

# Fire Safety Design Strategy

## Issue 1.1

### October 2021



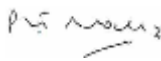

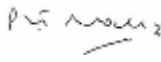

**Client:** Waldegrave Mews Ltd.  
**Premises:** 189 Waldegrave Road, Teddington TW 11 8LX

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Issue	Reason	Date	Prepared by	Signature	Checked by	signature
1.0	First Draft Issue for comments	14.9.21	Paul Molloy BEng (Hons) MIFireE		Steve Johns MIFireE	
1.1	Incorporating comments from 30.9.21	1.10.21	Paul Molloy BEng (Hons) MIFireE		Steve Johns MIFireE	

**Notes:**

This document is provided for the purpose of enabling Waldegrave Mews Ltd., to demonstrate compliance with the appropriate fire safety performance levels required by the relevant building and its use as described herein. It should not be manipulated, abridged, or otherwise presented without the formal written consent of the author.

## 1. Executive Summary

This report has been commissioned by Waldegrave Mews Ltd to ensure appropriate fire safety measures are introduced to the proposed buildings at 189 Waldegrave Road, Teddington TW11 8LX. It can be used as part of the planning submission and the Building Control Body to demonstrate compliance with the relevant fire safety requirements for the proposal to provide eighteen residential units and office accommodation over three floors, within three distinct blocks.

The report has been developed to document the fire safety provisions in the buildings as a whole, the buildings will be developed to provide the eighteen residential units and refurbished office. There will be common staircases provided, each flat will be accessed from the stair, separate refuse and cycle stores will be provided as part of the scheme.

This strategy document should be used to provide a benchmark reference for fire safety matters, these must be considered whenever carrying out alterations to the design of the building or making other significant changes to its use or occupancy profile, and when undertaking fire risk assessments.

The document only considers life safety issues and any additional requirements regarding property protection are outside the scope of this document.

There is an inherent risk in all fire safety designs, including those that are or were code compliant and where fire engineering has been used to develop the fire strategy, however on-going fire safety management and fire risk assessment along with regular reviews with enforcing/approving authorities should enable this risk to be kept to a minimum.

## **2. Introduction**

The fire safety design strategy report documents the fire safety arrangements and features within the building at 189 Waldegrave Road, Teddington TW11 8LX. The strategy outlines the critical fire safety features within the building so that these measures are not unintentionally altered, as part of the day-to-day design or management and benchmarks the fire safety provision should any further alterations or extensions be proposed.

### **2.1. Scope and Purpose**

The report applies only to this address and is intended to provide the relevant persons such as planners, building control body, architects, building owners and occupiers with all the necessary fire safety information; such that when refurbishments, alterations to the design or other changes take place they are fully aware of the critical fire safety features within the building so that they can ensure that these measures are not unintentionally altered.

### **2.2. Limitations**

The opinions and findings noted in the report are made based solely upon the information and documentation provided, as well as the meeting held on 7<sup>th</sup> September 2021.

### **2.3. Site Description**

The site will be subjected to a comprehensive redevelopment to include the demolition of the existing single storey rear buildings to provide 18 new apartments. The existing building at 189 Waldegrave Road will be refurbished to provide a small commercial space on the ground floor with three apartments provided above and behind the commercial space.

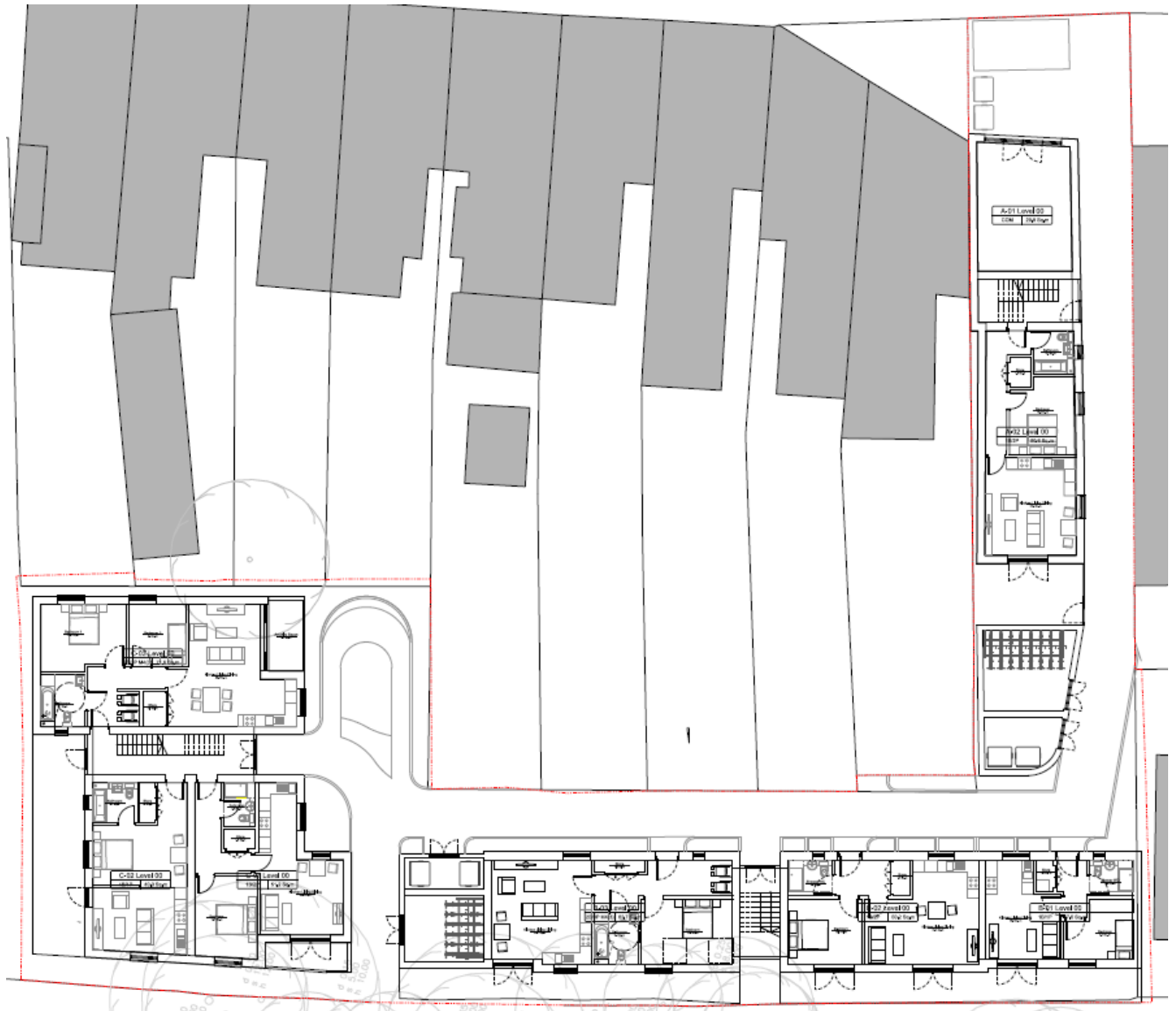
The site is being developed to provide eighteen residential flats over three floors, the height to the top storey is greater than 5 metres and less than 11 metres, and each of the apartments will be served a common stair, or independent access.

It is proposed all flats will be provided with a residential misting system in accord with BS 8458.

The commercial space situated on the ground floor of Block A will be subject to a specific fire risk assessment on fit out and will be separated from the residential units with a minimum of 60 minutes fire resistance.

## 2.4. Site layout

### 2.4.1. Proposed Ground Floor Layout

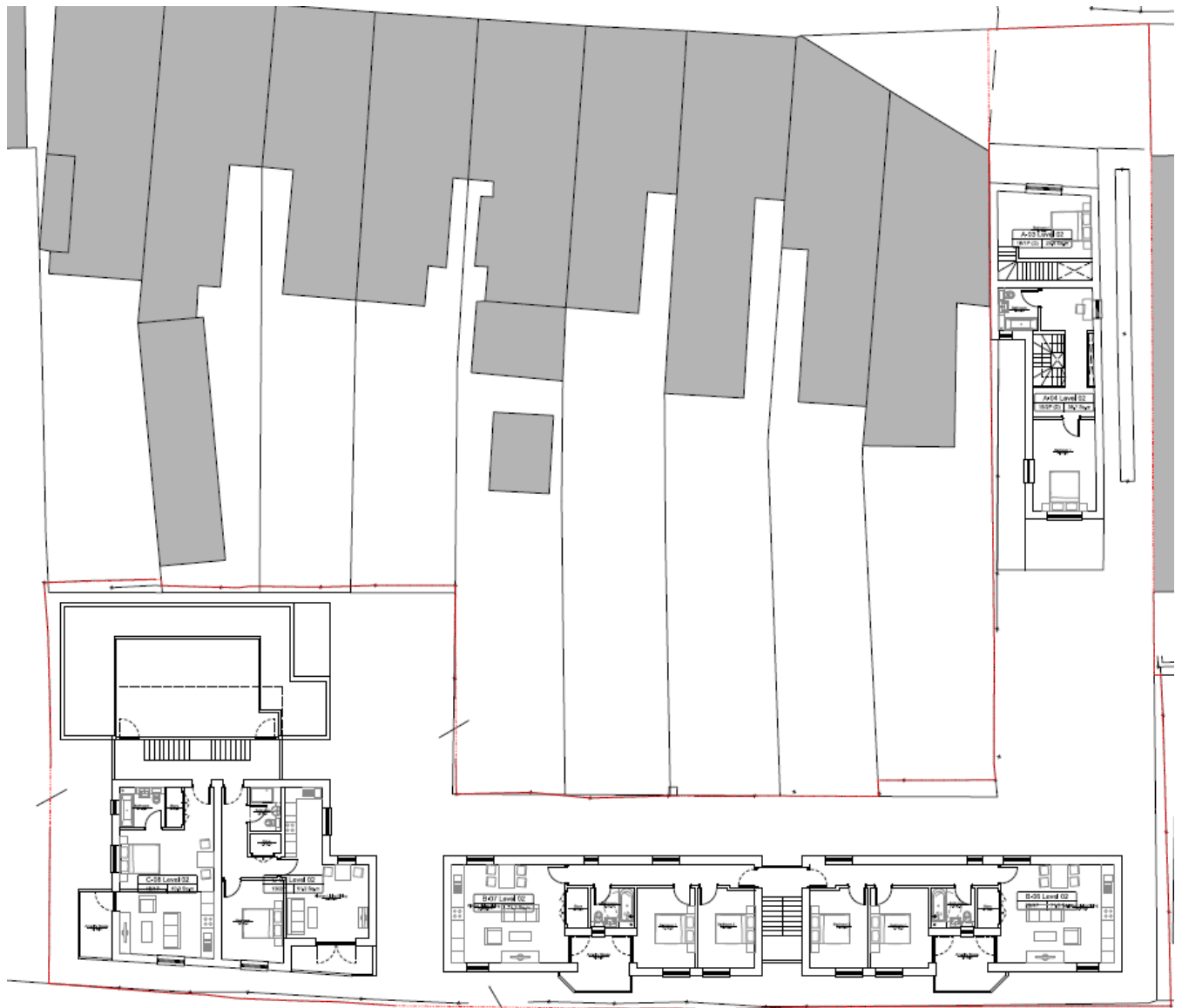


### 2.4.2. Proposed First Floor Layout



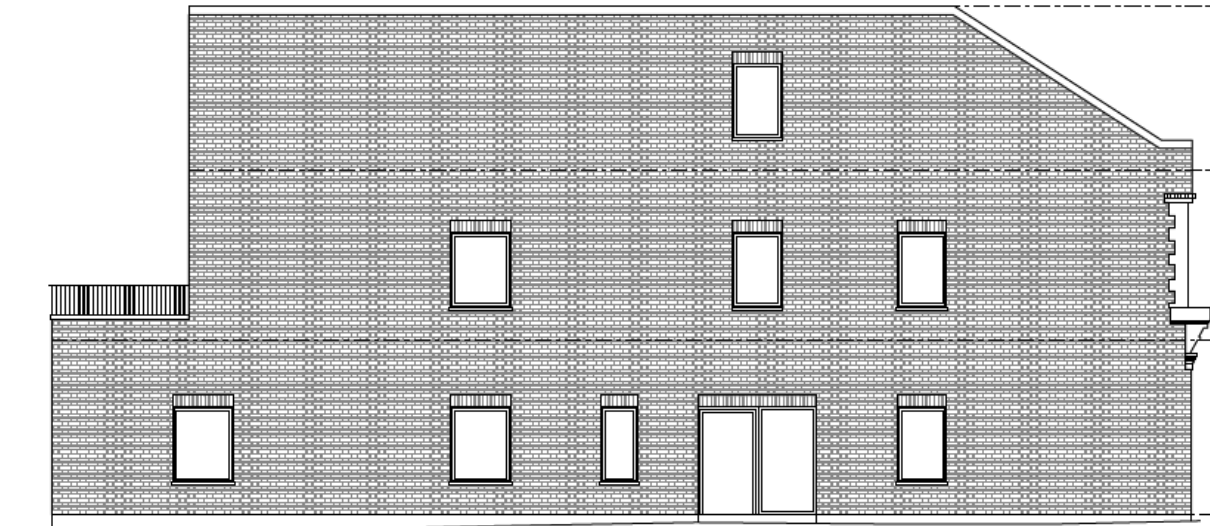


### 2.4.3. Proposed Second Floor Layout

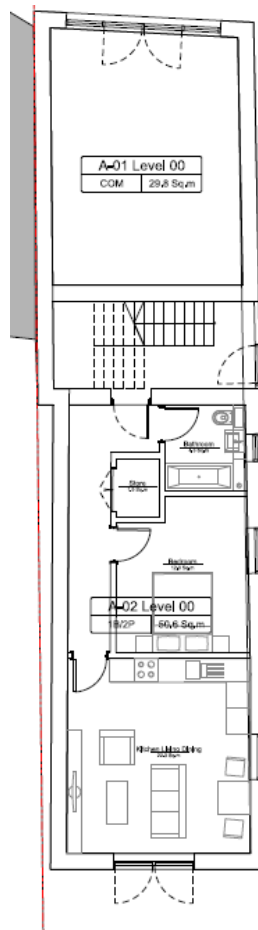


## 2.5. Block Layout

### 2.5.1. Proposed Block A

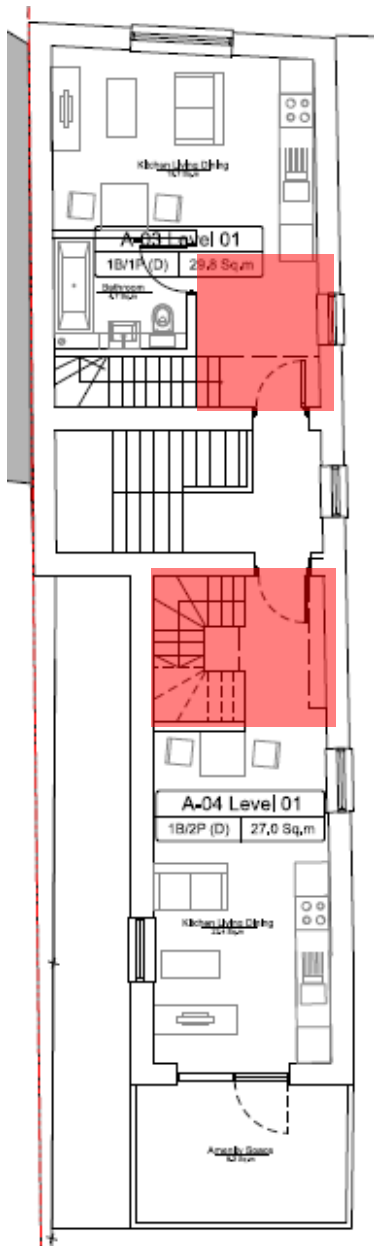


Ground Floor

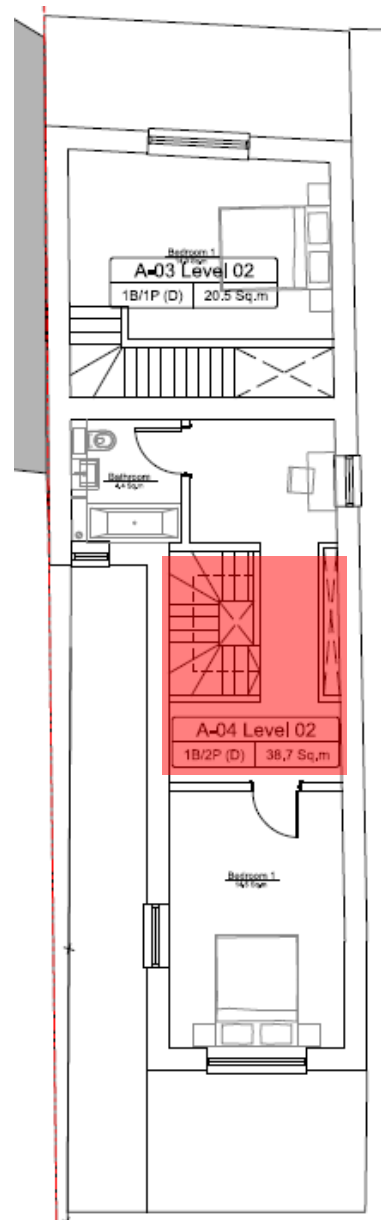


A small commercial unit is located on the ground with an aspect on to the road which is separated from the residential accommodation, access is available from the side aspect into a stair enclosure with access to a ground floor flat and access to two duplex flats accessed from the first floor.

First Floor



Second Floor

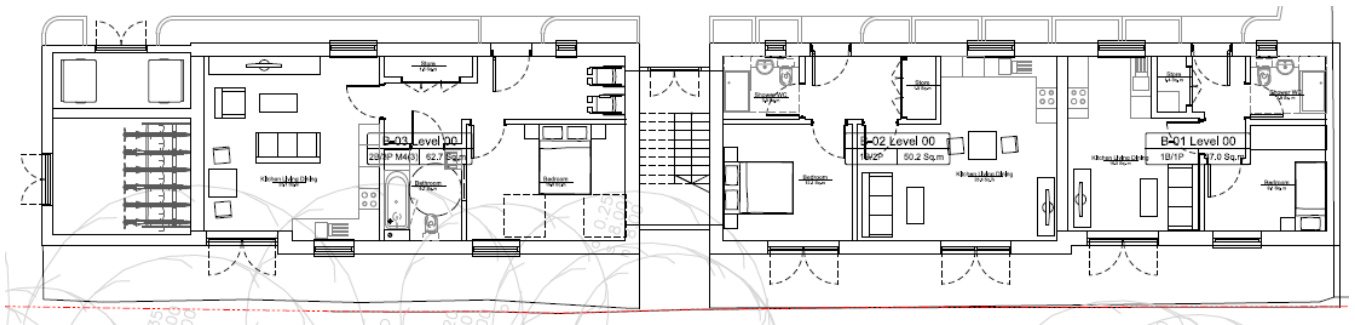


Protected entrance hall and landings will be required to be provided in accord with Diagram 3.6 of ADB.

### 2.5.2. Proposed Block B

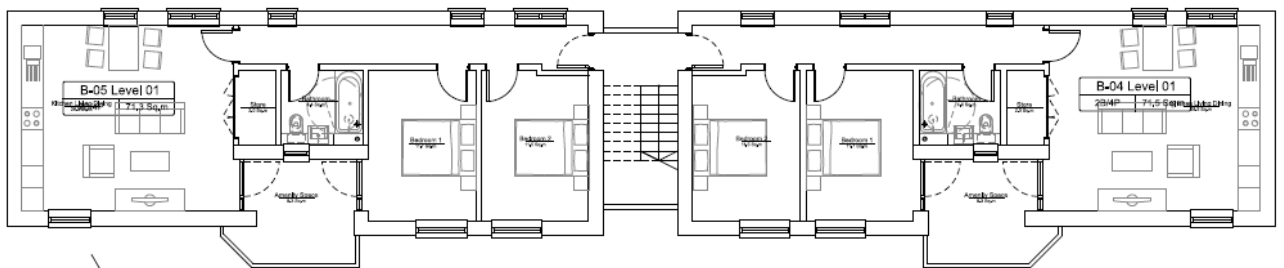


Ground floor

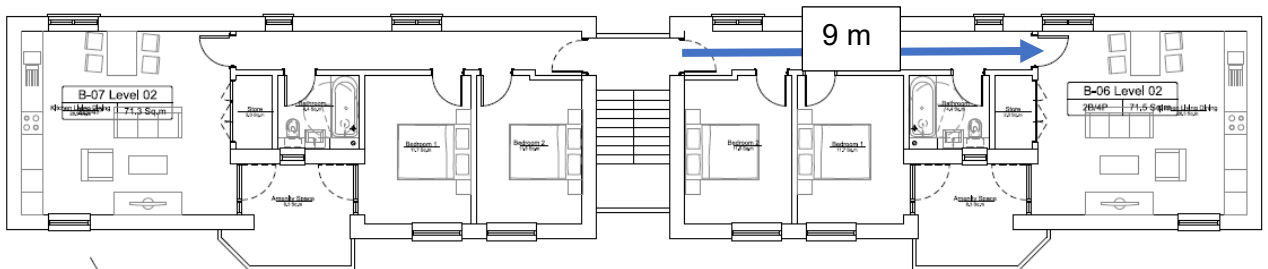


Independent access is available to three flats at ground floor level, access is provided to an “open stair” that serves the flats on the upper floors. There is also independent access to refuse and cycle stores

First floor

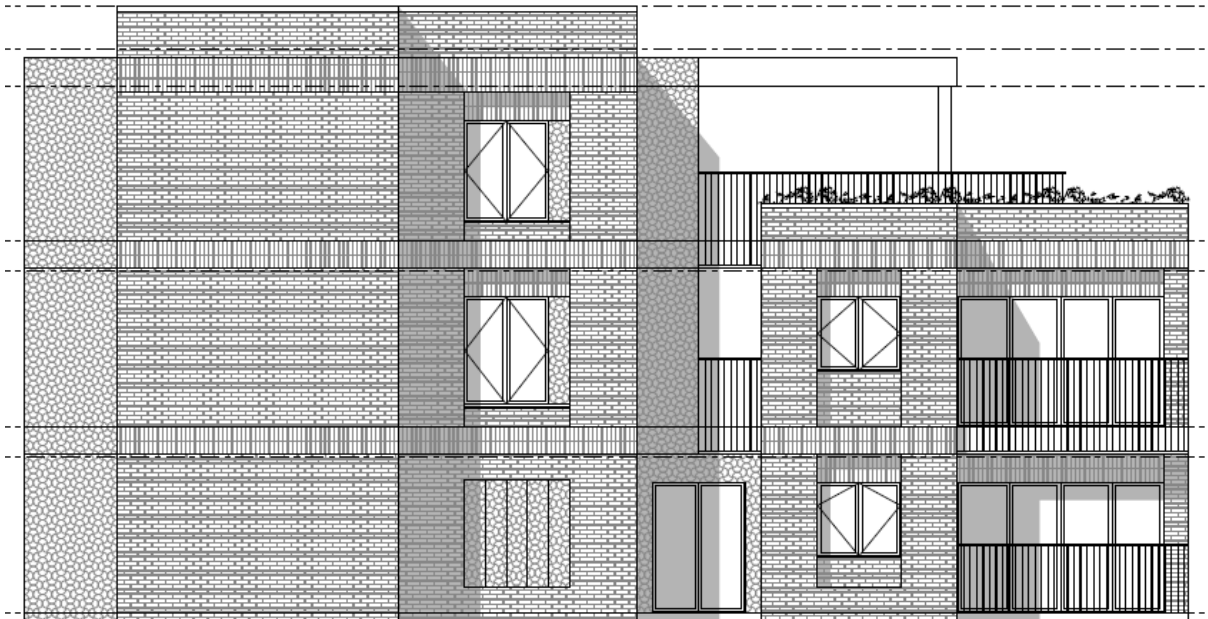


Second floor

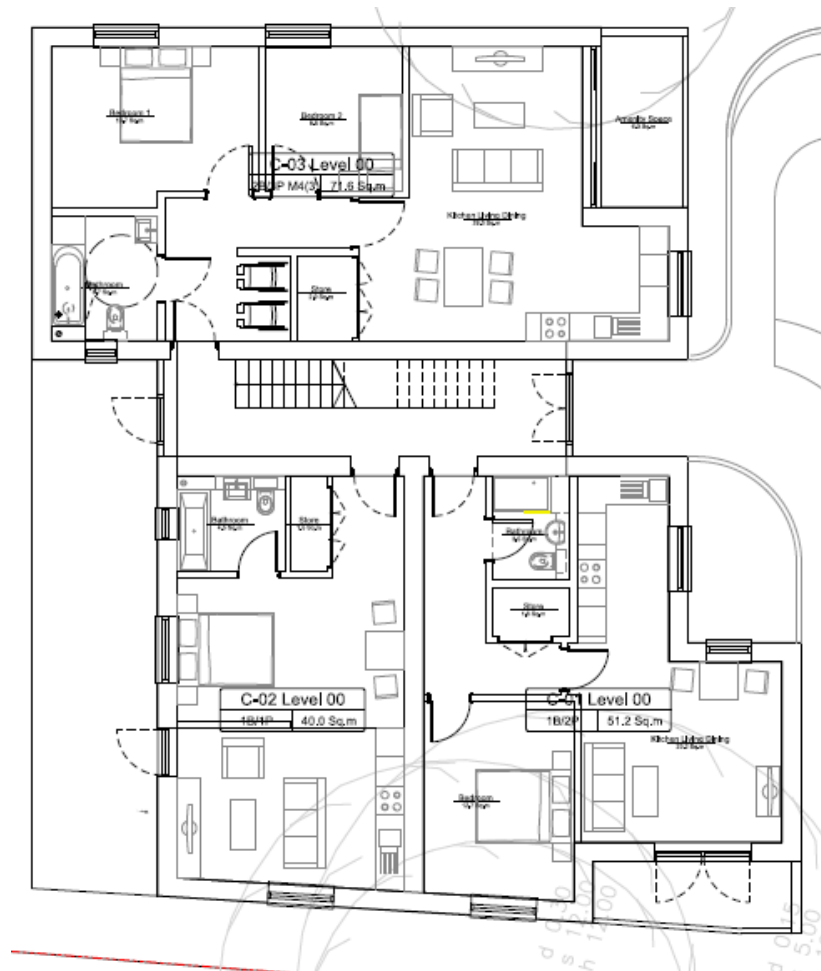


Protected entrance halls are provided with a maximum distance of 9 metres to the furthest habitable rooms, in accord with Diagram 3.2 ADB. The inner protected entrance hall is constructed to provide 30 minutes fire resistance with fire doors providing a minimum of 20 minutes fire resistance.

### 2.5.3. Proposed Block C

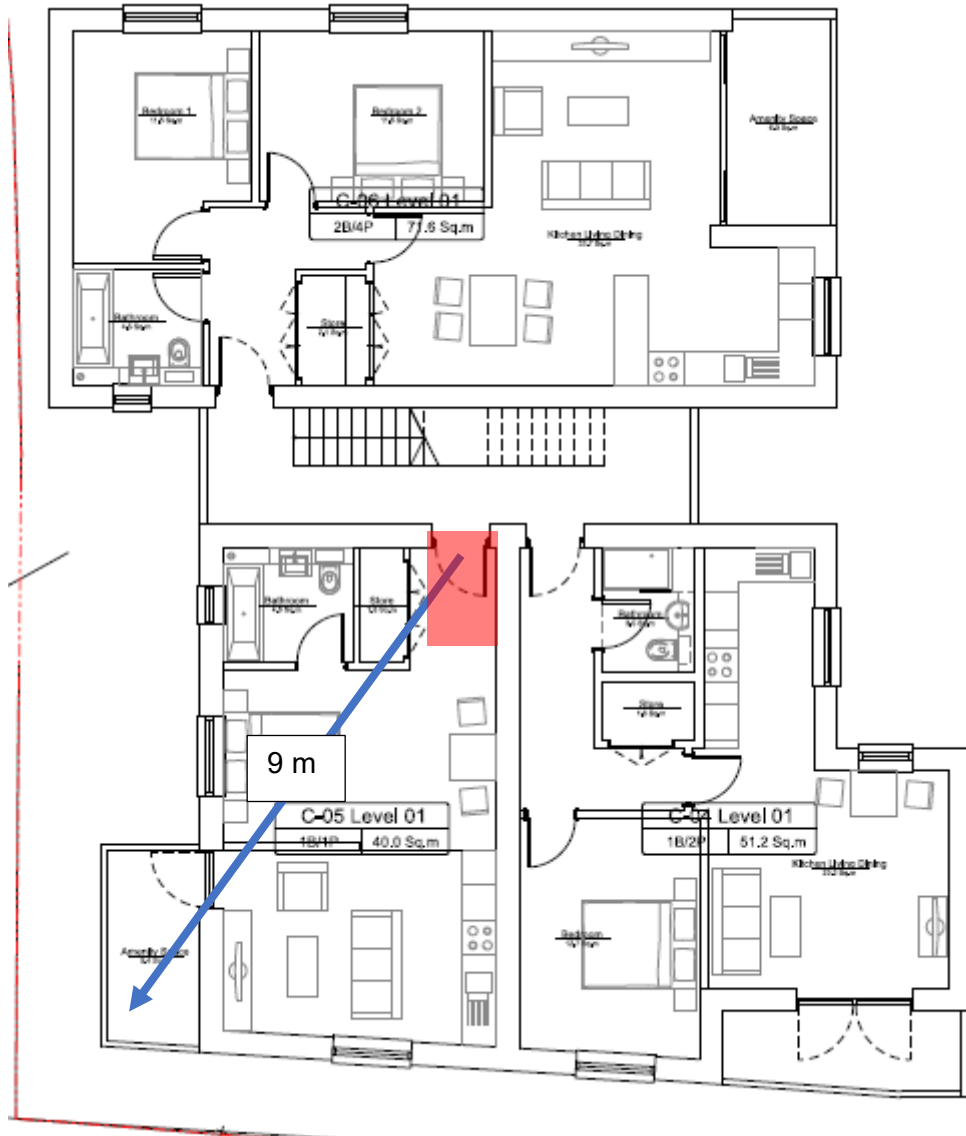


Ground floor



Block C is accessed via an “open stair” and has access to three flats on the ground floor. Each flat is provided with protected entrance halls. The inner protected entrance hall is constructed to provide 30 minutes fire resistance with fire doors providing a minimum of 20 minutes fire resistance.

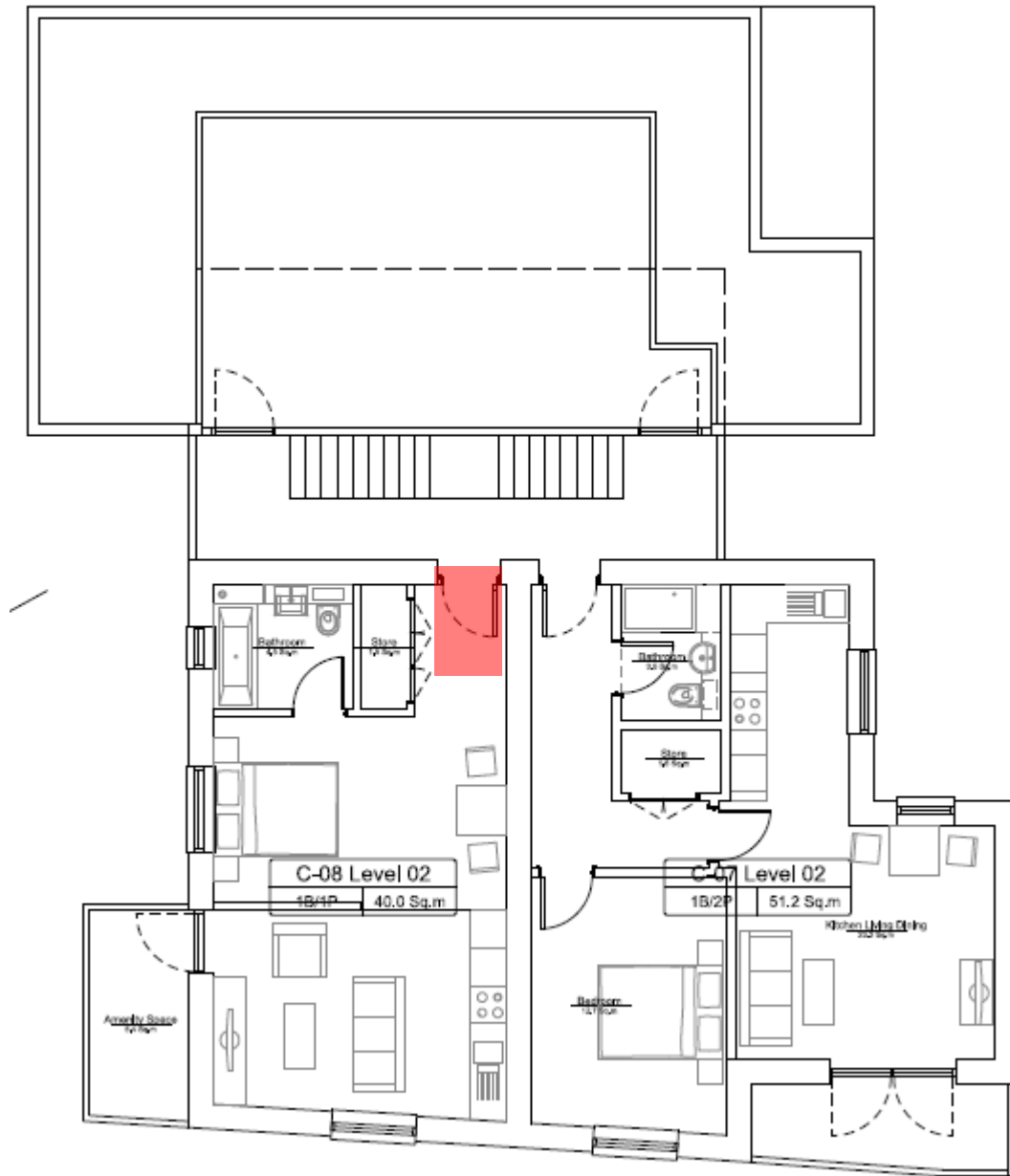
First floor



The three first floor flats are accessed from an “open stair” two flats are provided with a protected entrance hall. The inner protected entrance hall is constructed to provide 30 minutes fire resistance with fire doors providing a minimum of 20 minutes fire resistance.

The smaller flat is open plan in nature with restricted travel distance from the entrance door to the furthest point designed to be less than 9 metres (this may necessitate the moving of the entrance door), with the cooking facilities being remote from the entrance door in accord with Diagram 3.3 of ADB.

## Second floor



The second floor has access to two flats, the larger flat has a protected entrance hall, The inner protected entrance hall is constructed to provide 30 minutes fire resistance with fire doors providing a minimum of 20 minutes fire resistance.

The smaller flat is open plan in nature with restricted travel distance from the entrance door to the furthest point designed to be less than 9 metres (this may necessitate the moving of the entrance door), with the cooking facilities being remote from the entrance door in accord with Diagram 3.3 of ADB.

A roof terrace area is provided on the second floor.

## **3. Legislation**

### **3.1. Building Regulations**

Building Regulations require a building owner to provide adequate levels of life safety to the building by providing suitable:

- i. Means of escape
- ii. Means of warning occupants of a fire
- iii. Limiting internal fire spread
- iv. Limiting external fire spread, and protection to adjacent property from fire
- v. Access and facilities for Fire Service operations.

For Flats, this is normally achieved by following the guidance in Approved Document B (ADB)<sup>1</sup>. Other documents are available and consist of a three-tier approach guidance; simple premises normally follow the guidance documented within (ADB), while other approaches are also acceptable as detailed in BS 9991 Code of Practice for Fire Safety in the Design, Management and Use of Residential Buildings<sup>2</sup>, where the buildings are more complex in design. Alternatively, where more innovative solutions and fire safety concepts are involved, fire engineering may be used following the principles in BS 7974<sup>3</sup> in order to demonstrate an equivalent or better level of life safety is provided in the building(s). This development utilises the principles set out in ADB, with deviations justified where necessary.

#### **3.1.1. Building Regulations Purpose Group**

The building is to be used as Residential Dwellings and is classified as Flats 1 (a), and Office 3 in accordance with the Building Regulations, Approved Document B: Fire Safety Table 0.1.

#### **3.1.2. Current Approvals Position to date**

It is understood the existing buildings are subject to the necessary processes for planning; and building regulations will be assessed by an appointed building inspector. The purpose of this strategy is to allow the developer to present a design fire strategy document to the Local Authority, to ensure approval is achieved.

### **3.2. Regulatory Reform (Fire Safety) Order 2005**

Upon occupation of the building "The Regulatory Reform (Fire Safety) Order 2005" (RR(FS)O 2005)<sup>4</sup> requires the "Responsible Person" to undertake a fire risk assessment to ensure adequate fire precautions are provided and maintained by introducing a comprehensive and robust fire safety management system. For flats this only applies to the common parts.



## 4. Supporting Drawings

The table provides a summary of the drawing information supplied that should be read as part of this fire strategy.

189 Waldegrave Road, Teddington TW11 8LX.- Drawings

Drawing Title	Drawing Number	Date	Rev
Design & Access Statement	MA014-MAA-PP-A-DAS-WIP	July 21	P01
Proposed Ground Floor GA Plan	MA014-MAA-XX-DR-A-02101	August 21	P06
Proposed First Floor Plan	MA014-MAA-XX-DR-A-02102	August 21	P06
Proposed Second Floor Plan	MA014-MAA-XX-DR-A-02103	August 21	P06
Proposed Elevations Block A	MA014-MAA-XX-DR-A-04101	September 21	P03
Proposed Elevations Block B	MA014-MAA-XX-DR-A-04111	September 21	P04
Proposed Elevations Block C	MA014-MAA-XX-DR-A-04121	September 21	P03
Fire Plan Sketch Ground Floor	MA014-MAA-XX-DR-A-SK003	September 21	P01
Fire Plan Sketch First Floor	MA014-MAA-XX-DR-A-SK004	September 21	P01
Fire Plan Sketch Second Floor	MA014-MAA-XX-DR-A-SK005	September 21	P01

## **5. Emergency Escape Strategy**

### **5.1. Stay Put policy**

The escape strategy adopted for this building is based on a “stay put” policy. A stay put policy involves the following approach:

When a fire occurs in a flat, the occupants alert others in the flat, make their way out of the building and summon the Fire and Rescue Service.

If a fire starts in the common parts, anyone in this area makes their way out of the building and summon the fire and rescue service.

All other residents not directly affected by the fire would be expected to “stay put” and remain in their apartment unless directed to leave by the fire and rescue service.

The Stay Put Policy applies to the flats only. The evacuation strategy for the Commercial premises on the ground floor should follow the outcome of the fire risk assessment, it is expected this will result in an immediate evacuation. This will be independent of the residential accommodation.

### **5.2. Evacuation Strategy**

The fire compartmentation between apartments is analogous to the party wall separation between adjoining houses, which prevents fire spreading from one house to another. It also enshrines the principle that a person’s actions should not endanger their neighbours.

The fire compartmentation provided between the apartments is one hour, they are also fitted with a residential water mist system, this should ensure a fire is contained within the apartment of origin.

## 6. Building Regulations compliance

### 6.1. Means of warning and escape B1.

The requirement –

*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 intention -

- a. There are sufficient means for giving early warning of fire to people in the building.
- b. All people can escape to a place of safety without external assistance.
- c. Escape routes are suitably located, sufficient in number and of adequate capacity.
- d. Where necessary, escape routes are sufficiently protected from the effects of fire and smoke.
- e. Escape routes are adequately illuminated, and exits are suitably signed.
- f. There are appropriate provisions to limit the ingress of smoke to the escape routes, or to restrict the spread of fire and remove smoke.

The extent to which any of these measures are necessary is dependent on the use of the building, its size, and its height. Building work and material changes of use subject to requirement B1 include both new and existing buildings.

#### 6.1.1. Proposals

##### 6.1.2. Fire Suppression System

The development will be provided with a residential water mist system in accord with BS 8458<sup>5</sup>, this should ensure any fire occurring will be contained within the room of origin. The system will be fitted to provide the residential standard of the standard and will serve as compensation for the extended travel distances involved with the fire service access arrangements, as well as providing a safer environment for the residents of the development.

##### 6.1.3. Automatic Fire Detection System

The development consists of individual apartments, each apartment will be fitted with a fire alarm and detection system in accord with BS 5839 – 6<sup>6</sup> Grade D1/D2 Category LD2. This will provide smoke detection in the escape routes principle habitable rooms, as well as a heat detector in the kitchen. It is proposed to use multi-sensor detectors in the living areas where kitchens are situated to reduce the incidence of unwanted fire signals.

Smoke detectors on each level of the common areas of Block A will be provided to operate the AOV at the head of the stairs.

##### 6.1.4. Travel Distances

The development is laid out so the travel distances in a flat where a protected hallway is less than 9 metres, or there is restricted travel distance of less than 9 metres within a flat. Flats

with a height of less than 4.5 metres have alternative means of escape from escape windows and doors where necessary.

#### **6.1.5. Exit Capacity**

The exit capacity for the development is far in excess of any predicted occupancy for this type of accommodation. This includes the provision of the ground floor commercial premises.

#### **6.1.6. Emergency Lighting**

The development will be provided with emergency lighting in accord with BS 5266<sup>7</sup>. Generally, emergency lighting should be provided to give adequate luminance near each exit door and where it is necessary to emphasise potential danger as outlined below:

- i. Exit doors intended to be used in an emergency
- ii. Near stairs so each flight of stairs receives direct light
- iii. Near any change in level
- iv. Mandatory emergency exits and safety signs
- v. Changes of direction
- vi. Intersection of corridors
- vii. Outside each final exit
- viii. Near firefighting and first aid equipment.

#### **6.1.7. Automatic Opening Vent (AOV)**

An automatic vent is to be provided at the head of the common stair in Block A to assist in firefighting operations and keep the staircases relatively clear of smoke and products of combustion.

The AOV should provide a minimum of 1.0m<sup>2</sup> opening area and will be operated automatically by smoke detectors situated on each floor level, or by an override switch for use by the Fire and Rescue Service situated at the entrance to the building.

The AOV should be tested monthly by operating the provided switch and should be inspected and serviced at least annually by a competent person using the smoke detectors to actuate them.

Blocks B and C are served by an open stair, so there are no specific ventilation requirements for these blocks.

## 6.2. Internal fire spread (linings) B2.

The requirement -

- (1) *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, either a rate of heat release or a rate of fire growth, which is reasonable in the circumstances.*
- (2) *In this paragraph “internal linings” means the materials or products used in lining any partition, wall, ceiling, or other internal structure.*

Intention –

B2 is met by achieving a restricted spread of flame over internal linings. The building fabric should make a limited contribution to fire growth, including a low rate of heat release. The choice of materials for walls and ceilings can significantly affect the spread of fire and its rate of growth, even though they are not likely to be the item ignited first. It is particularly important in circulation spaces where rapid fire spread is more likely to prevent the escape of occupants that surface linings are restricted by limiting the surface spread of flames and minimising heat release rates.

ADB Table 4.1 outlines the requirement for wall and ceiling internal linings.

### *Classification of Internal Linings*

Location	European Class
Circulation spaces, including the common areas of blocks of flats	B-s3, d2
Other rooms (including garages) circulation spaces within a dwelling	C-s3, d2
Small rooms of maximum internal floor area of 4 m <sup>2</sup>	D-s3, d2

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

### 6.2.1. Proposals

The development will use materials to ensure the linings of the structure comply with the requirements of the table above. All works are to be completed by competent persons to a high standard following manufacturer’s instructions.

### 6.3. Internal fire spread (structure) B3.

The requirement -

- (1) The building shall be designed and constructed so that, in the 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. For the purposes of this sub-paragraph a house in a terrace and a semi-detached house are each to be treated as a separate building.*
- (3) Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following—*
  - (a) sub-division of the building with fire-resisting construction.*
  - (b) installation of suitable automatic fire suppression systems.*
- (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.*

Intention – requirement B3 is met by achieving all of the following.

- a. For defined periods, loadbearing elements of structure withstand the effects of fire without loss of stability.
- b. Compartmentation of buildings by fire resisting construction elements.
- c. Automatic fire suppression is provided where it is necessary.
- d. Protection of openings in fire-separating elements to maintain continuity of the fire separation.
- e. Inhibition of the unseen spread of fire and smoke in cavities, to reduce the risk of structural failure and spread of fire and smoke, where they pose a threat to the safety of people in and around the building.

The extent to which any of these measures are necessary is dependent on the use of the building and, in some cases, its size, and on the location of the elements of construction.

#### 6.3.1. Proposal – provisions of compartmentation

Compartmentation is fundamental to containing a fire in one flat. Modern construction methods can ensure compartmentation is achieved and maintained.

In buildings containing flats, the following should be constructed as compartment walls or compartment floors:

- I. Every floor (unless it is within a flat, i.e. between one storey and another within one individual dwelling).
- II. Every wall separating a flat from any other part of the building
- III. Every wall enclosing a refuse storage chamber.

This development will be provided with one-hour compartmentation between flats, and between the commercial and residential accommodation and 30 minutes compartmentation to the entrance hallway within the flats where provided. Any services passing through the fire compartment are to be suitably protected to maintain the appropriate fire resistance.

It is recommended that consideration should be given to the layout of the vents from bathrooms and kitchens, to avoid where possible, penetration through fire resistant walls. Doors from cupboards opening into the staircase, for meters and services should be FD30s fire doors to maintain the compartmentation to the stair.

Typical compartmentation provided, is shown in Figure 14 below with:

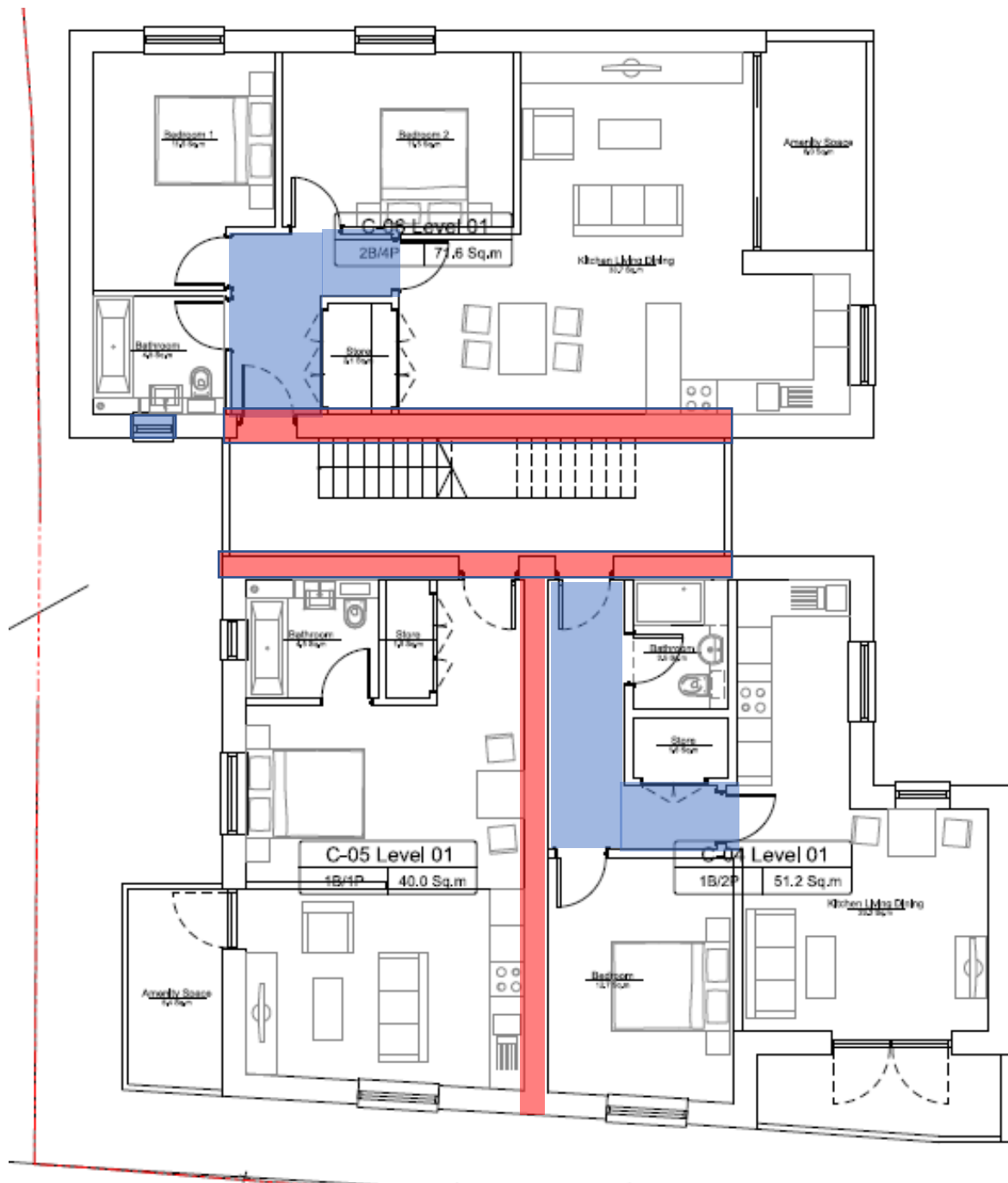
60 minutes - represented by red infill



30 minutes - represented by blue infill



Typical compartmentation



### 6.3.2. Protection of Openings and Fire Stopping

To ensure all fire separating elements are effective, every joint or imperfection of fit, or opening to allow services to pass through the element should be suitably fire stopped. Vertical service risers are to be enclosed in a fire protected shaft or fire stopped at each compartment floor level.

All openings for pipes, ducts, conduits, or cables that pass through and / or any joints between fire separating elements should be appropriately fire stopped with consideration for any potential thermal movement of pipes and ducts.

Where non-rigid materials are adopted or unsupported spans of 100mm are used, then the fire stopping material should be reinforced with materials of limited combustibility.

### 6.3.3. Openings for Pipes

Where services pass through a fire separating element, the following three fire stopping measures should be considered to evaluate the most appropriate fire protection measure.

- i. Proprietary Seals - provide a system such as an intumescent collar which has been tested to maintain the fire resistance of the wall, floor for a pipe of any diameter.
- ii. Pipes with restricted diameter - if the pipe satisfies the requirement of the Table below, the fire stopping can be made from cement mortar or intumescent mastic around the pipe.
- iii. Sleeving - of lead, aluminium alloy, fibre cement or uPVC with dimensions as outlined in the Table below can be used.

#### *Maximum Diameter of Pipes Passing Through a Compartment*

Situation	Non-combustible materials	Lead, Aluminium alloy, uPVC, fibre cement	Any other material
Structure enclosing a protected shaft which is not a stairway or lift shaft.	160mm	110mm	40mm
Compartment wall or compartment floor between clusters	160mm	160mm (stack pipe) 110mm (branch pipe)	40mm
Any other Situation	160mm	40mm	40mm



## 6.4. External fire spread B4.

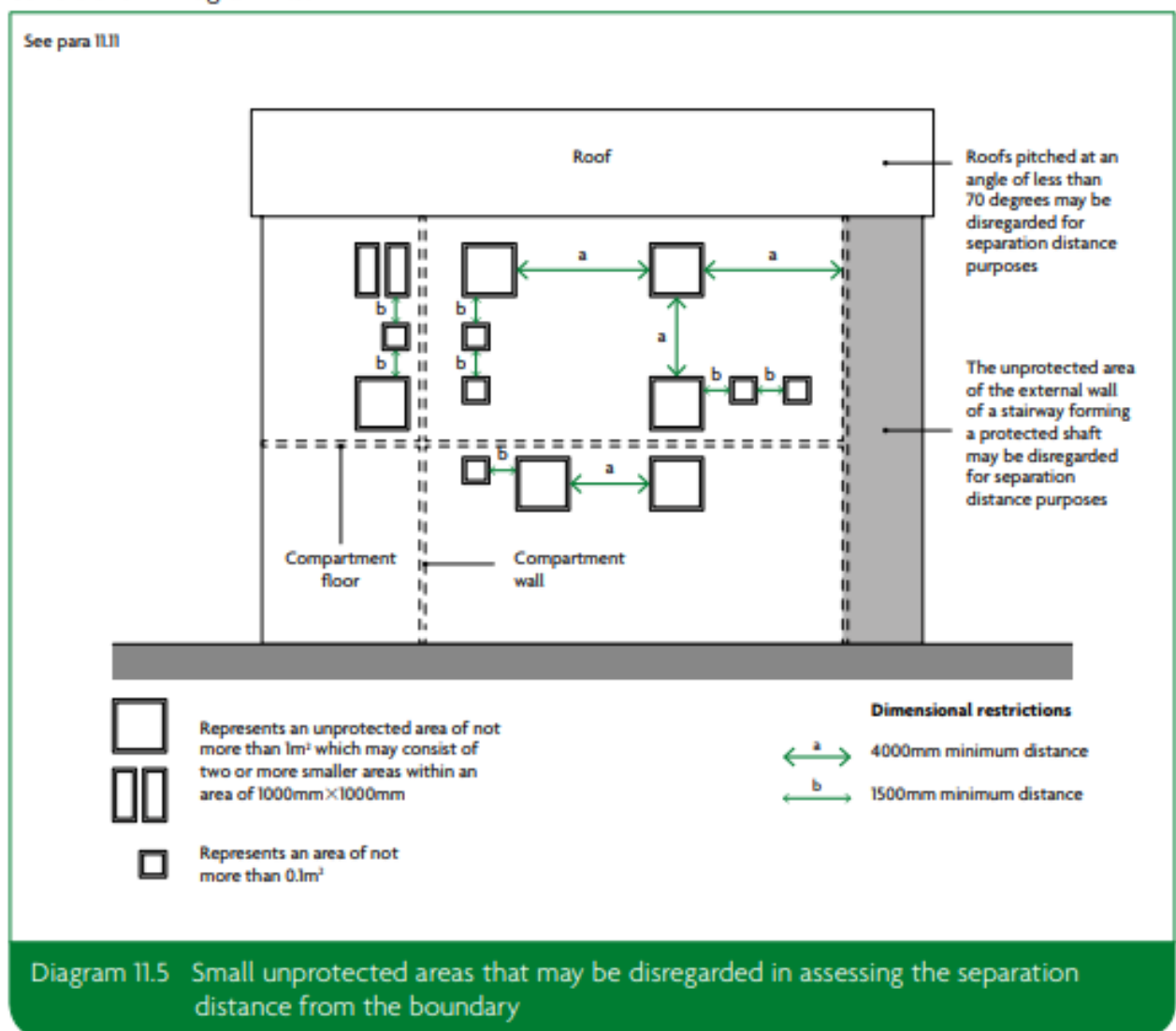
The Requirement –

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

(2) *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.*

### 6.4.1.Space separation

Buildings should be constructed to ensure a fire is unlikely to involve an adjacent building. This is achieved by restricting the unprotected area in an external wall. There is a boundary condition on Block C East elevation, where the distance is less than 1000 mm from the boundary, in order to satisfy this condition, the size of the opening should be restricted in accord with Diagram 11.5 of ADB.



As a water suppression system is proposed it could be argued that the size of the openings could be doubled to an area of not more than 0.2 m<sup>2</sup>. ADB allows for a doubling of unprotected area if a sprinkler system is fitted, as a residential mist system is proposed this will offer similar protection to a residential sprinkler system in reducing the radiant heat flux of any fire within that compartment. The other portion of the windows should be fire resisting and fixed closed.

#### **6.4.2. External walls**

External walls should be constructed to achieve the classification requirements outlined in Table 10.1 of ADB.

#### **6.4.3. External fire spread over the external faces of buildings**

External walls should be constructed using a material that does not support fire spread and therefore endanger people in or around the building. This should include balconies, and it is strongly recommended that only materials of A2 or A1 fire rating are used in their construction.

Flame spread over, or within, an external wall construction should be controlled to avoid creating a route for rapid fire spread bypassing compartment floors or walls. Combustible materials should not be used in cladding systems and extensive cavities.

External wall surfaces near other buildings should not be readily ignitable, to avoid fire spread between buildings. External walls should therefore either meet the performance criteria given in BRE Report BR 135 [N1] for cladding systems using full scale test data from BS 8414-1 or BS 8414-2, or meet the recommendations as set out in BS 9991.

The building appears to be predominately brick faced with a pebble dashed finish, it should be confirmed that all facades of the building including any proposed balconies comply with the information contained within the MHCLG document "Advice for building owners of multi-storey, multi occupied residential buildings", January 2020.

Note: The installation of appropriately fire rated cladding is acceptable and can be evidenced by supplier information but providing the evidence to mortgage lenders of appropriate fire stopping between the external walls and cladding can be potentially difficult, and photos taken by installers may not be sufficient.

It is recommended that prior to installing cladding, consideration is given as to how evidence of fire stopping will be provided, if required, by mortgage lenders.

## 6.5. Access and facilities for the fire service B5.

The requirement –

*(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 provision shall be made within the site of the building to enable fire appliances to gain access to the building.*

Intention –

Provisions covering access and facilities for the fire service are to safeguard the health and safety of people in and around the building. Their extent depends on the size and use of the building. Most firefighting is carried out within the building. In the Secretary of State's view, that requirement B5 is met by achieving all of the following:

- a. External access enabling fire appliances to be used near the building.
- b. Access into and within the building for firefighting personnel to both:
  - i. search for and rescue people
  - ii. fight fire.
- c. Provision for internal fire facilities for firefighters to complete their tasks.
- d. Ventilation of heat and smoke from a fire in a basement.

### 6.5.1. Proposal

There is poor access to the rear portion of the development, resulting in all parts of the proposal not being within 45 metres of the position of the fire appliance.

A fire main is proposed to provide firefighters with firefighting water, this will require a low-level drain valve at the lowest level.

Due to the increased travel for firefighters which is approximately 75 metres to the entrance of Block C it is proposed to fit all flats with a residential water mist system in accord with BS 8458. The provision of such a system will ensure any fire should be contained to the room of origin, and although there will be a slight delay in firefighters accessing the furthest flats in the development, the delay will not be significant assuming moving at 2 metres per second the delay will be in the region of less than a minute, however, the benefit of fitting a residential water mist system will make the firefighting conditions much more favourable for the firefighters. Therefore, this proposal with provision of a fire main and residential water mist system will result in better conditions for firefighters than a code compliant condition.

An Automatic Opening Vent (AOV) is available to the stair enclosure in Block A, this will assist in keeping the stair relatively clear of smoke and the products of combustion for evacuation purposes as well as assisting firefighters in their firefighting operations.

The route of the firefighting main is shown to provide firefighting water to within 45 metres of any part of the development.

Fire Service access arrangements.

Fire Appliance



### 6.5.2. Location and access to external water supply

All premises should be provided with a supply of water for firefighting. Firefighters must lay out hose between the water supply and the fire appliance, so these distances should be kept to a minimum.

Hydrants should be located where necessary in positions that are near to building entry points (including entry points to fire-fighting shafts containing fire mains) and fire appliance parking positions as follows:

- i. For buildings provided with dry fire mains, hydrants should be provided within 90 m of dry fire main inlets,

- ii. For buildings not provided with fire mains (or where the building is fitted with a wet fire main), hydrants should be provided within 90 m of an entry point to the building and not more than 90 m apart.

Water mains and hydrants should be capable of delivering a sufficient flow of water to enable effective firefighting to be undertaken. If the water supply takes the form of a static tank or dam, the capacity should be related to the size of the building and the risk involved. An unlimited and guaranteed natural water source providing the right quantities is also expected to be acceptable, subject to access and hardstanding for the fire appliances being provided.

The water supply should comprise of one or a combination of the following:

- i. hydrants provided by the water supply company on the street mains.
- ii. private hydrants designed and installed in accordance with BS 9990<sup>8</sup>, ideally forming part of a ring main system.
- iii. a static or natural water supply.

There has been no adverse change to the provision of water supplies for firefighting purposes, from the existing buildings.

#### **6.6. Building Regulations Conclusion**

The proposals appear to meet the functional requirements of the Building Regulations, in so much as the requirements B1 to B5 are satisfactory.

## **7. Fire safety Management**

### **7.1. Assessing Fire safety Management**

Managing fire safety is addressed in BS 9999<sup>9</sup>, the principles of fire safety management contained within BS 9999 can be considered best practice for managing fire safety, although with the simple nature of the development and the lack of any permanent employees many of the recommendations may not be relevant. The standard of fire safety management required for a building is a critical component to be considered when determining how an emergency event involving fire will be dealt with.

### **7.2. Considerations of fire safety management**

- i. Ensure a suitable and sufficient fire risk assessment is undertaken by a competent person.
- ii. Appoint a person to manage fire safety, although they will not be on site on a day-to-day basis, they will be responsible for the general management, and should have the appropriate training.
- iii. Engage with residents, outlining key messages on fire prevention, ensuring the security of the block. The use and storage of hazardous materials should be prohibited. What actions are required on the discovery of a fire and what the evacuation strategy means. What they need to do to safeguard escape routes, ensuring doors close correctly and are not wedged, held, or tied open. Keeping common parts clear of combustibles and obstructions. How they can assist the Fire and Rescue service by not parking in restricted areas. They also need to understand the procedure for reporting essential repairs. This information can be provided within a resident's handbook.
- iv. Fire Action Notices are a useful method of summarising the actions in the event of a fire and reinforcing the evacuation policy.
- v. Controlling hazardous activities, the management should have procedures in place to ensure hazardous activities such as 'hot work' is controlled and a 'permit to work system' is adopted.
- vi. Inspection testing and maintenance; fire safety systems should be regularly tested and inspected. This will include automatic water mist systems, fire doors, means of escape is kept fire sterile, emergency lighting systems, fire alarm systems, fire dampers where fitted and automatic ventilation systems.
- vii. Periodically inspect fire separating construction to ensure there are no breaches in fire compartmentation.
- viii. Maintain records to demonstrate the fire precautions are being regularly inspected and maintained.

## 8. Environment

Many fires or emissions from combustion processes damage the environment. The contents of a building, and the activities carried on within any building catching fire are likely to cause pollution to a greater extent than products used in the fabric of the building itself.

Regarding accidental fires, the main area for consideration in respect to environmental impact of such fires is the loss of control of pollutants as a consequence, for example from smoke and firefighting water run-off.

Appropriate steps at the design stage of any building can minimise the impact of accidental fires on the environment and, whilst the emphasis is likely to be on the potential contents of the building, it would be responsible to consider the effects of using combustible materials in the building specification.

## 9. Conclusion

The buildings are proposed to be designed and refurbished using modern methods to provide inherent and appropriate fire resistance and fire compartments, which should ensure that a fire is contained within the room or flat of origin. Work will be carried out to a high standard.

The residential accommodation is proposed to be fitted with a residential water mist system to BS 8458 providing a safer living space for residents. This is above the requirements for a development of this size and height and should ensure a fire is contained within the room of origin and will allow firefighters to operate in a safer environment when firefighting operations are taking place.

The buildings are to be fitted with a fire detection and alarm system to BS 5839 – 6 Grade D1/D2 LD2, additional detectors will be fitted in Block A in the commercial areas subject to fit out and in the common stair to operate the AOV at the head of the stair.

Therefore, the escape strategy adopted throughout this building is based on a ‘stay put evacuation’ policy.

Any alterations, or refurbishments undertaken in the future should not compromise the inherent fire resistance provided. Any fixed fire protection measures should be subjected to routine testing and maintenance in accord with the manufacturer’s recommendations or the relevant British Standard guidance where appropriate.

The building should be subjected to a fire risk assessment by a competent person on occupation.



## 10. References

1. Approved Document B Volume 1 Dwellings 2019
2. BS 9991:2015 Code of Practice for fire safety in the design, management and use of buildings.
3. BS 7974 Application of fire safety engineering principles to the design of buildings.
4. Regulatory Reform (Fire safety) Order 2005
5. BS 8458 Fixed Fire Protection Systems Residential and Domestic Watermist System Code of Practice for the design and installation. 2015
6. BS 5839-6 Fire detection and alarm systems for buildings: Part 6 Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises. 2019
7. BS 5266 Emergency Lighting – Part 1 Code of Practice for the emergency lighting of premises. 2016
8. BS 9990 Non-automatic firefighting systems in buildings – Code of practice. 2015
9. BS 9999 Fire Safety in the Design, Management and Use of Buildings – Code of Practice. 2017



## Company Introduction – Clients

Adena Fire is a completely independent fire safety services company, meaning that we only recommend the services our customers need – and nothing more. Our consultants and engineers are all currently serving or recently retired officers from the British Fire Service and combine this with extensive experience in the private fire safety sector. We work with a number of companies within the Fire Protection, Construction and Security industries to provide fire safety services to their customers, as well as a growing client base who we work for directly. The prices that we offer our clients are always competitive – we keep our overheads low in order to keep the costs to our clients low too.

### Our Services.

#### Fire Risk Assessments

When our consultants undertake risk assessments for our clients, they are able to provide them with informed advice. Their experience and understanding of fire and how it behaves, means that they are able to be more flexible, allowing more cost-effective solutions to be adopted – rather than simply basing their advice on stringent technical guidance.

All Fire Risk Assessments are carried out in accordance with PAS 79, which is the recommended methodology of the IFE and BSI – (British Standards Institute). The current legislation (Regulatory Reform {Fire Safety} Order 2005) requires that any workplace with five or more employees, or the common areas in residential flats, must have a fire risk assessment carried out and for it to be reviewed regularly.

#### Pre-Occupation Risk Assessments

These reports are one step before a Fire Risk Assessment, and are often required by a building owner, developer or management company once a refurbishment or building has been built, to review fire safety arrangements prior to the building being occupied. A Fire Risk Assessment can then be conducted once occupied.

#### Fire Safety Training

- Fire Marshal/Warden Training
- Fire Safety Awareness and Extinguisher Training
- Evacuation Chair Training
- Virtual Fire Safety Training

Our trainers make sure that the sessions cover everything that they need to but understand that true learning requires them to engage their audience. They do this by making sure the content of the training is relevant, interesting and that it is delivered in a way that delegates understand and retain the information. When our clients have the space and on-site parking, we can deliver live fire training as well as – allowing students to enjoy a real hands-on experience (and dare we say, have some fun!).

## Fire Safety Consultancy

Adena Fire provide a bespoke fire safety consultancy service, tailored to each client's specific requirements – such as new build design consultancy and building refurbishments, or changes of use or occupation. Our services include Fire Strategies, Regulation 38 Documents, Pre and Post Occupation Fire Risk Assessments.

- All of our consultants are either serving or retired British Fire Service professionals – some already working in technical fire safety departments – which enables them to foresee and pre-empt, potential objections that may arise during the design process
- Our consultants are highly qualified in all aspects of fire safety and fire engineering (to MSc Level in Fire Engineering), fully conversant with ADB (Approved Document B), BS9999, as well as bespoke fire-engineered solutions
- Our consultants all draw from vast fire safety experience gained in both the commercial and public sectors – including Fire Risk Assessments (using PAS79 methodology)

## Fire Safety Arrangements

### Fire Emergency Plans and Fire Safety Policies

Fire Emergency Plans are implemented to ensure the most efficient and speedy evacuation of occupants from a building in the case of a fire or a suspected fire. Adena Fire will document effective procedures that will detail how the occupants of the building will be warned in case of fire, the roles and responsibilities of designated employees, summoning and meeting the fire and rescue service, details on escape routes and meeting points, as well as contingency plans.

### Fire Evacuation Drills

A minimum of two full Fire Evacuation Drills must be conducted each year, whereby all occupants follow the Fire Emergency Plans. The drills must be recorded in the fire logbook alongside the Fire Risk Assessment. If the Fire Service requests a visit to your customer's premises, these will be a key in providing evidence that they are legally compliant.

## Dry and Wet Riser Testing and Maintenance

We have our own (small!) fire engine, which has been kitted out with everything that a full-size engine needs to have, allowing Adena Fire to perform six monthly visual and annual wet pressure testing of dry rising mains in compliance with the NEW British Standard: Code of Practice for Non-Automatic Fire-Fighting Systems in Buildings (BS 9990: 2015) – *many of our competitors are still working to the 2006 Standards.*

We have unrivalled experience in the testing and maintaining of these systems – all of our engineers are serving officers in the Fire Service – so who better to do this than those of us who have real hands-on experience in using wet and dry-risers to put fires out.

### Additional New Services:

Firefighting Lift Checks  
Evacuation Chair Testing and Maintenance

**Contact Us:**

If you are interested in any of the services we provide, please contact Jacqui Critch either by email: [jacqui@adenafire.co.uk](mailto:jacqui@adenafire.co.uk) or by phone 07805 421336 / 01787 220471. Please also visit our website at [www.adenafire.co.uk](http://www.adenafire.co.uk).

