

Fire Safety Statement

Our ref: 141123

Date 12th May 2021

The following provides a summary of the key fire safety features of the building. This is based on compliance with Part B of the Building Regulations 2010 (as amended).

Author – Planning Policy D12 Fire Safety B

Ed Hagan is a Chartered Building Engineer. He has a BSc Hons in Building Control Surveying from University of Westminster and is member of the Chartered Association of Building Engineers.

Ed has 15 years of experience in Building Control within the built environment in both the private and public sectors and is responsible for administering the Building Regulations so regulatory standards of health, safety, welfare, conservation of fuel and power and accessibility are met. He has also dealt with fire safety in many projects including industrial buildings.

Workmanship: All works will meet the relevant workmanship requirements of Approved Document 7 (AD7)

Fire Statement Overview: The fire statement put forward for the 'Erection of an industrial building' at Barton Buildings, Uxbridge will meet the guidance within the London Plan policy D11 covering the building's functionality in terms of Part B (Fire Safety) and include:

1. Building's construction and materials used etc
2. Means of escape including persons who are disabled
3. Evacuation assembly points
4. Proposed fire alarm and emergency lighting
5. Fire Brigade access for both personnel and appliances including water supplies

In addition, the internal layout, travel distances, final exits, external fire and internal fire spread have all been considered at this early stage to ensure the strategy develops at minimum design risk while optimising safety.

Building Regulations Purpose Group

As per Table D1 of Approved Document B Vol 2, the work is considered Industrial (6) and Office (3)

Key Fire Safety Building Information

Building Regulations	Compliance Note
Height	<11m from external ground to roof (mean) level
Area	Industrial unit: Approximately 1070m ² not including stairs and sanitary accommodation Office unit: 135m ² not including stairs and sanitary accommodation.
Occupancy /floor space factors (when actual design figures not known)	Industrial unit @ 30 m ² /person = maximum 35 persons Office unit @ 6 m ² /person = max. 22 persons

Fire Safety Design Summary:

The following summarizes the key requirements of B1 to B5 of the Building Regulations. This includes the means of escape for all building users including those who may be disabled.

Building Regulations	Compliance Note				
(i) Means of escape	Final Exit calculations	Maximum number of persons from fire safety info table above	Minimum final clear exit width (mm) to meet both Part B, and Part M (Accessibility)	Actual Final clear exit width (mm)	Compliance with Part B
Office stair capacity	i) Main stair leading to main entrance/exit	22	1100	1800	√
	ii) Alternative stair	22	1100	1100	√
	Total capacity of stairs when discounting largest stair (i) = 22 persons				√
	(Check) Final exits as wide as the stair they serve				√

Building Regulations	Compliance Note (Industrial unit)				
(i) Means of escape	Final Exit calculations	Maximum number of persons from fire safety info table above	Minimum final clear exit width (mm) to meet both Part B, and Part M (Accessibility)	Actual Final clear exit width (mm)	Compliance with Part B
Escape via the storey exit leading to the main entrance/exit is not considered in these calculations as sufficient other exits available)					
	i) Final exit via NW elev.	35	800	800	√
	ii) Final exit via SW elev.	35	800	800	√
	iii) Exit via storey exit of escape stair (NE elev.)	35	800	Appears approx.. 750mm (when scaled)	X (to be increased to 800mm to meet Part M)
	Total capacity of exits when discounting largest exit (i) = 70 persons				√
	No issues with Merging Flows as at 2 further exits available from warehouse. Low numbers also anticipated unless otherwise advised.				

Building Regulations	Compliance Note (Office unit)					
B1- Means of escape Office (1st floor)	Final Exit calculations	Maximum Occupancy from fire safety info table above	Minimum final clear exit width (mm) to meet both Part B, and Part M (Accessibility)	Actual Final clear exit width (mm)	Compliance with Part B	
	i)Storey exit leading to main entrance/exit (NE elev.)	22	800mm	Assumed 800mm	√	
	ii)Final exit via alternative escape stair (NE elev.)	22	800mm	Assumed 800mm	√	
	Total capacity of exits when discounting largest exit (i)= 22 persons				√	
(ii) Travel distances	Purpose Group	Single Direction	More than One Direction			
	6 - Normal Hazard	25	45			
	6 – Higher Hazard	12	25			
	<i>Note: Travel distances are assessed using these figures where the internal layout the building are known. Where the layouts are not detailed direct travel distar equivalent to 2/3rds of the figures listed are used. Please contact me should you n any further clarification.</i>					
	Travel distances appear satisfactory					
(iii)	All final exit door and doors leading to them to be easily and immediately operable by persons making good their escape without the use of a key at all times					

(iv)	All escape routes to lead to a place of safety, be adequately lit internally and externally and maintained free of obstructions and trip hazards
(v)	The proposed final exits should not present an obstacle to wheelchair users. Any level exit thresholds installed should have a gradient no greater than 1:20, or a ramp be provided.

(vi)	30 minutes protected staircases including FD30s doors off the stairs to be provided to both stairs.												
B2 Internal Linings	Surface finish classification requirements Table 6.1 Classification of linings <table> <tr> <th>Location</th><th>Classification</th></tr> <tr> <td>Small rooms of maximum internal floor area:</td><td>D-s3, d2</td></tr> <tr> <td>a. 4m² in residential accommodation</td><td></td></tr> <tr> <td>b. 30m² in non-residential accommodation</td><td></td></tr> <tr> <td>Other rooms (including garages)</td><td>C-s3, d2</td></tr> <tr> <td>Other circulation spaces</td><td>B-s3, d2⁽¹⁾</td></tr> </table> NOTE: 1. 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. Plastic rooflights, if the limitations in Table 6.3 and 14.2 (Approved Document B Vol 2) are observed, should be a min class D-s3, d2 rating, otherwise will have to accord with Table above.	Location	Classification	Small rooms of maximum internal floor area:	D-s3, d2	a. 4m ² in residential accommodation		b. 30m ² in non-residential accommodation		Other rooms (including garages)	C-s3, d2	Other circulation spaces	B-s3, d2 ⁽¹⁾
Location	Classification												
Small rooms of maximum internal floor area:	D-s3, d2												
a. 4m ² in residential accommodation													
b. 30m ² in non-residential accommodation													
Other rooms (including garages)	C-s3, d2												
Other circulation spaces	B-s3, d2 ⁽¹⁾												
(i) B3 Part B3 – Internal Fire Spread (Structure)	Assuming the office area is considered ancillary to warehouse, and as the office is not greater than 1/5 of total floor area, no additional compartmentation measures are required between the occupancies. If not considered ancillary, 60 minutes REI fire resistance will be required.												
(ii)	As the building is not more than 18m to the first floor storey and an overall floor area of less than 7000m ² , although recommended, there is no requirement to install a sprinkler system to meet B3.												
(iii)	A minimum 30 minutes fire resistance will be required between ground and first floor offices												
Part B4 – External Fire Spread	South-east elevation -As the rear elevation shown below on grid line C is coincident with the boundary, 60 minutes fire resistance will be required to both inside and outside of the external wall. In addition, the steel stanchions and possibly some of the roof steels will also require 60 minutes fire resistance where the structure is essential for stability of the external wall.												

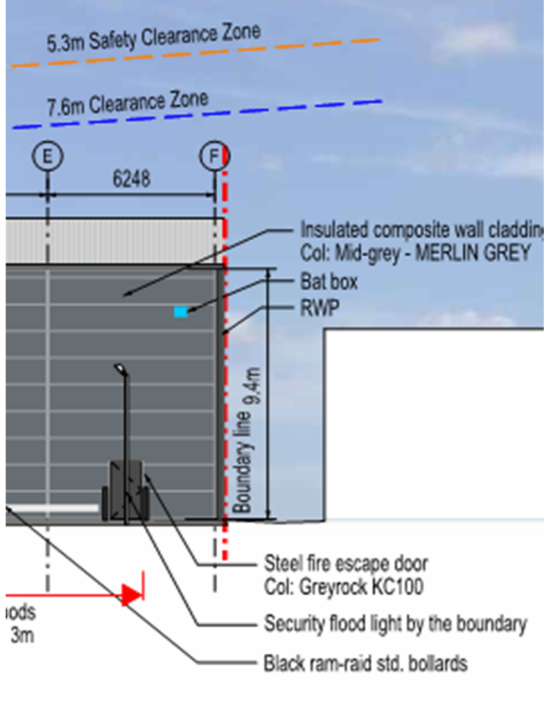
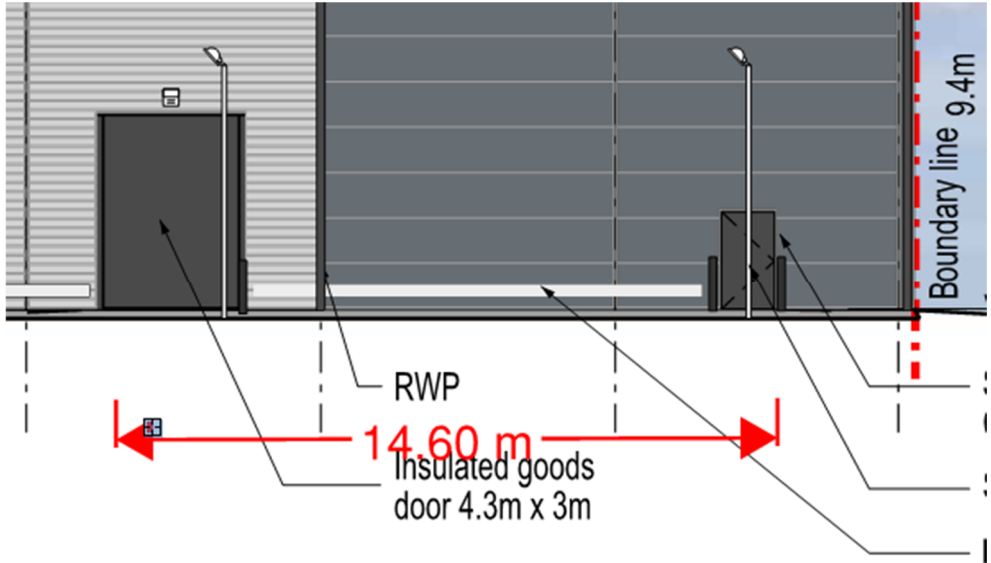
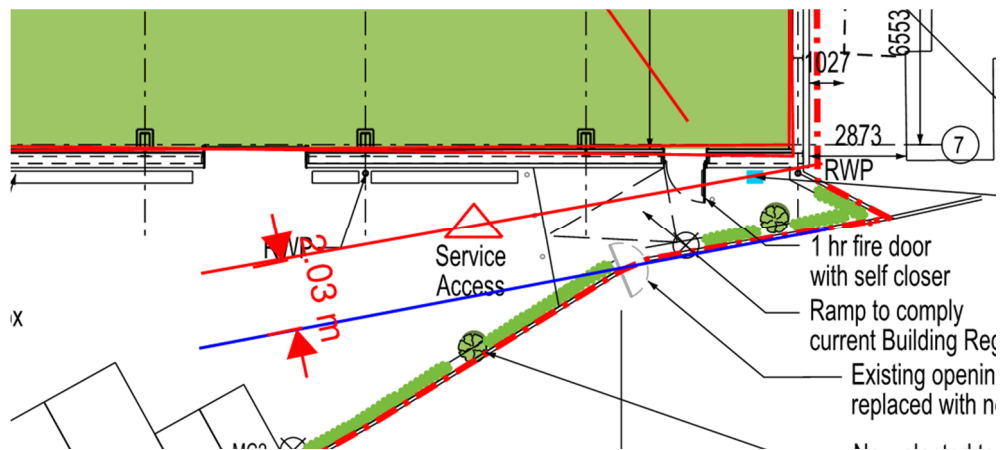
	
ii)	As the proposed external walls are within the parameters relevant boundaries that are assessed as part of Part B4, all internal walls will require 60 minutes fire resistance.
iii) Calculation for external fire spread using unprotected areas methodology-	South west elevation: When forming a plane of reference (red) as per BR187 (External fire spread -2nd edn). 2014) the distance is approximately 2m from the plane of reference to the boundary line (blue) Using enclosing rectangles from BR187, the approximate unprotected area is 15m². Using an enclosing rectangle of 6m high x 15m wide from Table B = 90m² Unprotected areas as a percentage of the enclosing rectangle $15/90 \times 100 = 17\%$ 

Table B: Enclosing rectangle 6 m high

Width	20%	30%
Minimum boundary distance (m)		
3.0	1.5 (1.0)	2.0 (1.0)
6.0	2.0 (1.0)	3.0 (1.5)
9.0	2.5 (1.0)	3.5 (2.0)
12.0	3.0 (1.0)	4.0 (2.0)
15.0	3.0 (1.5)	4.5 (2.5)
18.0	3.5 (1.5)	4.5 (2.5)
21.0	3.5 (1.5)	5.0 (2.5)



Minimum distance to boundary is 3.0m and current arrangement does not conform to the enclosing rectangle calculations.

However, the enclosing rectangle calculation methodology in this instance does not consider:

- The increase in boundary distance where the boundary changes direction - the locally increased distance to the actual boundary from the service access door (12.9m² area) is approx. 8m in conjunction with 60 minutes fire resistance provided from inside the building .
- A 60 minute self- closing fire door as shown (final exit shown to the right of delivery shutter) is to be provided.

We would see this as meeting the Functional Requirements of the Building Regs (B4) and adequately resist spread of fire from the external wall and *from one building to another having regard to the height, use and position of the building.*

iv)

North west elevation.

Using enclosing rectangles from BR187, the approximate unprotected area is 28mm².

Using an enclosing rectangle of 6m high x 15m wide from Table C = 90m²

Unprotected areas as a percentage of the enclosing rectangle $28/90 \times 100 = 31\%$

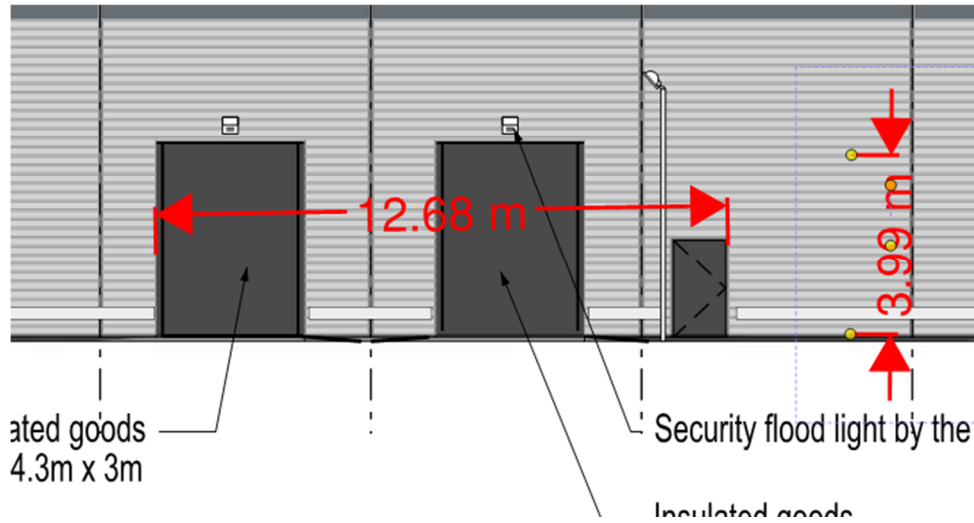
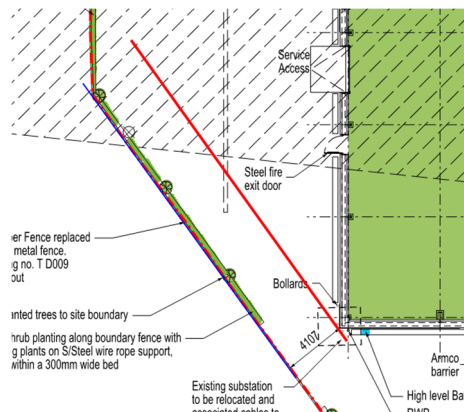


Table B: Enclosing rectangle 6 m high

Width	20%	30%	Distance from
Minimum boundary distance (m)	Figures		
3.0	1.5 (1.0)	2.0 (1.0)	2.5 (1.5)
6.0	2.0 (1.0)	3.0 (1.5)	3.5 (2.0)
9.0	2.5 (1.0)	3.5 (2.0)	4.5 (2.5)
12.0	3.0 (1.0)	4.0 (2.0)	5.0 (3.0)
15.0	3.0 (1.5)	4.5 (2.5)	5.5 (3.0)
18.0	3.5 (1.5)	4.5 (2.5)	5.5 (3.5)
21.0	3.5 (1.5)	5.0 (2.5)	6.0 (3.5)

Google images



Minimum distance to boundary from plane of reference is approximately 5.5m and current arrangement falls short by 1.4m from the tables in BR187

However, the enclosing rectangle calculation methodology in this instance does not consider:

- The increase in boundary distance where the boundary changes direction to become parallel with the elevation (opposite the main entrance doors) and distance to the boundary from the main entrance is approximately 15m at this point.
- The unlikelihood that a building will be erected in the restricted area shown below

We would see the proposals as meeting the Functional Requirements of the Building Regs (B4) and adequately resist spread of fire from the external wall and *from one building to another having regard to the height, use and position of the building*

North East elevation:

Using enclosing rectangles from BR187, the approximate unprotected area is 65m2.
 Using an enclosing rectangle of 9m high x 30m wide from Table C = 270m2
 Unprotected areas as a percentage of the enclosing rectangle 65/270 x 100 = 24%
 Centre of Arundel Road > 7m so; satisfactory.



Table C: Enclosing rectangle 9 m high

Width	20%	30%
Minimum boundary distance (m)		
3.0	1.5 (1.0)	2.5 (1.0)
6.0	2.5 (1.0)	3.5 (2.0)
9.0	3.5 (1.5)	4.5 (2.5)
12.0	3.5 (1.5)	5.0 (3.0)
15.0	4.0 (1.5)	5.5 (3.0)
18.0	4.5 (2.0)	6.0 (3.5)
21.0	4.5 (2.0)	6.5 (3.5)
24.0	5.0 (2.0)	6.5 (3.5)
27.0	5.0 (2.0)	7.0 (3.5)
30.0	5.0 (2.0)	7.0 (3.5)
40.0	5.5 (2.0)	7.5 (4.0)
50.0	5.5 (2.0)	8.0 (4.0)
60.0	5.5 (2.0)	8.0 (4.0)
80.0	5.5 (2.0)	8.5 (4.0)
100.0	5.5 (2.0)	8.5 (4.0)
120.0	5.5 (2.0)	8.5 (4.0)
130.0	5.5 (2.0)	8.5 (4.0)

Notes

vi) When assessing external wall surfaces, Table 12.1 below applies (excerpt below) In this instance, no classification applies to buildings 1000mm or more from the relevant boundary. As the rear elevation (grid line C) is coincident with the boundary, the external surface should achieve Class B -s3, d2 (Class 0 in previous ADB guidance)

Table 12.1 Reaction to fire performance of external surface of walls

Building type	Building height	Less than 1000mm from the relevant boundary	1000mm or more from the relevant boundary
Any other building	More than 18m	Class B-s3, d2 ⁽²⁾ or better	From ground level to 18m: class C-s3, d2 ⁽²⁾ or better From 18m in height and above: class B-s3, d2 ⁽²⁾ or better
	18m or less	Class B-s3, d2 ⁽²⁾ or better	No provisions

vii) Roof coverings in close proximity to a boundary, should give adequate protection against the spread of fire over them. Broof(t4) would demonstrate compliance with Table 14.1.

Table 14.1 Limitations on roof coverings

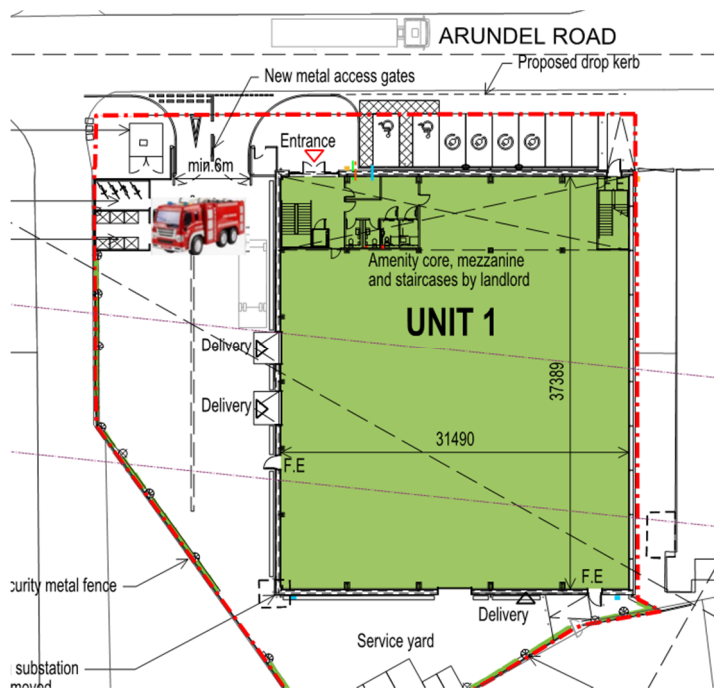
Designation ⁽¹⁾ of covering of roof or part of roof	Distance from any point on relevant boundary			
	Less than 6m	At least 6m	At least 12m	At least 20m
B _{ROOF} (t4) 	●	●	●	●
C _{ROOF} (t4)	○	●	●	●
D _{ROOF} (t4)	○	● ⁽²⁾⁽³⁾	● ⁽²⁾	●
E _{ROOF} (t4)	○	● ⁽²⁾⁽³⁾	● ⁽²⁾	● ⁽²⁾
F _{ROOF} (t4)	○	○	○	● ⁽²⁾⁽³⁾

● Acceptable. ○ Not acceptable.

- NOTES:**
- Separation distances do not apply to enclosed/covered walkways. However, see Diagram 8.2 if the roof passes over the top of a compartment wall.
- Polycarbonate and uPVC rooflights that achieve a class C-s3, d2 rating by test may be regarded as having a B_{ROOF}(t4) classification.
- The designation of external roof surfaces is explained in Appendix B
 - Not acceptable on any of the following buildings.
 - Industrial, storage or other non-residential purpose group (purpose groups 6 and 7) buildings of any size.
 - Any other buildings with a cubic capacity of more than 1500m³.
 - Acceptable on buildings not listed in (1) if both of the following apply.
 - Part of the roof has a maximum area of 3m² and is a minimum of 1500mm from any similar part.
 - The roof between the parts is covered with a material rated class A2-s3, d2 or better.

**Part B5 –
Access and
Facilities
for the Fire
Service**

Vehicle access for a pumped appliance is required to 15% of the perimeter or within 45m of every point on the projected plan area for both units and almost 50% of accessible which meets B5. Access is from Arundel Road



ii) The minimum carrying capacity to meet Part B for a pump fire appliance is currently 12.5 tonnes. As some fire appliances are not standardised, these may be of greater weight or different sizes and at consultation with the Fire and Rescue Service, the Building Control body may adopt other dimensions.

iii) As the building has a compartment of 280m² or more in area, if erected more than 100m from an existing fire-hydrant, additional hydrants should be provided within 90m of an entry point to the building and not more than 90m apart.

iv) Assembly point- This should be located preferably outside of the building curtilage in area where staff can easily reach such as outside the sub station

**Fire Safety
Information
Regulation
38**

The person carrying out the work shall give fire safety information to the responsible person not later than the date of completion of the work, or the date of occupation of the building, whichever is earlier.

Fire safety information means information relating to the design and construction of the building, and the services, fittings and equipment provided in or connection with the building which will assist the responsible person to operate and maintain the building with reasonable safety.

Specification Summary:

The following details the building's construction and other specific items in relation to fire safety.

Item	Specification	Additional Notes
Fire Alarm System	BS 5839: Part 1: 2017 <i>'Fire detection and fire alarm systems for buildings. Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises'</i> ,	
Emergency Lighting	BS 5266.Part 1; 2016 <i>'Code of practice for the emergency lighting of premises'</i>	
Exit Signage	BS 5499-4: 2013 Safety signs CoP for escape route signing	<i>Health and Safety (Safety signs and signals) Regulations 1996 and containing symbols or pictograms</i>
Fire hydrants	BS 3251 1976 : <i>Indicator plates for fire hydrants and emergency water supplies</i>	
Fire Extinguishers	Post-handover/ client provision.	
Cladding system	Curvewall composite wall cladding and profiled roof cladding are proposed	All to meet requirements raised in B3 and B4 above