not extend to any third party.
- This Fire Strategy considers the Building Regulations which cover life safety only. Property protection, business continuity and insurance issues are not addressed in this report.
- This Fire Strategy provides strategic design advice and performance criteria only. Detailed design of any systems shall be provided by others. Where this document does not provide performance criteria, the design will need to meet the relevant guidance as set out in Section 1.3 above.
- This Fire Strategy has been developed based upon the information stated in Section 1.6 below. Changes to the design following the revision of this information will not be reflected within this Fire Strategy report.

Fire safety considerations during construction will need to be addressed under the Construction (Design and Management) Regulations 2015 by the Principal Contractor. This Fire strategy does not address these regulations and may not be used for demonstrating compliance with these regulations.

1.6 Reference Drawings

This report relates to the following plans provided by BPG Architects + Surveyors.

Description	Drawing Number	Rev
Elleray Hall Ground Floor Fire Strategy plan	4422-BPG-XX-01-DR-A-1500	T02
Elleray Hall First Floor Fire Strategy Plan	4422-BPG-XX-01-DR-A-1501	T02
Elleray Hall Roof Plan	EHT-106	T2
Elleray Hall South & West Elevations	EHT-112	T2
Elleray Hall North & East Elevations	EHT-113	T2

Table 3 Reference Drawings.

2 MEANS OF ESCAPE

2.1 Evacuation Strategy

Elleray Hall has been configured for simultaneous evacuation. This means that on activation of any detector or manual call point an evacuation signal will sound across the property via the fire alarm sounders, for an immediate evacuation of the whole premises.

2.2 Occupancy Loads

The minimum required width of escape routes is dependent on the maximum number of people likely to use the escape route in the event of a fire. It is recognised that in this type of environment there is no single occupancy factor which covers all areas at any one time. The occupancy figures will fluctuate at different times.

Whilst the offices, main hall, café/ lounge are calculated at full capacity, the ancillary accommodation within the building such as the storage area, plant rooms, and WCs will only be occupied occasionally for short periods of time. Therefore, for the purpose of this assessment, it is considered reasonable to disregard the occupants within the ancillary accommodation to reflect a more realistic occupancy distribution.

The occupancy figure has been derived from the floor areas shown on the drawings provided by the design team. The estimated occupancies for each area are shown below:

Location	Approximate Floor Area (1) (m^2)	Floor space factor (m^2/person)	Occupancy (2) (persons)
Ground Floor			
Main Hall	140	0.5(3)	~~280~~ 120(4)
Admin Office	15	6	3
Kitchen	30	7.0	4
Café area	31	1	31
Lounge area	35	1	35
Specialist room	10	1	10
Specialist room	8	1	8
Quiet room	10	1	10
		Ground Floor Total	**221**

First Floor			
Activity room 01	39	1.0	39
Activity room 02	30	1.0	30
Staff room	10	5	2
		First Floor Total	~~71~~ **60**[5]
		Building Total	**281**

NOTES:

1. Floor area of habitable space on each storey.
2. Rounded to the nearest whole number.
3. The floor space factor used is based upon a general-purpose assembly hall. Should these areas be used for other activities such as dining and meeting spaces, the floor space factor should be changed to 1m^2/person, thus significantly reducing the occupancy within each of these areas.
4. The hall occupancy is limited to 120 due to a fire obstructing the 1650 double doors, with the remaining 750mm doors providing egress for 120 persons from the main hall. Management and control measures will be put in place to control numbers within this space to not greater than 120 people. Where the hall is sub-divided no side of the hall will exceed 60 people.
5. Any storey, served, by a single stair, should have no more than 60 people, where the limit on travel distance is in one direction. Management and control measures will be put in place to control the first floor to no more than 60 people.

Table 4 Occupancy Figures.

It should be noted that although the floor space may permit the occupancy numbers outlined above, the exit widths will not (see notes in table above). A full review of exit widths can be found in the following section with any limitations of occupancy numbers outlined.

2.3 Horizontal Escape

2.3.1 Number of Exits

In accordance with ADB, the number of escape routes and exits from any room or storey in the building will be provided as shown in Table 5 below.

Maximum number of persons	Minimum number of escape routes/exits
60	1
600	2
More than 600	3

Table 5 Number of escape routes and exits.

The current drawings show that the number of exits per room, area and storey are sufficient for the numbers outlined. The exception to this is the first floor; as this area only has a single exit, the total occupancy of this storey will not exceed 60 persons.

Escape from the main hall through the kitchen has not been considered as an acceptable means of escape, as such it is not considered under this report.

Kitchen staff will escape to the rear via the external door provided.

2.3.2 **Direction of door openings**

It should be noted that ADB requires all doors, which may be used by more than 60 people, to open in the direction of escape; if this cannot be achieved, regardless of the width, the maximum number of occupants able to use this door will be limited to 60.

Under the current drawing updates and revisions all doors have been altered to open in the direction of escape where greater than 60 people may be present within a room/space.

2.3.3 **Exit Widths**

The width of each exit will be sufficient for the indicated occupancy. In order to calculate the required widths of any exits from an area that has more than a single exit, the largest exit is discounted. This ensures that in the event of a fire preventing occupants from using one of the exits, all occupants can still safely escape with the remaining available exits.

Maximum number of persons	Minimum width (mm)
60	750
110	850
220	1050
More than 220	5 per person

Table 6 Exit Widths.

The main hall has the potential for the largest single occupancy, however, in the event of a fire preventing access to the final exit doors leading directly to outside, all occupants would have to escape via the two 750mm doors. Each door can safely accommodate 60 persons therefore the occupancy within the hall will not exceed 120 persons; this will be robustly managed and strictly adhered to at all times. Management procedures will be put in place to control and ensure that this space is not hired or let out for occupancies greater than this. There are sliding bi–fold doors to the rear of the hall, these aren't not a suitable means of escape under guidance and therefore have not been included when assessing the available escape widths.

There is a sub-dividing screen across the hall. When this is used neither side of the hall will exceed 60 occupants. Again, this will be carefully and strictly adhered to at all times.

All other doors within the premises are suitable for the indicated occupancy.

There is a gate to the side of the building. This area is adjacent solid construction; therefore, it is not considered that the direction of escape will significantly impact upon occupants escape from this area. The gates will comply with the requirements outlined in Section 2.5 in relation to door fastenings.

2.3.4 **Travel Distances**

Travel distances are limited to the following when using Table 2.1 of ADB:

Description	One direction only (m)	More than one direction (m)
Assembly and recreation		
• Areas with seating in rows	15	32
• Elsewhere	18	45
Plant Room		
• Distance within the room	9	35
• escape route not in open air (overall travel distance)	18	45

Table 7 Travel Distances.

Escape is only possible in a single direction at first floor level; therefore, the travel distance will not exceed 18 metres. Most areas on ground floor are provided with an alternative means of escape. All travel distances are within the limits outlined above.

2.3.5 **Inner Rooms**

The two specialist rooms and quiet room located at ground level are classed as inner rooms. ADB states that an inner room condition is acceptable when one of the following arrangements is in place:

- the enclosures (walls or partitions) of the inner room should be stopped at least 500mm below the ceiling; or
- a suitably sited vision panel not less than 0.1m^2 should be located in the door or walls of the inner room, to enable occupants of the inner room to see if a fire has started in the outer room; or
- the access room should be fitted with a suitable automatic fire detection and alarm system to warn the occupants of the inner room of the outbreak of a fire in the access room.

As a fire detection and alarm system will be fitted within the premises, the access room (café/lounge area) will be provided with suitable automatic detection, which will alert occupants within the inner room of a fire. It is noted from the updated plans that these doors will also be provided with vision panel, thereby allowing occupants to see any issues occurring outside their room.

2.4 Vertical Escape

The first floor is served by a single protected stair; ADB states that a single escape stair may serve a building in the following situations.

- The travel distance from every point in each storey does not exceed the distance for escape in one direction only (as outlined in Table 7 above)
- The building has no storey with a floor level more than 11 metres above ground level.
- Any storey, served, by the stair, has no more than 60 people, where the limit on travel distance is in one direction.

As previously outlined, the occupancy of the first floor will be limited to 60 persons. This will require suitable management procedures and control to ensure that the occupancy is not exceeded. The building has no floor above 11 metres from ground level and the travel distance at first floor level to the storey exit does not exceed 18 metres, therefore, a single escape stair is acceptable.

2.4.1 Stair Width

The first floor is served by a single 1100mm wide protected stair. ADB states that a 1100mm wide stair serving a single floor is able to safely accommodate 220 persons; as the occupancy of the first floor will not exceed 60 persons, the stair width is considered suitable.

As there is a lift there is the possibility of a mobility impaired person attending a meeting or training session on the first floor. As such a disabled refuge and two-way communication system is being provided at first floor level. In accordance with the London Plan policies 'D5 Inclusive Design' and 'D12 Fire Safety' an evacuation lift will be provided which serves the ground and first floor. This will be covered in greater detail later in this report, in summary this evacuation lift will provide the facilities for any mobility impaired person to be evacuated in a more dignified and managed solution.

2.4.2 Protection of Stairs

The stair will be a protected stair and will therefore be enclosed in 30-minute fire resisting construction.

The entire stair enclosure will be kept free of potential sources of fire; for this reason, any meters or service risers located within these areas will be enclosed in suitable fire resisting construction.

There will be no combustible materials stored within these areas; the stair and corridor will remain sterile areas at all times. The main reception area/office which opens onto the protected escape route is provided with a 30min fire rated shutter which will automatically close on activation of a manual call point or detector within the property. This will ensure that the route out of the building is protected.

In addition, as the single stair forms part of the only means of escape from the first floor, the flights and landings will be constructed of materials achieving class A2-s3, d2 or better.

2.4.3 **Merging Flows**

Due to the layout of the building, there is a possibility of merging flows within the stair at ground floor level, therefore, the width of the final exit will be sufficient to enable a maximum evacuation flow rate equal to or greater than that from the storey exit and stair combined.

The equation given for the calculation of the minimum final exit width to account for merging flows in the escape stair at final exit level is as follows:

$$W = \frac{\left(\left(\frac{N}{2.5}\right) + (60S)\right)}{80}$$

Where:

W = width of final exit (m)

N = number of people served by the storey exit

S = stair width (m)

As the width of the final exit is known, the equation can be rearranged to establish the maximum number of people who may use the ground floor storey exit shared with the stair; the rearranged equation is shown below.

$$N = 2.5(80W - 60S)$$

$$N = 2.5\big((80 \times 1.725) - (60 \times 1.1)\big)$$

$$N = 2.5(138 - 66)$$

$$N = 180\ persons$$

Worst case scenario would be a fire obstructing the largest final exit within the hall. This means all 120 occupants of the hall would have to escape from the hall via the two single 750mm doors leading into the main corridor / protected stair enclosure; the staff within the admin office would also escape back into the main corridor area in this particular scenario. All other remaining occupants at ground floor level would be able to escape via alternative exit routes. As such the 1725mm clear opening for the front entrance is considered acceptable for the expected occupancy. The main entrance doors are configured to power open on alarm, and as such, the doors will allow occupants to evacuate as soon as they get to the doors, thereby reducing the queuing. There is higher than expected level of separation between the hall and the corridor and it is considered that occupants will be able to evacuate with sufficient time.

2.5 Door Fastenings

In general, doors on escape routes will be either of the following.

a. Not fitted with a lock, latch or bolt fastenings.
b. Fitted only with simple fastenings that are all of the following.
    i. Easy to operate; it should be apparent how to undo the fastening.
    ii. Operable from the side approached by people escaping.
    iii. Operable without a key.
    iv. Operable without requiring people to manipulate more than one mechanism.

If a secure door is operated by code or combination keypad, swipe or proximity card, biometric data etc., a security mechanism override will be possible from the side approached by people escaping. Electrically powered locks will 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.

Security mechanism overrides for electrically powered locks will be a Type A call point as described in BS 7273-4. The call point will be positioned on the side approached by people escaping. If the door provides escape in either direction, a call point will be installed on both sides of the door.

In places of assembly, doors on escape routes from rooms with more than 60 people will be either of the following.

a. Not fitted with locks, latches or bolts.

b. Fitted with panic fastenings in accordance with BS EN 1125.

2.6 Disabled Evacuation

The London Plan 2021 outlines the Greater London Authority (GLA) approach to spatial development and serves as a blueprint for future developments and projects to ensure inclusivity within London. Under Policy D5, it states the following:

Policy D5 Inclusive design

A 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.

B 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 (or more subject to capacity assessments) should be a suitably sized fire evacuation lift suitable to be used to evacuate people who require level access from the building.

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

It then states under 3.5.10 that:

3.5.10 Buildings should be designed and built to accommodate robust **emergency evacuation** procedures for all building users, including those who require level access. All building users should be able to evacuate from a building with dignity and by as independent means as possible. 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. The installation of lifts which can be used for evacuation purposes (accompanied by a management plan) provide a dignified and more independent solution. The fire evacuation lifts and associated provisions should be appropriately designed, constructed and include the necessary controls suitable for the purposes intended. See also Policy D12 Fire safety.

Policy D12 states:

Policy D12 Fire safety

A In the interests of fire safety and to ensure the safety of all building users, all development proposals must achieve the highest standards of fire safety and ensure that they:

1) identify suitably positioned unobstructed outside space:
   a) for fire appliances to be positioned on
   b) appropriate for use as an evacuation assembly point
2) are designed to incorporate appropriate features which reduce the risk to life and the risk of serious injury in the event of a fire; including appropriate fire alarm systems and passive and active fire safety measures
3) are constructed in an appropriate way to minimise the risk of fire spread
4) provide suitable and convenient means of escape, and associated evacuation strategy for all building users
5) develop a robust strategy for evacuation which can be periodically updated and published, and which all building users can have confidence in

6) provide suitable access and equipment for firefighting which is appropriate for the size and use of the development.

B All major development proposals should be submitted with a Fire Statement, which is an independent fire strategy, produced by a third party, suitably qualified assessor.

The statement should detail how the development proposal will function in terms of:

1) the building's construction: methods, products and materials used, including manufacturers' details
2) the means of escape for all building users: suitably designed stair cores, escape for building users who are disabled or require level access, and associated evacuation strategy approach
3) features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans
4) access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and positioning of equipment, firefighting lifts, stairs and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these
5) how provision will be made within the curtilage of the site to enable fire appliances to gain access to the building
6) ensuring that any potential future modifications to the building will take into account and not compromise the base build fire safety/protection measures.

As such, as access is available to the first floor of the building, a lift will be provided. In accordance with the London Plan an assessment has been undertaken and it has been agreed with the design team that an evacuation lift will be provided to the property.

In addition to the lift being provided a designated refuge point will be installed and maintained at first floor level within the protected stair. The location of the refuge area will not reduce the width of the escape route, and the refuge space will not obstruct the flow of persons evacuating.

The refuge area will be designed to accommodate the wide variety of wheelchairs in use, including powered wheelchairs. The space provided for a wheelchair in a refuge will not be less than 900mm x 1400mm allowing for manoeuvring. An emergency voice communication (EVC) system, complying with BS 5839-9: 2011 will also be provided, allowing communication between the refuge point and the main receiver station, which should be located adjacent to the main fire panel within the entrance area.

Evacuation lifts will automatically ground on activation of the alarms, as such building management will ensure that a suitable emergency evacuation plan is formulated and implemented for all persons and any expected disabled persons. This will ensure that staff are trained and are present within the building at all times the building is in use and that staff are trained on how to utilise the EVC to correctly communicate with any occupants within the refuge area. They will be trained in how to understand the information outlined on the fire alarm panel and understand the location of any fire incident indicated on the panel. They will be trained in how to 'drive' the evacuation lift to the first floor to enable mobility impaired persons to safely leave the refuge and enter the evacuation lift to be brought to ground floor. Where there may be more than one mobility impaired person present then this may require the lift to be driven to the first-floor multiple times. The emergency evacuation plan and associated training will ensure that all disabled persons can safely be evacuated to a place of ultimate safety without external assistance.

Under current fire safety legislation, it is the responsibility of the person(s) having responsibility for the building to provide a fire safety risk assessment that includes an emergency evacuation plan for all people likely to be in the premises, including disabled people across the building, and how that plan will be implemented. Such an evacuation plan must not rely upon the intervention of the Fire and Rescue Service to make it work.

The evacuation plan must also consider occupants with hearing and/or visual impairments. Personal Emergency Evacuation Plans (PEEPs) will be put in place for members of staff and regular visitors with disabilities including those with sensory impairments.

General Plans will be put in place. A General Plan covers the same points as a PEEP, but instead of being focused on an individual person, it will accommodate any disabled or mobility impaired people who could have access to the building but may not necessarily be familiar with the premises.

2.7 Emergency Lighting

Emergency lighting will be installed in accordance with BS 5266:2016 and BS EN 1838:2013 throughout the premises. Emergency luminaries will be sited on escape routes to final exits, and external emergency lighting will be installed on those discharge points.

The emergency lighting system will be provided with testing facilities such as key operated test-switch for each circuit, to enable the un-switched supply to each luminaire/circuit to be isolated for test.

As external routes are provided and required for escape purposes the rear external routes will be suitably lit by borrowed lighting or emergency lighting if no borrowed light is available. This will be subject to contractor's design.

2.8 Signage

Every doorway or other exit providing access to a means of escape, other than exits in ordinary use (e.g. main entrances), will be distinctively and conspicuously marked by an exit sign in accordance with BS ISO 3864-1 and BS 5499-4.

The external route will be suitably signed and external escape route clearly delineated and available at all times.

Escape signage within the main hall will be suitably provided and illuminated as required.

Suitable signage will be provided for any firefighting equipment.

Fully endorsed fire action notices will be provided adjacent to all manual call points and on notice boards.

2.9 Lifts

As part of the buildings planning conditions and in-line with the requirements of The London Plan 2021 an evacuation lift will be provided as defined in Policy D5 and D12 of The London Plan.

The evacuation lift will provide access between the ground and first floor. The lift will be connected to the fire alarm system and will automatically ground upon actuation of the alarm. The lift will be provided with an override switch/key which will allow building staff to drive the life to enable safe evacuation for persons who require assistance from the first floor.

The lift will be designed and installed in accordance with the relevant provisions in BS EN 81-20 and BS EN 81-70. The secondary power supply in accordance with BS 8519 and will be a separately fused circuit fed directly from the main incoming electrical supply to the building. The cabling will be enclosed in fire rated construction and will be armoured cabling for resilience reasons.

3 AUTOMATIC FIRE DETECTION AND MEANS OF WARNING

A category L3 fire alarm and detection system, in accordance with BS 5839-1:2017, will be provided throughout the premises.

A category L3 level of coverage would mean that automatic detection is provided in escape routes and all rooms opening onto the escape routes. Manual break- glass call points will be provided adjacent to all storey exits and final exits from the building.

The building has been designed for simultaneous evacuation. This means that on the activation of a detector or a manual call point the evacuation signal will give an instantaneous warning from all fire alarm sounders for an immediate evacuation of the whole premises.

The fire alarm will be audible throughout the premises with the provision of supplementary visual beacons in locations where the background noise level necessitates the use of ear defenders (e.g. plant rooms). Consideration will also be given to alerting people with hearing and/or visual impairments. Personal Emergency Evacuation Plans (PEEPs) will be put in place for members of staff and regular visitors with disabilities including those with sensory impairments.

The alarm system will be interfaced with any hold open devices provided to self-closing doors and any other active devices that require local smoke detection to operate them by cause and effect. This includes the main entrance doors, which will automatically power open on the actuation of a detector anywhere within the building.

The fire shutter to the admin/office and also the one provided to the kitchen area will be linked to the fire alarm system and will be configured so that they automatically close upon activation of the fire alarm system.

It is recommended that the main fire alarm control panel be situated within the main entrance to the building, where it will be easily accessible to the attending Fire Service.

4 INTERNAL FIRE SPREAD

4.1 Linings

In accordance with ADB, the internal linings for the community centre will be as detailed below in Table 8.

Location	Classification
Small rooms with a floor area less than 30m^2 in non-residential accommodation	D-s3, d2
Other rooms	C-s3,d2
Other circulation spaces	B-s3, d2(1)
NOTES: (1) Wallcoverings which conform to BS EN 15102, achieving at least class C-s3, d2 and bonded to a class A2-s3, d2 substrate, will also be acceptable.	

Table 8 Classification of linings.

It should be noted that parts of walls in rooms may be of lower performance than that stated in Table 8, but no worse than class D-s3, d2. In any one room, the total area of lower performance wall lining should be less than an area equivalent to half of the room's floor area, up to a maximum of 60m^2 in non-residential accommodation.

4.2 Structural Fire Protection

In accordance with the guidance given in ADB, all elements of structure will be provided with fire protection to achieve a minimum of 60 minutes fire resistance as outlined in BS 476 and Appendix B, Table B3 of ADB. This requirement also applies to any element of structure that supports or provides stability to another.

Purpose Group	Height of top occupied storey above ground floor level (metres)	Sprinklers provided?	Minimum period of fire resistance (minutes)
Assembly and Recreation	Up to 5	No	60

Table 9 Recommended Fire Resistance Period of Elements of Structure.

An element of structure is any one of the following:

a) A member that forms part of the structural frame of a building, or any other beam or column;

b) A loadbearing wall or loadbearing part of a wall;
c) A floor;
d) A gallery (but not a loading gallery, fly gallery, stage grid, lighting bridge, or any gallery provided for similar purposes or for maintenance and repair);
e) An external wall;
f) A compartment wall (including a wall that is common to two or more buildings).

The following are excluded from the definition of 'element of structure'.

a) A structure that supports only a roof, unless either of the following applies.
   i) The roof performs the function of a floor, such as for parking vehicles, or as a means of escape.
   ii) The structure is essential for the stability of an external wall that needs to be fire resisting (e.g. to achieve compartmentation or for the purposes of preventing fire spread between buildings).
b) The lowest floor of the building.
c) A platform floor.
d) A loading gallery, fly gallery, stage grid, lighting bridge, or any gallery provided for similar purposes or for maintenance and repair.
e) External walls, such as curtain walls or other forms of cladding, which transmit only self-weight and wind loads and do not transmit floor load.

In accordance with Tables B3 and B4 of ADB, the fire rating of elements of structure will be as follows:

Element of structure	Minimum provisions when tested to the relevant parts of BS 476 (minutes)			Method of Exposure
	Load-bearing capacity [1]	Integrity	Insulation	
Structural frame, beam or column	60	N/A	N/A	Exposed faces
Load-bearing wall element	60	N/A	N/A	Each side separately
Floor	60	60	60	From underside
Roof that performs the function of a floor	60	60	60	From underside
Roof that form part of an escape route	30	30	30	From underside
External wall less than 1m away from the relevant boundary	60	60	60	Each side separately
External wall 1m or more away from the relevant boundary [2]	60	60	15	From inside the building
Compartment walls	60	60	60	Each side separately

NOTES:

1. Applies to load-bearing elements only.
2. Such walls may contain areas that do not need to be fire resisting (unprotected areas).

Table 10 Recommended Fire Resistance Period for Elements of Structure.

The fire resistance requirements outlined above will be achieved using tested systems. Further information regarding this will be sought from the relevant product manufacturer; an example of such information is "The White Book" produced by British Gypsum.

Further detail on the construction methods and materials will be included within the Stage 5 report.

4.3 Compartmentation and Fire Resisting Construction

The main objective of compartmentation is to prevent rapid fire spread, which may prevent occupants of the building from escaping safely. Compartmentation reduces the chance of a fire becoming large thereby protecting the means of escape and also reducing the likelihood of fire spread to neighbouring buildings.

Maximum compartment size limits will also be adhered to; these limits are outlined in the table below.

Purpose Group	Height of top occupied storey above ground floor level	Single Storey	Multi-Storey
Assembly and Recreation	No limit	No limit	2000m^2

Table 11 Maximum Compartment Sizes.

The proposals do not exceed the maximum compartment limits outlined above; therefore, no compartment walls and/or floors are required. In addition, the offices are less than 1/5th of the total floor area of the building and are therefore classed as ancillary. This means compartment walls and floors are not required to separate different purposes.

Although compartment walls and floors are not required, fire resisting construction will still be provided. The staircase will be enclosed in 30-minute fire resisting construction; all rooms opening into to the stair at both levels will be separated from the stair with a minimum of 30-minute fire resisting construction. In addition to the above, all stores, cleaner's cupboards, and plant areas will be enclosed in 30-minute fire resisting construction.

The main hall will be separated from the remainder of the ground floor by 60-minute fire resisting construction such that it forms a separate fire compartmentation. All fire doors providing access to the compartment from other areas of the building at ground floor will achieve FD60S rating. The fire shutters to the admin/office and to the servery are to be provided as 30-minute fire resisting shutters.

The fire resisting construction requirements are outlined in the table below.

Part of building	Minimum provisions when tested to the relevant parts of BS 476 (minutes)			Method of Exposure
	Load-bearing capacity [1]	Integrity	Insulation	
Protected stairway	30	30	30	From underside
Protected corridor/lobby	30	30	30	Each side separately
Other fire resisting construction	30	30	30	From underside
Cavity barriers	N/A	30	15	Each side separately
NOTES: 1. Applies to load-bearing elements only.				

Table 12 Recommended Periods of Fire Resistance for Compartmentation Elements.

4.4 Fire Doors

Location of door	Minimum period of fire resistance	Comments
Forming part of the enclosure of a protected stairway	FD30S	Will be self-closing.
Forming part of the enclosure of a protected corridor	FD30S	Will be self-closing.
Forming part of the enclosure of a riser cupboard or plant room	FD30	Self-closing devices are not required to cupboards and service ducts which are normally kept locked shut.
Forming part of the enclosure of a store room	FD30S	Self-closing devices are not required to cupboards and service ducts which are normally kept locked shut.
Forming part of the separating wall from the main hall to the remainder of the ground floor.	FD60S	Will be self-closing.
Within a cavity barrier	FD30	Will be self-closing.

Table 13 Fire Door Provision.

All fire doors will be fitted with a self-closing devices, except for fire doors to cupboards and service ducts which are normally kept locked shut. Where a self-closing device may interfere with the day-

to-day use of the building, the door may be held open with an automatic release mechanism provided in accordance with BS 5839-3:1988.

This device will hold the door open, however, will automatically close the door if any of the following occur:

- Smoke is detected by an automatic device of a suitable nature and quality in a suitable location.
- A hand-operated switch, fitted in a suitable position, is operated.
- The electricity supply to the device, apparatus or switch fails.
- The fire alarm system is operated.

In accordance with ADB, all fire doors will be marked with the appropriate fire safety sign conforming to BS ISO 3864-1 according to whether the door is:

- to be kept closed when not in use (Fire door keep shut);
- to be kept locked when not in use (Fire door keep locked shut); or
- held open by an automatic release mechanism (Automatic fire door keep clear).

Fire doors to cupboards and to service ducts will be marked on the outside. All other fire doors will be marked on both sides.

Doors forming part of the means of escape from, and within, the building will:

- be hung clear of any change of floor level;
- be hung so that they do not reduce the effective width of any escape route across a landing;
- if opening into a corridor, be recessed to the full width of the door;
- where hung to swing both ways (double swing), or subdividing corridors, be provided with a minimum of a vision panel;
- open to an angle not less than 90°.

4.5 Concealed Spaces

Concealed spaces and cavities in the building can allow the rapid unseen spread of fire and smoke to areas remote from the seat of an incident. To reduce the potential for fire spread, cavity barriers will be provided to divide cavities and to close the edge of cavities.

In accordance with ADB, cavity barriers will be provided in accordance with Figure 1 and includes, but is not limited to, the following:

- all junctions between an external cavity wall and every compartment floor and compartment wall;
- at the edges of cavities, including around openings (such as windows, doors and exit/entry points for services);
- all junctions between an internal cavity wall and every compartment floor, compartment wall, or other wall or door assembly which forms a fire-resisting barrier;
- for a protected escape route, i.e. protected corridor, a cavity that exists above or below any fire resisting construction will either be fitted with cavity barriers on the line of the enclosure to the protected escape route or for the cavities above the fire resisting construction, enclosed on the lower side by a fire resisting ceiling which extends throughout the building, compartment or separated part.

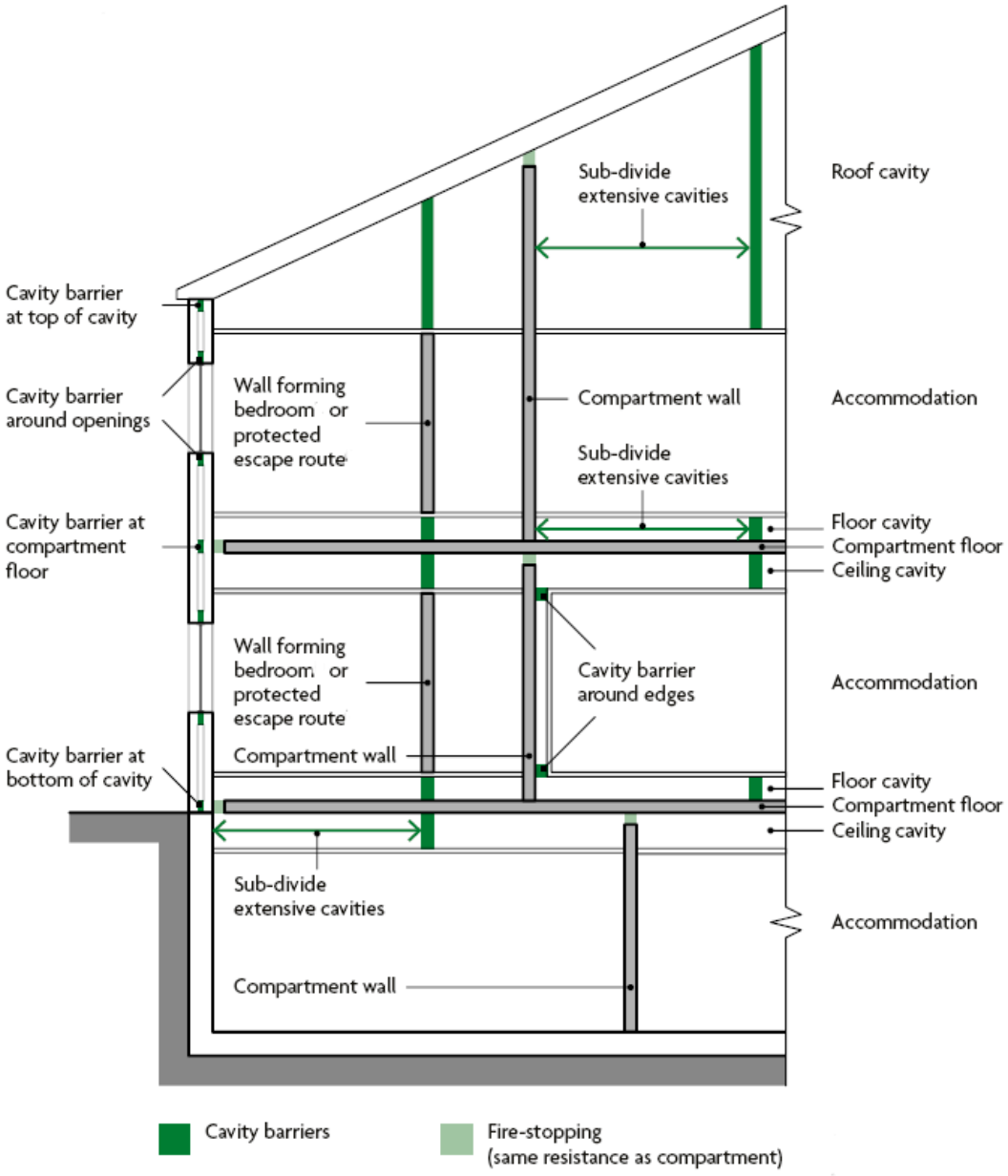
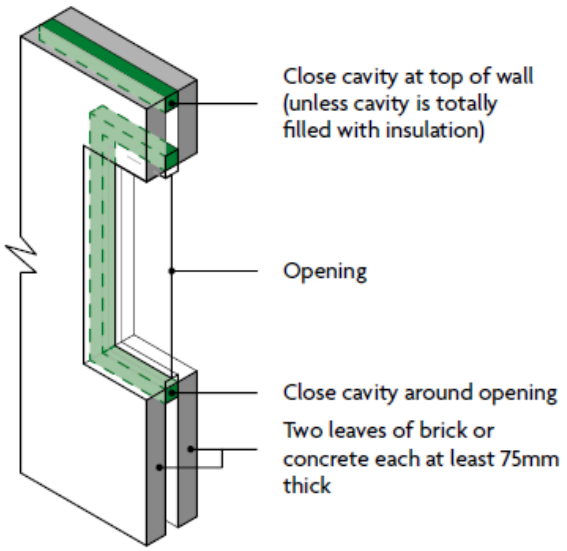


Figure 1 Provisions for Cavity Barriers.

The above does not apply where a wall meets the conditions outlined in Figure 2 below.



NOTES:

1. Materials used to close the cavity in this arrangement do not need to achieve a specific performance in relation to fire resistance.
2. Domestic meter cupboards may be installed provided that the following conditions are met:
   a. There are no more than two cupboards per dwelling
   b. The openings in the outer wall leaf are not bigger than 800×500mm for each cupboard
   c. The inner leaf is not penetrated except by a sleeve not more than 80×80mm, which is fire-stopped.
3. Materials achieving class B-s3, d2 or worse may be placed within the cavity.

Figure 2 Cavity walls excluded from provisions for cavity barriers.

If concealed spaces or cavities are created, cavity barriers will be required. The cavity barriers will provide a minimum of 30/15 minutes' fire resistance period in term of integrity and insulation respectively. Cavity barriers will be securely supported so as to guarantee integrity and insulations properties irrespective of the failure of un-rated components.

Cavity barriers will be tightly fitted to a rigid construction and mechanically fixed in position. If this is not possible (e.g. where a cavity barrier joins to slates, tiles, corrugated sheeting or similar materials) the junction will be fire-stopped.

Cavity barriers will be fixed so their performance is unlikely to be made ineffective by any of the following.

a. Movement of the building due to subsidence, shrinkage or temperature change, and movement of the external envelope due to wind.
b. During a fire, collapse of services penetrating the cavity barriers, either by the failure of the supporting system or through degradation of the service itself (e.g. by melting or burning).
c. During a fire, failure of the cavity barrier fixings. (In roof spaces, where cavity barriers are fixed to roof members, there is no expectation of fire resistance from roof members provided for the purpose of support.)
d. During a fire, failure of any material or construction to which cavity barriers abut. (For example, a suspended ceiling that continues over a fire resisting wall or partition collapses,

and the cavity barrier fails prematurely because the ceiling was not designed to provide a minimum fire resistance of EI 30.)

Cavity barriers in a stud wall or partition, or provided around openings, may be formed of any of the following:

a. Steel, a minimum of 0.5mm thick.
b. Timber, a minimum of 38mm thick.
c. Polythene-sleeved mineral wool, or mineral wool slab, under compression when installed in the cavity.
d. Calcium silicate, cement-based or gypsum-based boards, a minimum of 12mm thick.

It should be noted that these do not necessarily achieve the integrity and insulation performance specifications required (i.e. 30 minutes integrity, 15 minutes insulation).

Cavity barriers provided around openings may be formed by the window or door frame, if the frame is constructed of steel or timber of the minimum thickness in (a) or (b), as appropriate.

4.5.1 **Extensive Cavities**

Cavity barriers will be used to divide any cavity (including roof spaces). Table 14 sets out maximum dimensions for undivided cavities.

Location of cavity	Class of surface/product exposed in cavity (excluding the surface of any pipe, cable or conduit, or any insulation to any pipe)	Maximum dimension in any direction (m)
Between roof and a ceiling	Any	20
Any other cavity	Class C-s3, d2 or better	20
	Worse than Class C-s3, d2	10

Table 14 Maximum dimensions of cavities in buildings other than dwellings.

Table 14 does not apply to any of the following cavities:

a) A cavity in a wall that is fire resisting only because it is loadbearing.
b) A cavity in a wall that meets the conditions of Figure 2.
c) A floor or roof cavity above a fire resisting ceiling that extends throughout the building or compartment to a maximum of 30m.

d) In a building not put to residential or institutional use, a cavity that does not contain materials achieving class B-s3, d2 or worse and is formed either:
    i. behind the external skin of an external cladding system with a masonry or concrete inner leaf a minimum of 75mm thick;
    ii. by overcladding an existing masonry (or concrete) external wall or an existing concrete roof.
e) A cavity below a floor next to the ground or next to oversite concrete, if either:
    i. the cavity is less than 1000mm in height;
    ii. the cavity is not normally accessible by people, unless there are openings in the floor such that it is possible for materials to accumulate in the cavity (in which case cavity barriers should be provided and access should be provided to the cavity for cleaning).

If a single room with a ceiling cavity or underfloor cavity exceeds the dimensions outlined in the table above, cavity barriers need only be provided on the line of the enclosing walls/partitions of that room, if both of the following apply:

a) The cavity barriers are a maximum of 40m apart.
b) The surface of the material/product exposed in the cavity is class C-s3, d2 or better.

4.6 Fire Stopping

All penetrations through fire separating elements will be adequately fire stopped or sealed to ensure that the integrity and performance of the element is not impaired. Areas that will require fire stopping will be around pipe and cable services, ventilation ducts and flues and junctions between fire separating elements.

All elements and services that penetrate a compartment wall, floor or other element of fire resisting construction are to be fire stopped using a method appropriate to the element penetrated and the surrounding construction.

Typical fire stopping materials include:

- cement mortar
- gypsum-based plaster
- cement-based or gypsum-based vermiculite/perlite mixes

- glass fibre, crushed rock, blast furnace slag or ceramic-based products (with or without resin binders) and
- intumescent mastics.

Systems used will be designed, installed, tested and maintained in full accordance with the relevant BS 476 standard and the ASFP Approved Code of Practice.

4.7 Openings for Pipes

Pipes passing through a fire-separating element, unless in a protected shaft, will comply with one of the following options:

Option 1: Provide a proprietary, tested sealing system that will maintain the fire resistance of the wall, floor or cavity barrier.

Option 2: Firestop around the pipe, keeping the opening for the pipe as small as possible. The nominal internal diameter of the pipe will not exceed the dimensions outlined in the table below.

Situation	Pipe material and maximum nominal internal diameter (mm)		
	High melting point metal (1)	Lead, aluminium, aluminium alloy, uPVC(2), fibre-cement	Any other material
Structure (but not a wall separating buildings) enclosing a protected shaft that is not a stairway or a lift shaft.	160	110	40
Any other situation	160	40	40

NOTES:

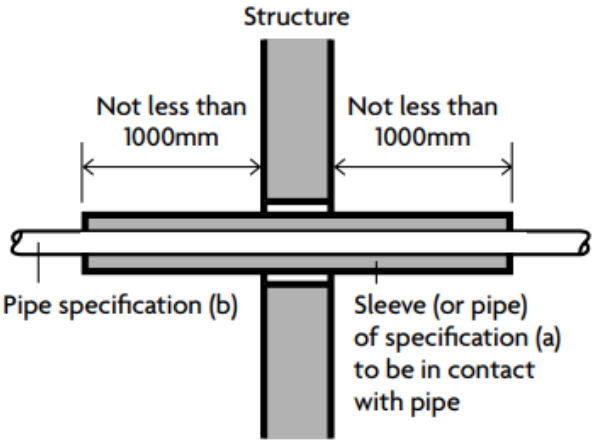
1. Any metal (such as cast iron, copper or steel) which, if exposed to a temperature of 800°C, will not soften or fracture to the extent that flame or hot gas will pass through the wall of the pipe.
2. uPVC pipes that comply with either BS 4514 or BS 5255.

Table 15 Maximum nominal internal diameter of pipes passing through a compartment wall/floor.

Option 3: A pipe with a maximum nominal internal diameter of 160mm may be used with a sleeve made out of a high melting point metal, as shown below, if the pipe is made of one of the following:

- Lead
- Aluminium
- Aluminium Alloy
- Fibre-cement
- uPVC (pipes should also comply with either BS 4514 or BS 5255)

A high melting point metal means any metal (such as cast iron, copper or steel) which, if exposed to a temperature of 800°C, will not soften or fracture to the extent that flame or hot gas will pass through the wall of the pipe.



NOTES:

1. Make the opening in the structure as small as possible and provide fire-stopping between pipe and structure.
2. See Table 15 for materials specification.
3. The sleeve should be class A1 rated.

Figure 3 Pipes penetrating structure.

4.8 Mechanical Ventilation and Ductwork

Ductwork should not help to transfer fire and smoke through the building. Terminals of exhaust points will be sited away from final exits, cladding or roofing materials achieving class B-s3, d2 or worse and openings into the building.

It should be noted that ventilation ducts supplying or extracting air directly to or from a protected stairway should not also serve other areas.

A fire and smoke damper will be provided where ductwork enters or leaves each section of the protected escape route it serves. It will be operated by a smoke detector or suitable fire detection system. Fire and smoke dampers will close when smoke is detected.

In a system that recirculates air, smoke detectors will be fitted in the extract ductwork before both of the following:

a) The point where recirculated air is separated from air to be discharged to the outside.
b) Any filters or other air cleaning equipment.

When smoke is detected, detectors will do one of the following.

i. Cause the system to immediately shut down.
ii. Switch the ventilation system from recirculating mode to extraction to divert smoke to outside the building.

Non-domestic kitchens and plant rooms will have separate and independent extraction systems; extracted air will not be recirculated.

Any ventilation ductwork will need to be fire protected where it penetrates a fire separating element. As ventilation ducts provide a potential route for fire spread through the duct consideration of how this will be fire stopped will also be made. Four basic methods will be considered:

- Method 1 - protection using thermally activated fire dampers;
- Method 2 - protection using fire resisting enclosures;
- Method 3 - protection using fire resisting ductwork;
- Method 4 - protection using automatically activated fire and smoke dampers triggered by smoke detectors.

Methods 1 and 4 will not be used for extract ductwork serving kitchens; the likely build-up of grease within the duct can adversely affect dampers.

Thermally activated fire dampers will not be used for extract ductwork which passes through the enclosure of a protected escape route; this is due to the fact that large volumes of smoke could still pass the thermal device without triggering them.

5 EXTERNAL FIRE SPREAD

5.1 External Wall Surfaces

The external wall of a building will not provide a medium for fire spread if that is likely to be a risk to health and safety. The requirements in this section reduce the risk of vertical fire spread as well as the risk of ignition from flames coming from adjacent buildings. The requirements can be achieved by constructing external walls so that both of the following are satisfied.

- The risk of ignition by an external source to the outside surface of the building and spread of fire over the outside surface is restricted.
- The materials used to construct external walls, and attachments to them, and how they are assembled do not contribute to the rate of fire spread up the outside of the building.

The external surfaces (i.e. outermost external material) of external walls will comply with the provisions in Table 16 below. The provisions apply to each wall individually in relation to its proximity to the relevant boundary. The boundary that a wall face is the relevant boundary and may be one of the following:

a. The site boundary.
b. The centre line of a space where further development is unlikely, such as a road, railway, canal or river.
c. An assumed notional boundary between two buildings on the same site where either of the following conditions is met.
   i. One or both of the buildings are in the 'residential' or 'assembly and recreation' purpose groups (purpose group 1 or 5).
   ii. The buildings will be operated/managed by different organisations.

Building type	Building height	Less than 1000mm from the relevant boundary	1000mm or more from the relevant boundary
'Relevant buildings'		Class A2-s1[(1)], d0 or better	Class A2-s1[(1)], d0 or better
Assembly & recreation	More than 18m	Class B-s3[(2)], d2 or better	From ground level to 18m: class C-s3, d2[(3)] or better From 18m in height and above: class B-s3[(2)], d2 or better
	18m or less	Class B-s3[(2)], d2 or better	Up to 10m above ground level: class C-s3, d2[(3)] or better Up to 10m above a roof or any part of the building to which the public have access: class C-s3, d2[(3)] or better[(4)] From 10m in height and above: no minimum performance
Any other building	More than 18m	Class B-s3[(2)], d2 or better	From ground level to 18m: class C-s3, d2[(3)] or better From 18m in height and above: class B-s3[(2)], d2 or better
	18m or less	Class B-s3[(2)], d2 or better	No provisions

NOTES:

1. The restrictions for these buildings apply to all the materials used in the external wall and specified attachments.
2. Profiled or flat steel sheet at least 0.5mm thick with an organic coating of no more than 0.2mm thickness is also acceptable.
3. Timber cladding at least 9mm thick is also acceptable.
4. 10m is measured from the top surface of the roof.

Table 16 Reaction to fire performance of external surface of walls.

External walls will meet the requirements outlined in Table 16 above, with cavity barriers provided in accordance with Section 4.5 of this report; it will be noted that in the case of an external wall construction, which comprises an external cladding system with a masonry or concrete inner leaf

(which is not subject to the provisions outlined in Table 14 of this report), the surfaces which face into the cavities will also meet the provisions of Table 16.

Due to the height and use of the building, the building is not classed as a 'relevant building', therefore the requirements outlined in the table above for "assembly and recreation" will be used.

As the boundary is more than 1000mm on all elevations, all external walls will achieve a rating of Class B-s3, d2 or better.

Should a cladding system be used, the external walls will either meet the requirements outlined in Table 16 above and paragraphs 12.6 - 12.9 of ADB or alternatively will meet the performance criteria given in the BRE Report "Fire performance of external thermal insulation for walls of multi storey buildings (BR 135) for cladding systems using full scale test data from BS 8414-1:2002 or BS 8414-2:2005".

5.2 Unprotected Areas

To prevent external fire spread from and to adjacent buildings, ADB requires limiting the extent of unprotected areas to the sides of a building which would not give adequate protection against the external spread of fire from one building to another. The amount of unprotected area allowed is dependent on the distance to site boundaries/ notional boundaries.

A prescriptive assessment has been undertaken in accordance with the "Enclosing Rectangles" approach as outlined in BR 187 report. The aim of this assessment is to ensure that the building is separated from the boundary by at last half the distance at which the total thermal radiation intensity received from all unprotected areas in the wall would be 12.6 kW/m². The assessment evaluates the need to provide fire rated construction within the external envelope to mitigate the risk of external fire spread. It has been assumed that other than any glazed areas and final exit doors, the solid portions of the elevation are suitably protected with fire resisting construction in accordance with the requirements outlined in Table 10 of this report and have no combustible material more than 1mm thick as its external surface.

It is always assumed that a fire will be confined to one compartment, therefore, to calculate the allowable percentage of unprotected openings, the compartment providing the worst-case scenario

is always assessed. As there are no compartment walls or floors within the building, each elevation is considered in its entirety.

5.2.1 Front Elevation (West Façade)

(LWF Calculations)

The minimum distance to the relevant boundary is approximately 10 metres. The relevant boundary has been taken to the centreline of North Lane.

Using a 15-metre-wide x 6-metre-high rectangle, a minimum boundary distance of 6.0 metres is required for 100% unprotected openings. This demonstrates that the glazed portion of this elevation does not require any fire resistance based on the current distance to the relevant boundary.

(BPG Architects Calculations)

Not considered.

5.2.2 Rear Elevation (East Façade)

(LWF Calculations)

The minimum distance to the relevant boundary is approximately 1.5 metres. The relevant boundary has been taken as the site boundary.

Using a 12-metre-wide x 3-metre-high rectangle, a minimum boundary distance of 3.5 metres is required for 100% unprotected openings; as the boundary distance is less than this, the percentage of unprotected area must be limited. A 1.5 metre boundary distance permits 40% of the "enclosing rectangle" to be unprotected; the area of the enclosing rectangle is 36m^2 therefore 40% of this area equates to 14.4m^2. From the drawings provided, the amount of unprotected area is approximately 5.9m^2. This demonstrates that the unprotected portion of this elevation does not require any fire resistance based on the current distance to the relevant boundary.

(BPG Architects Calculations)

Unprotected Areas East Elevation

Enclosing Rectangle = 11.59 x 2.57 = 29.79m2

Permitted unprotected at 9.55m = 76.4%

(Taken from ADB Table 13.1 – Interpolating between two points given)

Unprotected Area 17.39m^2

% of unprotected Area = (17.39/29.79) x 100 = 39%) *calculation incorrect should be 58%*

&

Unprotected Areas East Elevation

Enclosing Rectangle = 9.98 x 2.57 = 25.41m2

Permitted unprotected at 1.48m = 11.8%

(Taken from ADB Table 13.1 – Interpolating between two points given)

Unprotected Area 5.971m^2

% of unprotected Area = (5.971/25.41) x 100 = 23%)

(LWF Calculations)

5.2.3 Side Elevation (North Façade)

The minimum distance to the relevant boundary is approximately 5.5 metres. The relevant boundary has been taken as the site boundary.

Using a 9-metre-wide x 3-metre-high rectangle, a minimum boundary distance of 3 metres is required for 100% unprotected openings. This demonstrates that the unprotected portion of this elevation does not require any fire resistance based on the current distance to the relevant boundary.

5.2.4 Side Elevation (South Façade)

(LWF Calculations)

The minimum distance to the relevant boundary is approximately 5.5 metres. The relevant boundary has been taken to the centreline of Middle Lane.

Using a 27-metre-wide x 3-metre-high rectangle, a minimum boundary distance of 4.5 metres is required for 100% unprotected openings. This demonstrates that the glazed portion of this elevation does not require any fire resistance based on the current distance to the relevant boundary.

(BPG Architects Calculations)

Unprotected Areas East Elevation

Enclosing Rectangle = 22.83 x 3.09 = 70.55m2

Permitted unprotected at 5.5m = 44.0%

(Taken from ADB Table 13.1 – Interpolating between two points given)

Unprotected Area 11.7m^2

% of unprotected Area = (11.7/70.55) x 100 = 17%)

5.3 Roof Coverings

Roof coverings will need to comply with Table 17 below. If any plastic roof lights are provided, they will meet the requirements of Tables 14.2 and 14.3 of ADB.

Designation of covering of roof or part of roof	**Minimum distance from any point on relevant boundary**			
European Class	**Less than 6m**	**At least 6m**	**At least 12m**	**At least 20m**
B_{ROOF}(t4)	Acceptable	Acceptable	Acceptable	Acceptable
C_{ROOF}(t4)	Not acceptable	Acceptable	Acceptable	Acceptable
D_{ROOF}(t4)	Not acceptable	Acceptable(1)(2)	Acceptable(1)	Acceptable
E_{ROOF}(t4)	Not acceptable	Acceptable(1)(2)	Acceptable(1)	Acceptable(1)
F_{ROOF}(t4)	Not acceptable	Not acceptable	Not acceptable	Acceptable(1)(2)

NOTES:

(1) Not acceptable on any of the following buildings:

- Industrial, storage or other non-residential Purpose Group buildings of any size.
- Any other building 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 rated class A2-s3, d2 or better.

Table 17 Limitations on Roof Coverings.

6 FIRE SERVICE ACCESS AND FIRE FIGHTING FACILITIES

6.1 Hydrants

The provision of existing fire hydrants in the vicinity of the development has been confirmed by the design team. The existing hydrants are located in positions that are within 90 metres of an entry point to the building and not more than 90 metres apart. The location of the existing hydrants within the vicinity of the redevelopment can be seen on the diagram below.

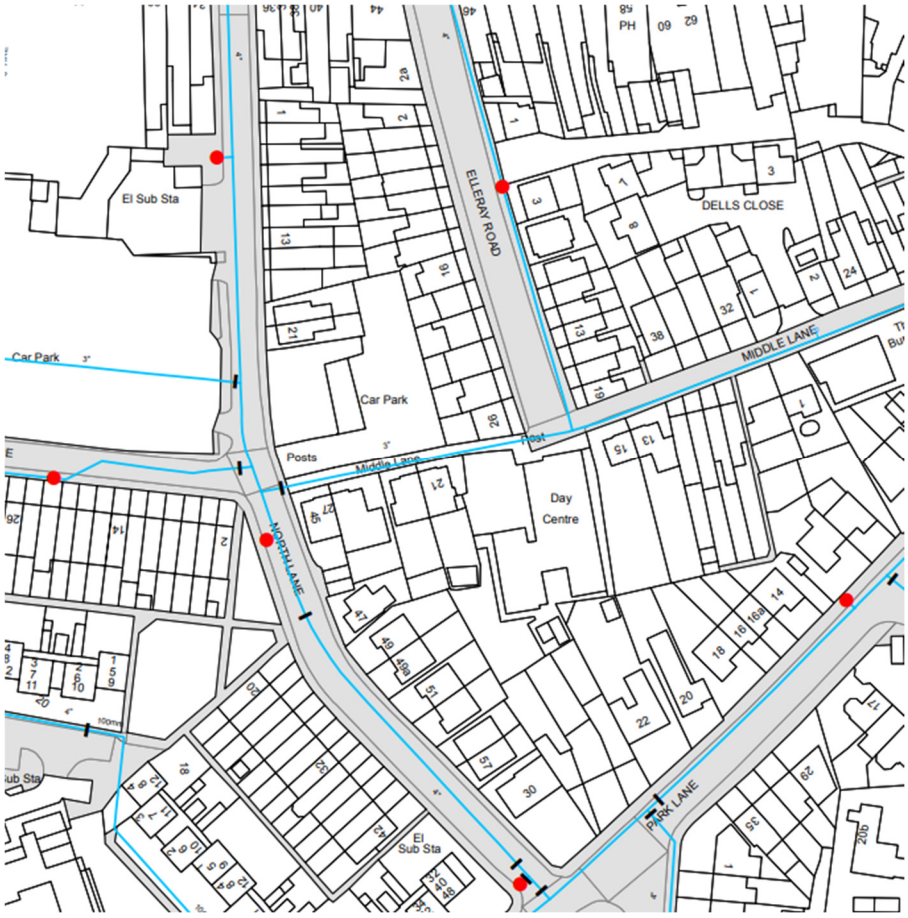


Figure 4 Location of fire hydrants.

6.2 Vehicle Access

For buildings with a total floor area less than 2000m^2 and a top storey floor height less than 11 metres, ADB requires pumping appliance access to at least 15% of the perimeter of the building or within 45 metres of every point on the projected footprint of the building.

Currently it is possible to achieve both of the above requirements based on appliance access via North Lane.

All doors giving firefighter access into the building are considered suitable and meet the minimum required width of 750mm.

Any roads or surfaces providing fire appliance access will comply with the widths and hard-standing requirements outlined in ADB and as shown below. As North Lane is an existing road, it is assumed to comply with the requirements below.

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(3)
High Reach	3.7	3.1	26.0	29.0	4.0	17.0(4)

NOTES:

(1) Fire appliances are not standardised. The building control body may, in consultation with the local fire and rescue service, use other dimensions.

(2) The roadbase can be designed to 12.5 tonne capacity. Structures such as bridges should have the full 17-tonne capacity. The weight of high reach appliances is distributed over a number of axles, so infrequent use of a route designed to accommodate 12.5 tonnes should not cause damage.

(3) For buildings within London, as per LFB's Fire Safety Guidance Note 29 (GN29), this should be increased to 14 tonnes.

(4) For buildings within London, as per LFB's Fire Safety Guidance Note 29 (GN29), this should be increased to 23 tonnes.

Table 18 Vehicle Access Route Specification.

7 PORTABLE FIRE FIGHTING EQUIPMENT

A detailed analysis of the risks within the building will be undertaken with portable fire-fighting equipment (PFFE) provided accordingly.

Portable fire extinguishers will be selected and installed in accordance with BS 5306-8:2012 and BS 5306-3:2017.

Normally, extinguishers will be located in conspicuous positions where they will be readily seen by persons following an escape route, i.e. room exits, corridors, stairways, lobbies and landings. Extinguishers will be sited in such a way that it is not necessary to travel more than 30 metres from the site of the fire to reach an extinguisher.

8 FIRE SAFETY MANAGEMENT

Under Regulation 38 of the Building Regulations, this Fire Strategy and all other relevant fire safety information will be provided to the 'responsible person' (under the Regulatory Reform Order 2005) not later than the date of completion of the work, or the date of occupation, whichever is earlier. In addition, the responsible person will also need to confirm receipt and understanding of all relevant fire safety information.

Once occupied, those responsible for managing the building must comply with the requirements of the Regulatory Reform (Fire Safety) Order 2005 (FSO), which requires that a responsible person (the person having control of the building, or a degree of control) takes reasonable steps to reduce the risk from fire and makes sure people can safely escape from the building if there is a fire. This involves a fire safety risk assessment being carried out to comply with the Regulatory Reform Order (Fire Safety) 2005. The fire safety risk assessment will need to consider the level of management required on site, which will need to be developed and maintained to continuously comply with the requirements of the RRO. In addition, there will always need to be enough staff on duty to manage the requirements of the fire strategy for the building.

It will need to be ensured that the maximum permissible occupancy within the building for events are limited to the numbers detailed in this report, which will need to form part of the management strategy for the building and be documented/communicated to the end user of the building. In summary the main hall cannot be used by more than 120 people, including any staff who may be present at any event. If the hall is sub-divided, then there can be no greater than 60 people in each section. The first floor cannot have more than 60 people occupying that level.

A robust fire safety management plan will be prepared by Building Management to the relevant areas of the building, which will include but is not limited to the following:

- Actions to be taken in the event of a Fire Emergency including specific evacuation protocols with coordinated fire alarm system cause and effect arrangements.
- A defined assembly point outside and away from the property.
- Evacuation strategy for the building (i.e. 'simultaneous' strategy).
- Personal/or General Emergency Evacuation Plans (PEEPs or General Plan) for all occupants needing help to evacuate the building, which will inform the management of the extent of support needed for evacuation through the recording of PEEPs.

- Housekeeping (e.g. Waste management, keeping escape routes clear/free of obstructions and combustible items (fire loading), and locking of stores etc.)
- Maintenance of active and passive fire safety systems, for example:
    - Compartmentation to the building.
    - Fire doors.
    - Fire detection and alarm systems.
    - Continuing Control and Audit Procedures.
    - Security.
    - Maintenance of Fire Service Access.

This section only serves as a brief introduction to the evacuation and procedures which will be written into the Fire Safety Management Plan. Further guidance can be found in BS 9999.

The fire safety management procedures will need to recognise that to compliment the passive and active fire safety measures, there must be a safe and effective procedure in the form of a fire evacuation plan for the building designed with a simultaneous evacuation. When this plan is in place, it will need to be rehearsed through fire/evacuation drills forming part of staff training.

Specific training for staff must be provided in the use of the following:

- Understanding and interpreting the fire alarm panel screen.
- Understanding and interpreting the Emergency Voice Communication system.
- Communicating via the Emergency Voice Communication system.
- Understanding and driving the evacuation lift in a fire scenario (including explanation of the compartmentation present and the separation to create protected areas).

The emergency evacuation plan together with the information and procedures detailed in this report, will need to form the basis of the management commitment to ensure that effective fire safety procedures are maintained.

Records of all staff training will need to be logged and maintained in a Fire Safety Logbook.

9 LIMITATIONS

The information limitations and assumptions used in the preparation of this report are described below.

Building Regulations

This report considers Building Regulations which deal with life safety only. Property protection, business continuity and insurance issues are not addressed in this report.

Other Limitations

Complying with the recommendations of this report will not guarantee that a fire will not occur. This report has been prepared for sole benefit, use and information of Richmond and Wandsworth Councils and other members of the design team and the liability of LWF, its directors and employees, in respect of the information contained in this report, will not extend to any third party.

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APPENDIX A - FLOOR PLANS

Figure 5 Site Plan

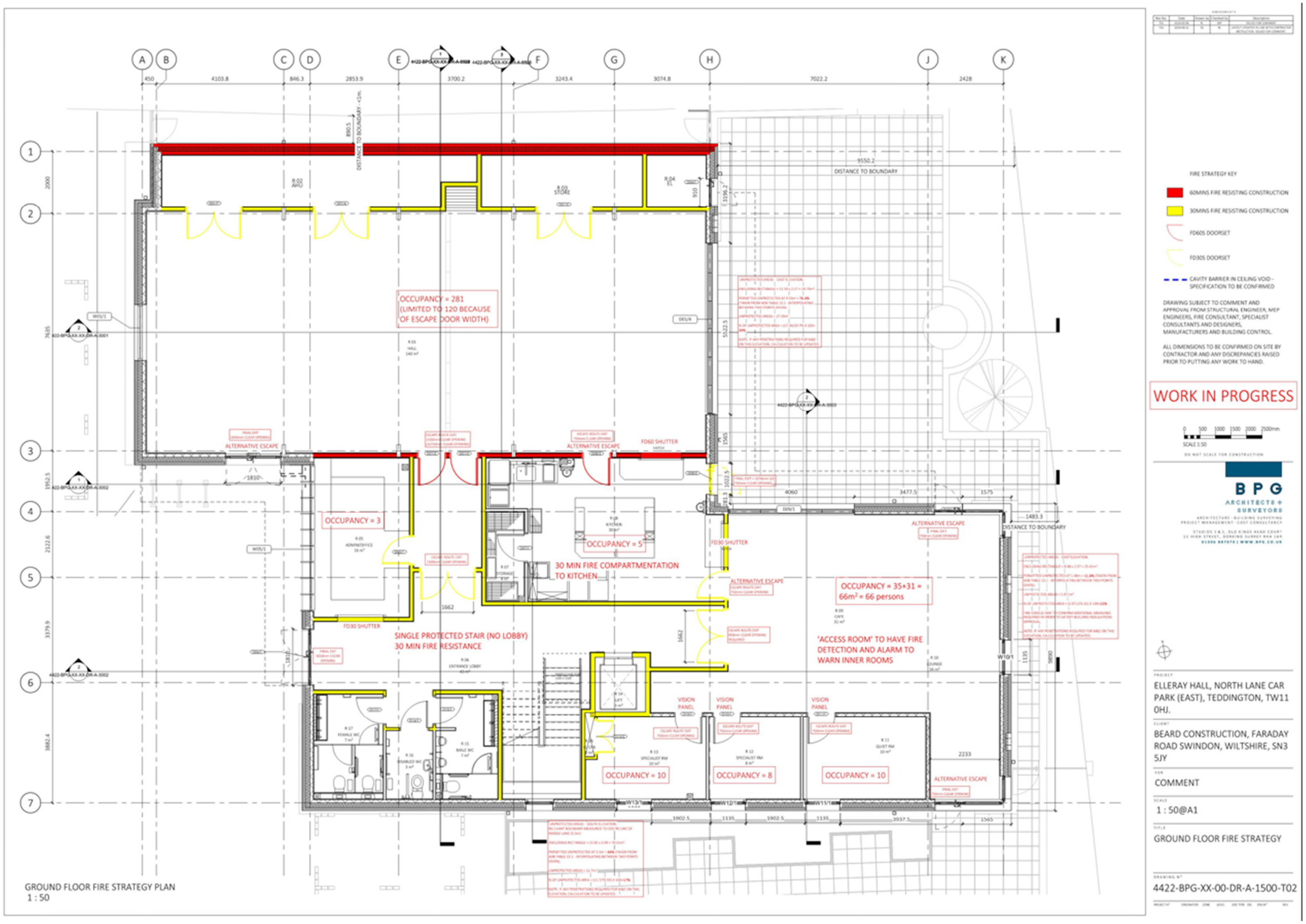

Figure 6 Ground Floor Layout

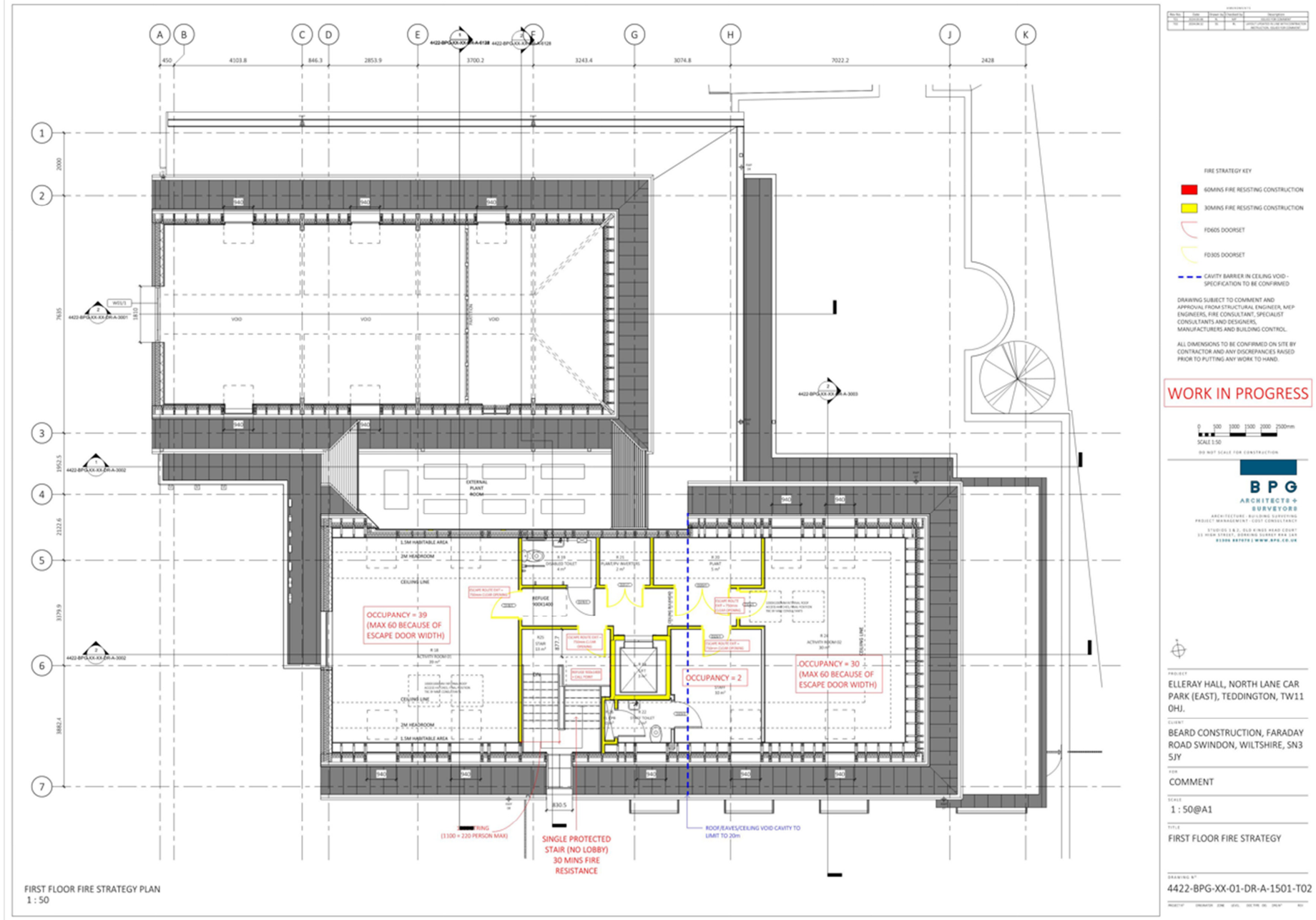

Figure 7 First Floor Layout.

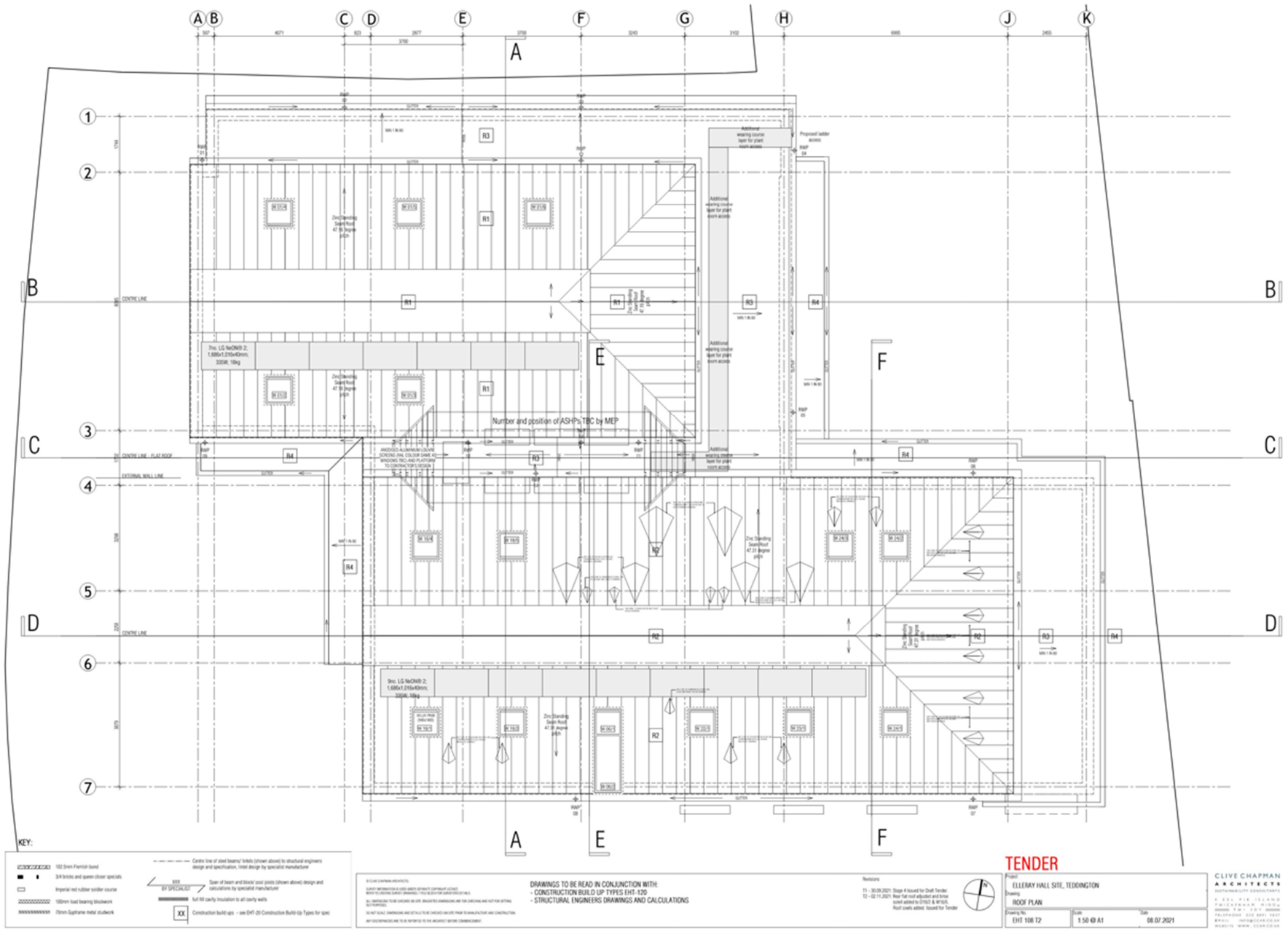

Figure 8 Roof Layout.

Figure 9 West (front) and South (side) Elevations.

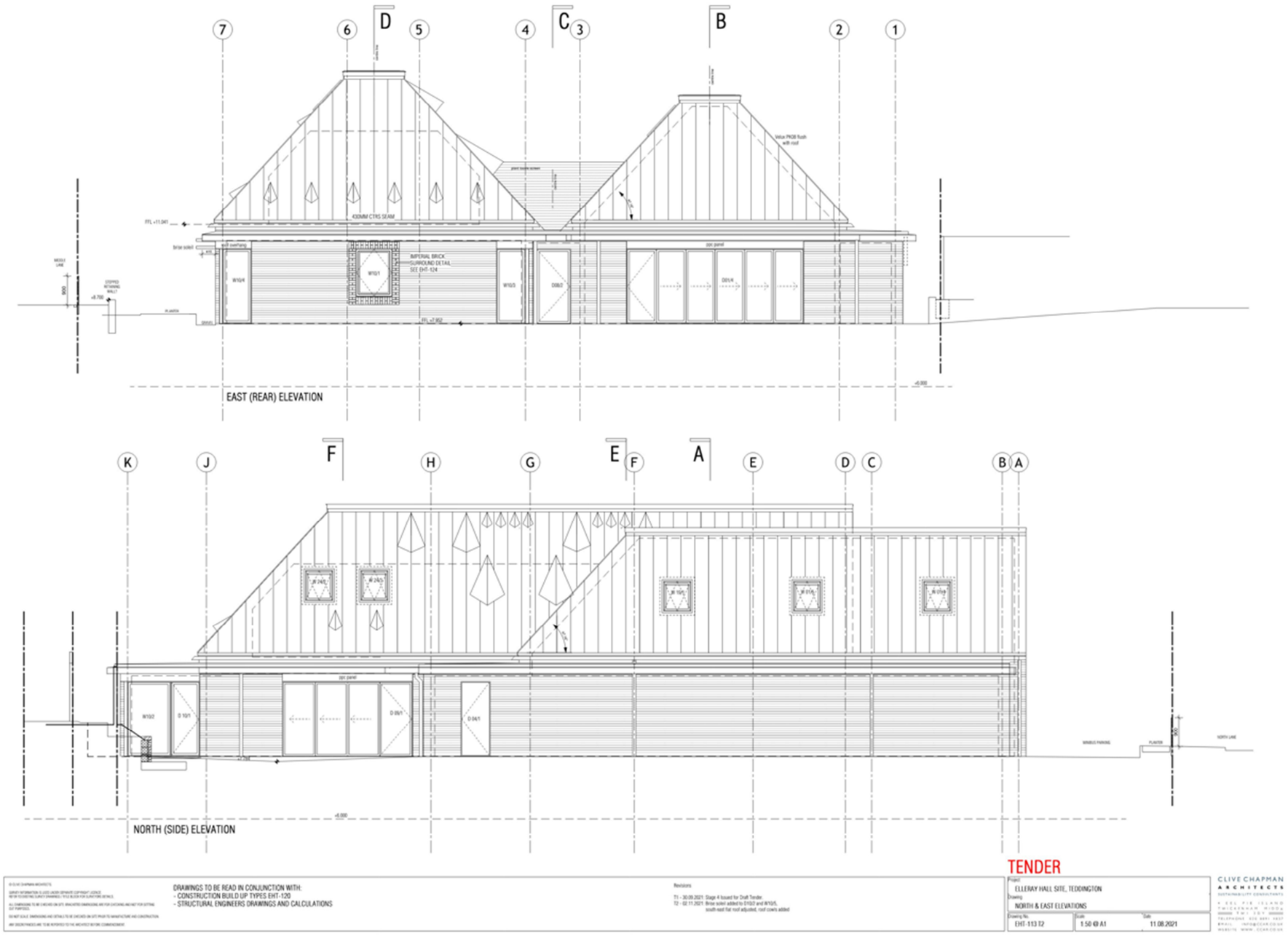

Figure 10 East (rear) and North (side) Elevation.