

Author Credentials

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

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

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

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

Revisions

Revision	Date	Prepared By Comments		Signature
1.0	06.03.2024	Nadim Choudhary	Issued for Comment and Acceptance	Washing or
2.0	18.03.2024	Nadim Choudhary	Updated in line with client comments	Nationalay

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

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

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1. Purpose of Document

1.1. Scope

Fire Safety Services trading under Rockland Safety Services Ltd have been instructed in the development of a Fire Safety Strategy (this document) for the proposed mixed-use development at Grosvenor Garage, Fitzgerald Avenue, London SW14 8SZ.

The commercial unit is expected to be developed further as part of the fit-out design, which falls beyond the scope of this report. Incoming tenants are expected to commission individual fit-out fire strategies for the commercial unit, to be developed by a competent fire engineer.

This report covers the entire building in the finished building condition. This report does not represent a construction phase fire safety strategy, which is the responsibility of the Contractor. Phased or temporary arrangements fall beyond the scope of this report.

This report is subject to review and agreement with the Building Control Body including their statutory consultation with the local Fire Brigade.

1.2. Legislation

The main fire legislation applicable to this building includes The Building Regulations 2010, The Regulatory Reform (Fire Safety) Order 2005 and the Fire Safety Order 2021.

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

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

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

1.2.1. Building Regulations 2010 (as amended to date)

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

buildings. There are 18 Parts, which cover subjects such as structure, fire safety, ventilation, drainage, etc.

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

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

There are several prescriptive documents, which can be adopted to show compliance with the Schedules. These include Approved Document B Volume 1 (ADB Vol. 1) and BS 9991 which are considered as adequate to provide general guidance for residential buildings. Approved Document B Volume 2 (ADB Vol. 2) and BS 9999 are considered adequate to provide general guidance for commercial buildings.

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

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

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

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

This report assumes that the building will be managed effectively and in accordance with the requirements of the Regulatory Reform Fire Safety Order 2005.

1.2.3. <u>Regulation 7</u>

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

The building is assumed to not include a floor in excess of 18m, therefore not classed as a 'relevant building'. However, it is proposed to comply with the requirements of Regulation 7 for a 'relevant building' in order to indicate compliance with the functional requirement B4 (external fire spread) and to reduce the risk with respect to the property likely needing an EWS1 form.

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

Attention is also drawn to the updated Regulation 7(1A), which prohibits the use of relevant metal composite materials in an external wall or specified attachment of all buildings. Relevant metal composite materials are defined as any panel or sheet, having a thickness of no more than 10mm which is composed of several layers, two or more of which are made of metal, alloy or metal compound, and one or more of which is a substantial layer made of a material having a gross calorific value of more than 35MJ/kg when tested in accordance with BS EN ISO 1716. A substantial layer is defined as a layer which is at least 1mm which or has a mass per unit area of at least 1kg/m².

1.2.4. <u>Regulation 38</u>

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

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

1.3. <u>Fire Safety Objectives</u>

The primary objective of this report is to help provide a design that meets the functional requirements of the Building Regulations (see Section 1.2).

To achieve this, the design aims to:

- Provide suitable means of warning (Requirement B1)
- Provide suitable means of escape (Requirement B1)
- Provide means to limit internal fire spread (Requirements B2 and B3)
- Provide means to limit the risk of external fire spread (Requirement B4)
- Provide suitable access and facilities for the Fire Service (Requirement B5)

1.4. Property Protection

The guidance and recommendations herein are primarily concerned with the protection of life and preventing conflagration. However, the life safety objectives of this fire safety strategy will also aid in protecting the property by minimising damage to the building and contents caused by heat, smoke, and firefighting.

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

2. Type of Property

2.1. Description

Grosvenor Garage, Fitzgerald Avenue, London SW14 8SZ is a new mixed-use development, consisting of three dwellinghouses and one block of flats, all in an adjoined condition. The overall development will include a total of three storeys (G + 2).

The ground level of the block of flats will include ancillary areas for the residential block (bin stores, bike store) and a commercial unit. The above-ground floors will comprise exclusively of residential units.

Each dwellinghouse is served by a protected internal staircase. The block is served by a staircase and one lift.

It is the understanding of Rockland Safety Services Ltd that the block of flats includes a top occupied floor (second floor) in excess of 5m, but less than 11m above the lowest adjoining ground. The top occupied floor of the dwellinghouses (second floor) will be more than 4.5m but less than 7.5m above ground level.

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

2.2. <u>Design Approach</u>

Approved Document B Volume 1 (ADB) has been employed as the guidance document to develop this fire strategy. Approved Document B Volume 2 (ADB) has been employed in the design of the ancillary and commercial areas at ground floor.

This report is not exhaustive in nature. Therefore, where not specifically stated, all fire safety provisions should be in accordance with ADB, and the documents referenced therein.

2.3. <u>Purpose Group</u>

The dwellinghouses will be in the selected purpose group [1(b)], as described in Table 1.0 of ADB (see extract below).

Volume 1 purpose groups

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

For the residential areas of the block of flats, the purpose group selected will be Flats [1(a)] (see extract below).

Title	Group	Purpose for which the building or compartment of a building is intended to be used
Residential	1(a) ⁽¹⁾	Flat.
(dwellings)		

For the commercial unit on the ground floor within the block of flats, the purpose group selected will be Shop and Commercial (4).

Shop and commercial

• A retail trade or business (including selling food or drink to the public for immediate consumption, retail by auction, self-selection and over-the-counter wholesale trading, the business of lending books or periodicals for gain, the business of a barber or hairdresser, and the rental of storage space to the public).

• Premises to which the public are invited either:

— to deliver or collect goods in connection with their hire, repair or other treatment

— (except in the case of repair of motor vehicles) where the public themselves may carry out such repairs or other treatments.

2.4. Occupancy Numbers

Within residential areas, occupants are assumed to be able to live and evacuate independently.

Within ancillary areas, it is assumed that occupants will be awake and familiar with the building and associated escape routes.

Within the commercial areas, it is assumed that occupants will not include any dependency level. However, suitable training and procedures should be in place so that members of staff can effectively assist all occupants (i.e., disabled occupants) that may need assistance in a fire scenario.

The maximum occupancy numbers for the commercial unit are presented below in Table 1. The design team should confirm these maximum occupancy numbers are satisfactory in coordination with the Client. Residential unit areas are not presented below as these do not dictate fire safety provisions. Bike stores, bin stores, etc. are not presented as these include a transient occupancy only.

Table 1 - Maximum Occupancy Numbers

Floor	Area	Maximum Occupancy Numbers
Ground	Commercial unit	60

3. Requirement B1: Means of Warning and Escape

"The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times." - Part B of Schedule 1 of the Building Regulations 2010."

3.1. Evacuation Strategy

Residential Areas

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

Ancillary Areas

All residential ancillary areas (bike stores, bin stores) will employ a simultaneous evacuation strategy, whereby all residential ancillary areas should evacuate immediately upon activation of the fire alarm anywhere in the communal parts of the building.

Commercial Areas

The commercial unit should employ a simultaneous evacuation strategy, separately, whereby only the commercial unit of fire origin should evacuate immediately upon activation of the fire detection and alarm system therein.

3.2. <u>Fire Detection</u>

Residential Areas

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

Communal Areas

The common residential parts of the block of flats (communal staircase, ancillary areas, etc.) should be covered by a standalone Category L5 fire detection and alarm system designed, installed and maintained in accordance with BS 5839-1. This system should be employed to trigger the smoke ventilation systems (see Section 3.10), and also evacuate the ancillary areas.

The communal system should include smoke detection in the communal staircase and ancillary areas. The fire alarm panel should be located near the main entrance of the residential staircases on the ground floor.

Commercial Areas

The commercial unit should include a standalone Category L2 fire detection and alarm system designed, installed and maintained in accordance with BS 5839-1.

General

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

3.3. <u>Automatic Fire Suppression</u>

As the block does not include a floor in excess of 11m above the ground and each dwellinghouse includes a top floor of less than 7.5m above the lowest adjoining ground, automatic fire suppression is not considered a minimum requirement for the buildings.

3.4. <u>Escape Signage</u>

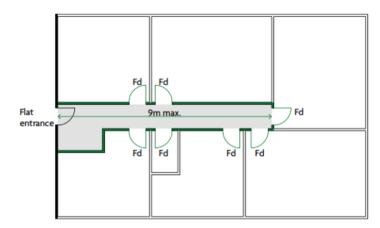
Escape signage should be designed and installed in accordance with BS ISO 3864-1, BS EN ISO 7010, and BS 5499-4. It is expected that escape signage should be provided to all communal residential areas (communal staircase), ancillary areas and the commercial unit.

3.5. <u>Emergency Lighting</u>

Emergency lighting should be designed and installed in accordance with the recommendations of BS 5266-1 and BS EN 1838. It is expected that escape signage should be provided to all communal residential areas (communal staircase), ancillary areas and the commercial unit.

3.6. Escape within Flats

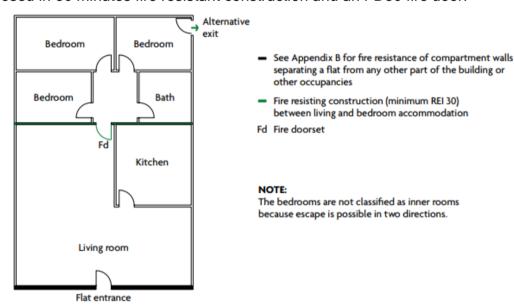
All above ground flats should be designed as flats with protected entrance halls in accordance with Diagram 3.2 of ADB (as extracted below). Each protected entrance hall should achieve 30 minutes of fire resistance and serve all habitable rooms via FD30 fire doors. Travel distance within the protected entrance hall should be limited to 9m.



- Fire resisting construction (minimum REI 30)
- Fd Fire doorset (minimum E 20)
- Protected entrance hall (minimum REI 30)
- See Appendix B for compartment walls separating a flat from any other part of the building or other occupancies

NOTE: Bathrooms do not need to have fire doorsets provided that the bathroom is separated by fire resisting construction from the adjacent rooms.

The flat on the ground floor will be designed as a flat with an alternative exit from the bedroom in accordance with Section 3.19 and Diagram 3.4 of ADB (as extracted below). The bedroom should be enclosed in 30 minutes fire resistant construction and an FD30 fire door.



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

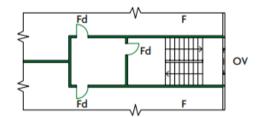
3.7. <u>Escape in Common Parts of the Building</u>

The common staircase in the block is proposed to follow the guidance of Diagram 3.9.b. of ADB (as extracted below) for a small single stair building design without communal corridors. The following requirements should be adhered to in accordance with ADB recommendations:

- The building should not include a floor in excess of 11m above ground.
- The building should not include more than 3 storeys above ground.

- The common staircase should include smoke ventilation in accordance with Section 3.11 (i.e., 1.0m² AOV).
- There should be no more than two flats per storey.
- All flats that are served by the staircase should be separated from the staircase by a
 protected common corridor. However, if the flats have protected entrance halls or
 protected internal staircases, the common corridors can be omitted.
- The ancillary areas should not connect directly to the staircase, lift or the discharge route from the staircase. At ground floor level, the bike store should connect to a protected lobby including smoke ventilation in accordance with Section 3.11 (i.e., 0.4m² permanent ventilation). The lobby should be enclosed in 30 minutes fire resisting construction and FD30S fire doors. This lobby is now indicated on the plans.
- Special tenancy agreements and management procedures should be in place to ensure occupants do not use the common staircase landings to store any combustibles.
- Only fire-rated letter boxes are permitted in the main entrance to the staircase.

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



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

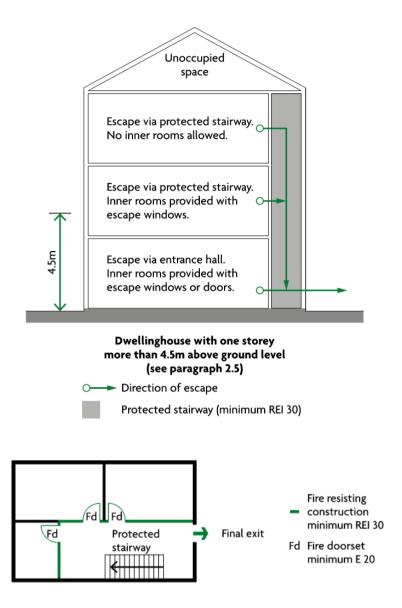
If the flats have protected entrance halls, the lobby between the common stair and flat entrance is not essential.

NOTES:

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

3.8. Escape Within Dwellinghouses

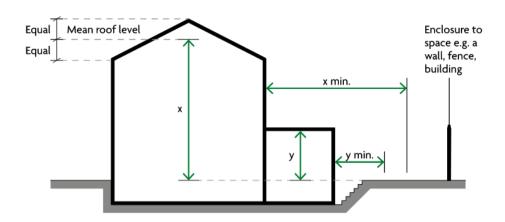
The houses should employ protected internal staircases in accordance with Diagram 2.1.c), Diagram 2.2.a) and Section 2.5.a). i) of ADB (as extracted below). Considering that the houses include a top floor of less than 4.5m, the protected internal staircase should achieve 30 minutes of fire resistance and serve all habitable rooms via FD30 fire doors. The internal staircases should be clear of combustibles and storage areas should not be located in the staircase enclosure.



As the top occupied floor of the dwellinghouses is less than 7.5m above ground, suppression is not required.

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

It should be noted that escape from the ground floor rooms could also be via emergency escape windows and doors (in accordance with Section 3.9) leading into the back garden, if the garden is longer than the height of the building in accordance with Diagram 2.5 of ADB.



Where escape from a dwellinghouse is to an enclosed space with exit only possible through other buildings (e.g. a courtyard or back garden), the length of the space should exceed whichever is the greater of the following.

- a. The height of the dwellinghouse above ground level (x).
- b. Where a rear extension is provided, the height of the extension (y).

3.9. <u>Emergency Escape Windows and Doors</u>

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

- Emergency escape windows should not be used for rooms that are more than 4.5m above the lowest adjoining ground outside the building.
- Windows should have an unobstructed openable area that complies with all of the following:
 - A minimum area of 0.33m².
 - o A minimum height of 0.45m.
 - A minimum width of 0.45m.
 - The bottom of the openable area is a maximum of 1100mm above the floor.
- People escaping should be able to reach a place free from danger of fire. Courtyards or inaccessible back gardens should comply with Diagram 2.5 (as extracted above).
- Windows should be capable of remaining open without being held.

3.10. Inner Rooms

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

- A kitchen.
- A laundry or utility room.
- A dressing room.
- A bathroom, WC, or shower room.

3.11. Smoke Ventilation

There is generally no requirement for smoke ventilation for residential dwellinghouses of this height, therefore this fire strategy does not currently propose any smoke ventilation provisions for dwellinghouses.

Residential staircase

In accordance with ADB, an AOV, achieving a minimum free area of 1.0m², should be provided at high level above the communal staircase serving the block of flats. The AOV should be designed, installed and maintained in accordance with BS EN 12101-2.

Bin Stores

Each bin store should include 0.2m² of permanent ventilation directly to the outside.

Bike Store

The bike store in the block should be accessed via a protected lobby provided with 0.4m² of permanent ventilation directly to the outside. The lobby should be enclosed in 30 minutes fire resisting construction and FD30S fire doors. This lobby is now indicated on plans.

3.12. <u>Escape within the Ancillary Areas</u>

Travel within most ancillary areas (bike stores, bin stores) should be limited to 9m in a single direction of escape.

The ground floor ancillary areas should include escape directly to the outside.

3.13. <u>Escape within the Commercial Areas</u>

The commercial unit should include a single exit directly to the outside. A maximum occupancy of 60 people is permitted considering the single exit for the commercial unit.

Travel distances should be limited to 18m in a single direction of escape within the commercial unit. These should be reviewed as part of the fit-out fire strategy of the incoming tenants.

3.14. <u>Travel Distances</u>

Within protected entrance halls for all flats, travel distances should be limited to 9m, as measured from the door serving any habitable room, up to the flat entrance door.

Travel distances within the landings of the protected internal staircases (within dwellinghouses) should be limited to 9m.

Travel in ancillary areas is limited to 9m in a single direction of escape.

Travel in the commercial unit is limited to 18m in a single direction of escape. This should be reviewed as part of the fit-out fire strategy of the incoming tenants.

3.15. First Aid Firefighting

First aid fire-fighting equipment should be appropriate for the fire hazards and for the occupancy of the building and should be located where it can be deployed quickly. Fire extinguishers should be chosen and located as per BS 5306-8 and should be commissioned as per BS 5306-3.

3.16. Provision of Refuges

In accordance with London Plan Policy D5, the lift serving the block of flats should be designed as an evacuation lift, in support of dignified escape for occupants. The ground floor should include level escape directly to the outside from all areas.

The evacuation lift should be enclosed in 60 minutes fire resisting construction, including FD30 fire doors.

The design team should confirm how the building complies with The Equality Act. Personal Emergency Evacuation Plans (PEEPs) need to be developed for regular occupants (PEEPs). PEEPs must outline the fire safety requirements and evacuation procedures for persons with disability to ensure that the differing needs of all persons using the building are properly considered.

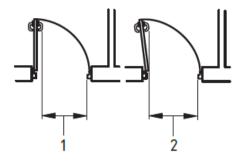
3.17. Provision of Muster Points

Suitable muster points must be identified once occupants leave the building. It may be acceptable to have one common muster area depending on available space in the surrounding area. The route to the muster point shall be clear of the building, well defined, and if necessary, suitably guarded from possible traffic. The selection of the muster point should not adversely impact on Fire Service access and facilities.

3.18. <u>Escape Doors</u>

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

The minimum clear exit width of any door will be 850mm in support of independent disabled evacuation. The clear width is measured as per the extract below.



Key

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

3.19. <u>Vertical Means of Escape</u>

For the block of flats, the communal staircase serves a top floor less than 18m; therefore, the staircase does not need to be designed as a firefighting core. The minimum clear width of the staircase should achieve 1000mm.

Only fire resisting letter boxes achieving 30 minutes and constructed of materials achieving Class A2-s3, d2 or better are permitted. Furniture or combustibles are not permitted in this area.

The communal staircase in the block should be designed as a 60-minute protected shaft, with FD30S doors.

For dwellinghouses, the minimum clear width of the internal protected staircases should achieve 800mm.

The protected internal staircases in dwellings should be enclosed in 30 minutes fire resisting construction (and FD30 fire doors) up to a final exit at ground floor level. The staircases should discharge directly to a final exit leading to a place of safety.

3.20. Lift

As the building does not serve a floor in excess of 18m above ground, firefighting lifts are not required.

The lift serving the block of flats should be designed as an evacuation lift in accordance with BS EN 81-76, providing dignified escape for disabled occupants in accordance with London Plan Policy D5.

The lift shaft should be enclosed in 60 minutes fire resisting construction and FD30 fire doors.

3.21. Service Risers

Service risers should be enclosed in 60 minutes fire resisting construction (and FD30S fire doors), including adequate 60 minutes fire stopping in line with each floor. These should be designed in accordance with BS 8313. Service risers should not open directly into a staircase.

Service risers should not be used for storage; therefore, the service / store should be only used for services and / or meters.

3.22. Escape Beyond Final Exits

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

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

4. Requirement B2: Internal Fire Spread (Linings)

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

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

The materials used in construction, walls and internal linings of the walls and ceilings should be classed in accordance with the requirements of Table 6.1 in ADB Volume 2 as a minimum, and tested in accordance with the European Classifications in accordance with BS EN 13501-1, as outlined in the extract below.

Location	Classification
Small rooms of maximum internal floor area:	D-s3, d2
a. 4m² in residential accommodation	
b. 30m² in non-residential accommodation	
Other rooms (including garages)	C-s3, d2
Other circulation spaces	B-s3, d2 ⁽¹⁾

NOTE:

^{1.} Wallcoverings which conform to **BS EN 15102**, achieving at least class C-s3, d2 and bonded to a class A2-s3, d2 substrate, will also be acceptable.

5. Requirement B3: Internal Fire Spread (Structure)

"The building shall be designed and constructed so that, in the event of a fire, its stability will be maintained for a reasonable period. A wall common to two or more buildings shall be designed and constructed so that it adequately resists the spread of fire between those buildings. To inhibit the spread of fire within the building, it shall be sub-divided with fire-resisting construction to an extent appropriate to the size and intended use of the building. The building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited." - Part B of Schedule 1 of the Building Regulations 2010"

5.1. General

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

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

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

5.2. <u>Structural Fire Resistance</u>

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

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

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

In accordance with ADB, the building should include 60-minute structural fire resistance, considering the top occupied floor (second floor) is assumed to be less than 11m, but more than 5m.

Any structural element that provides support to other fire rated elements should achieve at least the same fire rating as those elements they support. There is no requirement to provide structural fire protection to any structure solely supporting a roof, although any structure supporting a roof top plant or escape route from a plantroom (unless solely used for maintenance access) should be provided with the appropriate period of fire resistance.

5.3. <u>Minimum Fire Resistance Standards</u>

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

The overall compartmentation strategy is presented in Table 2. For fire doors, "30" refers to the period of fire resistance with respect to Integrity (E) only, and "S" refers to the ability to resist the passage of smoke by means of intumescent strips and smoke seals as necessary.

Table 2 - Compartmentation Strategy

Building Element	Minimum Fire Resistance (minutes)	Fire Doors
Elements of structure	60R	N/A
External Fire Resisting Walls (see Sections 3.7 and 6.4)	60REI	N/A
Party Walls (see Section 6.4)	60REI	N/A
Compartment floors (all floors in the block of flats)	60REI	N/A
Protected shafts (communal staircase)	60REI	FD30S
Protected internal staircases (in dwellinghouses)	30REI	FD30
Protected entrance halls (in flats)	30REI	FD30
Protected shaft (lift)	60REI	FD30
Protected shafts (service risers)	60REI	FD30S
Compartment walls (flats, houses)	60REI	FD30S
Compartment walls (ancillary areas)	60REI	FD30S
Compartment walls (commercial unit)	60REI	N/A
Compartment walls (ancillary lobby)	60REI	FD30S
Cavity Barriers	30E, 15I	N/A

5.4. <u>Fire Compartmentation</u>

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

Any external wall which falls within 1000mm of a relevant boundary, as well as all walls separating dwellinghouses from each other or from the block of flats should be constructed as a party wall achieving 60 minutes fire resistance from both sides.

Each flat should be a standalone, independent fire compartment achieving 60 minutes fire resistance and FD30S fire doors.

Each ancillary area should be a standalone, independent fire compartment achieving 60 minutes fire resistance and FD30S fire doors.

The commercial unit should be a standalone, independent fire compartment achieving 60 minutes fire resistance.

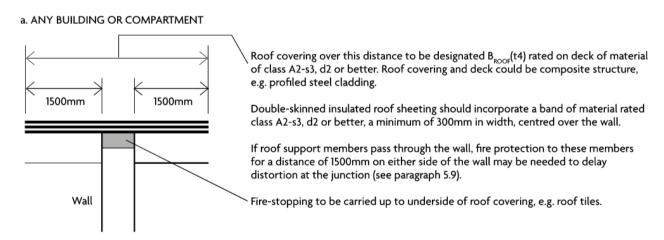
Each dwellinghouse should be a standalone, independent fire compartment achieving 60 minutes fire resistance.

Each protected entrance hall within flats should include 30 minutes fire resistance as separation from any other area within the same flat and FD30 fire doors.

For each dwellinghouse, the protected internal staircases should include 30 minutes fire resistance and FD30 fire doors as separation from any other area within the house.

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

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



5.5. Fire Doors

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

The fire door ratings should be as per Table C1 of ADB, when tested in accordance with BS 476-22 in accordance Table 2 with above. Fire doors should be self-closing unless they give access to cupboards or service risers, in which case they should be kept locked.

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

5.6. Fire Stopping

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

5.7. Fire Resisting Dampers / Ductwork

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

5.8. <u>Concealed Spaces</u>

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

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

6. Requirement B4: External Fire Spread

"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building; The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building." - Part B of Schedule 1 of the Building Regulations 2010."

6.1. External Wall Materials

The building is assumed to not include a floor in excess of 18m, therefore not classed as a 'relevant building'. However, it is proposed to comply with the requirements of Regulation 7 for a 'relevant building' in order to indicate compliance with the functional requirement B4 (external fire spread) and to reduce the risk with respect to the property likely needing an EWS1 form.

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

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

Additionally, Regulation 7(1A) has been introduced to prohibit the use of relevant metal composite materials forming part of the external wall systems or specified attachments of all buildings. Relevant metal composite materials are defined as any panel or sheet, having a thickness of no more than 10mm which is composed of a number of layers two or more of which are made of metal, alloy or metal compound and one or more of which is a substantial layer made of a material having a gross calorific value of more than 35MJ/kg when tested in accordance with BS EN ISO 1716. A substantial layer is defined as a layer which is at least 1mm thick or has a mass per unit area of at least 1kg/m².

6.2. <u>Cavity Barriers in External Walls</u>

Cavity barrier requirements are presented in Section 5.8. Cavity barriers should be provided in the following locations of external walls:

- At the junction of an external cavity wall with a compartment floor, compartment wall or other fire resisting construction.
- Around all openings (e.g., windows, doors, etc.) within an external cavity wall.
- Around the edges of cavities.
- To limit the size of extended cavities to 20m.

6.3. Roof Coverings

A roof is any external wall with a slope of more than 70° from the horizontal. Roof coverings are proposed to achieve a performance of B_{ROOF}(t4) in all areas.

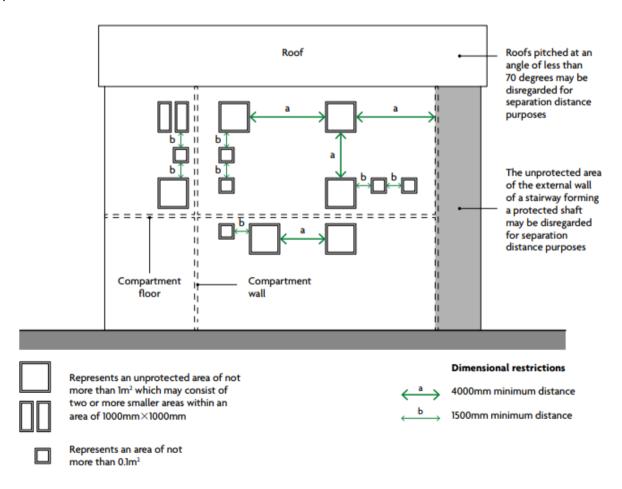
Attention is also drawn to the requirement for junctions of compartment walls with a roof, in accordance with Section 5.4. Therefore, the deck of the roof should be a material of limited combustibility.

Green roofs (if applicable) should be designed in accordance with 'Fire Performance of Green Roofs and Walls', published by the Department for Communities and Local Government.

6.4. Separation Distances

Re-entrant corners of the external wall system separating different fire compartments should include fire resisting walls (of the same rating as the highest rated compartment at that junction) within 1.8m of the junction of different fire compartments.

In protected external walls, only small, unprotected areas may be ignored, if in accordance with Diagram 11.5 of ADB (as extracted below). Any other glazed areas should be fire resisting and kept locked shut.



Separation distance calculations have been undertaken in accordance with the tabulated solutions of BR187. The relevant boundaries for the residential areas have been selected as presented below:

- Towards the North, the middle of the adjoining public road (South Worple Avenue).
- Towards the East, the middle of the adjoining public road (Fitzgerald Avenue).
- Towards the South, the actual site boundary.
- Towards the West, the actual site boundary.

BR 187 indicates that for areas with reduced fire loads density (<25kg/m²), a radiation intensity of 84 kW/m² should be used (i.e., residential). For areas with increased fire load densities (>25kg/m²) a radiation intensity of 168 kW/m² should be used (i.e., commercial and ancillary areas). The overall calculations are presented in Table 3. These calculations are based on the largest compartment corresponding to each elevation. The design team should confirm the dimensions employed are accurate and that the maximum unprotected areas are achieved.

Table 3 - Separation Distance Calculations

Elevation	Radiator Height (m)	Radiator Width (m)	Radiation Intensity (kW/m²)	Assumed Boundary Distance (m)	Maximum Unprotected % Elevation Allowed				
Residential Areas (Residential Areas (block of flats)								
North	3.0	15.0	84	>2.0	50%				
East	3.0	15.0	84	>4.0	100%				
South	3.0	15.0	84	0.0	0% (party wall)				
West	3.0	15.0	84	0.0	0% (party wall)				
Residential Areas (dwellinghou	ses)							
North	9.0	6.0	84	>5.0	100%				
East	9.0	15.0	84	0.0	0% (party wall)				
South	9.0	6.0	84	>5.0	100%				
West	9.0	15.0	84	0.0	0% (party wall)				
Ancillary Areas and	Ancillary Areas and Commercial Unit								
East	3.0	15.0	168	>6.0	100%				
South	3.0	12.0	168	0.0	0% (party wall)				
West	3.0	12.0	168	0.0	0% (party wall)				

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

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

7.1. Vehicle Access

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

The pump appliance access route should be via Fitzgerlad Avenue and Grosvenor Avenue. The pump appliance parking location should be within 45m along a route suitable for laying hose from all areas in the block of flats, and all areas in each dwellinghouse. Therefore, pump appliance access should be provided immediately in front of the block of flats and each dwellinghouse.

The pump appliance should not have to reverse more than 20m. It is noted that Fitzgerald Avenue does not include a dead-end in proximity to the building. However, Grosvenor Avenue includes a dead-end in excess of 20m immediately in front of the three dwellinghouses on site. Therefore, a suitable turning point should be provided for the pump appliance on site, at the end of Grosvenor Avenue. This is not provided on the current site plan and design adjustment is expected going forward.

The vehicle access routes around the building should meet the requirements for pump appliances in accordance with Guidance Note 29 issued by London Fire Brigade (as extracted below).

This is subject to agreement with the Building Control Body, including their statutory consultation with London Fire Brigade.

Appliance Type	'		Min. turning circle between kerbs (m)	Min. turning circle between walls (m)	Min. clearance height (m)	Min. carrying capacity (tonnes)	
Pump	3.7	3.1	16.8	19.2	3.7	14.0	

7.2. Access and Facilities within the Building

Any perimeter doors providing access into the building should achieve a minimum width of 750mm (unless otherwise specified in this report) in support of firefighting operations. Doors should not be located more than 60m apart from each other.

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

All areas in the building should be within 45m along a route suitable for laying hose as measured from the pump appliance parking location.

7.3. Water Supplies

The buildings should include a suitable operational hydrant within 90m of the entrance to each staircase as well. If this is not achieved, a new private hydrant would be required within 90m of each residential staircase entrance. Private hydrants should be in accordance with BS 9990.

7.4. <u>Wayfinding Signage</u>

In support of firefighting operations, the block should be provided with wayfinding signage in accordance with Sections 15.13 to 15.16 of ADB Volume 1, even if the building does not include a floor in excess of 11m in height.

7.5. <u>Secure Information Box</u>

In support of firefighting operations, the block should be provided with a secure information box in accordance with Sections 15.18 to 15.21 of ADB Volume 1, even if the building does not include a floor in excess of 11m in height.

8. Fire Safety Management

8.1. General

A competent person should be appointed as fire safety manager. This person should be given sufficient stated authority, powers of sanction and resources to take responsibility for the day-to-day safety management of the building and to ensure that essential repairs or maintenance are carried out. Refer to Section 41 of BS 9999 for further advice and information. Ultimately the site must be continuously evaluated to ensure that it is operating whilst all legislative requirements are being met in parallel.

A fire safety management plan should be drawn up for the building by the facilities management department responsible for the building in line with BS 9999 Annex H. The manual should provide clear guidance on what to do in an emergency. The needs of all occupants should be considered in the design of evacuation and management plans. The plan should be implemented and maintained by a designated responsible person or persons and should include:

- Fire safety policy.
- Summary of fire safety strategy including fire protection systems.
- Actions to be taken in a fire scenario.
- Assisted evacuation provisions.
- Roles and responsibilities of designated staff (if applicable).
- · Continual fire risk assessment.
- On-going risk assessment of residents' ability to self-evacuate.
- Checking that active / passive fire safety systems have not been tampered.
- Continual maintenance and testing of fire safety systems.
- Strict management and implementation of permit to work applications.
- Staff and contractor fire safety training (if applicable).
- Coordination with other parties where occupying a shared building.
- Housekeeping policy.
- Communication procedures.
- Contingency planning.
- Security arrangements to limit the risk of arson and unwanted access.
- Continuous and frequent engagement with the local fire authorities.
- Updating site plans and updating documentation where refurbishment works are carried out.

8.2. Operation and Maintenance

Planned inspection, maintenance and testing procedures should be established and used to ensure that all fire protection systems can operate effectively when required. Arrangements

should be made for all fire safety equipment, installations, and systems to be inspected and tested on a regular basis by a competent person.

Extinguishers should be routinely inspected by the user at not less than quarterly and preferably at monthly intervals to make sure that appliances are in their proper position and have not been discharged or lost pressure. The user should replace extinguishers not available for use by serviceable extinguishers. Annual inspection, service and test discharging should be carried out by a competent person. The UK servicing standard BS 5306-3 puts the onus on the user (i.e., the Occupier) to use a competent person and those extinguishers should be serviced to that standard and the manufacturers recommended procedure.

8.3. Fire Policy Statement

The principal aim of the facilities management team shall be to make the building a safer place by reducing as far as possible the risks and social and economic costs of fires. The 'responsible person' has a duty under the Regulatory Reform (Fire Safety) Order 2005 to carry out a formalized Fire Risk Assessment to determine the fire risks to occupants. The purpose of the assessment is to enable the 'responsible person', to determine any actions necessary to comply with the above Order by ensuring, so far as is reasonably practicable, the safety of relevant persons throughout the entire lifecycle of the building.

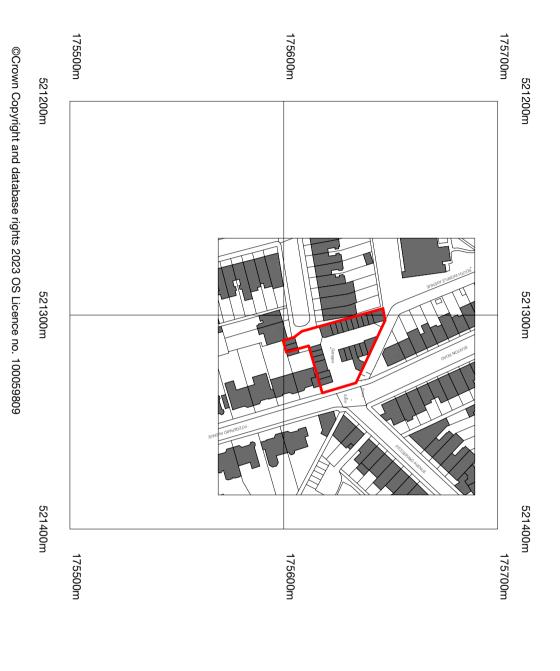
8.4. Regulation 38

To comply with Regulation 38 to the Building Regulations, it is proposed that a full package of building design information is passed on to the end user for the development.

It is proposed that the following package of information is provided to the end users:

- The fire strategy report (this document).
- Management information proposed in addition to that contained in this strategy.
- Specifications of all active / passive fire safety systems.
- Specifications of all fire safety equipment.
- Final construction plans for the building.
- Installation certification and commissioning information for all fire safety systems as well as associated manuals.
- Any other relevant information.

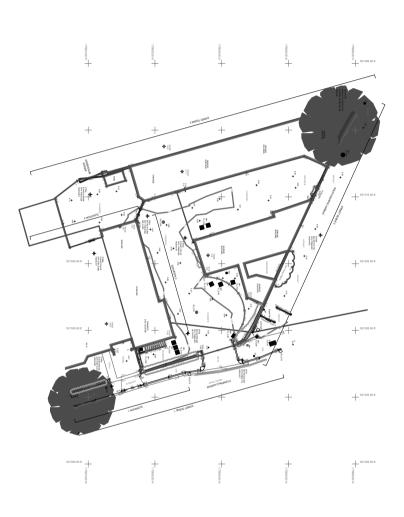
9. Appendix A – Drawing Plans

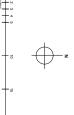


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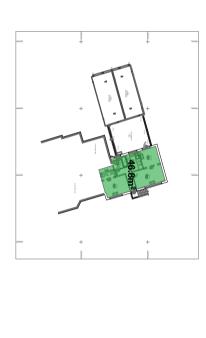
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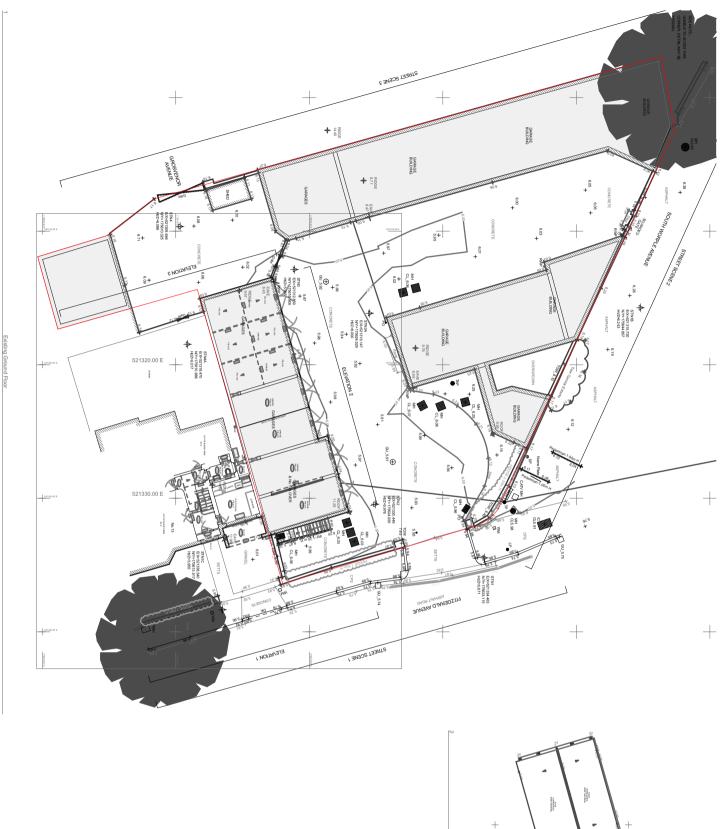
Residential (apartment) GIA total 46.8m² Private domestic lock up garages GIA total 269.9m² Office GIA total 12.0m2

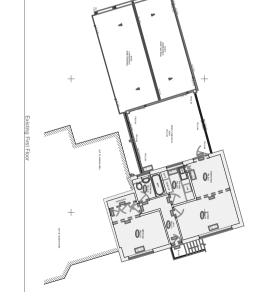
Workshop GIA total 88.5m²

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Grosvenor Garage Fitzgerald Avenue SW14 8SZ

Existing Site Use





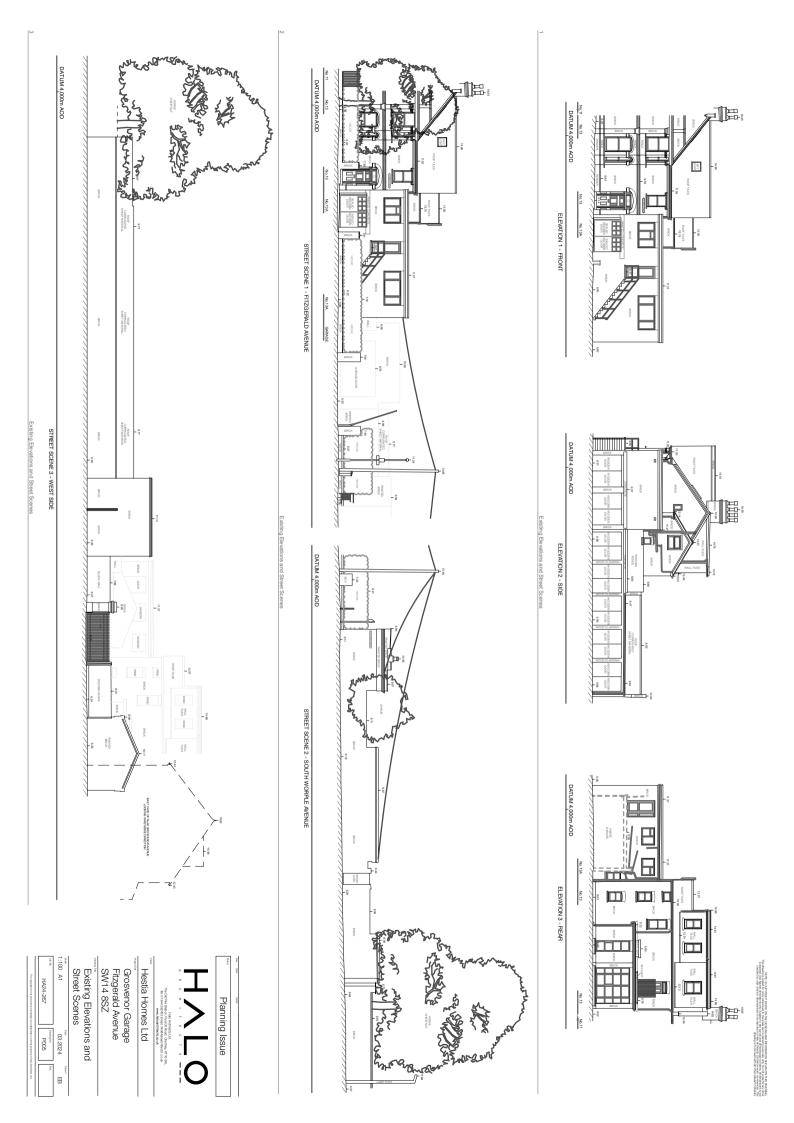
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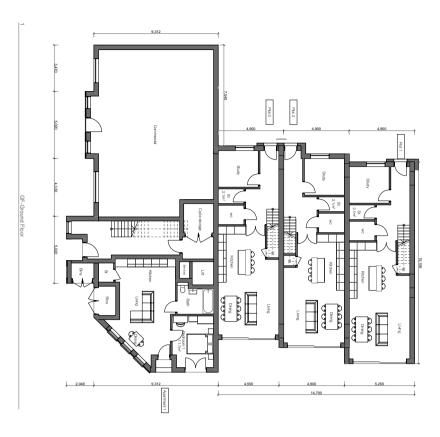
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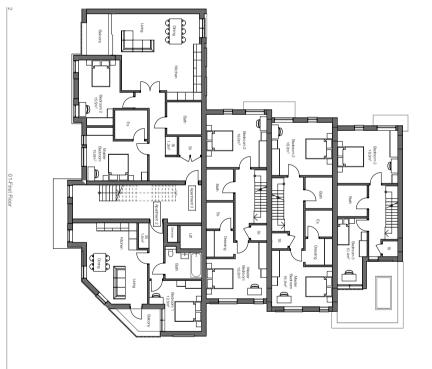
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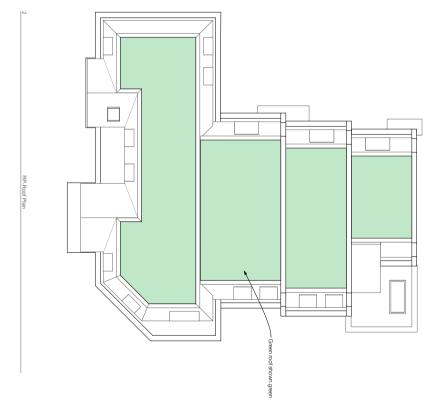


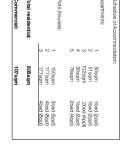


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Proposed Elevations

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