HANOVER BUILDING, RETAIL UNITS – MANCHESTER
FIRE STRATEGY

DM914/se/21sr
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INTRODUCTION

Building Description

The Hanover building is an existing office building in Manchester. There will be retail units at the ground, lower ground, and basement levels. There will be four units (1 to 4) at the ground floor. Unit 3 will be a small single storey unit and Unit 4 will have two storeys at ground and lower ground level. Unit 1 and 2 will be accessed from ground level but due to a sloping site their lower level will be the basement level. The ground floor arrangement is shown in the figure below.

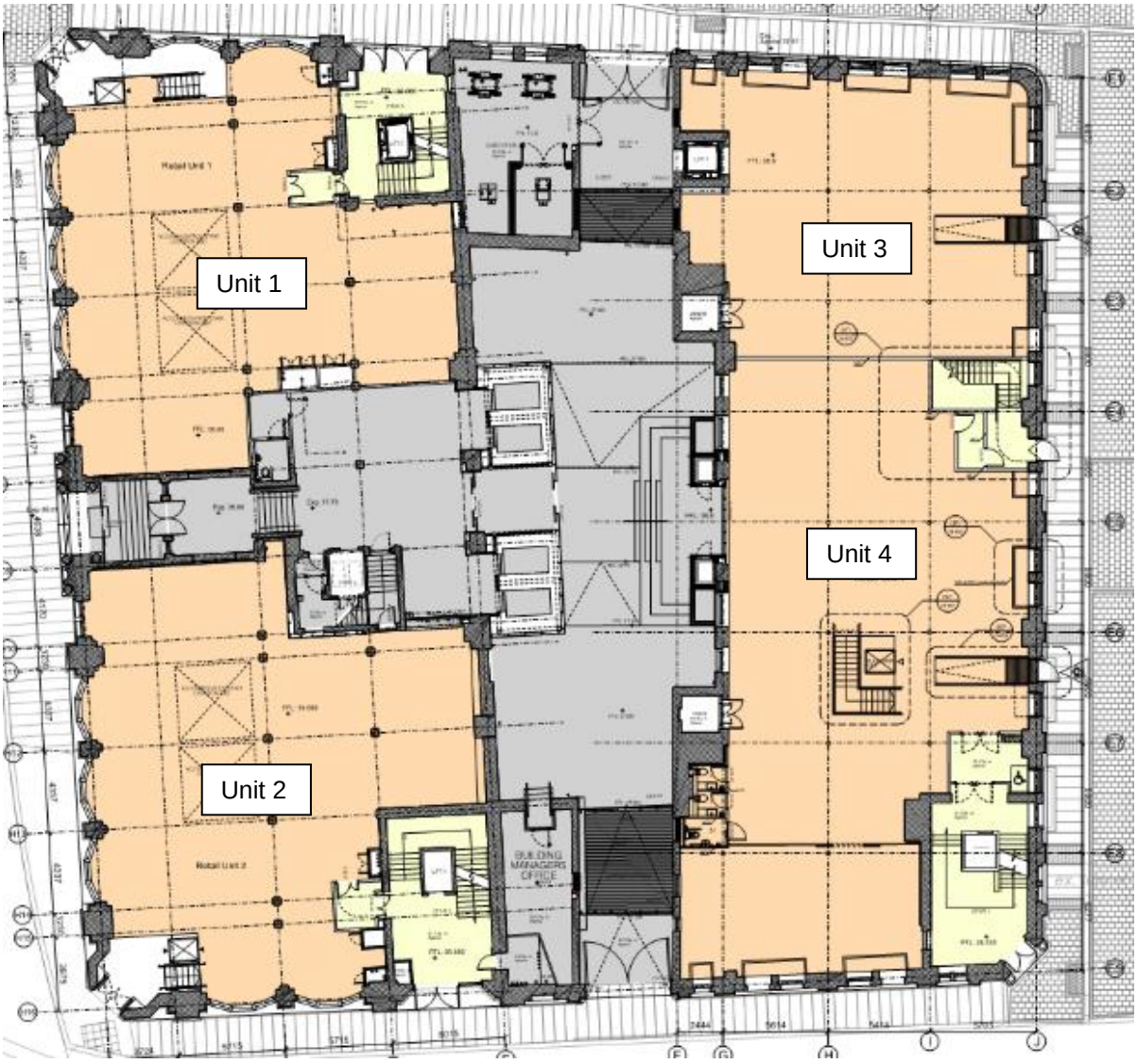


Figure 1: Ground Floor Layout

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Aim of Report

This report describes the fire strategy for the retail units. It is intended for submission to Building Control and the Fire Service.

The unit's fire strategy is based on the guidance in the Approved Document B.

This report addresses life safety not property protection.

ACTIVE FIRE SAFETY SYSTEMS

Sprinklers

Sprinklers are not required in any of the retail units and are not proposed.

Automatic Fire Alarm and Detection

The units will be provided with automatic fire alarm and detection to at least an L2 standard. The retail alarm system will be connected to the landlord's system.

MEANS OF ESCAPE

Evacuation

The basebuild fire strategy is based on a whole building evacuation (office levels and retail), due to the atrium connection. This evacuation strategy will be maintained.

Occupancy

The units have been assessed for both retail use and restaurant use. The calculated occupancy for each is summarised in the following tables. Retail units have been assessed at 2m^2 person. Restaurant use has been assessed at 1.35m^2/person (this assumes the unit will be 70% seating at 1m^2/person and 30% kitchen/back-of-house at 7m^2/person).

Unit	Ground	Lower Ground	Basement
1	176	N/A	230
2	176	N/A	230
3	132	N/A	N/A
4	230	358	N/A

Table 1: Calculated Occupancies – Retail Use

Unit	Ground	Lower Ground	Basement
1	260	N/A	340
2	260	N/A	340
3	195	N/A	N/A
4	340	530	N/A

Table 2: Calculated Occupancies – Restaurant Use

Storey Exits

Unit 1 and 2

At ground floor both Units 1 and 2 have exits via open stairs onto Corporation Street and into the landlord stairs to the rear. Each of these exits will be at least 1050mm wide this will provide capacity for 220 occupants at the ground floor. This is sufficient to support retail use. However, should the unit be used as a café/restaurant there will be a shortfall in the calculated exit capacity. In this case a management system will be implemented to ensure the occupancy does not exceed 220 at the ground floor of each unit.

At basement level the units have two storey exits with access to the same rear stairs and also into corridors leading across the building to alternative stairs, as shown in Figure 2. These exits will be at least 1050mm wide to provide capacity for 220 occupants at the basement level. There will be a shortfall in calculated escape capacity at these levels for both retail and restaurant use. A management plan will be implemented to limit to occupancy at this level to no more than 220 or alternatively wider escape routes will be provided.

Alternatively, for retail use is for sales area to be max 440m², so that calculated occupancy is only 220.

Both units will also have an open stair between the basement and lower ground. This route has not been considered as an escape route.

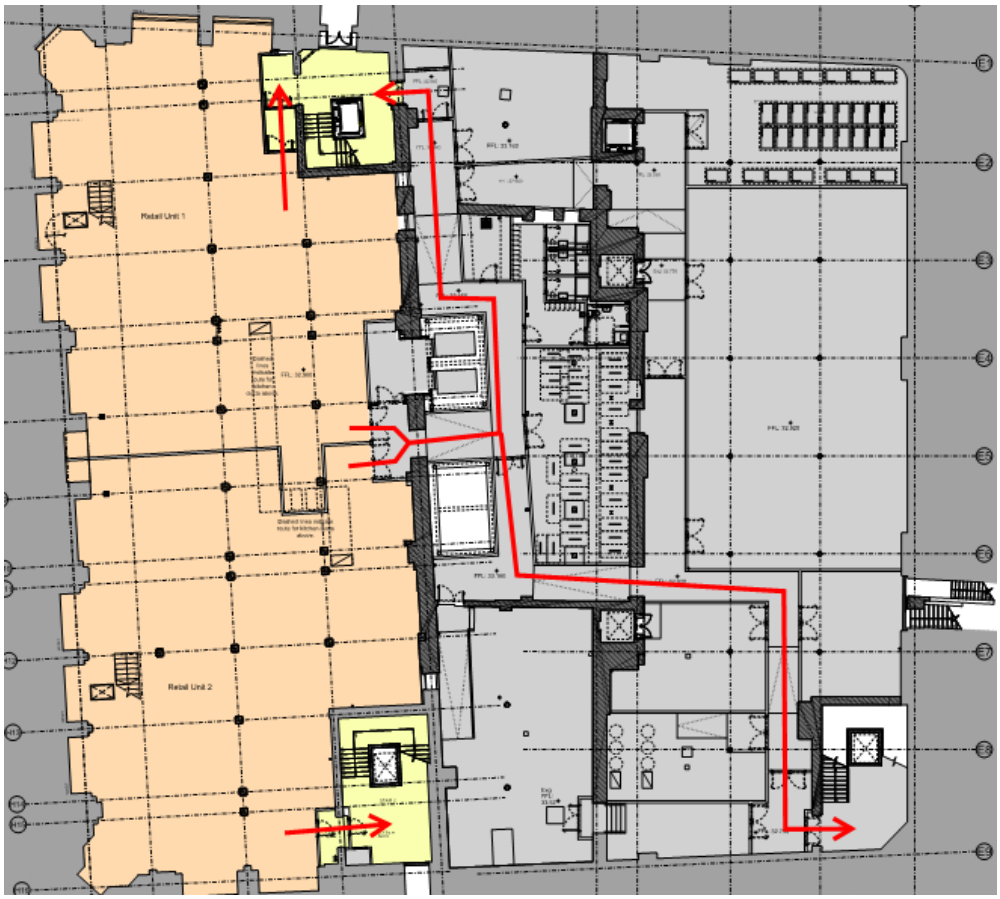


Figure 2: Unit 1 and 2 Basement Escape Routes

Unit 3

Unit 3 will have a single exit onto the street. If the unit is used for retail use, the unit's exit will be at least 750mm wide and the unit will be limited to 60 occupants. However, based on assessing the unit as a small premises, there may be an argument to support up to 100 occupants, similar to the restaurant unit discussed below.

However, if the unit is used as a café or restaurant, the unit will be treated like a small premises, on the basis that the unit is a single storey, single occupancy, and has a floor area less than 280m². In this case, the following will apply:

- Any kitchen or cooking equipment will be located at the far end of the unit, away from the exit.
- The exit will be at least 850mm wide.
- The unit will support up to 100 occupants.

In either case the calculated escape capacity will be less than the calculated occupancy based on floor area. A management strategy will be implemented to sure the unit calculated escape capacity is not exceeded.

Unit 4

Unit 4 will have two independent exits onto the street at ground floor and an additional exit into the landlord's stair. These exits will be at least 850mm wide, providing an exit capacity for 220 occupants at ground level. At lower ground there will be an exit into an independent stair and another into the landlord's stair. These exits will be at least 850mm wide and this will provide exit capacity for 110 occupants from the lower ground level.

If larger occupancies are proposed at the lower ground level, the exits will be at least 1050mm wide, increasing the exit capacity to 220 occupants from the lower ground level.

In either case the calculated escape capacity will be less than the calculated occupancy based on floor area. A management strategy will be implemented to sure the unit calculated escape capacity is not exceeded.

Travel Distances

Travel distances will generally be within recommended the limits of 18m in a single direction and 45m where there is more than one direction of escape for each unit, measured after fitout.

Unit 3 currently has travel distances up to 21m in a single direction. Given the small unit size, and treating the unit as a small premise, travel distances can be up to 27m in a single direction in this unit.

Stairs

Unit 1 and 2

There are two landlord escape stairs from Unit 1 and three from Unit 2, as shown in Figure 2. Each stair is at least 1.1m wide and will support at least 220 occupants at the basement level.

Both unit 1 and 2 also have an open stair between ground and basement. This stair has not been considered for escape from these units.

Unit 3

Unit 3 will not have stairs.

Unit 4

The unit will have two enclosed stairs serving the lower ground level – Hanover Building Stair 1 and a unit stair, as shown in Figure 3. Stair 1 is 1.5m wide. The unit stair will be at least 1.1m wide. This will support up to 220 occupants at the lower ground level, though this may be restricted by the storey exit capacity as described above.

There is also an open stair between ground and lower ground. This stair has not been considered for escape from this unit.

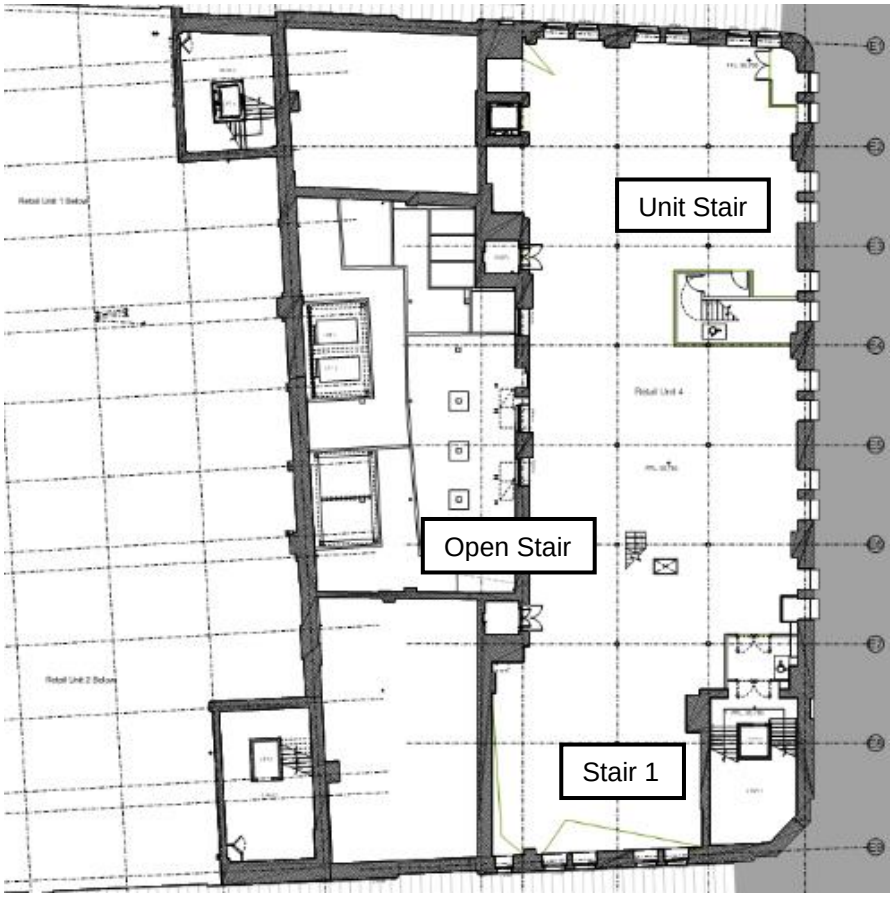


Figure 3: Stairs

Disabled Occupants

Where occupants need to use stairs as part of the escape route, a disabled refuge will be provided in a protected space (stair enclosure or stair lobby).

Refuges will be at least 900mm by 1400mm. They will be provided with an emergency two-way communication system and will be located so as not to reduce the required escape width.

Unit 1, 2 and 4 will each have an open stair, these stairs have not been considered as escape routes and therefore a disabled refuge are not required for these stairs.

Emergency Lighting

Emergency Lighting will be provided in line with the recommendation of the Approved Document B.

Escape Signage

Escape Signage will be provided in line with the recommendation of the Approved Document B.

FIREFIGHTING

Access

There is good fire vehicle access to the building, which is surrounded by roads on all four sides.

There is no requirement for additional firefighting facilities.

Basement Smoke Venting

The lower ground and basement levels have windows directly to outside. On this basis, the lower ground and basement levels do not require a dedicated basement smoke venting system.

These windows and existing vent area will be maintained to support the basement smoke venting.

STRUCTURE AND COMPARTMENTATION

Structure

The building's fire strategy is based on the structure achieving 60 minutes fire resistance. Any new structure or changes to the existing structure will ensure that this fire resistance is maintained.

Compartmentation

The retail units will be enclosed in fire resisting construction achieving at least 60 minutes fire resistance.

Each unit will be lobbied from the landlord stairs. Lobbies will achieve 30 minutes fire resistance.

The floors between the basement and ground levels should be compartment floors to meet the recommendations of current Building Regulations guidance, however there will be open stairs between ground and basement/ lower ground levels in three of the units. This is reasonable based on:

- Each unit will form its own 60 minute fire resisting compartment, reducing the extent of fire spread and forming effective floor-to-floor compartmentation between the units and the rest of the building. Although there will be an opening at ground floor, the basement levels will therefore be fire separated from the upper levels of the building;
- The concern with basements is the risk of smoke and heat building up with no route to vent to outside. This will not be a concern in these units, where smoke and heat will be able to pass up through the open stair and to outside, but be prevented from affecting upper levels by the fire compartmentation provided;
- The basement/lower ground levels have windows to outside and are therefore comparable to a ground level. The windows will also allow smoke venting and therefore the heat and smoke build up will be reduced compared to a typical enclosed basement level.

Lift

Lift 7 will serve Unit 4 at the lower ground level and Unit 3 at ground level, therefore connecting two tenants. The lift will not be accessed via a protected lobby at either level. This is reasonable as the building will fully evacuate for a fire in either unit.

Wall and Ceiling Linings

Wall and ceiling linings should meet the following recommendations:

Area	National Class	European Class
Small Room, no larger than 30m^2	3	D-s3, d2
Other Rooms	1	C-s3, d2
Circulation Spaces	0	B-s3, d2

Table 3: Wall and Ceiling Linings Classifications

EXTERNAL ELEVATIONS

Unprotected Areas

There are changes proposed to the external elevations of the retail units. Given the change to retail use, it should be ensured that the amount of unprotected areas on the external elevations is within the recommended limits.

The amount of unprotected area permitted on each elevation will therefore be limited in line with the enclosing rectangle method using BR187: *External Fire Spread Building Separation and Boundary Distance.* The calculations for each elevation are summarised in Table 4.

Unit	Elevation	Boundary Distance (m)	Compartment		Permitted Unprotected areas		Actual Amount of Unprotected Area
			With (m)	Height (m)	(%)	(m^2)	(m^2)
1	North	4.9	16	6.5	35	37	35
	West	8.3	24	6.5	55	86	64
2	West	>15	24	6.5	100	216	N/A
	South	6.5	16.5	6.4	51	54	36
3	North	4.0	19.5	3.9	39	29	25
	East	5.4	15.5	3.9	45	27	18
4	North	4.0	19.5	1.5	97	28	9
	East	5.4	39	4.5	40	71	43
	South	6.5	13.0	5.5	69	50	23

Table 4: Permitted Unprotected Areas

The boundary distances were measured to:

- North elevation – centre of Hanover Street
- East elevation – centre of Federation Street
- South elevation – centre of Balloon Street
- West elevation – centre of Corporation Street

The table above shows that for each of the elevations the amount of unprotected area is within the recommended limits.

External Wall Build-Up

Where there are changes made to the external walls, the materials used will be non-combustible or limited combustibility.