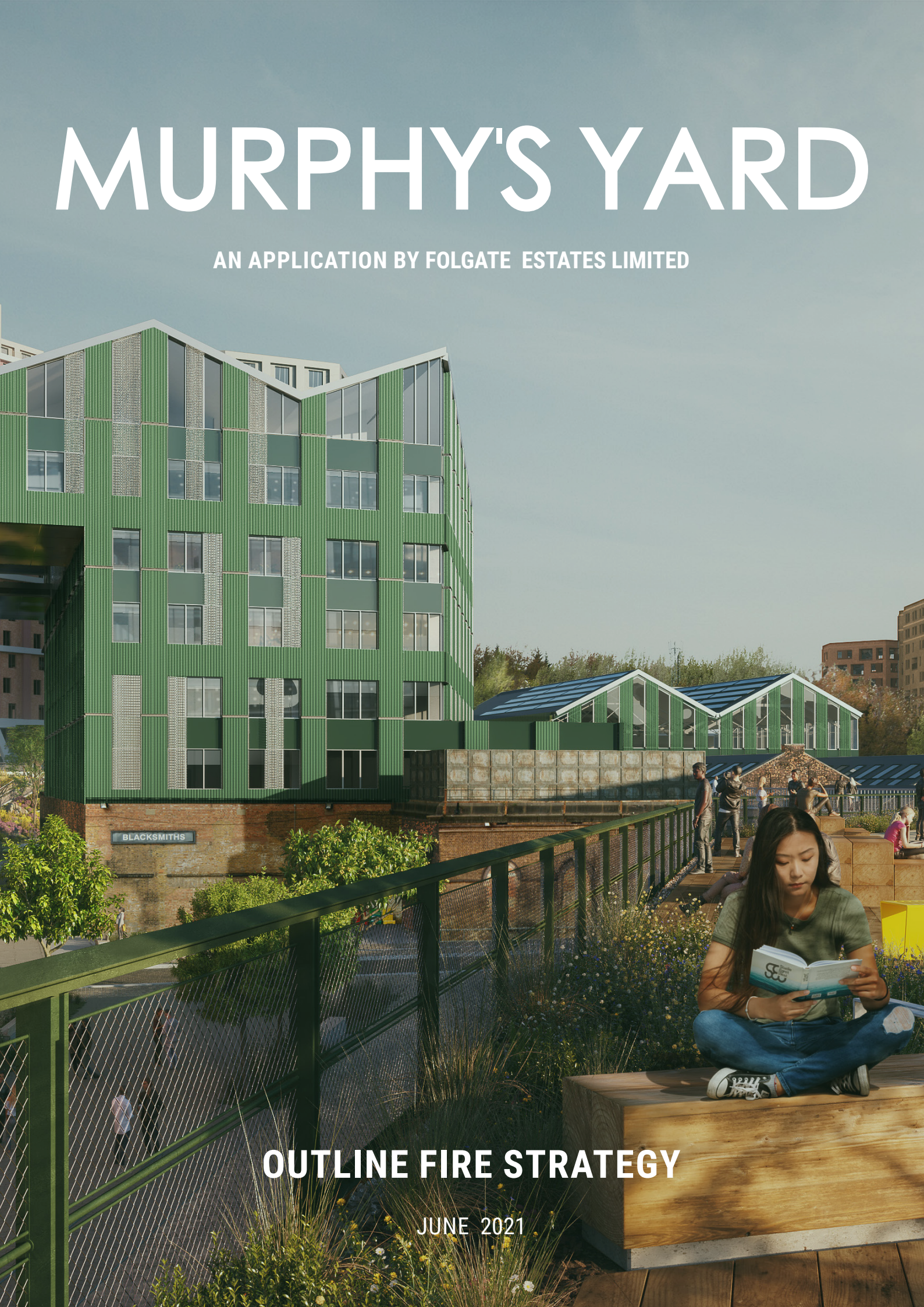
MURPHY'S YARD

AN APPLICATION BY FOLGATE ESTATES LIMITED



OUTLINE FIRE STRATEGY

JUNE 2021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dp9

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1 Introduction

1.1 Scope

Elementa has been engaged as a specialist fire and life safety consultant to develop and validate the outline fire strategy for the Murphy's Yard development.

The fire strategy is intended for discussion between the design team and to assist the design team in developing the layouts to ensure that once a Building Regulations application is made, all of the fire safety elements will be incorporated into the plans.

This report is based on the guidance in Approved Document B (ADB), 2019 edition incorporating the 2020 amendments (for the residential buildings) and BS9999 (for the Sheds and other commercial units).

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

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

1.2 Building Description

All buildings are part of the Murphy's Yard development in Kentish Town, London.

Plots A, B, F, G, H, I and Sheds 02 and 03 are commercial units and will be a mix of offices, light workshop / industrial spaces and commercial units.

Plot C, J, K, L, M, O, P, Q and S are to be residential blocks. In some instances, there may be commercial units at the bases of the residential blocks.

The number of storeys of each Plot based on the indicative masterplan is detailed in the following table. Please note that where heights are referenced in the text it is from the fire access level and not necessarily the AOD.

Plot	Usage	Number of storeys (max)	Maximum Height AOD
A	Commercial	1	+44.70m
B	Commercial	1	+44.70m
C	Residential	8	+64.30m
F	Commercial	8	+72.09m
G	Commercial	8	+79.40m
H	Commercial	8	+79.40m
I	Commercial	8	+75.35m
J	Residential	19	+113.45m (+55.85m, +107.05m)
K	Residential	14	+94.45m (+88.05m, +56.05m, +52.85m)

L	Residential	11	+84.85m (+78.45m, +56.05m, +52.85m)
M	Residential	9	+77.65m
O	Residential	7	+70.45m
P	Residential	3	+56.00m
Q	Residential	10	+82.25m
S	Residential	17	+97.35m
Shed 02	Commercial	3	+54.16m
Shed 03	Commercial	7	+68.89m

Table 1 – Building usage

An indicative site plan is shown in the image below.

Figure 1 – Site Plan

1.3 Fire Strategy Summary

The proposals outlined in this document demonstrate a level of fire safety equal to or greater than the general standard as required by compliance with the recommendations in ADB and BS9999.

Elements of the fire strategy are summarised below:

Commercial Plots

- Where commercial blocks are over 11m in height they will be provided with two stair cores, each accessed via a protected lobby at each level.
- Where commercial blocks are over 18m in height, at last one of the stairs will be designed as a firefighting shaft.
- A dry main will be provided in the firefighting shaft, with all points of the floor plate within 60m of a dry riser outlet.
- A fire tender must be able to park within 18m of the dry riser inlet, with a dead-end condition of no greater than 20m.

- At ground floor, all parts of the floorplate will be within 60m of the position of a fire tender.
- Exit widths, stair capacities and travel distances will be dependent on the building usage, with a risk profile approach as per the recommendations in BS9999.
- A sprinkler system will be provided to the Commercial Plots in accordance with BS EN 12845.
- Where there are basements, smoke control will be required.

Shed 02

- Under 11m in height and will be provided with a single escape stair accessed via a protected lobby at all levels.
- A dry main will be provided in the stair, with all points of the floor plate on the upper floors within 45m of the dry riser outlet.
- A fire tender must be able to park within 18m of the dry riser inlet, with a dead-end condition of no greater than 20m.
- At ground floor, all parts of the floorplate will be within 45m of the position of a fire tender.
- Exit widths, stair capacities and travel distances will be dependent on the building usage, with a risk profile approach as per the recommendations in BS9999.

Shed 03

- Over 18m in height and will be provided with three stair cores, each accessed via a protected lobby at each level.
- The split footprint at the lower levels necessitates two of the stairs to be designed as firefighting shafts.
- A dry main will be provided in each firefighting shaft, with all points of the floor plate on the upper floors within 45m of a dry riser outlet.
- A fire tender must be able to park within 18m of both dry riser inlets, with a dead-end condition of no greater than 20m.
- At ground floor, all parts of the floorplate will be within 45m of the position of a fire tender.
- Exit widths, stair capacities and travel distances will be dependent on the building usage, with a risk profile approach as per the recommendations in BS9999.

Residential Plots

- In all residential Plots, a stay-put evacuation policy will be in place.
- Where Plots are over 18m in height they will be provided with a firefighting shaft.
- Where Plots are under 18m in height they will be provided with a protected escape stair.
- The number of cores will be dependent on the internal travel distances and the internal layout of each individual plot.
- The common corridor at each level will be provided with smoke control by way of either a 0.6m^2 mechanical smoke shaft, or a 1.5m^2 natural smoke shaft. The number required will be dependent on the travel distances.
- For Plots under 50m in height, a dry main will be provided in the firefighting shaft (or within the escape stair where under 18m in height), with all points of the floor plate on the upper floors within 60m of a dry riser outlet.
- For Plots over 50m in height, a wet main will be provided in the firefighting shaft with all points of the floor plate on the upper floors within 60m of a wet riser outlet.
- A fire tender must be able to park within 18m of the dry / wet riser inlet, with a dead-end condition of no greater than 20m.
- A sprinkler system will be provided to all Residential Plots (except Plot P) in accordance with BS9251.
- The smoke control system will be extended to the basement corridor where applicable.
- Commercial units at ground floor will be completely separate from the residential elements and will evacuate simultaneously.

2 Legislation

2.1 Building Regulations 2010

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

The requirements of the Schedule relating to fire safety are:

- B1 – Means of warning and escape
- B2 – Internal fire spread (linings)
- B3 – Internal fire spread (structure)
- B4 – External fire spread
- B5 – Access and facilities for the fire service

The principle aim of the Building Regulations is to ensure the health and safety of people in and around a building.

The 'requirements' set out broad objectives or functions, which the individual aspects of the building design and construction must set out to achieve. They are therefore often referred to as 'functional requirements' and are expressed in terms of what is 'reasonable', 'adequate' or 'appropriate'.

2.2 Approved Document B (ADB)

The Ministry of Housing, Communities and Local Government (MHCLG) has produced a number of guidance documents to assist designers in meeting the relevant requirements of the Building Regulations. These 'Approved Documents' provide guidance on different aspects of the Regulations. Approved Document B – Fire safety (ADB) provides general design guidance on ways in which the functional fire safety requirements can be satisfied.

The Building Regulations 2010 require reasonable standards of health and safety for persons in or about the building to be provided.

However, as with many "deemed to satisfy" documents, the ADB is general in its approach and cannot contain sufficient detail for the multiplicity of building designs and varieties of building fire loads and occupancies encountered in practice.

The recommendations presented in the ADB provide guidance on how to satisfy the functional requirements of the Building Regulations. However, there is no obligation to adopt any particular solution contained in the document. The document recognises this and accepts that, if the requirement can be demonstrated to have been satisfied by alternative solutions, then this is equally acceptable.

2.3 British Standard BS9999

In both new construction and upgrading existing buildings, the various aspects of fire precautions are interrelated and weaknesses in some areas can be compensated for by strengths in others. A higher standard under one of the areas might be of benefit in respect of one or more of the other areas. BS9999 provides a level of flexibility that allows the fire protection measures and the risks to be assessed to enable reasonable practical solutions to be designed.

BS9999 provides recommendations and guidance on the provision of measures to control or mitigate the effects of fire. The primary objective is to ensure that an adequate standard of life safety can be achieved in the event of fire in the building.

A secondary objective is to provide a level of protection for property and businesses against the impact of fire, e.g. in close proximity to residential buildings or as part of the same building or building complex. These can also have the effect of assisting the fire and rescue service and/or of providing environmental protection.

There are references throughout this British Standard to occupant safety, firefighter safety and property protection, to draw attention to the different issues these could raise. It is, however, important to be aware that provisions solely for life safety are unlikely to provide the full level of protection for buildings and property in a fully developed fire scenario.

2.4 Regulatory Reform (Fire Safety) Order

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

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

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

2.5 Construction, Design and Management Regulations

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

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

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

2.6 Statutory Consultation

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

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

2.7 New London Plan

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

3 Means of Warning & Escape

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B1, Means of Warning and Escape:

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

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

3.1 Evacuation Strategy

The evacuation strategy for each Commercial Plot and Shed will be simultaneous. Each building has been designed separately, evacuation in one will not initiate evacuation in the other.

Residential means of escape is somewhat different to many other types of buildings in that only the particular apartment that has a fire in it is immediately evacuated. The reasoning behind this is due to the level of compartmentation between each of the apartments and to reduce false alarms affecting all the people within the building. The Fire Service carries out evacuation of the other apartments if necessary.

The commercial spaces within the Residential Plots will be considered independent of the residential elements. It is proposed that these areas adopt independent simultaneous evacuation approaches. This is particularly important for areas that may have members of the public who are unfamiliar with the building and any evacuation procedures.

3.2 Travel Distances and Exit Widths

The travel distances, exit widths and stair widths will be based upon the recommendation in BS9999 for the Commercial Plots and Sheds. Each will be assigned a risk profile relevant to its use.

Travel distances, exit widths and stair widths within Residential Plots will be based upon the recommendations in ADB.

Variations in risk profile will be applied where relevant, with increased fire detection and alarm coverage and the inclusion of sprinklers permitting such variations.

3.3 Number of Exits and Stairs

3.3.1 Commercial Plots

All Plots are expected to be over 18m in height and will be provided with at least two stairs from the upper levels. At least one stair will be designed as a firefighting shaft.

3.3.2 Residential Plots

It is proposed that ADB is used to determine the travel distances within each residential Plot. The common corridor at each level will be provided with smoke control to protect the stair. This will take the form of either:

- A 0.6m² mechanical smoke ventilation system (MSVS) The mechanical smoke shaft should achieve a minimum of 0.6m² internal free area with a 0.6m² Automatically Opening Vent (AOV) opening into each smoke shaft from each common corridor.
- A 1.5m^2 natural smoke shaft. This will achieve a minimum of 1.5m^2 internal free area with a 1.0m^2 AOV opening into the smoke shaft from each corridor.

The type, number and location of shafts will need to be determined during as the design develops.

As part of the smoke ventilation strategies, a 1.0m² AOV is required at the head of the stair. The staircase doors need to open into the common area on the floors that are ventilated by any MSVS to provide the replacement air, which shall also protect the staircase from smoke ingress.

At the later stages of design, a Computational Fluid Dynamics (CFD) assessment will be required to validate the smoke venting strategy.

The Plot P townhouses will have a protected stair providing means of escape.

3.3.3 Final Exit Route

The final exit route for all stairs serving the upper stories should be direct to outside. The exit from the stair and final exit door should be at least as wide as the stair itself.

3.4 Disabled Evacuation

The residential accommodation on the upper levels do not require disabled refuges to be provided.

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

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

However, a fully compliant evacuation lift will require a full team of staff to operate, which is impractical for a residential scheme where there may not be sufficient permanent staff at all times. Therefore, a suitable alternative would be to provide another firefighting lift within each core (in addition to the firefighting lift for the firefighting shaft) which would allow a disabled occupant to descend to ground floor under fire service instruction and supervision.

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

Within the Commercial Plots, a disabled refuge will be required in each stair at each floor level. It is expected that management will determine appropriate personal emergency evacuation plans for employees based on the guidance given in Fire safety risk assessment: means of escape for disabled people.

3.5 Fire Alarm & Detection System

3.5.1 Commercial Plots and Sheds

The fire alarm and smoke detection system within the Commercial Plots and Sheds will be designed in accordance with BS 5839 Part 1 and be of type L2.

3.5.2 Residential Plots

Open plan apartments should be provided with an LD1 automatic fire detection and alarm system with a minimum Grade D power supply, designed, installed and maintained in accordance with BS 5839 Part 6.

Private balconies are not required to have an additional sounder as they are accessed from one access room, and the sounder in the access room will be able to alert balcony occupants to a fire.

The system should be of Grade D1 if the apartments are to be rented accommodation and Grade D2 if they are to be owner occupied.

A smoke detection system should be provided in the common corridors on each floor. The sole purpose of the detection system is to activate the smoke ventilation system. No sounders or manual call points will be provided in the common corridors.

3.5.3 Ancillary Accommodation

The fire alarm and smoke detection within the ancillary spaces, stores, plant and refuse rooms should be designed in accordance with BS5839 Part 1 and be of type L3.

3.6 Emergency lighting

Emergency lighting as backup lighting should meet the recommendations of BS5266 Parts 1 and 7.

Final locations and routes shall be agreed during the design development.

3.7 Signage

Escape signage should follow the recommendations of BS5499.

Further detail will be provided during the design development.

3.8 Manual Fire Fighting Equipment / Fire Extinguishers

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

In this case it is proposed that manual firefighting equipment will be provided (by the tenants as a part of the fit out) as part of the fit out works and within the buildings with the quantity, location and type of extinguishers identified and agreed with the Fire Service based on the fire risk assessment of the industrial space by the responsible person.

Manual firefighting equipment will not be installed within the residential accommodation.

4 Internal Fire Spread (Linings)

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

"To inhibit the spread of fire within the building the internal linings shall:
a) adequately resist the spread of flame over their surfaces; and
b) have, if ignited, a rate of heat release which is reasonable in the circumstances.

In this paragraph "internal linings" mean material lining any partition, wall, ceiling or other internal structure."

4.1 Surface Linings

The interior wall and ceiling surfaces in buildings can have a significant influence on how fast a fire may develop. It is particularly important that in circulation spaces including staircases, where the rapid spread of fire is most likely to prevent occupants from escaping, surface linings are restricted by making provision for them to have low rates of heat release and surface spread of flame.

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

Location	**Class of Lining** **European Class***
Small Rooms of area less than: • 4m² in residential accommodation • 30m² in non-residential accommodation	D-s3,d2
Other Rooms	C-s3,d2
Circulations spaces within dwellings	C-s3,d2
Other circulation spaces including the common areas of block of flats and amenity spaces	B-s3,d2
Note: * The European classifications are described in BS EN 13501-1.	

Table 2 – Surface lining requirements

The class of linings can be downgraded (but not less than D-s3,d2) in walls of rooms providing the total area of those parts in any one room does not exceed one half of the floor area of the room and subject to a maximum of 20m² in residential accommodation and 60m² in non-residential accommodation.

For the purpose of this document the internal surfaces and linings includes only the floors within stair cores, the upper surface of all other floors are not subject to these limitations. Doors, door frames, window frames and frames in which the glazing is fitted, architraves and skirting are also exempt from these limitations.

5 Internal Fire Spread (Structure)

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

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

The requirements will be met;

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

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

5.1 Fire Resistance of Elements of Structure

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

The period of fire resistance required in accordance with ADB and BS9999 is linked to the risk profile of the building taking into account the height of the top floor and whether the building is sprinklered or not. Where any element supports another the supporting element should possess at least the resistance of the other. Approved Document B defines an element of structure as:

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

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

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

The structural fire resistance for each Commercial Plot will be 90-minutes. Shed 02 will require a structural fire resistance of 60-minutes. Shed 03 will require a structural ire resistance of 60-minutes.

Residential Plots up to 18m in height will require 60-minutes structural fire resistance. Residential Plots up to 30m in height will require 90-minutes structural fire resistance. Residential Plots greater than 30m in height will require 120-minutes structural fire resistance.

Where elements of structure support a building above they should be provided with the structural fire resistance to at least that required for the building they support.

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

5.2 Compartmentation

5.2.1 Commercial Plots

The firefighting shafts should be enclosed in 120 minutes fire resistance with FD60S self-closing doors. The stairs and lift within the shaft should be separated from the lobby with 60 minutes fire rated construction and FD30S self-closing door and FD30 doors respectively. The firefighting access route at ground floor should be enclosed in 120 minutes fire resistance.

The risers should be enclosed in the same period of fire resistance as the elements of structure with doors that achieve at least half of the fire resistance of the riser walls.

A 60-minute compartment wall should separate the areas of different risk profile.

For the purposes of limiting the external fire spread each floor will be designed as a compartment floor, with a fire resistance equal to the structure.

Openings in compartment walls should be limited to the passage of service ducts and access doors fitted with smoke seals. Where service ducts pass through compartment walls these will be provided with a fire barrier. All openings will be provided with a similar period of fire resistance to the wall they are provided within and the fire doors are to be locked closed.

In order to protect the final exit routes from the building all wall construction within 1.8m of the final exit points will be fire rated to 30 minutes. In general, most final exits are acceptable providing there are two directions of discharge from the exit, however where escape is only possible in a single direction and the exit route in the open air is within 1.8m of the building then any glazing present should be fire rated glazing to 30 minutes (integrity only).

5.2.2 Residential Plots

The firefighting staircases should be enclosed in 120 minutes fire resistance with FD60S self-closing doors whilst the firefighting lifts should be enclosed in 120 minutes fire resistance with FD60 doors. The firefighting access route at ground floor should be enclosed in 120 minutes fire resistance.

All apartments should have 60-minute fire resistant compartment walls with FD30S self-closing front doors. Where an internal corridor is provided it should be 30-minutes fire resisting with FD20 doors.

The stairs designed as escape stairs should be enclosed in the same period of fire resistance of the elements of structure with self-closing doors that achieve at least half of the fire resistance of the stair walls.

The risers should be enclosed in the same period of fire resistance as the elements of structure with doors that achieve at least half of the fire resistance of the riser walls.

Openings in compartment walls should be limited to the passage of service ducts and access doors fitted with smoke seals. Where service ducts pass through compartment walls these will be provided with a fire barrier. All openings will be provided with a similar period of fire resistance to the wall they are provided within and the fire doors are to be locked closed.

In order to protect the final exit routes from the building all wall construction within 1.8m of the final exit points will be fire rated to 30 minutes. In general, most final exits are acceptable providing there are two directions of discharge from the exit, however where escape is only possible in a single direction and the

exit route in the open air is within 1.8m of the building then any glazing present should be fire rated glazing to 30 minutes (integrity only).

5.2.3 Ancillary Accommodation

Plant, stores and refuse rooms should achieve 60 minutes fire resistance with FD30 doors.

Any electrical sub-stations should be fully separated from the adjacent accommodation spaces by at least 30 minutes fire resisting construction, although these requirements are likely to be superseded by the electricity supplier's requirements, which are typical based on 4 hours fire separation.

5.3 Fire Stopping

Fire stopping should be provided as per the guidance in ADB and BS9999.

5.4 Cavity barriers

Cavity barriers should be provided as per the guidance in ADB and BS9999.

5.5 Sprinklers

For Commercial Plots a commercial sprinkler system will be required, in accordance with BS EN 12845.

There are no sprinkler requirements for Sheds 02 and 03.

All Residential Plots (except Plot P) will be provided with sprinklers in accordance with BS9251. This sprinkler system should be extended to cover the amenity spaces. Plot P does not require sprinklers as it is solely three-storey townhouses.

6 External Fire Spread

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

a) *The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of building.*
b) *The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.*

The objective of this requirement is to ensure that there is sufficient separation between buildings to prevent fire spread and to ensure that fire does not spread up the building façade.

6.1 Unprotected Areas

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

An external wall assessment shall be undertaken at the Reserved Matter Application. However, it should be noted that the buildings are close to the site boundary on numerous elevations and this may affect the allowable percentage of unprotected areas on a number of facades. This is dependent on the use of each building.

6.2 External Wall Construction

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

For Commercial Plots greater than 18m in height (and Shed 03) the requirements are:

- Less than 1000mm from the relevant boundary: B-s3,d2 or better.
- Greater than 1000mm from the relevant boundary and up to 18m in height: C-s3,d2 or better.
- Greater than 1000mm from the relevant boundary and above 18m in height: B-s3,d2 or better.

Any insulation product used in the external wall of these Plots should be of Class A2-s3,d2 or better.

Shed 02 is under 18m in height, and as such the requirements are:

- Less than 1000mm from the relevant boundary: B-s3,d2 or better.
- Greater than 1000mm from the relevant boundary: C-s3,d2 or better.

Residential Plots over 18m in height are classed as relevant buildings as defined by ADB, and so all of the materials which become part of an external wall, should achieve European Classification A2-s1,d0 or Class A1, classified in accordance with BS EN 13501-1:2007+A1:2009. This does however not apply to the following:

- cavity trays when used between two leaves of masonry;
- any part of a roof if that part is connected to an external wall;
- door frames and doors;
- electrical installations;
- insulation and water proofing materials used below ground level;
- intumescent and fire stopping materials where the inclusion of the materials is necessary to meet the requirements of Part B of Schedule 1;
- membranes;
- seals, gaskets, fixings, sealants and backer rods;
- thermal break materials where the inclusion of the materials is necessary to meet the thermal bridging requirements of Part L of Schedule 1; or
- window frames and glass.

Membranes above ground level, although exempt, should achieve a minimum classification of B-s3,d0.

Residential Plots under 18m in height should conform with the following requirements:

- Less than 1000mm from the relevant boundary: B-s3,d2 or better.
- Greater than 1000mm from the relevant boundary and up to 18m in height: No provisions.

6.3 Roofs

Roof coverings should be designed in accordance with Table 36 of BS9999 as shown in Figure 2 below.

Table 36 **Separation distances for roof coverings**

Designation of covering of roof or part of roof [A]		Distance of roof from any point on relevant boundary			
National class	**European class**	**Less than 6 m**	**At least 6 m**	**At least 12 m**	**At least 20 m**
AA, AB or AC	B_{ROOF}(t4)	Acceptable	Acceptable	Acceptable	Acceptable
BA, BB or BC	C_{ROOF}(t4)	Not acceptable	Acceptable	Acceptable	Acceptable
CA, CB or CC	D_{ROOF}(t4)	Not acceptable	Acceptable [B], [C]	Acceptable [B]	Acceptable
AD, BD (or CD [B])	E_{ROOF}(t4)	Not acceptable	Acceptable [C]	Acceptable	Acceptable
DA, DB, DC (or DD [B])	F_{ROOF}(t4)	Not acceptable	Not acceptable	Not acceptable	Acceptable [C]

Figure 2 - Limitations on Roof Coverings

7 Access & Facilities for the Fire Service

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

(1) The building shall be designed and constructed so as to provide reasonable facilities to assist fire fighters in the protection of life.

(2) Reasonable provisions shall be made within the site of the building to enable fire appliances to gain access to the building.

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

7.1 Vehicle Access

Fire Service access is required to provide access for fire personnel and a water supply to within a reasonable distance of the building entrances. Due care should be given to ensure that the vehicle access route meets the requirements for a pump appliance as shown in the table below (which is taken from London Fire Brigade – Guidance Note 29).

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

Table 3 – Vehicle Access Requirements

Fire service access for a fire tender should be within 18m of the entrance to each stair and firefighting shaft which contains a dry or wet riser. It should be ensured there is no dead-end greater than 20m for this fire tender access.

At ground level, all points of the floorplate should be within 60m of a parking position for a fire tender. This is reduced to 45m for Sheds 02 and 03 which are not provided with sprinklers.

Based on the current access and circulation plans there will be adequate fire tender access provided, and it should be ensured that any access / security measures in and around the site (especially any bollards preventing vehicle access) should be bypass-able by the fire service. The details of the bypass arrangements should be developed and agreed with the fire service as applicable.

Areas identified as 'occasional access zones' should be designed so that a fire tender can use this space if required, and particular care should be taken when developing Plot J, to ensure there are no dead-ends greater than 20m created when accessing each stair core.

7.2 Internal Fire Service Access

Plots over 18m in height from the access level shall be provided with at least one firefighting shaft.

They shall be designed in accordance with ADB and BS9999 with the following features:

- Be constructed within 120 minutes of fire resisting construction,
- Include firefighting staircase,
- Include firefighting lift (provided with dual power supply, water protection etc.),
- Ventilated Fire Fighting Lobby,
- Outlet from the fire main at each storey that the firefighting shaft serves,
- Protected access (at least 120 minutes) onto firefighting shaft at access level.
- A 1.0m² vent on the top of the staircase.

The firefighting stair will be provided with a level of lighting recommended in BS5266 Part 1 and will have a backup power supply capable of maintaining the lighting and other operations in the firefighting shaft for at least 3 hours.

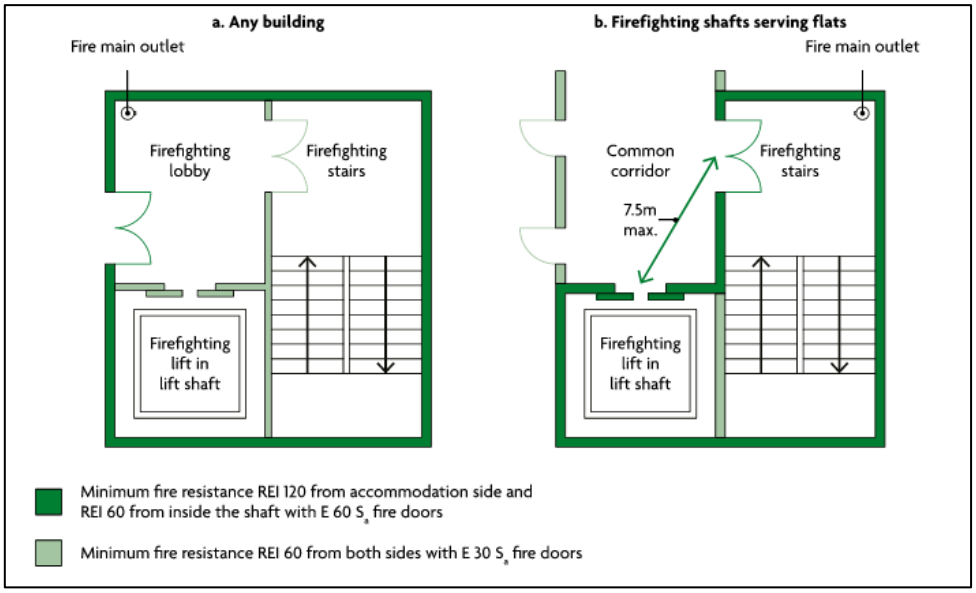

Figure 3 – Firefighting shaft layout

It is not proposed to provide firefighting shafts within Plots under 18m in height. For these Plots, a dry main will be provided within an escape stair.

7.3 Dry / Wet Risers

A dry riser will be provided within each firefighting core under 50m in height, and a wet riser will be provided within firefighting cores greater than 50m in height. For Plots under 18m in height, a dry riser will be provided in the escape stair.

Access is required for a pumping appliance to within 18m and within sight of an entrance giving access to the fire main.

All parts of the floor plates in all Plots should be covered within 60m (when measured along a route suitable for laying hose) from a dry/wet riser outlet provided within the firefighting lobby/stair.

All parts of the floor plates in Shed 02 and Shed 03 should be covered within 45m (when measured along a route suitable for laying hose) from a dry riser outlet provided within the firefighting lobby/stair.

7.4 Smoke Venting

7.4.1 Firefighting Shafts

The smoke venting requirements for the Residential Plots are discussed in detail as part of the means of escape section earlier. No further provisions beyond this are needed for firefighting.

Each firefighting shaft in Commercial Plots will be provided with smoke ventilation. At the head of the stair a 1.0m^2 free area vent is required and a mechanical smoke shaft is required within the firefighting lobby, with a minimum size of 0.6m^2 free area, that should provide a performance to at least to the same level as a 3.0m^2 natural BRE shaft.

7.4.2 Ancillary Accommodation

Within Residential Plots, lobbies providing access to the final escape routes should be provided with 0.4m^2 permanent ventilation.

Any basement spaces will be provided with compartmentation so no area is greater than 200m^2.

7.5 Hydrants

ADB recommends that hydrants should be provided as necessary to ensure that the dry riser inlets are within 90m of a fire hydrant. Where the existing hydrants cannot achieve this, then a private hydrant should be provided.

It is proposed that a site survey confirms whether the above criteria is achieved based on any existing hydrant provisions. If this survey establishes that the existing hydrants are inadequate it is recommended that an additional private hydrant is included on the site.

7.6 Emergency Power Supplies

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

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

- Automatic opening vents,
- Mechanical Smoke Venting system,
- Fire Alarm System,
- Emergency lights and signs,
- Firefighting lifts,
- Commercial Sprinkler System,
- Residential Sprinkler System (in buildings with a floor over 45m).

8 Conclusions and Recommendations

This report outlines the fire safety strategy proposals for Murphy's Yard and seeks to demonstrate compliance with the Building Regulations (generally in the form of the recommendations of ADB and BS9999).

The travel distances, exit widths and stair widths will be generally compliant with the recommendations of ADB and BS9999. It will need to be ensured that during fit-out they are complied with.

Elements of structure will achieve fire resistance based on the building usage and height.

Firefighting shafts are required to Plots over 18m in height. A dry main will be provided in the escape stairs to all other Plots.

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


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