FRANKHAM RMS

Fire Safety Strategy

Blashford Tower

Chalcots Estate

Camden

NW3 3RX

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Camden

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D01	23/04/2019	First Draft Issue
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01	14/05/2019	First Issue
02	24/06/2019	Minor Amendments
03	11/07/2019	Changes following Wates' feedback
04	05/09/2019	Client led re-write
05	16/01/2020	Updates following client feedback & feasibility study
06	21/01/2020	Drawing update
07	06/08/2020	Minor Updates

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1 Introduction

1.1 Building Description

The Chalcots Estate consists of 5 tower blocks; Blashford, Dorney, Taplow, Burnham and Bray. There are four largely identical 23-storey blocks; Dorney, Taplow, Burnham and Bray. Blashford is a smaller 19 storey tower block. This report covers Blashford Tower specifically.

Figure 1

Blashford Tower is a concrete frame building with concrete floor slabs. It consists of a single stair core which is 19 storeys tall (Ground plus 18). There are 4 flats on each floor, first to 18th, with a single flat accessed externally at ground floor level. The ground and lower ground floors contain a variety of residents' storage, plant areas and a TRA (Tenant and Resident Association) space. The TRA space consists of a small office and a meeting space which are currently being used by Wates as a site office.

1.2 Scope of report

This report is a fire safety strategy. It specifically reviews the building against the guidance it was originally built to and establishes acceptance criteria on that basis (see section 1.4). This strategy will also provide the current equivalent performance requirements, which should be utilised for any works being undertaken going forward. Where no work is being carried out there is no obligation to

upgrade the existing building. However, where existing arrangements are considered to present a risk then these should be identified in the fire risk assessment.

1.3 Limitations & Assumptions

As the building is existing, the below assumptions have been made:

- All existing fire stopping is adequate;
- The structure is rated to the fire time of the building, and protected adequately;
- All doors are installed and operating correctly.

Since this is an existing building, there is no reason to expect that it does not meet the standard required at the time of construction. The above assumptions are considered to reflect the existing building, but it is the responsibility of Camden to act if any defects with the above are discovered.

Any deficiencies with the above should be identified in the fire risk assessment, and do not form part of the fire strategy. Any required remedial works, identified as part of the fire risk assessment, should meet the modern performance specifications identified in this document.

It is recognised that a building of this height if built using the current guidance within Approved Document B 2019 would be fitted with sprinklers. This was not a requirement at the time of construction, and there is no obligation to retrospectively apply modern standards.

As the potential installation of sprinklers has considered, the feasibility study has been carried out. See document 227552-FCG-ZZ-XX-RP-Z-0201-S2-P01 issued by Frankham consultancy Group.

1.4 Relevant Fire Safety Design Standards

The building was built around approximately 1968. It appears to have been designed in accordance with CP3; from a perspective it is assumed that CP3: Chapter IV 1962 was utilised.

This fire strategy recognises the standards the building was designed to but will utilise the current guidance in Approved Document B 2019 when setting the performance specification of products and materials to be used in future. Where Approved Document B refers to the BS 5588 series, BS 9991 should be utilised as the guidance in BS 5588 has been superseded.

2 Means of Escape

2.1 Evacuation Strategy

This building should operate a ‘stay put’ evacuation strategy. A ‘stay put’ policy involves the following approach, as outlined in Approved Document B 2013 (including 2018 amendments):

- When a fire occurs within a flat, the occupants alert others in the flat if the alarm has not already sounded, make their way out of the building and summon the fire and rescue service.
- If a fire starts in the common parts, anyone in these areas makes their way out of the building and summons the fire and rescue service.

- All other residents not directly affected by the fire would be expected to 'stay put' and remain in their flat unless they become affected by the fire, are directed to leave by the fire and rescue service or choose to leave.

The ground and lower ground floor areas are an exception to this and operate a simultaneous strategy where a fire in this area will cause anybody located in the basement to evacuate, when they become aware, via discovering the fire or hearing warning of it from and alarm or other means.

If residents are unable to follow the above, for any reason, then their situation should be reviewed by LBC, and appropriate measures taken to ensure all residents are able to safely evacuate the building. If these measures involve residents waiting to be evacuated in secure enclosures, such as the stair, additional fire safety measures may be required to enable them to alert others to their location. These will need to be discussed and agreed with the fire service and each resident.

2.2 Escape within dwellings

At the time of construction internal hallways were a requirement, albeit not required to be fire rated. The only requirement is that the walls and ceilings are constructed using non-combustible materials or Class 1 surface spread of flame. Only the kitchen, dining room, and lounge were required to be fitted with 30 minute self-closing fire doors. These were the requirements at the time of construction and it is assumed that this is the situation in all flats.

Under current guidance the corridor would be provided with 30 minute fire resisting construction and all rooms, with the potential exception of the bathroom, would have FD20 fire doors (See Section Table 3). The fire doors would now not be recommended to be self-closing, as it was demonstrated that they are often wedged open and never closed.

Again, under current guidance but not at the time of construction, where there are cupboards located within the protected hallways, these would also be separated by 30-minute fire resisting construction with at least FD20 fire doors.

There is no requirement to upgrade the existing arrangements, as these were acceptable at the time of construction. Where any works are carried out to existing flats, it will be done to meet the general compartmentation requirements shown in the figure below. This includes enclosing the bathrooms, where shown below, in 30 minutes fire resistance with FD20 fire doors to provide protection to the communal area windows.

The below extract from one of the compartmentation mark-ups shows how the protected internal hallways could be provided to meet the current guidance in Approved Document B 2019.

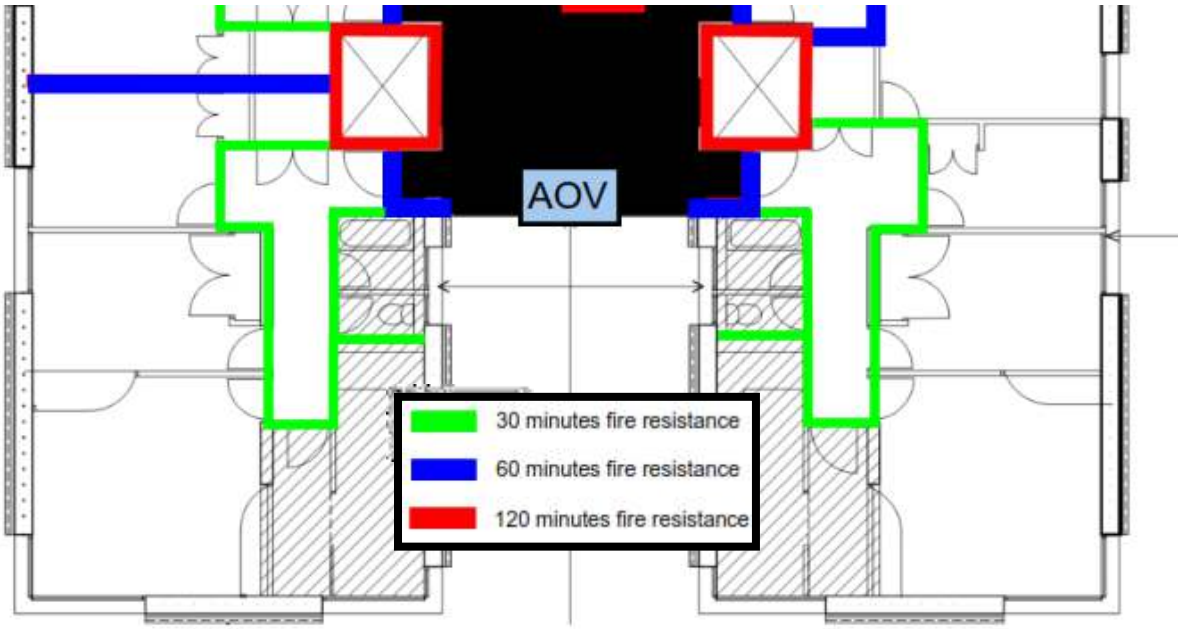

Figure 2 - Indicative Protected Internal Hallway Markup

2.3 Horizontal Escape

All flats open into a lobby where travel is available within 7.5m of the stair door from the furthest flat entrance door. This lobby is served by an automatic opening window vent, offering a cross sectional free area of at least 1.5m^2.

It has been highlighted that the proximity of some flat bathroom windows to the communal area windows is less than 1.8m, which would not be acceptable under current guidance. See sections 2.2 & 5.2.

The residents' storage areas have escape available in two directions, both within 45m of the nearest exit permissible with the original and current guidance.

The TRA space/Wates site office has a single direction of escape which is within 18m of the exit door. However, there is an inner room scenario so detection should be provided within the access room.

2.4 Vertical Escape

Blashford Tower is a single stair building. The stairs also serve as firefighting stairs and are more than 1200mm in width, which is wider than the current 1100mm requirement for firefighting stairs.

The base of the stair is located at ground floor away from the building and discharges toward the street in fresh air. However, the residents' storage area is only separated from the external escape route by a louvered vent on both sides. These louvered vents should be blocked from the inside, by 60 minutes construction, to protect any escaping residents.

3 Wall and Ceiling Linings

Wall and ceiling linings at the time of construction were not as clearly defined as within current guidance, with any wall requiring 60 minutes fire resistance recommended as being non-combustible; meeting the BS 476 Part 1. The exception being within dwelling where materials could also be National Class 1. There is no reason to assume this is not the case, and there is no requirement to make improvements to the existing arrangement, but where any works are carried out in future they should be done so in accordance with the below criteria:

Table 1: Classification of Linings (Table 4.1 Approved Document B 2019)

Location	European Class
Small rooms of area not more than $4m^2$	D-s3, d2
Other rooms (Including garages)	C-s3, d2
Circulation spaces within dwellings	
Other circulation spaces, including the common areas of blocks of flats	B-s3, d2(1)

Note:

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

4 Internal Fire Spread and Resistance

4.1 Elements of structure

Based on the assumption that there is a 3m floor to floor height, the building is approximately 54m tall. This would mean that the elements of structure at the time of construction would have been constructed to achieve 90 minutes fire resistance.

Current guidance in Approved Document B 2019 would not permit a building over 30m to be constructed without sprinklers, but if sprinklers were provided a structural fire resistance of 120 minutes would be recommended.

4.2 Compartmentation

The compartmentation requirements at the time of construction, which is what would have been provided as a minimum, is as listed below:

- Stairs - 60 minutes fire resistance;
- Lift shafts - 60 minutes fire resistance;
- Corridors - 60 minutes fire resistance;
- Shafts/risers - 60 minutes fire resistance;
- Non loadbearing floors - 60 minutes fire resistance;
- Substation - 120 minutes fire resistance;
- Boiler rooms - 120 minutes fire resistance;

- Refuse stores – 60 minutes fire resistance.

The levels of fire resistance within the current guidance in Approved Document B 2019 are listed below. Where any works are carried out to the existing compartmentation elements of the building, they will be reinstated to meet the below criteria:

As this is a residential building, all floors are compartment floors and would require the fire rating of the elements of structure; 120 minutes fire resistance.

Any compartment/party walls should be provided with 60 minutes fire resistance.

Stairways and lifts also serve as firefighting stairs and should be enclosed and separated from the remainder of the building by 120 minutes fire resistance.

Communal corridors should be constructed as protected corridors, with 60 minutes fire resistance. Any sub division within corridors should be provided with 30 minutes fire resistance

Any areas designated for storage within communal areas of the building should be separated from the escape routes by fire resisting construction of not less than 60 minutes.

Service risers, including those located within any external wall systems. will conform to the fire rating of the building, 120 minutes. This was originally done by containing the shaft vertically, and this solution should be continued. Where within an external wall, provided there is no unprotected area issue, the external face will not require fire rating.

Any refuse store areas should be separated from all adjacent accommodation by 60 minutes fire resistance. External doors require no fire rating. If located externally, these should be located at least 6m away from the building.

The electrical intake rooms should be separated from the rest of the building by 60 minutes fire resistance. (Substations may be required to be up to 4 hours fire resistance under the requirements of UKPN, but their locations and separation should be verified).

Any stores and any ancillary accommodation should be enclosed in 60 minutes fire resistance with FD30S doors. These are not allowed to be provided within the communal areas.

Each flat should be enclosed in 60 minutes fire resisting construction horizontally; between the flat and the corridor, and between flats. Any structural vertical separation between flats should meet the elements of structure requirement of 120 minutes, as the floors are compartment floors.

Internal protected hallways within flats, where required within section 2.2 of this report, should be provided with 30 minutes fire resistance. This includes walls to cupboards accessed off of the hallway.

The final escape route from the stair at ground floor level requires 60 minute protection from the residents' storage areas behind the louvres to either side.

The below are indicative mark-ups showing the current compartmentation requirements of a typical basement, ground and upper floor. This is what should be applied when any work is carried out in

these areas going forward but does not necessarily include all compartmentation requirements. Please utilise the text above to ensure all necessary compartmentation is considered.

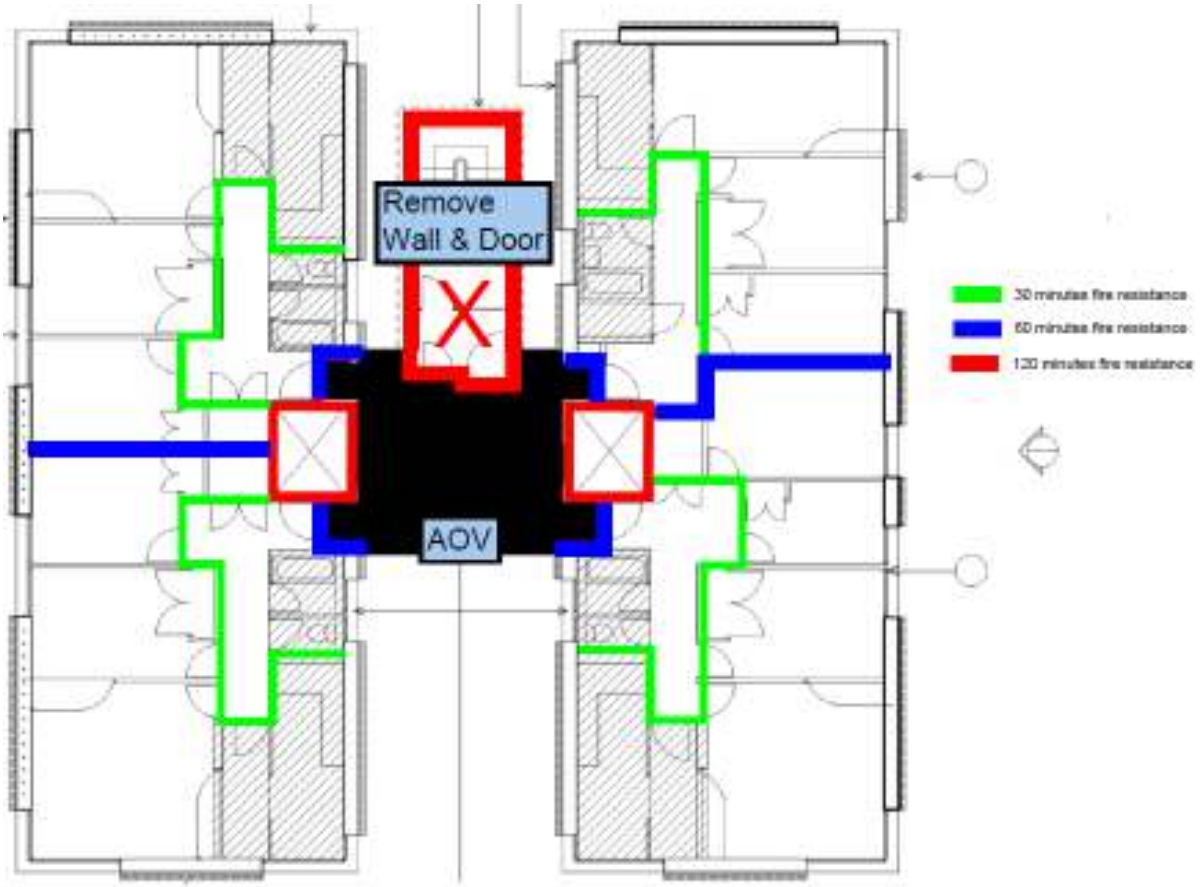

Figure 3 – Indicative Typical Upper Floor

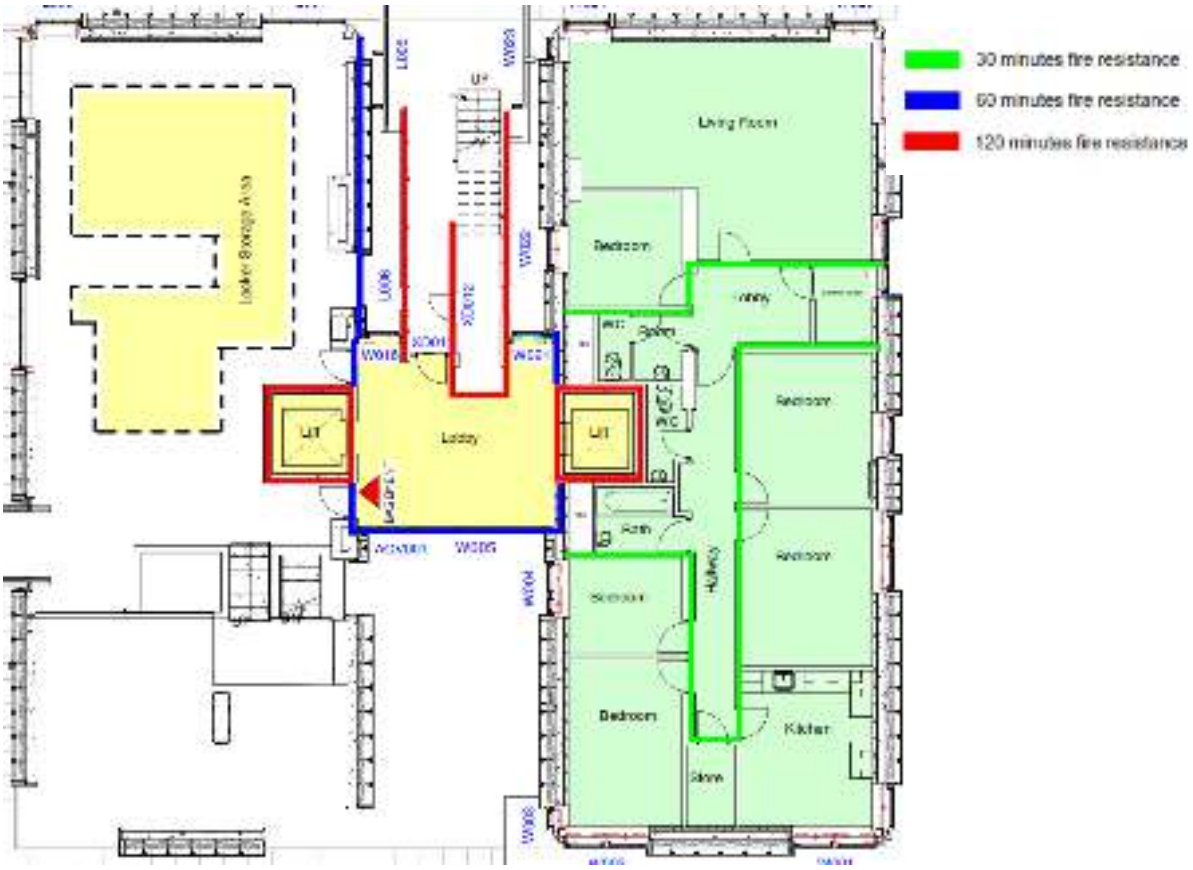

Figure 4 – Indicative Ground Floor

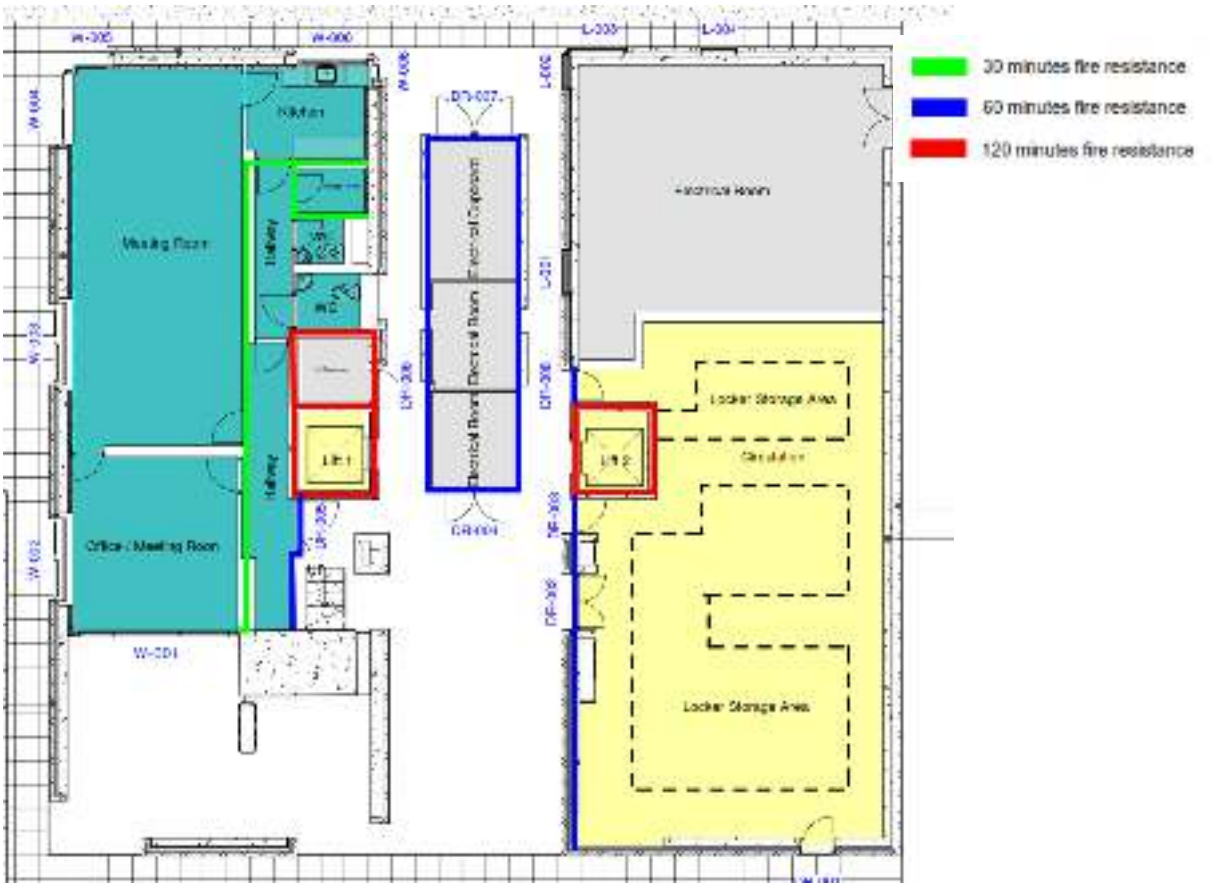

Figure 5 – Indicative Lower Ground Floor Plan

4.3 Fire Doors

The current fire doors within the building are a mixture of new and original. The original door requirements are as per the below table:

Table 2: Original CPs: Chapter IV 1962 Fire Door Performance Specification

Location	Door Specification
Stair Doors	Self-closing 30 minute fire door
Lift Doors	30 minute fire door
Service Risers	30 minute fire door
Bedroom & Bathroom Doors	No fire rating required
Kitchen, Lounge & Dining Room Doors	Self-closing 30 minute fire door
Flat Entrance Doors	Self-closing 30 minute fire door
Cleaners/Storage Cupboard Doors	30 minute fire door

Some of the above fire door sets have been replaced or upgraded over time. Where they still meet the above criteria, there is no obligation to upgrade these. However, the fire risk assessment will need to consider this.

All fire door sets when being replaced should, as a minimum, be provided with protection in accordance with the below table:

Table 3: Approved Document B 2019 Fire Door Performance Specification

Location	Door Specification
Stair Doors	FD60S
Lift Doors	FD60
Service Risers	FD60
Bedroom & Bathroom Doors	FD30*
Kitchen Doors	FD30*
Flat Entrance Doors	FD60S**
Cleaners/Storage Cupboard Doors	FD30S

** The internal flat doors have a minimum requirement of FD20, but Camden have taken the position to increase this to an FD30 standard when being replaced.*

*** The flat entrance doors have recently been replaced and improved to an FD60S standard. Although not a requirement, this was a decision made by Camden to improve the safety of residents and potentially fire service access.*

Any doors in communal areas should be provided with self-closers, except riser and small cupboard doors which should be kept locked shut and signed as such.

It is acceptable to provide doors on hold open devices which release on detection, if desired. The detectors should be located within 1.5m of the doors. It is proposed that these aren't provided on stair doors.

Doors are not required to open in the direction of travel as it is unlikely more than 60 people will be using a single door to escape.

Doors to bathrooms are not required to be fire resisting, provided the 30 minute fire resistant separation is maintained between the bathroom and adjacent rooms.

4.4 Cavity/Fire Barriers

Due to the external wall replacement works taking place, all work will be done in accordance with the criteria in Approved Document B 2019.

As the internal concrete walls and floors finish in line with the inside surface of the external wall line, in most areas, cavity barriers will be provided in accordance with the recommendations of Section 9 of Approved Document B in order to prevent fire spread around a fire-separating element or within extensive cavities. These require a minimum integrity rating of 30 minutes, and 15 minutes for insulation. However, in instances where a barrier rated to the minimum is not available, a higher rated product will be used.

The only exception to the minimum 30/15 cavity barrier requirement is the 120 minute fire barriers that should be provided where any walls or floors stop short of the inside surface of the external wall

line; this situation only occurs around the curtain walling where 120 minute fire barriers are required from the compartment walls to meet the external wall finish.

Due to the concrete structure and enhanced protection this provides to the external walls, it is not considered necessary to install cavity barriers in line with protected internal hallway walls. There will already be cavity barriers around all openings and at compartment wall and floor lines.

4.5 Fire Stopping

Fire stopping should be provided where any penetrations are made in any compartment walls/floors. This should be to the fire time of the compartment being penetrated.

Where ductwork passes through any compartment wall, a fire damper should be provided to prevent fire spread into the wall cavity.

Pipes should be suitably protected, with collars or sleeves, where they break through compartment walls or floors. In some instances, where they are of limited internal diameter and suitable material, only sealing is required to offer fire integrity and not insulation.

Any fire stopping products should have been tested in accordance with the relevant part of BS 476. They should also be fitted in accordance with the manufacturers' instructions.

5 External Fire Spread

5.1 Construction of External Walls

As the external walls, from the concrete external wall system outwards, are being replaced. All work should be done so in accordance with the current guidance in Approved Document B 2019. Any elements being retained will not be subject to assessment against current guidance unless any work is taking place in these areas.

Regulation 7 of the Building Regulations 2010 (2019 Amendments) states that any products used in the external wall construction, of residential buildings with a storey over 18m, shall be of limited combustibility; European Class A2-s1, d0 or better, apart from the following exceptions permitted:

a) cavity trays when used between two leaves of masonry;
b) any part of a roof (other than any part of a roof which falls within paragraph (iv) of regulation 2(6)) if that part is connected to an external wall;
c) door frames and doors;
d) electrical installations;
e) insulation and water proofing materials used below ground level;
f) intumescent and fire stopping materials where the inclusion of the materials is necessary to meet the requirements of Part B of Schedule 1;
g) membranes;
h) seals, gaskets, fixings, sealants and backer rods;
i) thermal break materials where the inclusion of the materials is necessary to meet the thermal bridging requirements of Part L of Schedule 1; or

j) window frames and glass.

The external walls at Blashford Tower have been stripped back to concrete and the new materials should comply with the above, as this is a residential building over 18m in height.

A full list of materials will be provided when made available.

5.2 Space Separation

This is an existing building and the space separation remains as it was when the building was built. Therefore, it has not been reviewed against the criteria in BR187. However, some areas have been identified where there are flat windows adjacent to communal area windows. It has been highlighted that the proximity of some flat bathroom windows to these vents is less than 1.8m, which would not be acceptable under current guidance. Bathroom windows present a minimal risk, as a fire in the bathroom itself is unlikely, and the 1.8m distance referred to in Approved Document B is related to radiated heat which will be less due to the minimal fire loading and low risk of a fire occurring in a bathroom. Bathroom windows present a minimal risk, as a fire in the bathroom itself is unlikely, and the 1.8m distance referred to in Approved Document B is related to radiated heat which will be less due to the minimal fire loading and low risk of a fire occurring in a bathroom. Although this is not considered to present a significant risk it is advised that, as part of the future works recommended in section 2.2, wherever this situation occurs with flats containing a protected internal hallway, the bathrooms should form part of the protected internal hallway and all rooms be provided with at least FD30 fire doors, including the bathrooms and w/c's.

6 Fire Safety Systems and Signage

The fire detection and alarm systems, AOV's and emergency lighting within the building are expected to meet the requirements and recommendations of the current standards, as they would not have formed part of the original construction requirements and will also have to be regularly tested and maintained in line with current standards. The below sections detail the current standards expected to be achieved for each system.

6.1 Fire Detection and Alarm Systems

6.1.1 Systems within dwellings

An automatic fire detection and alarm system should be provided within each dwelling to meet the recommendations of Approved Document B 2019 Grade D2 Category LD2 in accordance with BS 5839-6: 2019. This will generally consist of one mains-powered smoke detector in the internal protected hallway and a heat detector in the kitchen. These systems should already have been installed in all flats, but this will be verified as part of inspection works.

6.1.2 Systems within common areas

Detection should be provided within the communal areas to activate the AOV's only. This means there will be detection, but no sounders. The system should be a category L5 system, in accordance with BS 5839-1: 2019.

When a device is activated the AOV on that floor will open. Once in this position the system will be remain this way until the panel has been reset. No other AOV's will be able to open, unless overridden by the fire service.

6.1.3 Other systems

An automatic fire detection and alarm system should be provided in the TRA space, currently being used by Wates as a site office, due to the inner room situation. Due to the small area, and primarily residential use, a Grade D2 LD2 system in accordance with BS 5839-6: 2019 would be considered appropriate.

6.2 Ventilation Systems

6.2.1 Stair Ventilation

The stair is served by at least 1.0m^2 permanent natural ventilation at the head.

6.2.2 Corridor Ventilation

The ventilation to the stair lobby from the 1st to 19th floors will be provided by a 1.5m^2 window AOV. See section 5.2 for required AOV location.

It is recognised that a window AOV may not be permitted under some current guidance, such as BS 9991:2015, due to the building being over 30m in height. However, this is an existing arrangement and there is no practical solution to be able to provide an alternative ventilation arrangement. A review was carried out on site to determine if there was a potential location to introduce an AOV/mechanical shaft. However, no suitable locations are available without extensive destructive works which are not practical.

6.3 Emergency Lighting

All common escape routes should be served by emergency lighting, meeting the requirements of BS 5266-1: 2016 & BS EN 1838:2013. These areas include:

- Common corridors/lobbies;
- Stairs;
- Final escape route;
- External escape routes (if a route is needed to be taken to the street).

6.4 Fire Safety Signage

All signage should meet the recommendations of BS 5499-1 & BS ISO 3864-1. The below tables detail the requirements of the different types of signage needed for escape and fire equipment.

Table 4: Safe Condition Signage

Layout of Safety Signs	Requirement
Geometric Shape	Rectangular, square or oblong
Safety Colour	Green
Background	Safety Colour green, covering at least 50% of the area of the sign excluding the border
Contrast Colour	White
Graphical symbol	Colour white, placed centrally on the background
Border	Colour white, recommended width at least 0.025 of the sign height
Example	

Table 5: Fire Equipment Signage

Criteria	Requirement
Geometric Shape	Rectangular, square or oblong
Safety Colour	Red
Background	Safety Colour red, covering at least 50% of the area of the sign excluding the border
Contrast Colour	White
Graphical symbol	Colour white, placed centrally on the background
Border	Colour white, recommended width at least 0.025 of the sign height
Example	

6.4.1 Fire Door Signage

Fire doors should be provided with signage meeting the recommendations of BS 5499-5, depending on their method of closure.

Table 6: Fire Door Signage

Method of Closure	Signage	Sign Diameter	Letter Height
Self-closing device		60mm	5mm
Keep locked shut			

Fire exit doors and escape routes in and around the building will be provided with signage complying with the recommendations of BS 5499-5.

7 Fire Service Access

7.1 Vehicle Access

Vehicle access is available to within 18m of the dry riser inlet of the building, which is located adjacent to the main entrance.

7.2 Access within the building

A firefighting stair is provided in Blashford Tower, which is protected by a sterile ventilated lobby. The dry riser outlets are located within the lobby at each floor level, where travel is available within 45m of the dry riser outlet to the furthest point of the furthest flat.

There is currently a fire brigade lift located within the stair/lift lobby, which serves all floors ground and above. The existing lifts are currently able to be taken control of by the fire service and will allow them to access all floors. This is not a firefighting lift and it is not a requirement to upgrade this to meet the current firefighting lift requirements. The fire service have previously visited site and did not raise any concern as to the current lift arrangements and building control have accepted these being maintained as they are. Should upgrades be desired at a later date, they should be done so in accordance with BS 9991.

The lobby containing the firefighting lift is served by the AOV window.

7.3 Dry Rising Main

The building is fitted with a dry rising main with the inlet located adjacent to the main entrance and an outlet located in the lobby at each floor level from the fourth floor upwards. Although not in line with current standards, with the outlet recommended to be in the stair, this is an existing arrangement and it would be highly impractical to relocate the outlets.

As the building is over 50m in height, current guidance would recommend this building be fitted with a wet riser with outlets in the stair at each floor level, including ground floor. However, at the time of construction the existing arrangement with the dry rising main and outlets in the corridor was considered acceptable.

The potential of installing a wet rising main was also reviewed by Frankham Consultancy Group, with the below feedback:

- The Landing Valves for dry fire mains and wet fire mains are designed and constructed to different standards, with pressure regulating valves required at each outlet on a wet fire main;
- The landing valves boxes currently installed do not appear to comply with BS 5041-4, being fitted with a padlock, not a spring cylinder lock or budget lock as required by the British Standard;
- A significant number of other components, including storage cisterns and pump-set, electrical supply infrastructure etc are required to form a complete wet rising main system;
- Given the above, we would suggest it is not economical to attempt to convert the existing system to a wet fire main. If a new system is required, the client and end users would benefit from the installation of a new purpose designed system.

7.4 Hydrant Location

Hydrant locations are existing and are within 100m of the entrance to the building.

1 Relevant Legislation

The building will be subject to control under the following pieces of legislation:

- Regulatory Reform (Fire Safety) Order 2005;
- Building Regulations 2010 (2018 Amendments);
- Housing Act 2004;
- Homes (Fitness for Human Habitation) Act 2018.

1.1 Regulatory Reform (Fire Safety) Order 2005

The Fire Safety Order is the primary piece of legislation relating to fire safety in existing, non-domestic premises, and is usually enforced by the local fire authority.

The duty of ensuring that the requirements of the Order are met rests with the Responsible Person, who must undertake a risk assessment for the purpose of identifying the fire precautions he needs to take.

1.2 Fire Risk Assessment

There is a requirement for a fire risk assessment to be undertaken for virtually all non-domestic premises including the common areas of blocks of flats, and external walls. In many instances the significant findings of this assessment to be recorded. Furthermore, the onus on proving what reasonable fire safety measures should be provided lies with the person responsible for the building, not the enforcing authority.

Appendix A – Sprinkler Feasibility Study

See Frankham document, 227552-FCG-ZZ-XX-RP-Z-0201-S2-P01.