

SOCOTEC

PLANNING FIRE SAFETY STATEMENT

166 LEATHERHEAD ROAD

Project no. TX 163549

| Issue | Date | Drafted / Checked / Authorised | Notes |
|-------|----------|--------------------------------------|---------------|
| 1 | 15/03/24 | BA/LC+AG/TU | Initial issue |
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1 SUMMARY

1.1 Background

- 1.1.1 SOCOTEC has been appointed by Carmel (Group) Ltd. to develop the planning fire safety statement for 166 Leatherhead Road residential development located in 166 Leatherhead Road, Chessington, KT9 2HU. The project consists of seven (7) dwellinghouses: six (6) three-storey (G+2) dwellinghouses (type 1) and one single-storey dwellinghouse (type 2). House type 1 consists of 3-bedroom houses served by a staircase, with a topmost occupied floor at 6 m above the access level and a total area per dwelling of 145.4 m². The upper floor features one bedroom, the first floor two bedrooms and the ground the studio, kitchen, living and dining room. House type 2 comprises 3 bedrooms, kitchen, living and dining room on ground floor level, with a total area of 121.8 m².
- 1.1.2 This document is not intended to portray detailed design information. As a strategic document supporting and informing the wider design, it should be read in conjunction with the wider project design documentation.

1.2 Legislative requirements

The Building Regulations

- 1.2.1 The fire statement has been developed to satisfy the functional requirements of Regulation 7, and Parts B1 – B5 of Schedule 1 to the Building Regulations 2010 (as amended).
- 1.2.2 The fire statement will be developed to satisfy the requirements for fire safety as set out by the Building Regulations. The document has not been developed to address property protection. However, the features that are included for life safety will contribute in some extent to property protection. This document has also been developed with reference to local design expectations as set out within the London Plan.
- 1.2.3 In accordance with Regulation 4 of the Building Regulations, works must meet the functional requirements of the Building Regulations.
- 1.2.4 The fire statement has been developed in cognisance of the Construction (Design and Management) Regulations 2015 (CDM 2015), which sets out what designers are required to consider protecting anyone involved in the construction or ongoing use of a structure.
- 1.2.5 The fire statement does not address site fire safety during the building works, or the requirements of Dangerous Substances and Explosive Atmosphere Regulations 2002 (DSEAR), Health and Safety at Work etc Act 1974 (HASAWA), Control of Major Accident Hazards Regulations 2015 (COMAH), etc. which should be considered as a separate exercise.

1.3 Guidance

- 1.3.1 The requirements of Section 1.2 should be met through compliance with the prescriptive recommendations of Approved Document B – Volume 1 [1] (ADB Vol.1), and the codes of practice referenced therein.
- 1.3.2 In accordance with the fire safety engineering principles detailed in the BS 7974 [2] codes of practice, all fire precautions are determined on the basis of there being one seat of fire.

1.4 The London Plan – Policy D12

- 1.4.1 As part of the planning submission, the London Plan (2021) also requests that a ‘Fire Statement’ be provided for the building. It is intended that this fire strategy report will also serve as the baseline Fire Strategy for the scheme. However, this is subject to development as the design progresses.
- 1.4.2 Under the London Plan this project does not fall within the definition of a major development. However, this Fire Statement is being submitted on specific request of the Client. Details for the London Plan are provided in the following paragraphs.
- 1.4.3 Within the London Plan is the intent that buildings should achieve a high standard of fire safety, thereby reducing risk to life, minimizing the risk of fire spread, and providing suitable and convenient means of escape which all building users can have confidence in. In addition to the expectations of the Building Regulations, the design of this development is developed to meet the fire safety expectations within Policies D12 of the London Plan as follows:

Policy D12 Fire Safety states:

(A) In the interest 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:

- i. Identify suitably positioned unobstructed outside space:
 - a. For fire appliances to be positioned on;

- b. appropriate for use as an evacuation assembly point.
- ii. 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
- iii. Are constructed in an appropriate way to minimise the risk of fire spread
- iv. Provide suitable and convenient means of escape, and associated evacuation strategy for all building users
- v. Develop a robust strategy for evacuation which can be periodically updated and published, and which all building users can have confidence in
- vi. Provide suitable access and equipment for firefighting which is appropriate for the size and use of the development.

(B) All major development proposals (development having 10 or more dwellings or a site of at least 0.5 hectares) 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:

- i. The building's construction: methods, products and materials used, including manufacturers' details
- ii. 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.
- iii. Features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans
- iv. Access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and position of equipment, firefighting lifts, stair and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these
- v. How provisions will be made within the curtilage of the site to enable fire appliances to gain access to the building

1.4.4 Ensuring that any potential future modification to the building will take into account and not compromise the base build fire safety/ protection measures. This fire statement has been developed in accordance with the above items. This document is intended to serve as strategic guidance, therefore, detailed design information such as the methods of construction or the selection of specific products will not be included within this document. However, the minimum performance requirements to be achieved by certain products or materials in the building are stated within this report, which will be used to inform the selection of products during RIBA Stages 3 – 6.

1.4.5 In accordance with Clause 3.12.9 of Policy D12(B) of the London Fire Plan, Fire Statements are to be produced by qualified engineers with relevant experience in fire safety such as a chartered engineer or suitably qualified and competent professionals with demonstrable experience to address the complexity of the design being proposed. The relevant experience of the authors and authorisers of this document are in Section 1.7.

1.4.6 “SOCOTEC confirms that reasonable skill and care has been provided in the development of this Fire Statement and that to the best of our knowledge sets out a proposal that, with appropriate development in the following design and construction stages, would offer a level of fire safety that meets the expectations of Policy D12 of the London Plan.”

1.5 Regulatory Approvals

1.5.1 This fire statement should be reviewed by the Building Control Advisor. All aspects of the fire safety design remain subject to formal approval by the Building Control Advisor, including their statutory consultation with the London Fire Brigade (LFB).

1.6 Implementation

1.6.1 This report has been produced on the basis that:

- The project will be designed and constructed by competent persons in accordance with the recommendations of the guidance documents listed in Section 1.3 and the documents referenced therein; and
- The certificates will be provided at each stage where appropriate, and that all commissioning, witness testing, certification and 3rd party assessments are suitable and sufficient.
- It will be used to inform the fire risk assessments for the purposes of compliance with the Regulatory Reform (Fire Safety) Order 2005 (FSO), which are the duty of the ‘Responsible Person’ for the premises.

- It will form part of the information pack handed over to the building operators under Regulation 38 (of the Building Regulations) to aid the Responsible Person(s) in maintaining the fire risk assessment for the premises.
- A suitable and sufficient management regime is implemented, ensuring immediate intervention and evacuation.

1.6.2 SOCOTEC can provide industry leading support during design and construction (RIBA stages 3 to 7) and throughout the lifetime of the building(s), including phased construction stage strategies, fire risk assessments and DSEAR assessments. Please email firesafety@socotec.co.uk for further information.

1.7 Authors

1.7.1 Beatriz Aviñó is a Graduate Fire Engineer with a Master of Science in Industrial Engineering and a bachelor's in industrial engineering. Beatriz has been exposed to a variety of projects involving all areas of fire safety engineering from active protection systems to passive protection systems, evacuation design and fire compartmentation strategies. She has carried out a wide variety of projects, working with international standards (CTE, NFPA, EN, SBC...) for office buildings, hospitals, shopping centres, schools, and industrial plants, among others. Beatriz is an outstanding professional with critical thinking that seeks the best way to sort each challenge.

1.7.2 Liam Curran is an Associate Director with a Bachelor of Science (BSc) in Construction and Fire Technology, BSc Hons and a Master of Science in Fire Safety Engineering. Liam has over 10 years' experience practicing as a fire safety engineer including both UK and international based experience. In 2017, Liam established and was proprietor of LJC Fire & Access, a fire engineering and disabled access consultancy which he successfully led until joining SOCOTEC to head up the now Irish based office in 2021. Liam has experience in working in a variety of sectors, including the design and assessment of high-rise residential buildings in the UK and overseas.

1.7.3 Tabea Uhr has nearly 6 years' professional experience in developing fire strategies and fire engineering solutions on medium to large-scale construction projects. As a Structural Engineer by background, she further specialised in fire and life safety engineering and became an Associate Member of the IFE in 2019 and a member of the IHEEM in 2021. Her professional experience in fire and life safety spans across a diversified range of projects including residential, custodial and healthcare premises. She further specialises in construction fire safety and structural fire engineering.

1.8 Information received

1.8.1 This strategy is based on information provided to SOCOTEC UK Limited as listed in Table 2. Additional information or variations to that supplied may render the conclusions and recommendations within this report invalid.

Table 1 – Referenced documents

| Description | Reference | Rev. | Date |
|---|---------------------------|------|---------|
| Site & General Setting Out: Site Plan | DTP01-MAA-02-XX-DG-A-0001 | P08 | 12/2023 |
| Proposed loading and servicing | 24-329-TR01 | - | 02/2024 |
| GA Plans. House Type 1. 3 Bedroom House | DTP01-MAA-03-XX-DG-A-0001 | P03 | 12/2023 |
| GA Plans. House Type 2. 3 Bedroom Bungalow | DTP01-MAA-03-XX-DG-A-0002 | P03 | 12/2023 |
| GA Elevations. House Type 1. 3 Bedroom House | DTP01-MAA-04-XX-DG-A-2003 | P02 | 01/2024 |
| GA Elevations. House Type 2. 3 Bedroom Bungalow | DTP01-MAA-04-XX-DG-A-2003 | P02 | 01/2024 |
| GA Elevations. Terrace. Front & Rear Elevation | DTP01-MAA-04-XX-DG-A-2002 | P03 | 12/2023 |
| GA Sections. House Type 1. 3 Bedroom House | DTP01-MAA-05-XX-DG-A-2001 | P02 | 12/2023 |
| GA Sections. House Type 2. 3 Bedroom Bungalow | DTP01-MAA-05-XX-DG-A-2002 | P02 | 01/2024 |

2 PROJECT OVERVIEW

2.1 Project Brief

2.1.1 The proposed works consist of the construction of seven dwellinghouses, as illustrated in Figure 1 – . Each house type 1 consists of three-storey dwellinghouses (G+2), served by a private stair, as illustrated in Figure 3. The height of the top-most storey is 6 m above the access level. House type 2 is a single-storey dwelling. The development will be provided with seven open car park spaces.

2.1.2 There are two house types as follows:

- House type 1 (6 houses) – 3-storey (G+2);
- House type 2 (1 house) – 1-storey (G);

2.1.3 The location of each house is shown on the site plan in Figure 1. A detailed view of the floor plans is presented in Figure 2.

2.1.4 Each house type 1 will include the following:

- Ground floor: Studio, kitchen, living and dining room;
- First floor: two bedrooms with associated bathroom;
- Second floor: one bedroom with associated bathroom.

2.1.5 House type 2 will consist of bedrooms, bathrooms, kitchen, living and dining room allocate.

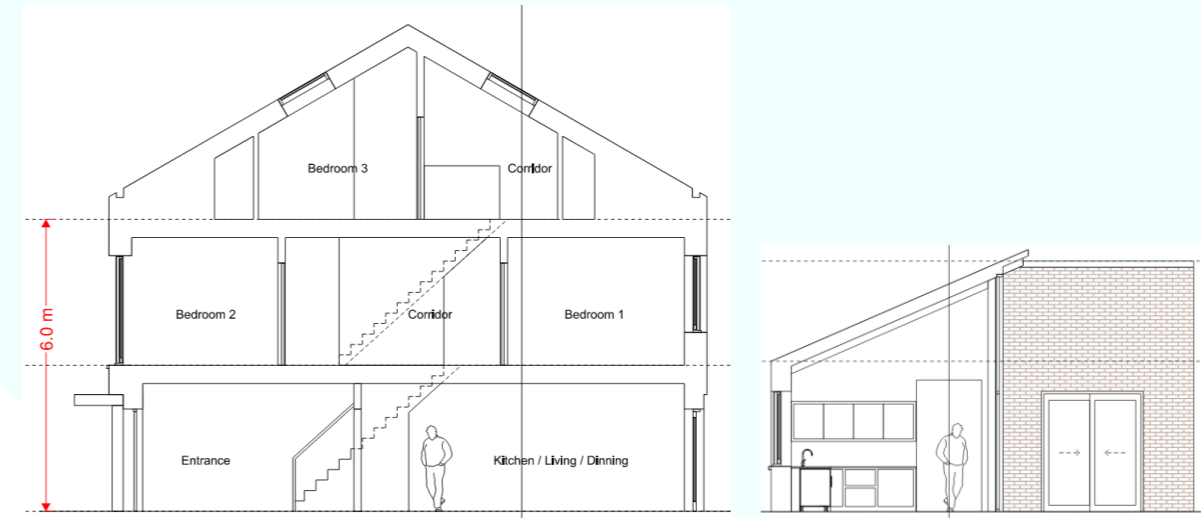


Figure 2 – Typical section. House type 1 (left) and house type 2 (right)



Figure 1 – Indicative site plan



Figure 3 – General arrangement drawings. House type 1

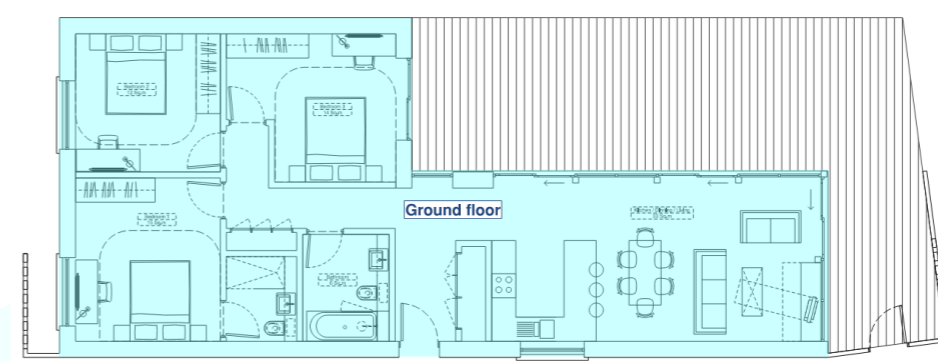


Figure 4 – General arrangement drawings. House type 2

2.2 Occupancy

- 2.2.1 The dwellinghouses are proposed to contain three bedrooms. The fire safety design is not driven by the number of occupants in the residential areas, as the design is based upon a defend-in-place approach, whereby only one dwellinghouse is expected to evacuate at a time. Occupants in the adjacent residential houses (other than the dwellinghouse of fire origin) may escape if they wish to do so.
- 2.2.2 It is expected that the distribution of elderly or disabled people will be as per a typical residential occupancy, and no additional requirements to support the proposed occupancy above the minimum stated in ADB Vol. 1 / the London Plan are understood as being necessary nor have been requested by the client. It is noted that there are no dwellings being designed for assisted living / wheelchair access hence disabled occupants are anticipated to be visitors and can escape via level access escape routes whilst being afforded assistance by dwelling occupants where needs be.

2.3 Risk profiles and occupant numbers

- 2.3.1 The proposed development seeks to satisfy the requirements for fire safety under the Building Regulations 2010 (Part B) through compliance with the fire safety design recommendations of ADB Vol. 1 [1] and the codes of practice referenced therein.
- 2.3.2 House type 1 is classified as purpose group 1(b) and house type 2 as purpose group 1(c).

3 FIRE SAFETY SYSTEMS

3.1 Means of detection and alarm

- 3.1.1 In support of the evacuation regime, all dwellinghouses should be provided with a Category LD2, Grade D1 automatic fire detection and alarm system specified and installed in accordance with BS 5839-6 [3].
- 3.1.2 The specification of the alarm system should be in accordance with Table 1 of BS 5839-6, with heat detectors in kitchens and smoke detectors in all circulation areas that form part of the escape routes from the premises. In accordance with the defend-in-place policy normally adopted for buildings containing private units, activation of a single detector head in any one house should only result in the evacuation of the residential unit within which the detection occurred.
- 3.1.3 Visual alarms should be provided where required in accordance with BS 5839-6 to facilitate occupants with hearing difficulties.

3.2 Automatic Suppression system

- 3.2.1 An automatic water fire suppression system (AWFSS) is not required for compliance, and none is being proposed.

3.3 Emergency Lighting

- 3.3.1 Emergency lighting is not recommended within the houses as no common areas are proposed with the design and is not a code requirement in a dwelling setting.

3.4 Fire safety signage

- 3.4.1 Fire safety signage is not being provided on the basis that internally, there are no common areas.

3.5 Back-up power supplies

- 3.5.1 The following fire safety systems shall be provided with back-up power supplies in accordance with BS 8519 [4]:
- Automatic fire detection;

3.6 Electric vehicles

- 3.6.1 If EV charging points are installed in the open car park, EV charging points should be in accordance with Approved Document S – Infrastructure for charging electric vehicles.
- 3.6.2

3.7 Green Roof

- 3.7.1 Green roofs are currently not expected on any of the houses.
- 3.7.2 ADB Vol. 1 does not offer any guidance on the impact of green roofs on the fire safety of a building. In the case that green roofs are provided, they should be designed and installed in accordance to “The GRO Green Roof Code; Green Roof Code of Best Practice incorporating Blue Roofs and BioSolar Applications Anniversary Edition 2021” [5] and placed over a B_{ROOF} (t4) roof covering.

4 MEANS OF WARNING AND ESCAPE

4.1 Evacuation regime

4.1.1 A 'stay-put' (also known as defend in place) strategy is proposed in all residential dwellinghouses, whereby only the residential dwellinghouse of fire origin should be signalled to evacuate in the first instance upon the activation of a fire alarm. Further evacuation of residential dwellinghouses may be enacted by the fire and rescue service as needed depending on the development of the fire. Occupants should also be informed that they may leave the building of their own accord if they should feel the need to do so.

4.2 Means of escape

4.2.1 The general philosophy for means of escape is that the occupants of a building should be able to turn their back on a fire and escape via the nearest exit without additional assistance from other occupants (unless assisting disabled occupants) or firefighters. In the first instance, this is achieved alternative escape routes and escape routes with a specified period of fire resistance.

4.2.2 There are a total of six three-storey houses and one single-storey house being proposed. Each house type 1 is treated separately from the adjacent units and should be separated by a compartment wall achieving 60 minutes as per Table 3 (see Section 5.2).

4.2.3 In house type 1, as there is a floor higher than 4.5 m above ground level, ADB Vol.1 calls for a protected stairway connecting the upper floors and ground floor. As illustrated in Diagram 2.2 (a) of ADB Vol.1, the stairs should deliver directly to the final exit via the ground floor.

4.2.4 House type 2 comprises an open-plan arrangement on ground floor. Therefore, in accordance with Section 2.1 of ADB Vol.1, all rooms should be provided with emergency escape windows or doors to be used as an alternative means of escape. Windows providing emergency escape should comply with all the following:

- Have an unobstructed openable area that complies with all the following:
 - A minimum area of 0.33 m²;
 - A minimum height of 450 mm and a minimum width of 450 mm (the route through the window may be at an angle rather than straight through);
 - The bottom of the openable area is a maximum of 1100 mm above the floor.
- May be fitted with locks (with or without removable keys) and opening stays (with child-resistant release catches); and
- Should be capable of remaining open without being held.

4.3 Escape beyond the final exits

4.3.1 Travel beyond the final exits must be away from the building, towards a place of safety, and not be jeopardised by unprotected openings of the building. Each house type 1 is provided with direct escape route from the protected stair, and an alternative exit through the living room to the enclosed back gardens. These enclosed garden spaces should comply with Diagram 2.5 of ADB Vol.1 (reproduced in Figure 5). Refer to Figure 6 and Figure 7 which shows that compliance with Diagram 2.5 ADB is achieved under design proposals.

4.3.2 As mentioned in Section 4.2.4, in addition to the primary ground floor exit, every room in house type 2 should have emergency escape windows or doors to serve as alternative egress route. These alternative exits lead directly to a back garden with exit to the common open space i.e. occupants can leave the back garden. See Figure 7.

4.3.3 Designated assembly areas would normally be needed and provided as part of the fire risk assessment of the building. However, in a dwellinghouse estate environment, occupants are to be encouraged to retreat to a safe distance from the building depending on the perceived risk at the time but away from the access routes that would be used by the fire and rescue service. It is expected that this would be directed by attending fire service personnel.

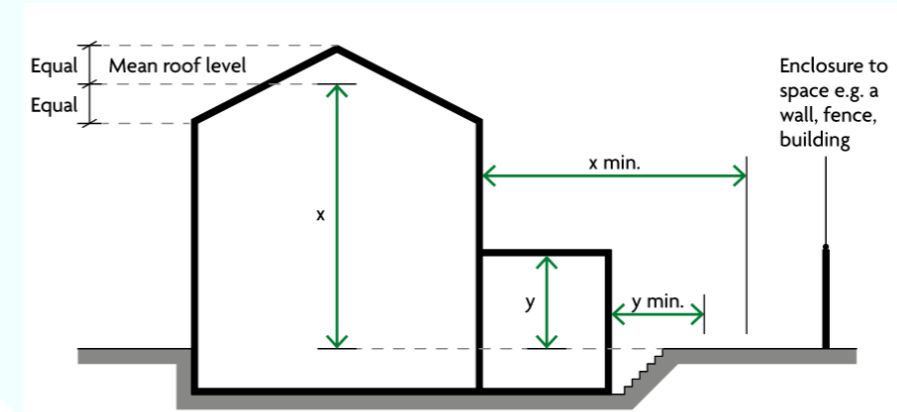


Figure 5 – Diagram 2.5 from ADB Vol.1

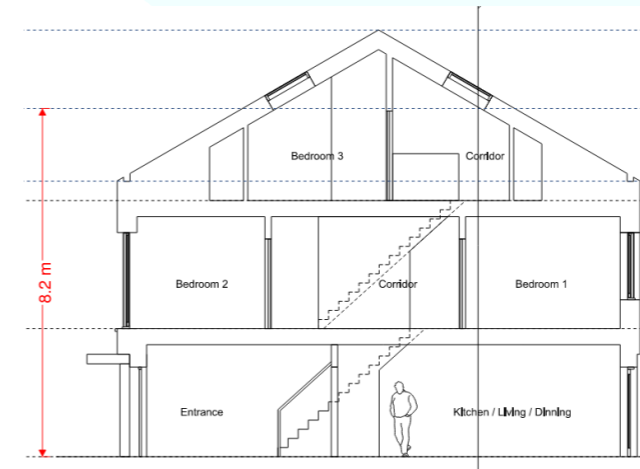


Figure 6 – House of the house type 1 above ground level.



Figure 7 – Length of the enclosed back gardens in house type 1 and 2.

5 INTERNAL FIRE SPREAD

5.1 Internal linings

- 5.1.1 Wall and ceiling linings should achieve the surface spread of flame and fire classifications outlined in Table 2 at a minimum.
- 5.1.2 Thermoplastic materials, which do not comply with Table 2 (e.g., windows, roof-lights, lighting diffusers, etc.) should comply with the recommendations of sections 4.13 to 4.17 of ADB Vol 1.

Table 2 – Internal lining requirements

| Location | European Class (BS EN 13501-1:2007+A1) |
|---|--|
| Small rooms ≤4 m ² | D-s3, d2 |
| Circulation spaces within dwellings and other rooms | B-s3, d2 |

5.2 Structural fire resistance, compartmentation and fire-resisting separation

- 5.2.1 In accordance with Table B4 of ADB Vol.1, the required structural fire resistance depends upon the height of the building. For house type 1, the height of the building (6 m) is measured from ground floor level to the finished floor level of the top storey. House type 2 is single storey dwellinghouse.
- 5.2.2 According to Table B4 of ADB Vol.1, houses with an occupied storey higher than 5m but below 11m above access level should be designed to achieve 60 minutes of fire resistance separating one house from another.
- 5.2.3 The structural frame of both houses should achieve 30 minutes of fire resistance.
- 5.2.4 Houses with occupied floors exceeding 4.5 m in height must have a protected stairway delivering directly to the final exit (see Section 4.2). The construction must achieve 30 minutes of fire resistance as stated in Table 3.
- 5.2.5 Elements of structure that only support a roof do not require fire resistance. The structure is considered to support more than only a roof if it supports a load other than the roof itself (e.g., rooftop plant) or is not essential to the stability of a fire-resisting element.

Table 3 – Fire resistance

| Element | Minimum fire resistance | Method of exposure |
|--|-------------------------|----------------------|
| Structural elements (frame/ beam/ column/ wall) | R30 | Exposed faces |
| Walls separating houses – Compartment wall | REI60 | Each side separately |
| External walls ^{Note1} | | |
| Any part less than 1,000 mm from the relevant boundary | REI30 | Each side separately |
| Any part more than 1,000 mm from the relevant boundary | RE30 I15 | From inside |
| Protected internal stairs | REI30 | Each side separately |
| Cavity barriers | RE30 I15 | Each side separately |

Note 1 – Relative to any part that needs to be fire resisting as a result of space separation requirements e.g. parts of, or all of the elevation may be permitted to be non-fire resisting depending on the available distance to the boundary. See Table 6 for details.

5.3 Fire doors and escape doors

- 5.3.1 Fire doors will be provided in accordance with Table 4. Fire door assemblies will comply with:
- BS 476-22 [8] or BS EN 1634-2 [9] for fire resistance; and, where applicable
 - BS 476-31 [10] or BS EN 1634-3 [11] for smoke leakage.
- 5.3.2 All doors on escape routes should either not be provided with a securing device or be provided with a securing device that is easily openable without the use of a key and without having to manipulate more than one mechanism. The escape provisions should be coordinated with the security / access design.
- 5.3.3 Doors opening onto stairways or corridors should be sited not to encroach on the effective width of any stairway, landing or corridor.
- 5.3.4 Where hold open devices are to be provided for fire doors in the common corridor areas, these should be installed in accordance with Appendix C of ADB Vol.1.

Table 4 – Fire doors

| Door location | National Class | European class |
|-----------------------------------|----------------|----------------|
| Doors to internal protected stair | FD 30 | E 30 Sa |

| Door location | National Class | European class |
|--|----------------|----------------|
| Doors opening in external walls that need protection as per Table 3. | FD 30 | E 30 Sa |

Note 1 Internal entrance hall / stair enclosure doors are not required to be on self-closing devices.
Note 2 All other fire doors should be self-closing except for doors into places of special fire hazards / plant rooms / risers that should be kept locked shut provided with appropriate signage.
Note 3 The ratings shown above are for integrity only.

5.4 Fire-stopping and penetrations through fire-separating elements

- 5.4.1 Every joint, imperfect fit and opening for services through a fire-separating element should be sealed with fire-stopping to ensure that the fire resistance of the element is not impaired.
- 5.4.2 All pipes, ductwork and services passing through fire-resisting barriers should be penetration-sealed with an appropriate system and / or fire damper which has been shown by test or assessment to maintain the period of the fire-resistance of the barrier.

5.5 Cavity barriers

- 5.5.1 Extensive concealed cavities (e.g., roof voids or the void between suspended ceilings and the soffit of the floor above) require cavity barriers to sub-divide them. If internal sub-divisions and all internal walls are proposed to extend up to soffit level (i.e., underside of the slab overhead), then there will be limited extensive internal cavities.
- 5.5.2 Cavity barriers are to be installed in accordance with Diagram 8.1 of ADB Vol 1.

6 EXTERNAL FIRE SPREAD

6.1 External surfaces and wall materials

- 6.1.1 External walls should be constructed such that they will not support fire spread at a speed that is likely to threaten people in or around the building.
- 6.1.2 External wall surfaces near other buildings should not be readily ignitable, to avoid fire spread between buildings.
- 6.1.3 Thermal breaks (thermal bridging elements) should not span two compartments. There is no minimum performance for the materials used, however, the minimum amount of material required to restrict thermal bridging should be used.
- 6.1.4 External wall systems, along with specified attachments, should comply with the requirements of Table 10.1 of ADB Vol 1: external surface of walls at a distance less than 1 m from the relevant boundary should achieved a reaction to fire performance of Class B-s3, d2 or better. There are no provisions for elevations that are located more than 1 m from the boundary.
- 6.1.5 In order to prevent the spread of flame across the surface of building at a speed which may pose a threat to life, ADB Vol.1 recommends that materials forming the external cladding to buildings follow the provisions given in paragraphs 10.5 to 10.9, or meet the performance criteria given in BR 135 for cladding systems using test data from BS 8414-1 [12] or BS 8414-2 [13].

6.2 Roof coverings

- 6.2.1 Roof coverings should be designated in accordance with the prescriptive recommendations of ADB Vol.1, as summarised in Table 5. No thermoplastic roof lights are proposed within the buildings.
- 6.2.2 Should photovoltaic panels or biodiversity areas be introduced to roofs in future, these should be in accordance with these recommendations, or be specified in accordance with suitable alternative guidance.
- 6.2.3 A 1,500 mm wide zone of the roof, should have roof coverings classified as B_{roof}(t4), on a deck of material of limited combustibility to both sides above compartment walls, as detailed in Diagram 5.2a of ADB Vol 1.

Table 5 – Limitations on roof coverings

| Distance from relevant boundary | Designation of roof covering European Class ^A | B _{roof} (t4) | C _{roof} (t4) | D _{roof} (t4) |
|---------------------------------|---|------------------------|------------------------|------------------------|
| Less than 6 m | | ✓ | ✗ | ✗ |
| At least 6 m | | ✓ | ✓ | ✗ |
| At least 12 m | | ✓ | ✓ | ✓ |

Class is in accordance with Commission Decision 2055/823/EC amending Decision 2001/671/EC in accordance with BS EN 13501-5 [7]. Test 4 within BS EN 13501-5 is to be used in determining the classification.

6.3 Space separation and unprotected areas of the external walls

- 6.3.1 Should a fire occur in a building, heat will radiate through non-fire resisting openings in the external walls. This heat can be enough to set fire to nearby buildings. In order to reduce the likelihood of this occurring, the Building Regulations place limits on the area of the external elevation with no fire resistance. This area is known as the unprotected area. The distance of the building from other buildings, the use of the building and the compartment size are all factors in determining the acceptable degree of unprotected area for each elevation.
- 6.3.2 Using the calculation process outlined in BR 187 [14] an analysis of the distance between the building and the adjacent roads or notional boundaries has been undertaken. For all above ground residential areas, the radiation intensity value of 84kW/m² recommended by BR 187 is utilised.
- 6.3.3 As compartmentation is provided between houses and neighbouring buildings, fires may be assumed to be confined to a single house. With regard to assessing fire spread from residential areas, it is assessed from the houses that offer the greatest opportunity for external fire spread from a given distance (i.e., the shortest). As such, the fire spread calculations undertaken in Table 6 are for the most onerous compartments within the block of houses.
- 6.3.4 The relevant site boundaries are taken as indicated in Figure 8, utilising the notional site boundaries (e.g., half distance between buildings on the same site), centreline of the surrounding roads and public spaces, where each of these are suitably unlikely to be developed.
- 6.3.5 The results presented in Table 6 shows the permitted area of elevation that can be unprotected e.g. be made up from windows / doors and areas of elevation that do not need any fire rating.

Table 6 – Space separation calculations

| Elevation | Relevant boundary | Heat flux (kW/m ²) | Width (m) | Height (m) | Allowable unprotected area (%) |
|-----------|-------------------|--------------------------------|-----------|------------|--------------------------------|
| A | 0.8 | 84 | 12.10 | 10.00 | 16% |
| B | 1.3 | 84 | 12.10 | 10.00 | 18% |
| C | 1.7 | 84 | 8.30 | 5.00 | 30% |
| D | 3.5 | 84 | 8.80 | 5.00 | 70% |
| E | 4 | 84 | 4.60 | 5.00 | 100% |
| F | 0 | 84 | 12.10 | 10.00 | 0% |
| G | 1.3 | 84 | 19.10 | 5.00 | 22% |



Figure 8 – Relevant boundaries and elevations

7 ACCESS AND FACILITIES FOR FIREFIGHTING

7.1 Means of notifying the fire and rescue service

7.1.1 In the event of fire, the fire and rescue service should be notified by a resident of the building.

7.2 Wayfinding signage for the fire service

7.2.1 On entering the estate, it is going to be extremely easy for fire service to identify the location of the incident so no wayfinding signage for the fire service is being proposed.

7.3 Vehicle access to and around the site

7.3.1 Fire and rescue service access to the site is via Leatherhead Road. The route to the building should be appropriate for the appliance access requirements, including sufficient turning facilities, typical values noted in Table 7. It must be ensured that a fire service vehicle may enter this location.

7.3.2 Dead-end access routes longer than 20 m require turning facilities. SOCOTEC have been provided with a vehicle track drawing (Figure 10) which demonstrates that a fire tender can turn about i.e. in a hammerhead type facility at the parking areas (whilst cars are in parked locations). However, the space appears to be smaller than the turning circle. Therefore, the vehicle track dimensions should be confirmed by the local fire and rescue service and access to the fire brigade may be provided from the rear of the houses through Nigel Fisher Way, as shown in Figure 11.

7.3.3 Access for a pumping appliance should be provided to within 45 m of all points inside the dwellinghouses, which is achieved throughout the site.

7.3.4 Fire and rescue service access should be sized in accordance with the recommendations given in London Fire Brigade document GN29 [15] as summarised in Table 7.

Table 7 – Typical FRS vehicle access route specification

| Element | Minimum recommended |
|------------------------------|---------------------|
| Width between kerbs | 3.7 m |
| Width between gateways | 3.1 m |
| Turning circle between kerbs | 16.8 m |
| Turning circle between walls | 19.2 m |
| Clearance height | 3.7 m |
| Carrying capacity | 14 tonnes |

7.4 Firefighting facilities within the building

7.4.1 Access for fire-fighters to the houses will be from the street level.

7.5 Water supplies

7.5.1 Water will be supplied for fire-fighting use via the public hydrant system. Hydrants will be provided in the vicinity of the building to support fire-fighting operations.

7.5.2 As per Google Imagery, there appears to be a fire hydrant situated along Nigel Fisher Way, within 90 m from the turning facilities of the development, as illustrated in Figure 11. Client should confirm the location and operation of existing hydrants.

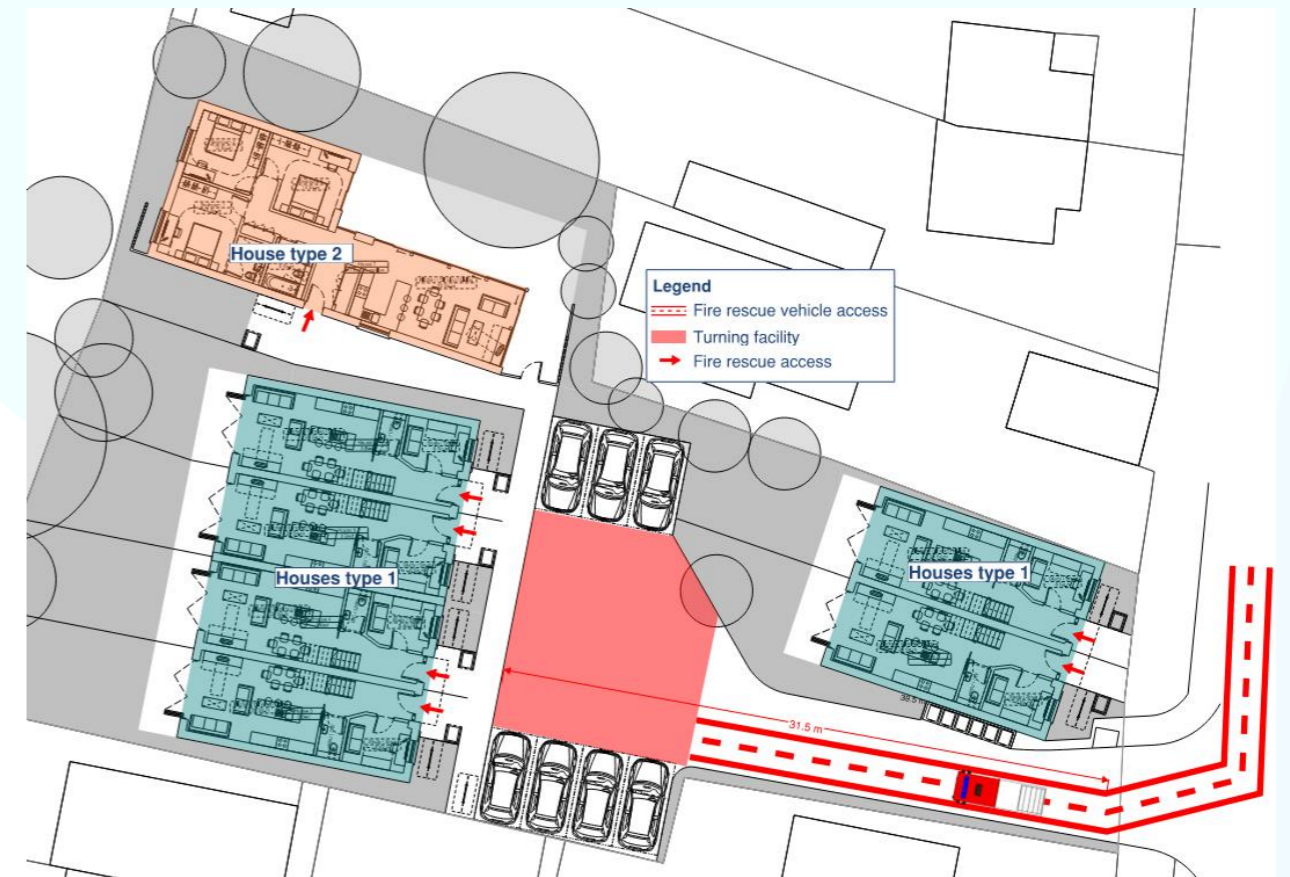


Figure 9 – Fire-fighting access around and to the building



Figure 10 – Fire tender turning within the car park



Figure 11 – Existing fire hydrant in Nigel Fisher Way

8 GOLDEN THREAD

8.1 Future development of the asset and the 'Golden thread' of information

- 8.1.1 The 'Golden Thread' refers to a concept where the fire safety information of a building is to be updated and maintained through the whole life cycle of the building. The fire safety information should be maintained and updated as the development evolves in line with the principles of the golden thread.
- 8.1.2 Under Regulation 38 of the Building Regulations, a fire safety strategy report should form part of the information handed over to the management company to enable them to be effective.
- 8.1.3 Those fire safety elements identified within the fire safety strategy report may only be modified following suitable review and approval under the Building Regulations by a building control body.
- 8.1.4 The Regulatory Reform (Fire Safety) Order 2005 (FSO) places a legal obligation on management. Under the Order, the responsible person must carry out a fire safety risk assessment and implement and maintain a fire management plan. In workplaces, the responsible person is the employer. Or anyone who has an extent of control over the premises. Some Examples include a branch manager, building supervisor, facilities management company, etc.
- 8.1.5 Building management should develop fire safety plans, fire safety manuals, a management and evacuation plan, an emergency information pack for the fire and rescue service. The information should be kept up to date. Management of fire safety must be integrated with all other management systems.
- 8.1.6 Management systems should also include procedures for anticipating and taking into account, either on a permanent or a temporary basis, changes to the occupancy (e.g. number of occupants, familiarity of occupants, etc) and /or fire growth characteristics (e.g., types of combustibles including fire growth rates, quantity of combustibles, storage/use of combustibles including high risk items, etc.) of the building and its contents over the life cycle of the building.
- 8.1.7 Maintenance and testing are essential to ensure that the fire safety systems will operate correctly in the event of a fire. Good housekeeping will be encouraged to ensure that the effectiveness of the fire safety provisions are not adversely affected.

9 Declarations and Recommendations

9.1 Declarations

- 9.1.1 As long as the requirements listed in this fire statement are achieved, the fire safety of the proposed development and the fire safety information satisfy the requirements of London Plan Policy D12A
- 9.1.2 This assessment is based on Approved Document B – Volume 1: Dwellings (2019 edition incorporating 2020 and 2022) amendments.

9.2 Design recommendations

- 9.2.1 The high-level requirements described within the current report shall be fully reviewed and confirmed by the design team during the design process and are expected to be fully incorporated as part of a formal fire safety strategy document.
- 9.2.2 The location and operational status of the fire hydrants should be confirmed with the London Fire Brigade.

- [1] DCLG, "Approved Document B: Fire Safety, Volume 1: 2022 Dwellings," HM Government, London, 2022.
- [2] BSI, "BS 7974:2019 Application of fire safety engineering principles to the design of buildings. Code of practice," British Standards Institution, London, 2019.
- [3] BSI, "BS 5839-6:2019 Fire detection and fire alarm systems for buildings - Part 6: Code of practice for the design, installation and maintenance of fire detection and fire alarm systems in dwellings," British Standards Institution, London, 2019.
- [4] BSI, "BS 8519:2020 Selection and installation of fire-resistant power and control cable systems for life safety and fire-fighting applications - Code of practice," British Standards Institution, London, 2020.
- [5] GRO, "The GRO Green Roof Code: Green Roof Code of Best Practise for the UK 2021," Green Roof Organsition, London, 2021.
- [6] BSI, "BS 476-22:1987 Fire tests on building materials and structures. - Part 22: Methods for determination of the fire resistance of non-loadbearing elements of construction," British Standards Institution, London, 1987.
- [7] BSI, "BS EN 1634-2:2008 Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware. Fire resistance characterisation tests for elements of building hardware," British Standards Institution, London, 2008.
- [8] BSI, "BS 476-31-1:1983 Fire tests on building materials and structures. - Part 31: Methods for measuring smoke penetration through doorsets and shutter assemblies. Section 31.1 Method of measurement under ambient temperature conditions.," British Standards Institution, London, 1983.
- [9] BSI, "BS EN 1634-3:2004 Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware. - Part 3: Smoke control test for door and shutter assemblies," British Standards Institution, London, 2004.
- [10] BSI, "BS 8414-1:2020 Fire performance of external cladding systems. Part 1: Test method for non-loadbearing external cladding systems fixed to, and supported by, a masonry substrate," British Standards Institution, London, 2020.
- [11] BSI, "BS 8414-2:2020 Fire performance of external cladding systems. Part 2: Test method for non-loadbearing external cladding systems fixed to, and supported by, a structural steel frame," British Standards Institution, London, 2020.
- [12] BSI, "BS EN 13501-1:2018 Fire classification of construction products and building elements. Classification using data from reaction to fire tests," British Standards Institute, London, 2018.
- [13] BRE, "BR 187: 2014, External fire spread - Building separation and boundary distances," IHS BRE Press, Bracknell, 2014.
- [14] London Fire Brigade, "GN29: Fire Safety Guidance Note - Access for Fire Appliances," London Fire Brigade, London, 2007.
- [15] BSI, "BS 8300-1:2018 - Design of an accessible and inclusive built environment. External environment - code of practice," British Standards Institution, London, 2018.

HOUSES TYPE 1 AND TYPE 2

Notes

The project consists of a new construction of six (6) three-storey (G+2) dwellinghouses (type 1) and one single-storey dwellinghouse (type 2).

The basis for compliance will be Approved Document B - Volume 1 2019 (incorporating 2020 and 2022 amendments) as being the most up to date guidance available.

Houses type 1 will achieve compliance through purpose group 1(b) and house type 2 through purpose group 1(c).

Means of warning of escape

- An automatic fire alarm and detection system should be provided within the dwellings, achieving a Grade D1 Category LD2, as per BS 5839-6.

- Emergency lighting is not being provided on the basis that the dwellings are single occupied units with no common areas i.e. non-complex buildings.

- The evacuation strategy considered is a stay-put strategy

- In houses type 2, at ground floor level, as an internal protected entrance hall leading to a final exit has not been provided, all habitable rooms should have an emergency escape window or door.

- In houses type 1, the escape from the upper levels should be provided by a protected stair, leading to a final exit (Option A of Diagram 2.2 of ADB Vol.1).

Internal fire spread (linings)

- Internal linings should achieve a classification of D-s3,d2 (or better) for small rooms with an area less than 4 m² and C-s3,d2 (or better) for other rooms and circulation spaces within a dwelling.

Internal fire spread (structure)

- A sprinkler system is not required in the dwellinghouses.

- The elements of structure should achieve the fire resistance of 30-minutes.

- Minimum period of fire resistance

- Compartment separating wall between dwellinghouses: 60 minutes with no penetrations for services permitted.

- Protected stair - 30 minutes

- Doors in protected stairways: FD30

- In house type 2, there is no internal fire separation being proposed as every room is to be provided with emergency escape window or door.

- Where required, cavity barriers, tested from each side separately, should provide a minimum of both of the 30 minutes integrity (E 30) and 15 minutes insulation (I 15).

External fire spread

- It is expected that the external wall system, along with specified attachments, will comply with the requirements of Table 10.1 of ADB Vol 1: external surface of walls at a distance less than 1 m from the relevant boundary should achieved a reaction to fire performance of Class B-s3, d2 or better.

Access and facilities for the fire service

- Access for a pumping appliance should be provided to within 45m of all points inside the dwellinghouses.

- Dead-end access routes longer than 20m require turning facilities.

Project: 166 Leatherhead Road
Title: Fire resistance and fire safety sketch
Revision: 1
Scale: as shown

Drawn by: BA
Checked by: LC+AG
Authorised by: TU
Date: 15/03/2024

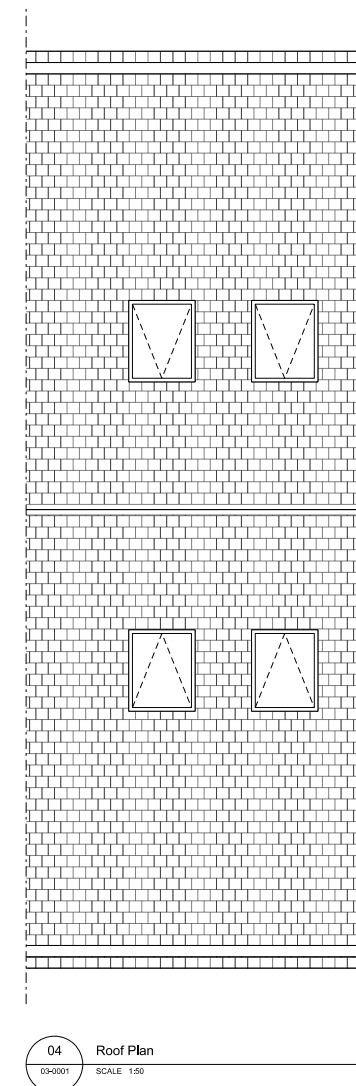
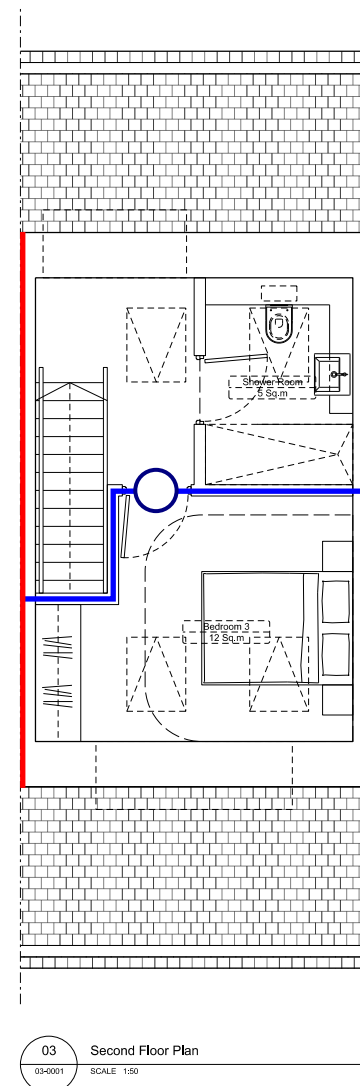
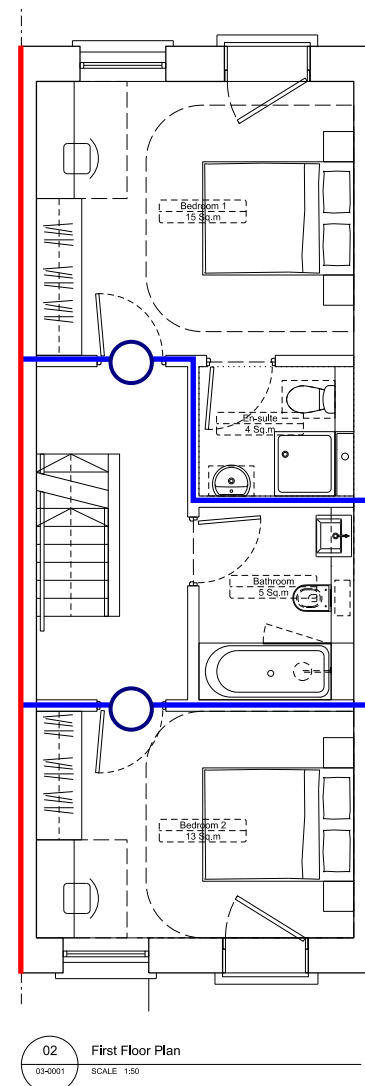
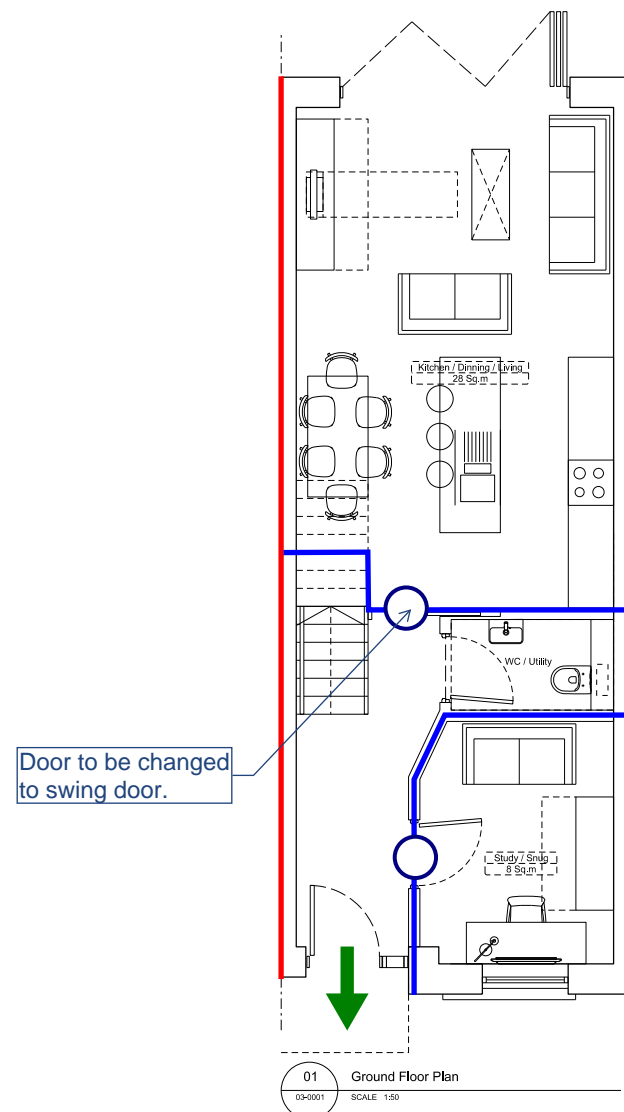
Fire resistance of separating elements and doors:

- 60FR
- 30FR
- FD30
- ➔ Final storey exit

Notes:
 This markup is for demonstration of the high level fire safety strategy for planning purposes. This should be treated as such until the development of the detailed fire safety strategy.

The fire resistance illustrated on this drawing are for separating or enclosing areas of the building. The performance of the load-bearing structure, external walls and floors should be in accordance with the detailed building fire safety strategy report which should be compiled at detailed design stage.

Unless otherwise shown, fire resistance provisions and method of exposure should be further developed as part of the detailed design, fire strategy.



| | | | | |
|-----|------------------------|----------|-----|-----|
| P03 | Issued for Information | 30/01/24 | TB | MA |
| P02 | Issued for comment | 11/01/24 | TB | MA |
| P01 | Issued for Information | 15/12/23 | TB | MA |
| Rev | Description | Date | Drw | Chk |

Scale: 0mm 500 1250 2500 5000

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Client:
Dave Tippets
 Project Name:
166 Leatherhead Road
 Drawing Title:
GA Plans
House Type 1
3 Bedroom House
 Drawing Status: **Stage 3** Status Code: **S0** Project No: **DTP01** Scale at A1:
 Drawing No: **DTP01-MAA-03-XX-DG-A-0001** Revision: **P03** Date: **DEC. 23** Scale at A3: **1:100**

Project: 166 Leatherhead Road
Title: Fire resistance and fire safety sketch
Revision: 1
Scale: as shown

Drawn by: BA
Checked by: LC+AG
Authorised by: TU
Date: 15/03/2024

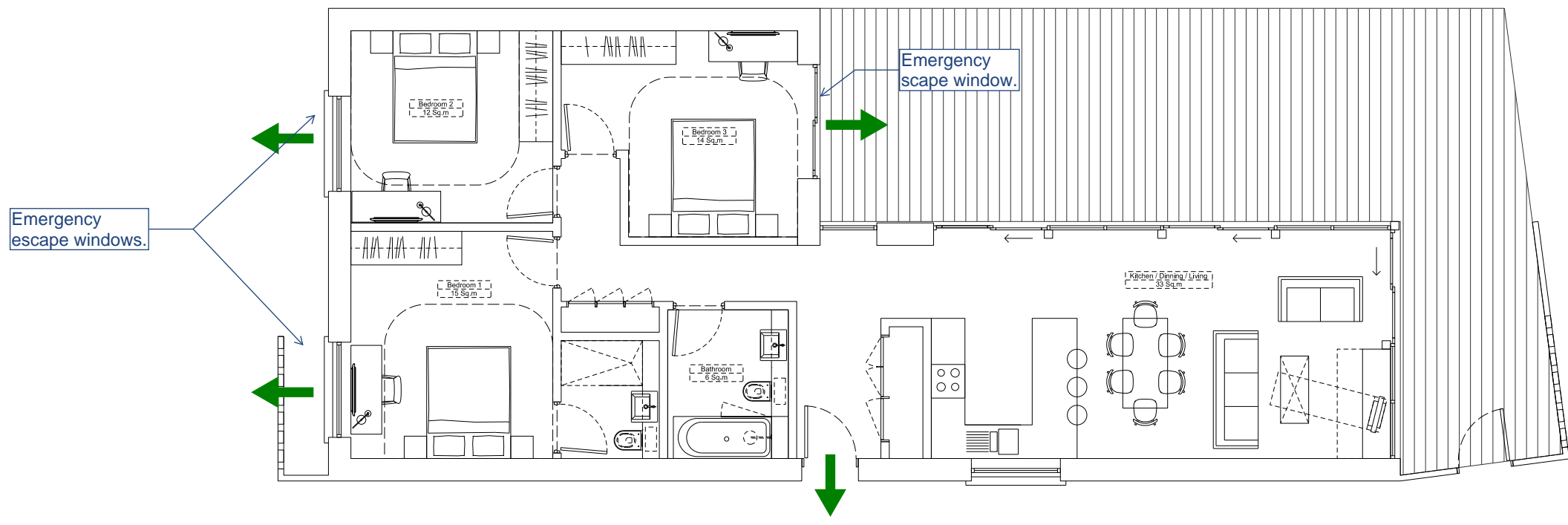
Fire resistance of separating elements and doors:

➔ Final storey exit

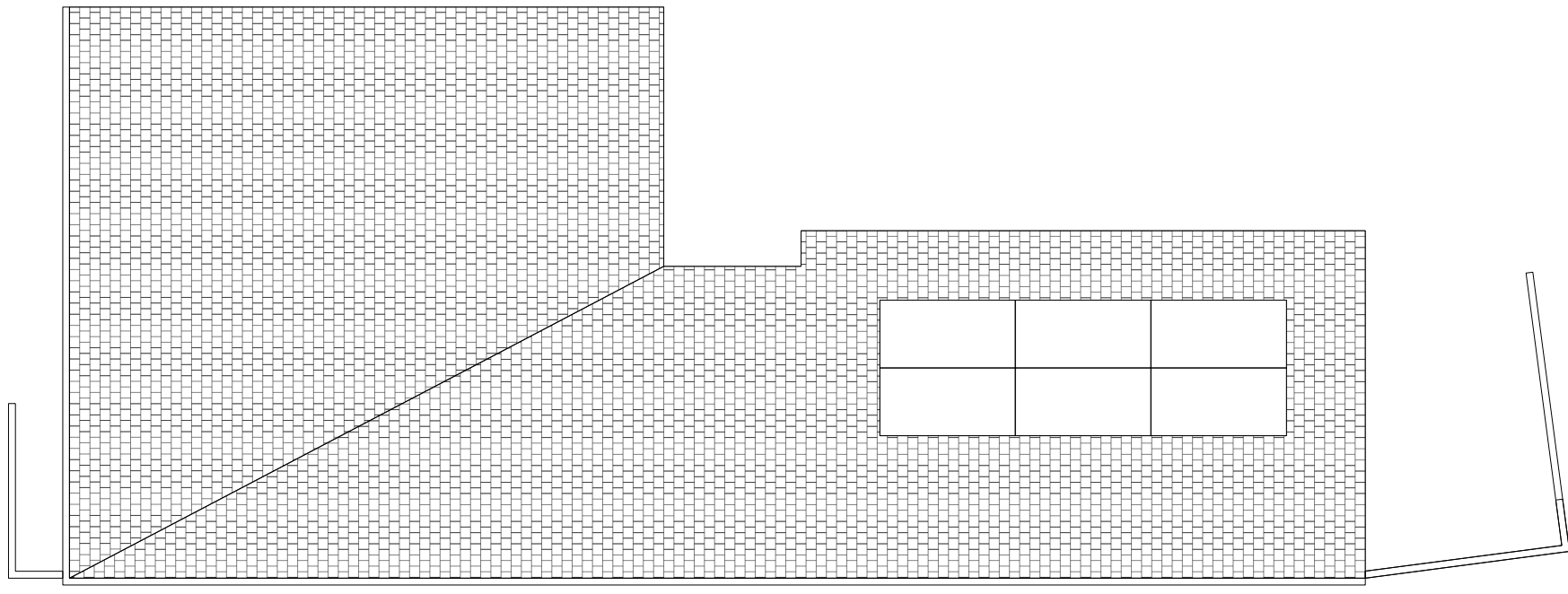
Notes:
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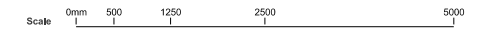


01 Ground Floor Plan
 03-0002 SCALE 1:50



02 Roof Plan
 03-0002 SCALE 1:50

| | | | | |
|-----|------------------------|----------|-----|-----|
| P03 | Issued for Information | 30/01/24 | TB | MA |
| P02 | Issued for comment | 11/01/24 | TB | MA |
| P01 | Issued for Information | 15/12/23 | TB | MA |
| Rev | Description | Date | Drw | Chk |



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Client:
 Dave Tippets

Project Name:
 166 Leatherhead Road

Drawing Title:
 GA Plans
 House Type 2
 3 Bedroom Bungalow

Stage 3

| | | | |
|---------------------------|--------------|-------------|--------------|
| Drawing Status: | Status Code: | Project No: | Scale at A1: |
| Stage 3 | S0 | DTP01 | 1:50 |
| Drawing No: | Revision: | Date: | Scale at A3: |
| DTP01-MAA-03-XX-DG-A-0002 | P03 | DEC. 23 | 1:100 |

Notes:

- External walls within 1 m of the boundary are to be protected in their entirety to achieve 30 minutes REI from both sides of the construction.
- Any walls more than 1 m from the boundary should be protected to the extent determined by a space separation calculation procedure. The required fire resistance in these cases is 30/15 in terms of Integrity and Insulation with protection required from the inside only.

Project: 166 Leatherhead Road
Title: Fire resistance and fire safety sketch
Revision: 1
Scale: as shown

Drawn by: BA
Checked by: LC+AG
Authorised by: TU
Date: 15/03/2024

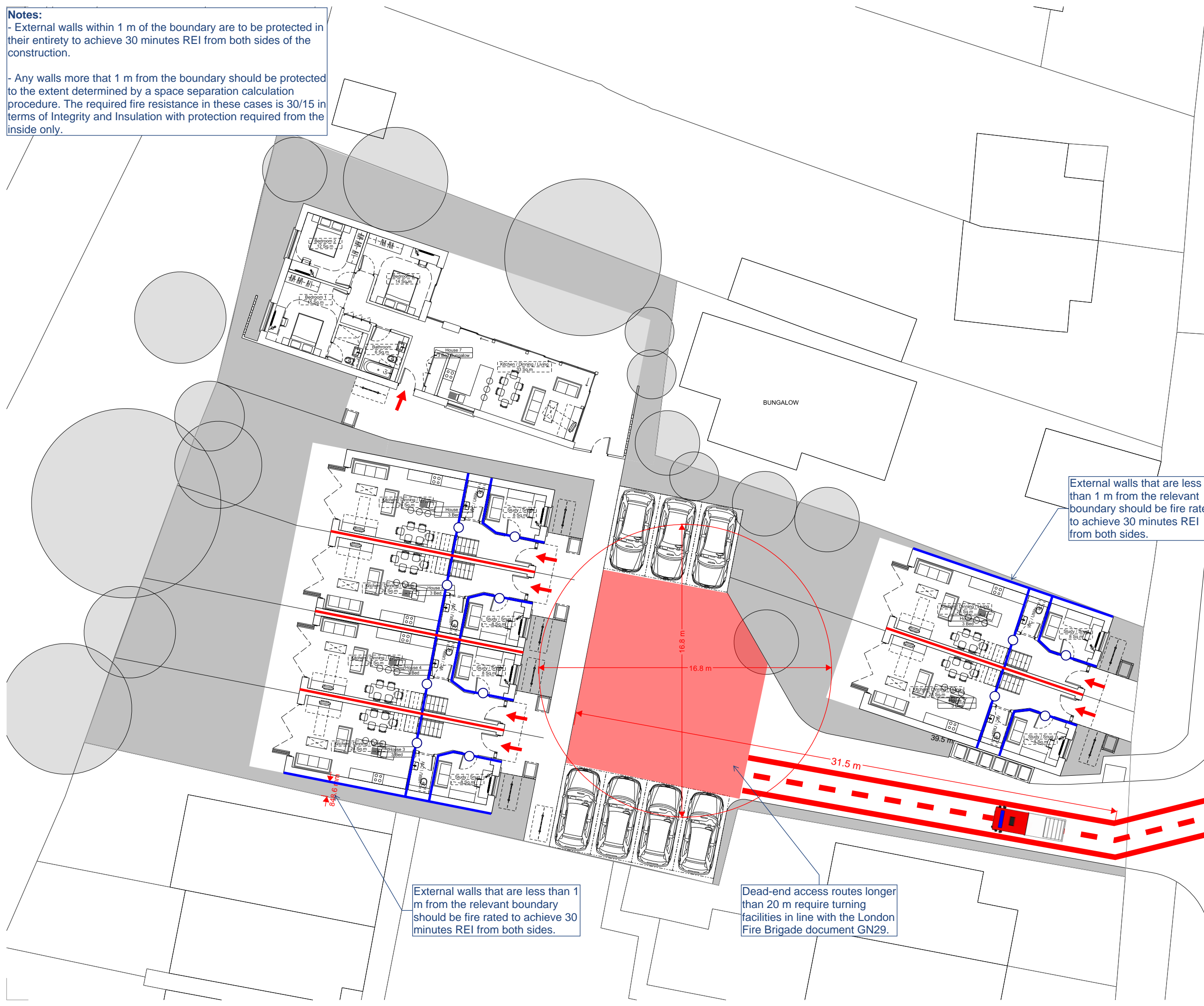
Fire resistance of separating elements and doors:

- 60FR
- 30REI from both sides of the construction
- - - Fire rescue vehicle access
- ↻ Turning facility
- ➔ Fire rescue access

Notes:
 This markup is for demonstration of the high level fire safety strategy for planning purposes. This should be treated as such until the development of the detailed fire safety strategy.

The fire resistance illustrated on this drawing are for separating or enclosing areas of the building. The performance of the load-bearing structure, external walls and floors should be in accordance with the detailed building fire safety strategy report which should be compiled at detailed design stage.

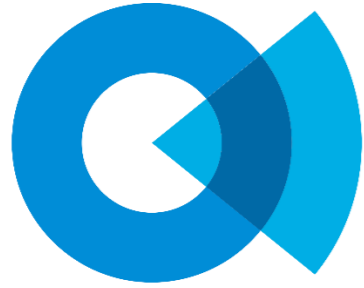
Unless otherwise shown, fire resistance provisions and method of exposure should be further developed as part of the detailed design, fire strategy.



External walls that are less than 1 m from the relevant boundary should be fire rated to achieve 30 minutes REI from both sides.

External walls that are less than 1 m from the relevant boundary should be fire rated to achieve 30 minutes REI from both sides.

Dead-end access routes longer than 20 m require turning facilities in line with the London Fire Brigade document GN29.



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