MARSHALL FIRE

Title:	Harrington Square Planning Fire Statement
Revision:	02
Date:	17th August 2023
Author:	Daniel Taylor BSc (Hons) AIFireE
Approver:	Robert Clarke

Revision	Description	Author	Approver	Date
00	Initial issue for comment	Daniel Taylor	Robert Clarke	11th April 2023
01	Updated plans and more text to support the topmost storey apartment and omission of the unventilated lobby.	Daniel Taylor	Robert Clarke	7th July 2023
02	Updated plans.	Daniel Taylor	Robert Clarke	17th August 2023

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1. Introduction

1.1 Overview

Marshall Fire have been appointed by Salboy (Mornington Crescent) Limited to provide a Planning Fire Statement for Harrington Square, Camden, NW1 2JE.

Our role is therefore to assist in steering the scheme towards meeting the requirements of London Plan, Policy D12 and D5.

This Fire Statement will consider the evolution of the development and the principles of the golden thread concept and will form the basis of the developing Fire Strategy.

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. The fire safety information provided at planning application stage should be developed to inform the overall fire strategy for the development. When passing fire safety information to subsequent development stages, consideration should be given to the accessibility, accuracy and relevance of the information to ensure the development is constructed as it has been designed and originally specified.

1.2 Purpose of this report

The purpose of this report is to review the proposals in terms of the London Plan requirements and to demonstrate the development meets the highest standards of fire safety, proportionate to the size and nature of the development.

It is considered a planning requirement to provide a fire statement and best practice is to follow the structure of the digital Planning Gateway One template which covers the London Plan requirements.

It should be noted that the project will still need to comply with the requirements of the Building Regulations and therefore the information presented herein may be developed further such that compliance with the requirements of the Building Regulations is demonstrated.

The contents of this report should therefore not be considered sufficient to form a part of the Building Regulations submission for the project and Building Regulation approval should be considered a risk until such time that approval in principle has been granted by the appointed Building Control Body.

The findings of this statement are based on the information available at the time of review. Marshall Fire cannot be held responsible for any subsequent changes to the design that we are not made aware of.

1.3 Scheme description

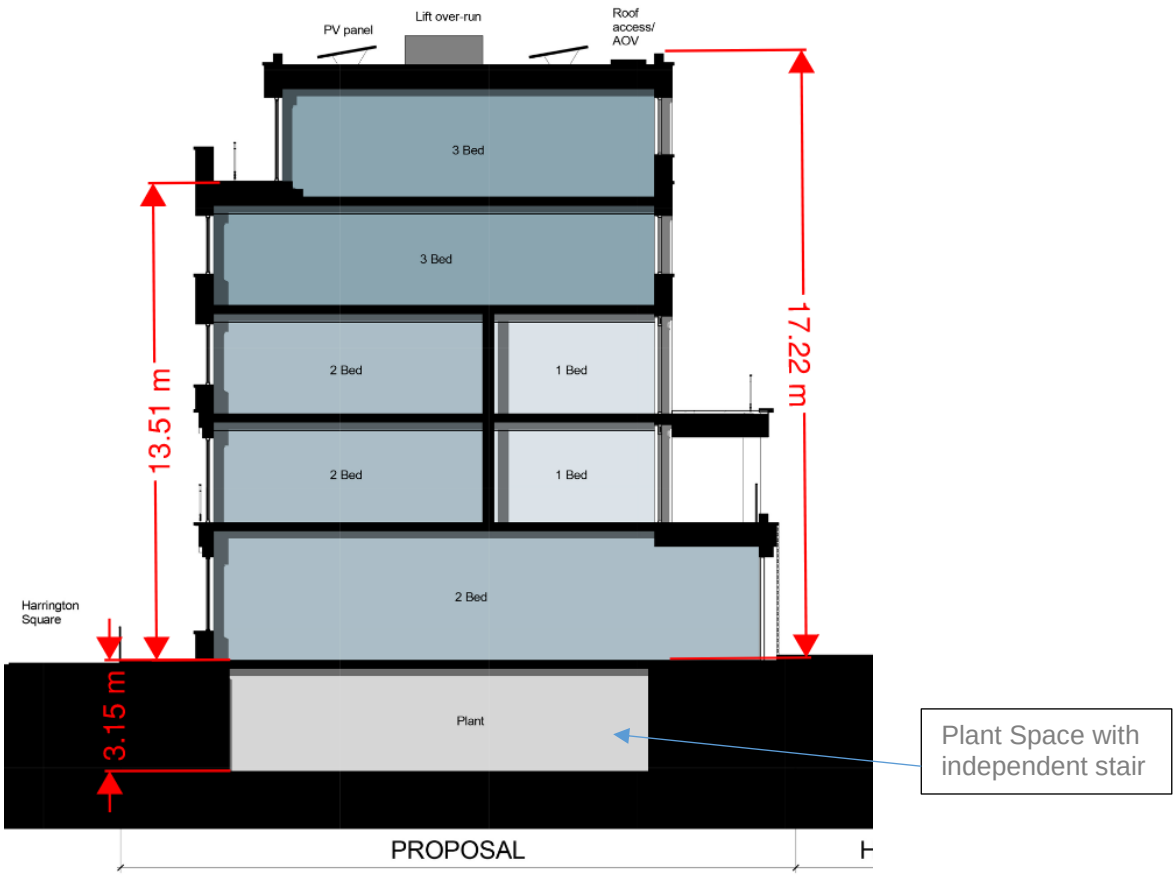
The development is located in Camden and consists of the construction of a new residential development consisting of basement, ground and 4 upper floor levels of residential accommodation. The basement is solely for plant and is accessible via an independent externally accessible stair.

The building is served by a single stair core, having a ventilated lift lobby and with an unventilated portion of corridor as per guidance serving apartments. The single stair will not connect to the basement.

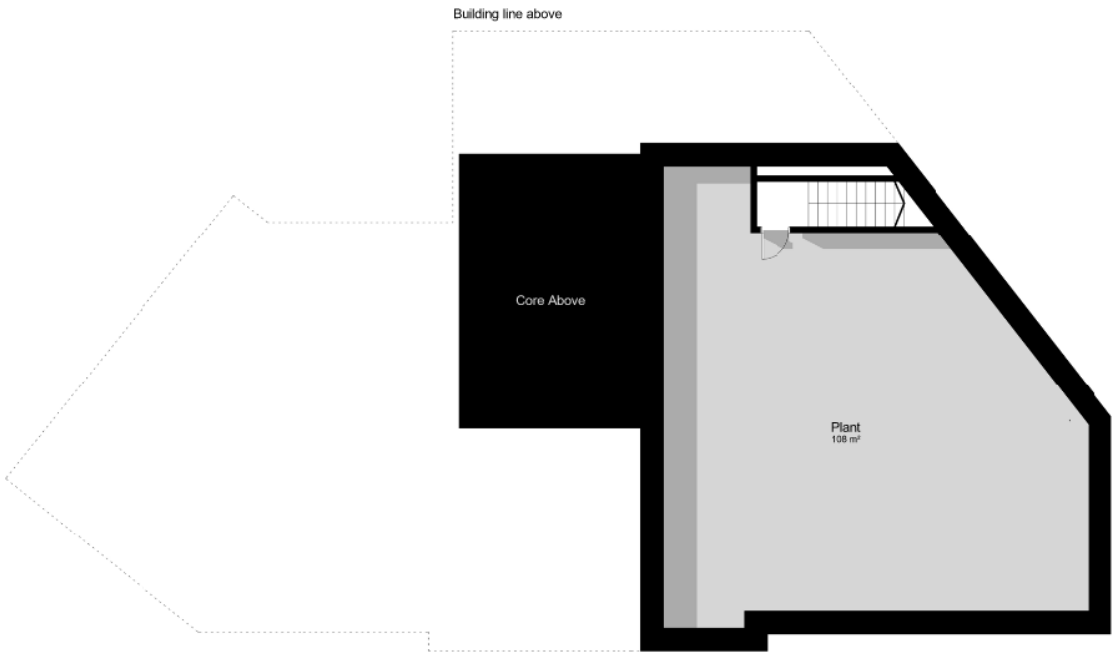
The topmost storey is more than 11m but less than 18m in height from access level with the topmost storey measuring 13m above access level.

Due to having a storey over 11m above ground then a sprinkler system designed and installed in accordance with BS 9251: 2021 is required for the residential areas and non-residential areas limited to 100m^2 in compartment size.

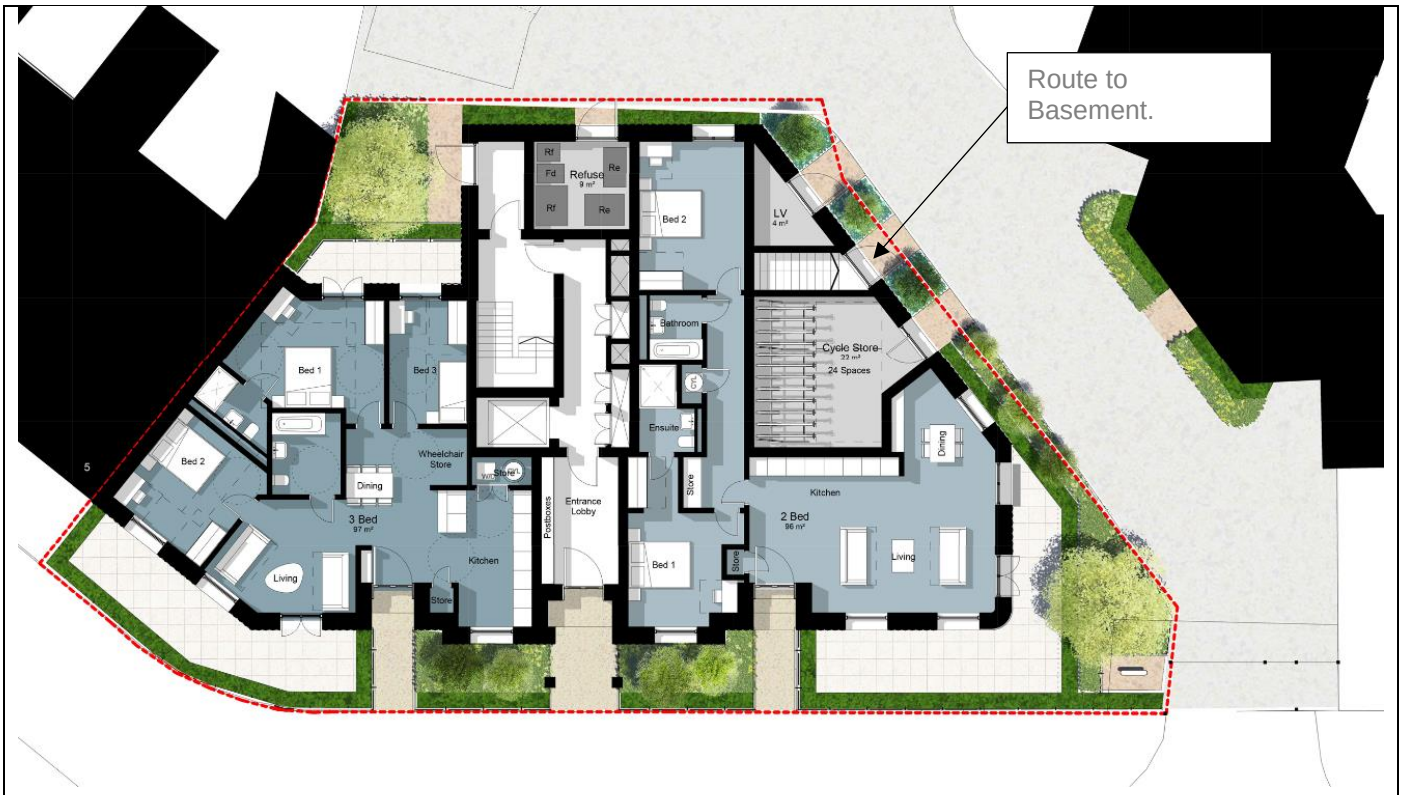
See Figure 1 for the current design proposals.



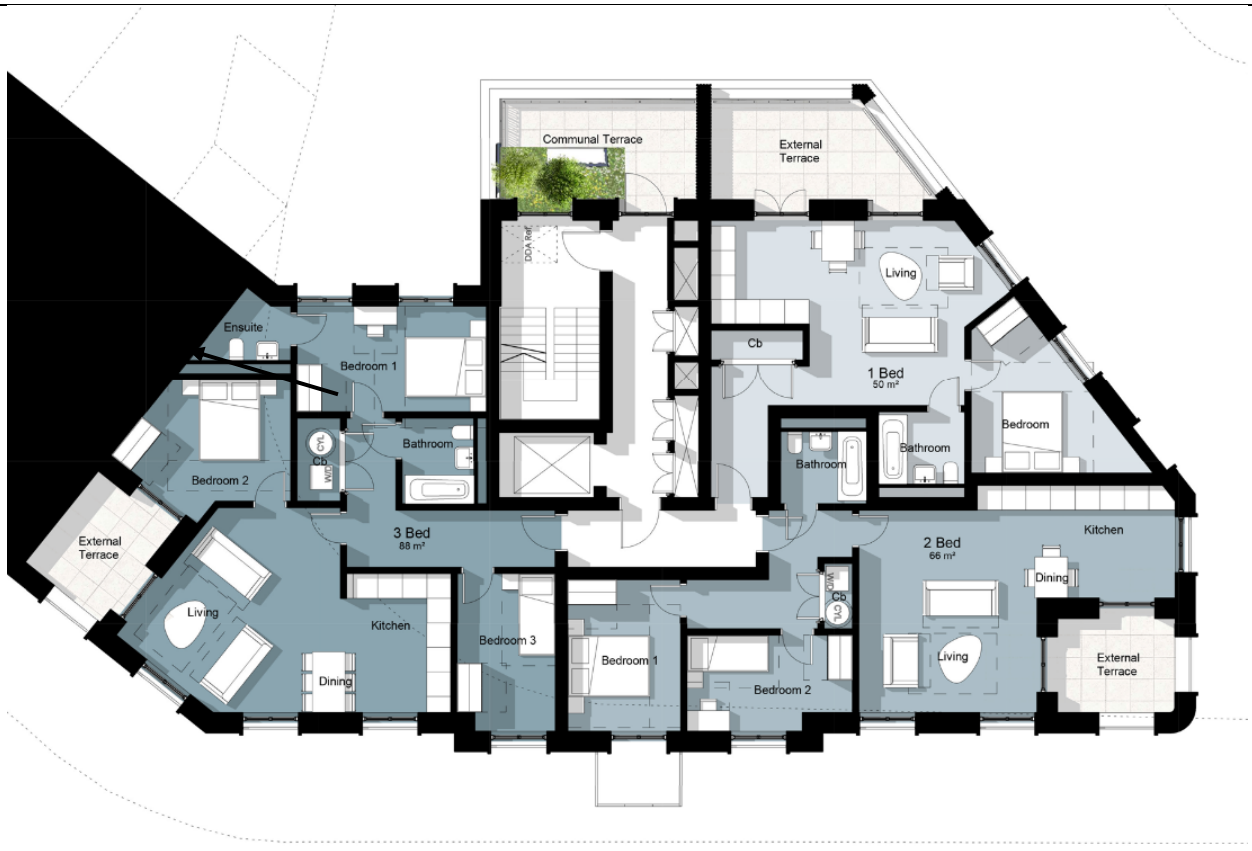
Buildings Heights



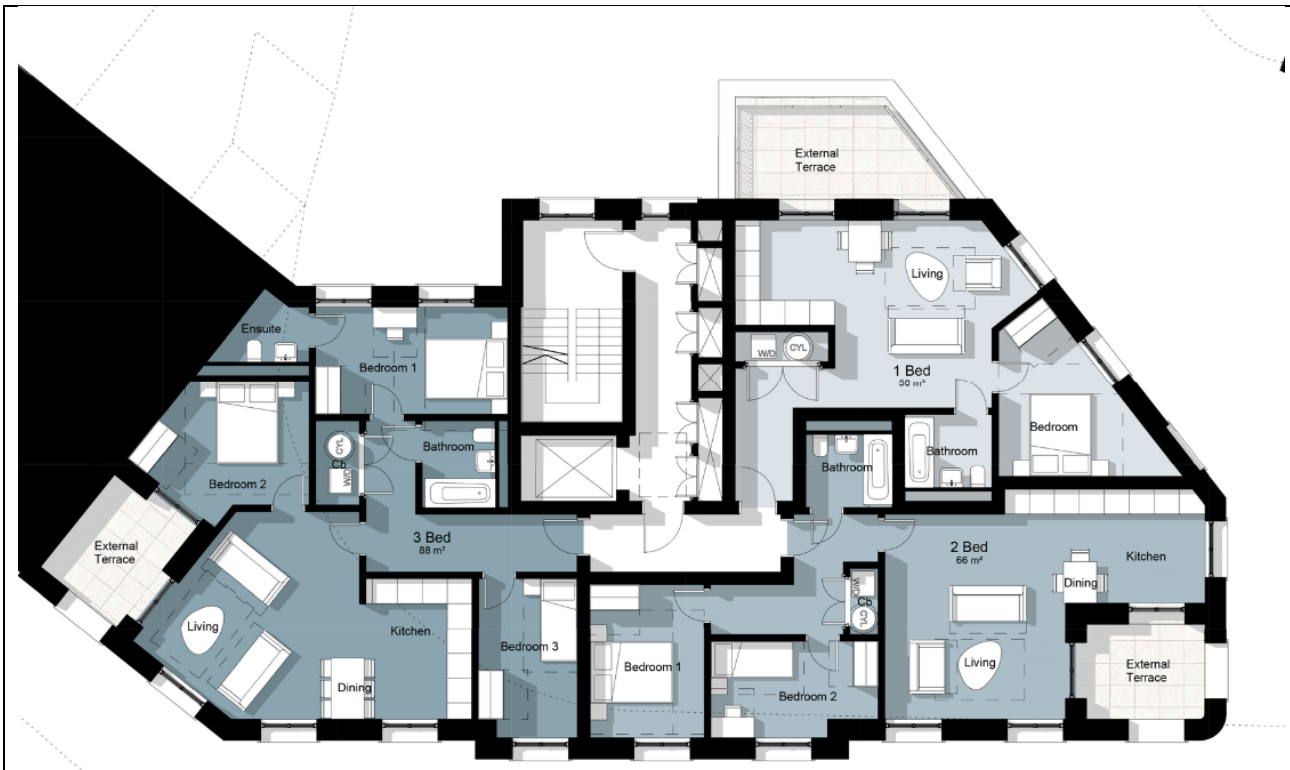
Basement Floor Plan



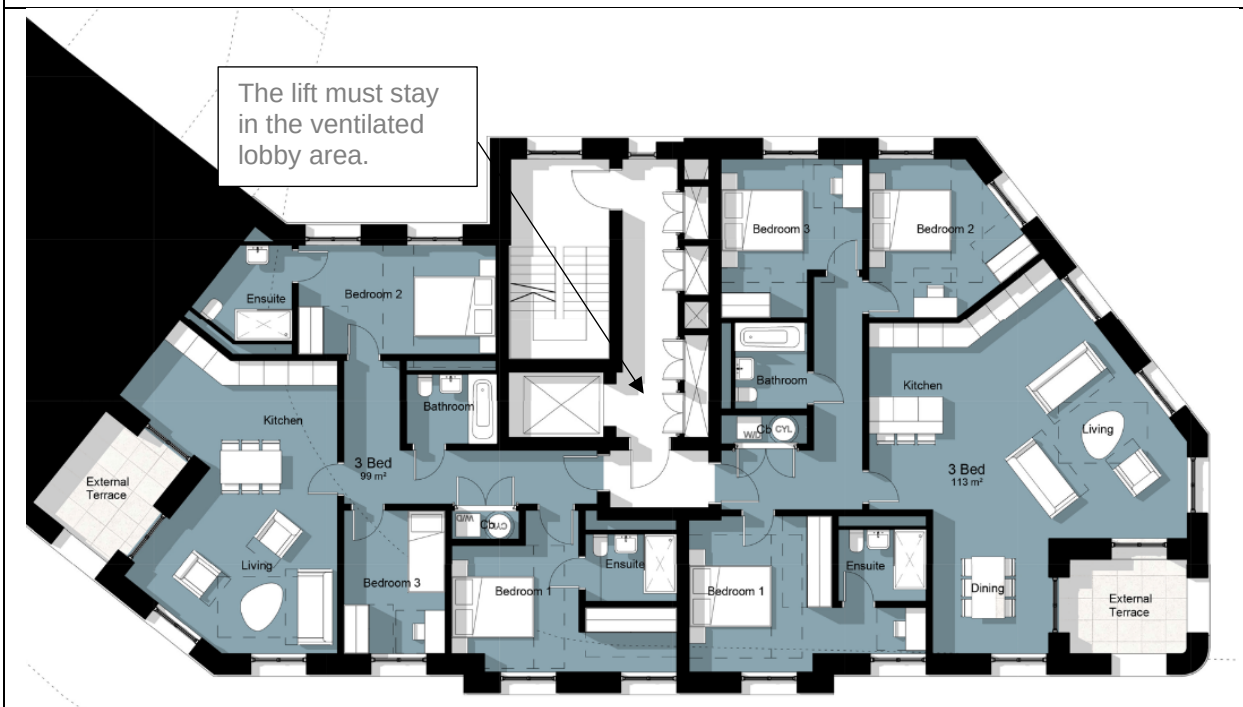
Ground Floor Plan



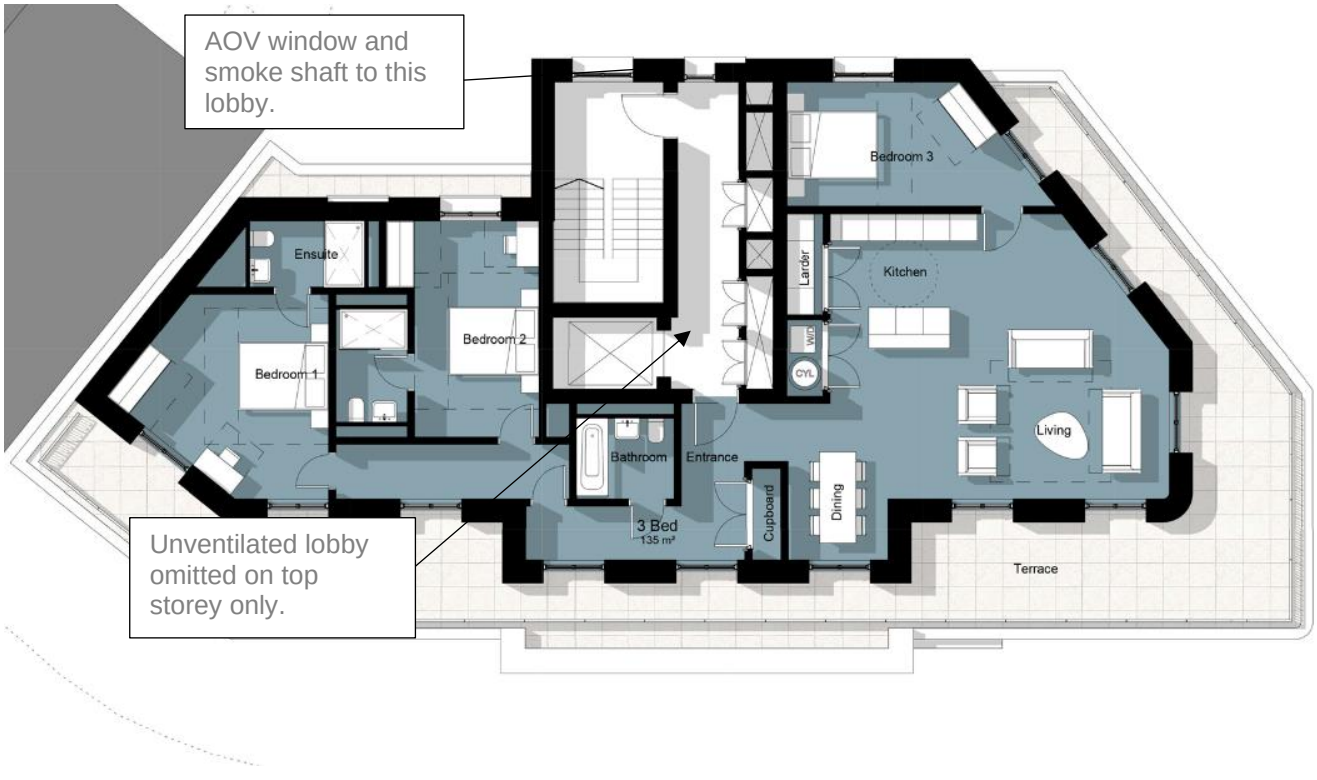
First Floor Plans



Second Floor



Third Floor Plan



Fourth Floor Plan

Roof

Figure 1: Design intent drawings

2. Fire Statement

2.1 Section 1: Site address

The development is located at Harrington Square, London, NW1 2JE.

2.2 Section 2: Description of proposed development including any change of use

The development is located in Camden and consists of the construction of a new residential development consisting of basement, ground and 4 upper floor levels of residential accommodation. The basement is solely for plant and is accessible via an independent externally accessible stair.

The building is served by a single stair core, having a ventilated lift lobby and with an unventilated portion of corridor as per guidance serving apartments. The single stair will not connect to the basement.

The topmost storey appears to have a single apartment, having omitted the unventilated portion of corridor.. This is a deviation but as it is solely a single dwelling on this floor level, having smoke control, sprinkler protection and all other occupants are not put at risk in the event of fire then it is considered reasonable due to spatial restrictions. A 1.5m^2 natural smoke shaft is provided and it is proposed to provide a 1.5m^2 external wall AOV vent as a compensatory feature giving higher levels of smoke ventilation.

The topmost storey is more than 11m but less than 18m in height from access level with the topmost storey measuring 13m above access level.

Due to having a storey over 11m above ground then a sprinkler system designed and installed in accordance with BS 9251: 2021 for the residential areas and non-residential areas limited to 100m^2 in compartment size

The following is a summary of the buildings key parameters:

Table 1: Building key parameters

Designation	*Designated purpose group*	*Topmost Story Height***	*Number of Storeys*	*Sprinklers*	*Firefighting Shaft*	*Elements of structure*
Block A	2b (Ci Risk Profile)	13.5m	5 (G+4) plus basement	Yes	No	60 minutes

2.3 Section 3: Name of person completing the fire statement and relevant qualifications and experience

This document was completed by Daniel Taylor. He has a BSc (Hons) in Fire Safety Engineering and is an Associate member of the Institution of Fire Engineers. He is a Senior Fire Engineer at Marshall Fire and has at least 5 years' of experience in the industry.

Daniel has a high level of understanding Fire Safety compliance and has worked on a wide range of projects including commercial projects across the UK of varying scales whilst acting as the lead fire engineer leading projects from RIBA Stage 2 to RIBA Stage 6 successfully.

This document was reviewed by Robert Clarke. He has a BTech in fire safety engineering and is a graduate member of the institute of fire engineers. He is a Senior Fire Engineer at Marshall Fire and has 15 years' experience in the industry.

Robert has an in depth understanding of the functional requirements of the Building Regulations 2010 and has applied fire safety standards to a wide range of commercial, industrial and residential buildings across England and Scotland.

2.4 Section 4: State what, if any, consultation has been undertaken on issues relating to the fire safety of the development; and what account has been taken of this

No consultations have been undertaken to date regarding proposed fire safety measures.

2.5 Section 5: Site layout plan with block numbering as per building schedule referred to in section 6

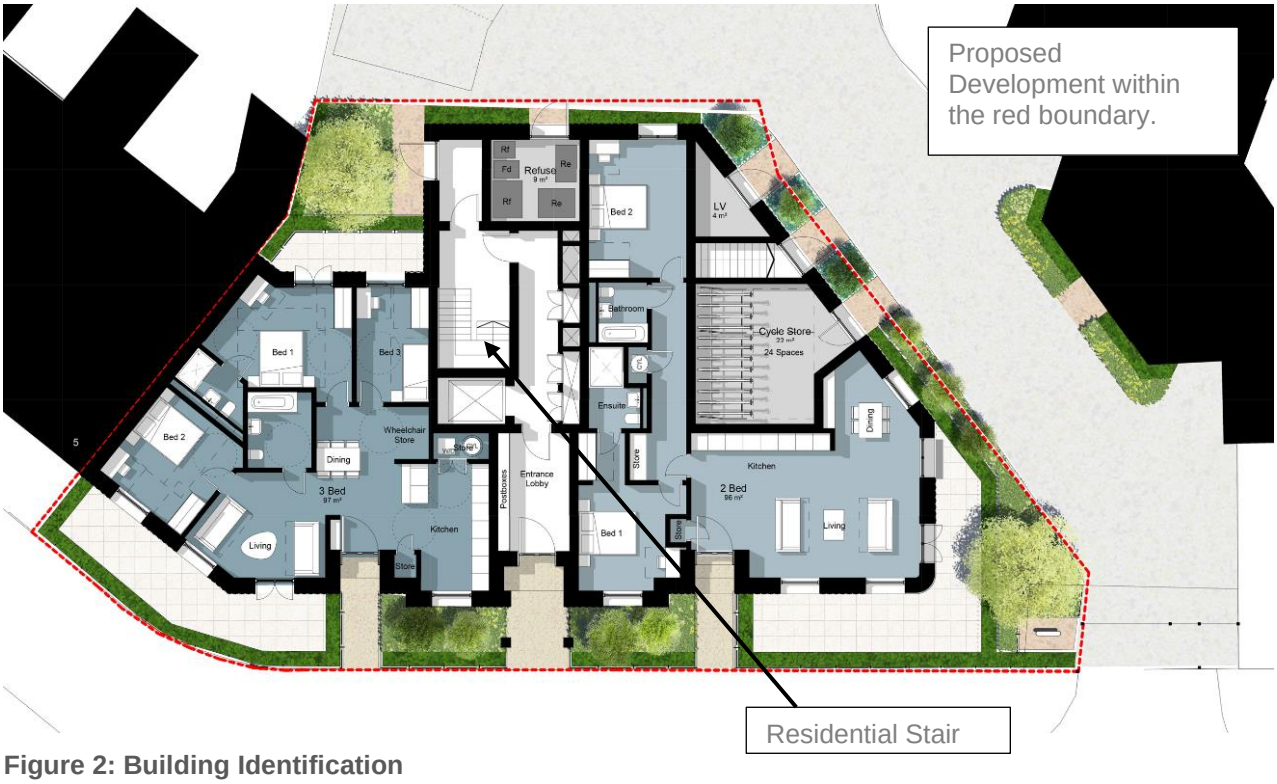


Figure 2: Building Identification

2.6 Section 6: Building schedule

Table 2: Buildings Schedule Table

Note: The proposed guidance will be adopted from BS 9991: 2015 & Draft BS 9991: 2021 Fire safety in the design, management and use of residential buildings – Code of practice

Site Information				Building Information		Resident Safety Information		
No.	**Block height (m)**	**No. of Storeys**	**Proposed use**	**Balconies**	**External Wall Systems**	**Evacuation approach**	**Sprinklers**	**Accessible housing provided**
Block A	17.2m (Topmost storey is 13.5m)	5 (G+4)	Sleeping accommodation	Yes	Class A2-s1, d0 or better	Stay-put Policy	Yes, in accordance with BS 9251	**Refer to architectural information**

Note: * The basement storey is split in two, each part serving the apartment at ground floor forming a duplex.

2.7 Section 7: Specific technical complexities

As part of the fire strategy, guidance will be taken from BS 9991: 2015, Draft BS 9991: 2021 and BS 9999: 2017 (where necessary).

The following fire detection and alarm systems are proposed:

- Within the commercial areas and non-residential landlord areas (plant rooms, stores and other similar rooms) a simultaneous evacuation strategy will be adopted with a fire detection and alarm system provided to BS 5839-1. The minimum level of detection is a Category M, consisting of manual call points only but the proposed category of system is to be L2 providing coverage to circulation spaces, rooms opening into circulation spaces and high-risk areas.
- Initiation of an evacuation in an apartment with a protected entrance hallway will be by an automatic fire detection system designed and installed in accordance with BS 5839-6 achieving a Grade D2, category LD2 system (Grade D1 if rented accommodation).
- Initiation of an evacuation in an open plan apartment will be by an automatic fire detection system designed and installed in accordance with BS 5839-6 achieving a Grade D2, category LD1 system (Grade D1 if rented accommodation).
- Within the common corridors, there will be an automatic fire detection system provided to give automatic operation of the smoke ventilation system. This system will not include sounders or manual call points but will have an alarm notification on the main fire alarm panel. This system will be designed and installed in accordance with BS 5829-1 and arranged as a Category L5 system (fire engineered) with system operation objective to activate the smoke ventilation systems in the common parts only.

Guidance states that the travel distances within the non-domestic areas in the development will be limited as follows:

- The lift lobby is limited to 7.5m from the stair door to the lobby door.
- The corridor serving the apartments which is also known as the ‘unventilated lobby’ and is limited to 7.5m from the lift lobby door to the furthest away apartment door.
- Sprinkler protected apartments have a 20m travel distance.
- Protected entrance hallways are limited to 9m in length.
- Plant rooms/Bin stores: 9m in a dead-end condition and 18m where more than one direction of escape is available.

From review of the plans, the travel distances appear satisfactory.

Where the furniture layout is unknown, only 2/3rd of the actual travel distance should be used as the direct route to the exit.

Provision for sprinkler protection:

- For a residential building having an uppermost storey greater than 11m, guidance requires sprinkler protection throughout in accordance with BS 9251: 2021. As this building height is less than 18m above ground, a Category 2 system is required. This will provide a minimum discharge density of 2.80mm/min through 1-2 sprinklers simultaneously for a minimum operating duration of not less than 30 minutes.
- Common corridors are required to be sterile, managed and have sprinkler protection based on the operation of a minimum of two heads as per the guidance is BS 9251: 2021.
- Sprinklers will be designed, installed and commissioned by a specialist contractor as the design develops.

Provisions for Open Plan Apartments

Within apartments defined as open plan the layout consists of bedrooms acting as inner rooms and the living space is open to the entrance door. The level of fire detection system is required to achieve a Category LD1, grade D2 (Grade D1 if rented accommodation) system and is required to have a sprinkler protection system in accordance with BS 9251. The maximum allowable travel distance is 20m measured from the furthest point within the flat to the entrance door of the apartment.

The following specific recommendations are to be met.

- The size of the open plan apartment should not exceed 16m x 12m (192m^2).
- Open-plan apartments should be situated on a single level only.
- The ceilings within the open plan apartment should have a minimum height of 2.25m.
- The kitchen should be enclosed in open plan apartments having an area exceeding 8m x 4m (32m^2).
- Cooking appliances in open plan apartments having an area smaller than 8m x 4m should not be adjacent to the entrance of the apartment. The location of the hob should be no less than 1800mm away from the means of escape route with an additional 900mm for adequate escape.

A Computational Fluid Dynamics (CFD) assessment and radiation calculations has been used to demonstrate safe egress. This will be subject to agreement with the Approving Authority.

The loadbearing elements of structure are based on the topmost storey of the building, based on the Draft BS 9991 proposals where a topmost storey is less than 18m with a single stair will require 60 minutes fire protection with sprinklers. This will be applied to all beams, columns, load bearing walls and floors in accordance with current guidance requirement.

A firefighting shaft is only applicable where the topmost storey is over 18m, and therefore is not required to this building.

The minimum stair width under Part B is 750mm, however, it is proposed to provide a stair measuring 1000mm clear width. The plans appear to show 1100mm has been provided.

Where stairs serve an upward direction (i.e. from basement to ground), the stair should be separated from the residential stair and measure 1200mm clear width.

A ventilated lift lobby is provided as part of the escape strategy and ventilation strategy. This lobby is served by an evacuation lift allowing for dignified escape.

The evacuation lift is intended as the primary means of emergency egress for occupants with reduced mobility. The evacuation lift operation will be defined as an automatic evacuation operation allowing them to self-evacuate. Provisions for persons with reduced mobility are provided as follows:

- The lift lobby acts as a place of safety while waiting for the lift to enable them to carry out a dignified escape. The evacuation lift requirements are covered in Draft BS 9991: 2021 Appendix's G, where the lift is self-driven.
- Emergency power supplies are required to serve the lift so that it remains functional in the event of a fire.
- The evacuation lift operation will be arranged for automatic evacuation operation as given in BS EN 81-20, and BS EN 81-76. This is based on the building characteristics as not having onsite management serving the apartments to assist with the evacuation and the building being sprinkler protected.
- Ongoing maintenance and management of the lift will be in line with BS EN 81-20, BS EN 81-76, and any other applicable codes of practice and manufacturer's recommendations.
- The minimum lift car size should be Type 2 in accordance with BS EN 81-70:2021, Table 3. Where the evacuation lift is part of a lift group, the car size should be at least the same size as the lift cars in the same group.
- The evacuation lift may be upgraded to a firefighting lift.

The stair has a final exit direct to open air at access level, and where the exit is part of a stair extension, this will be fire rated and defined as part of the stair.

The basement storey is only accessible from street level via its own stair. No ventilation is provided as this is solely for plant and is less than 140m^2. The fire service can manually open the stair door to atmosphere to achieve smoke clearance.

Post-boxes are a fire risk if within the stair enclosure, or any part of the only final exit route and therefore the material selection must consider the escape strategy and fire service access. Based on having a rear escape door and the fire service having the ability to use a hose from the fire tender, the post-box material is flexible but would always be recommended as limited combustibility so not to add to the fire load in an escape corridor.

Parcel deliveries will not be allowed to be stored in any part of the stairway. From review of the plans, a resident entrance lobby is available which may be used for storage of parcels. Given sprinklers to corridors and compartmentation, this is deemed acceptable.

The following compartmentation is required, but not limited to:

- The stair and lift cores are to be 60 minutes fire resistance. The stair will have a FD30S fire door and FD30 lift door. The lift lobby will form 60 minutes fire resistance with FD30S fire doors.
- Service risers are to be enclosed in fire resisting construction equal to the elements of structure and provided with fire doors with half the wall rating. Service riser doors are to be capable of resisting the passage of smoke at ambient temperature. (i.e.60 minutes with FD30 doors – Smoke Seals if provided within the common corridor/circulation spaces and with smoke detection within the riser).
- Apartments will form a 60 minutes compartment with the internal hallways achieving 30 minutes fire resistance with FD30 doors. The apartment entrance door will be FD30S with a self-closer.
- Compartment floors will need to meet the same level of fire resistance as per the structure (i.e. 60 minutes).

Doors are to be a minimum of 800mm clear width, and no narrowing should occur along the means of escape route. No less than 850mm for areas that cater for people with reduced mobility.

The development will be formed using reinforced concrete frame, external brick and some elements will include steelwork. All internal partitions will be constructed from lightweight metal/timber stud walls and gypsum plasterboard.

The external wall surface spread of flame requirement are:

- For a residential building with a building height more than 11m, the façade external surface is required to achieve ‘No Provision’ having a boundary more than 1m from the relevant boundary.
- For the external wall build up, whilst having a building over 11m, it is recommended to apply the ADB Volume 1 2022 amendments which states a Class A2, s1-d0 or better so not to be a medium of fire spread in accordance with BS EN 13501-1.

Firefighting intervention is via a dry riser inlet/outlet and then apply hose coverage from within the stair at every floor level. This is discussed in more detail in Sections 2.10, 2.11 and 2.12.

Proposed Smoke Control for the development are:

- The head of the stair will have a 1.0m^2 automatic open vent (AOV) to maintain tenable conditions at all times for all apartment blocks.
- The lift lobby will have a 1.5m^2 natural smoke shaft, with the louvered smoke vent positioned at high level and achieving 1m^2 free area. Further design specification is available in BS EN 12101-6 and will be developed by a smoke control specialist.
- The rest of the corridor is unventilated, limited to 7.5m.
- Ground floor stair extensions are not ventilated as they are not serving apartments and can be manually ventilated by opening the external doors.
- The ground floor lift lobby, whilst not serving apartments and so not strictly requiring smoke control, it is serving the service risers and so it is recommended that the smoke shaft from the floors above be extended to ground floor. This gives additional protection to the stair and ensures the lift will have safe egress at all times.
- Any common stair which does not form part of the only escape route from a flat may also serve ancillary accommodation if it is separated from the ancillary accommodation by a protected lobby. If the stair serves an area with a higher fire risk, the lobby should be provided with an area of permanent ventilation of not less than 0.4m^2 or be protected from the ingress of smoke by a mechanical smoke ventilation system. From review of the current plan, there is no ancillary accommodation adjoining the stair and is accessed externally at ground floor level.

2.8 Section 8: Issues which might affect the fire safety of the development

The following issues are noted as departures that require gaining the approving authorities' sign off.

1. The open plan apartments will require CFD modelling and radiation analysis to support the design.
2. The topmost storey penthouse apartment does not show an unventilated lobby and so the apartment connects directly to the lift lobby.

   As the topmost storey appears to have a single apartment only, having smoke control, sprinkler protection and all other occupants are not put at risk in the event of fire then it is considered reasonable due to spatial restrictions. A 1.5m^2 natural smoke shaft is provided and it is proposed to provide a 1.5m^2 external wall AOV vent as a compensatory feature giving higher levels of smoke ventilation.

2.9 Section 9: Local development document policies relating to fire safety

The project is located within the Greater London Authority (GLA) region and therefore should support the design intent of the London Plan Sections D12 and Policy D5.

2.10 Section 10: Fire service site plan

The fire service will have the ability to park on a hardstanding directly outside the development and will have access to the ground floor apartments without the need for a dry riser, similarly for the non-residential areas.

The upper floor levels will have access to a dry riser inlet within 18m of the fire service vehicle hardstanding. The dry riser outlet will be provided within the stair serving every floor level. The dry riser is required to be positioned so that line of sight is possible from the fire tender. The hose coverage allowance upon the floor plates is limited to 45m from an escape stair to the furthest part of the floor plan.

Figure 3 below shows identifies the hardstanding area and building entry points.

Ground Floor Plan

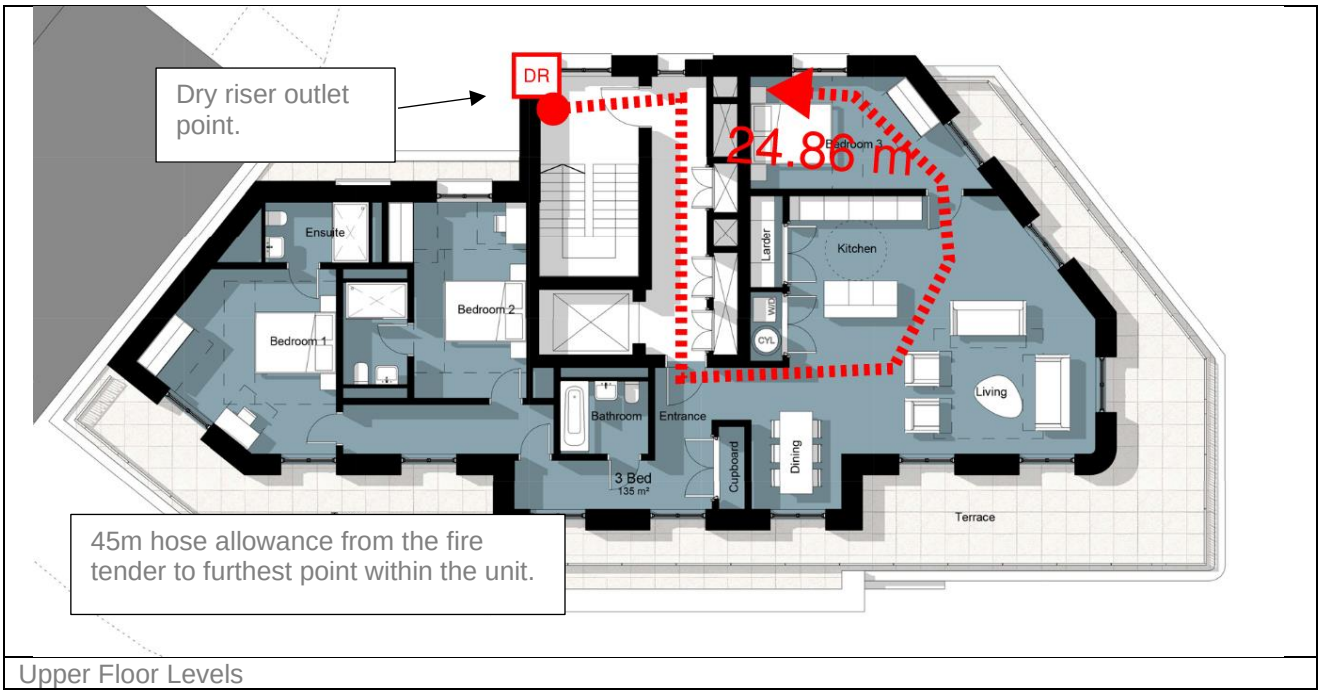


Figure 3: Indicative Fire Tender Access Points and Fire Main Point

2.11 Section 11: Emergency road vehicle access

Firefighting access is key for successful firefighting and therefore the appropriate provisions must be made regarding site access. Fire main (dry riser) will be provided with the inlet on the façade and an outlet within the stair serving every floor level.

Turning facilities should be provided in any dead-end access route that is more than 20m long. This can be by a hammerhead or turning circle. From inspection of the plans, the public roadways will be used and no turning point is required.

Table 3: Pump appliance access route requirements

Appliance Type	*Min. width of road between kerbs*	*Min. width of gateways*	*Min. turning circle between kerbs*	*Min. turning circle between walls*	*Min. clearance height*	*Min. carrying capacity*
Pump	3.7	3.1	16.8	19.2	3.7	12.5*
High Reach	3.7	3.1	26.0	29.0	4.0	17.0*

Note: * The minimum carrying capacity should be checked with the local fire brigade.

2.12 Section 12: Siting of fire appliances

Siting of the fire appliances will be to the front of the main entry point on the ground floor and to the stair core. This has been illustrated in Figure 3.

Where a fire main is to be positioned on the building façade this will need to be visible from the parked fire tender location and designed and installed in accordance with BS 9990. This is illustrated in Section 10.

2.13 Section 13: Suitability of water supply for the scale of development proposed

Existing public hydrant locations for the site are required to be checked and new hydrants provided if required to ensure hydrants are located within 90m of an entry point to the building/dry riser inlet and not more than 90m apart.

The water supplies will be via the public mains.

2.14 Section 14: Fire service site plan

The design team will provide a site plan as stated in Section 12. See also Figure 3.

2.15 Section 15: Signature

The following overview has been produced by Daniel Taylor.

2.16 Section 16: Date

The following fire safety statement is dated **17/08/2023.**

2.17 Conclusion

Having reviewed the documentation issued to Marshall Fire Ltd by Studio Power Limited and Artal Limited on behalf of the client, we agree with the overall design proposals and conclusion presented in the drawings for the proposed works can be developed in order to satisfy the functional requirements of the Building Regulations.

It is considered that the scheme meets Planning Gateway One and London Plan Policy D12 and D5 and gives respect to the proposed changes to Fire Safety in Draft BS 9991: 2021.

The evolution of the design development and the principles of the golden thread concept and will form the basis of the developing Fire Strategy through further design, construction and operating of the building.

We would however reiterate that the findings are limited to the information reviewed only and the installation, maintenance and ongoing maintenance are not our responsibility.

3. References

i. BS 9991: 2015 Fire Safety in Dwellings - Code of Practice.

ii. DRAFT BS 9991: 2021 Fire Safety in Dwellings - Code of Practice.

iii. BS 9999: 2017 Fire Safety in buildings other than dwellings.

iv. Approved Document B, Volume 1, 2019 + 2020 & 2022 amendments.

v. Fire Statement Guidance, Annex D Gov.co.uk

vi. BS 5839-6:2017, Fire detection and fire alarm systems for dwellings. Code of practice for system design, installation, commissioning and maintenance.

vii. BS 5839-1:2019, Fire detection and fire alarm systems for non-residential buildings. Code of practice for system design, installation, commissioning and maintenance.

viii. BS 9990:2015, Non automatic fire-fighting systems in buildings. Code of practice.

ix. BS 476 series: 1987, Fire tests on building materials.

x. BS EN 1366-3:2009, Fire resistance tests for service installations. Penetration seals.

xi. BR 187: 2014 External Fire Spread Building Separation and Boundary Distances.

xii. Gateway One Online Template.

xiii. London Plan Policy D12 and D5.