



Report

Project	Swallowfield Way, Hayes
Report Title	Planning Fire Statement
Our Ref	HBH256/R1 Issue 6

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Report No. HBH256/R1
Issue No. Issue 6
Issue Date. 27/03/2025

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Approved	RS	RS	RS	RS	RS	RS

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1.0 INTRODUCTION

1.1 Site Location and Description

The Site is located at Ainscough Crane Hire Site, 84 Swallowfield Way, Hayes, in the London borough of Hillingdon (UB3 1DQ).

The proposed development consists of the demolition of existing structures and redevelopment for Use Classes E(G)(iii), B2 and B8 (applied flexibly) including hard and soft landscaping, servicing and associated works.

This Fire Statement has been prepared by Jensen Hughes on behalf of Wrenbridge (FRELD Hayes) LLP ('the Applicant') in support of an application for full planning permission for the construction of a new warehouse facility. This facility will consist of four adjacent warehouses measuring 14.4m in mean roof height. The warehouses will contain first floor mezzanines and offices along with a ground floor reception located at the front of each warehouse unit as shown in the figure below. Plant decks will be provided above the first floor offices.

Planning permission for the scheme was granted on the 10th of April 2024 by the Council of the London Borough of Hillingdon subject to planning conditions.

This Fire Statement has been prepared to discharge Condition 11, Part A and B of decision notice ref: 63099/APP/2023/1608. Condition 11 Part A states:

- a) Prior to any above ground works for the development hereby approved (excluding demolition), a Fire Statement shall be submitted to, and approved in writing by, the Local Planning Authority. The statement shall detail how the development will function in terms of:
 - i. The building's construction: methods, products and materials used, including manufacturers' details,
 - ii. The means of escape for all building users: suitably designed stair cores, escape for building users who are disabled or require level access, and associated evacuation strategy approach,
 - iii. Features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans,
 - iv. Access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and positioning of equipment, firefighting lifts, stairs and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these,
 - v. How provision will be made within the curtilage of the site to enable fire appliances to gain access to the building,
 - vi. Ensuring that any potential future modifications to the building will take into account and not compromise the base build fire safety/protection measures.

Condition 11 Part B states:

- b) Prior to occupation of the development hereby approved, the final comprehensive Fire Statement shall be submitted to and approved in writing by the Local Planning Authority. This should be accompanied by the Building Control Decision Notice or equivalent. Thereafter the development shall be carried out and maintained in full accordance with the approved details.

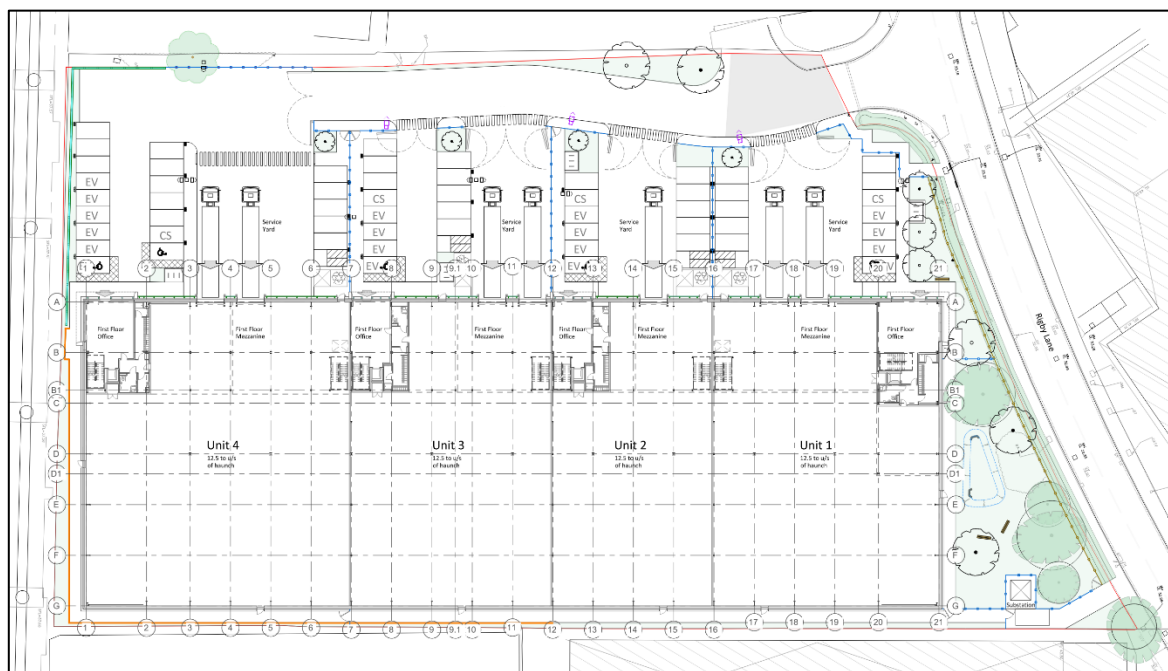


Figure 1. Proposed Warehouse Units

1.2 Aim of Fire Statement

This Fire Safety Statement report describes the main fire safety features, fire fighter access facilities and fire strategy principles in accordance with Policy D12(B) of the London Plan. It is intended to record the final fire strategy design of the building as part of Planning Condition 11 Part B noted above.

This statement has been produced by Jensen Hughes as an independent third party.

This report describes the fire strategy for Swallowfield Way, Hayes and only addresses life safety not property protection.

This report is not intended for Building Control or as part of the Building Regulations submission.

1.3 Relevant Guidance

The fire strategy for the building has been prepared using guidance in Approved Document B Volume 2 2019. Where appropriate, fire engineered solutions have been developed to support deviation from code guidance.

The works undertaken as part of the scope of this project will comply with the requirements of the Building Regulations relevant to fire safety.

1.4 London Plan

This fire statement has been developed to address compliance with D12(A1 to A6), D12(B) and D5 for dignified egress.

As required by the London Plan, Chapter 3 Design, the following will be achieved.

London Plan D12 Fire Safety - A

In the interests of fire safety and to ensure the safety of all building users, all development proposals must achieve the highest standards of fire safety and ensure that they:

- 1) *identify suitably positioned unobstructed outside space:* - See Section 7.0
 - a) *for fire appliances to be positioned on.*
 - b) *appropriate for use as an evacuation assembly point.*

- 2) *are designed to incorporate appropriate features which reduce the risk to life and the risk of serious injury in the event of a fire; including appropriate fire alarm systems and passive and active fire safety measures. - See Sections 5.0 and 6.0.*
- 3) *are constructed in an appropriate way to minimise the risk of fire spread. - See Sections 6.0 and 8.0.*
- 4) *provide suitable and convenient means of escape, and associated evacuation strategy for all building users. - See Section 4.0*
- 5) *develop a robust strategy for evacuation which can be periodically updated and published, and which all building users can have confidence in. - See Section 4.0*
- 6) *provide suitable access and equipment for firefighting which is appropriate for the size and use of the development. - See Section 7.0*

London Plan D12 Fire Safety - B

All major development proposals should be submitted with a Fire Statement, which is an independent fire strategy, produced by a third party, suitably qualified assessor.

The statement should detail how the development proposal will function in terms of:

- 1) *the building's construction: methods, products and materials used, including manufacturers' details – See Section 3.0*
- 2) *the means of escape for all building users: suitably designed stair cores, escape for building users who are disabled or require level access, and associated evacuation strategy approach – See Section 4.0*
- 3) *features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans – See Sections 5.0, 6.0 and 11.0*
- 4) *access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and positioning of equipment, firefighting lifts, stairs and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these – See Sections 5.0, 7.0 and 11.0*
- 5) *how provision will be made within the curtilage of the site to enable fire appliances to gain access to the building – See Section 7.0*
- 6) *ensuring that any potential future modifications to the building will take into account and not compromise the base build fire safety/protection measures. – See Section 9.0 and 10.0*

Policy D5 Inclusive design

- A. *Boroughs, in preparing their Development Plans, should support the creation of inclusive neighbourhoods by embedding inclusive design, and collaborating with local communities in the development of planning policies that affect them.*
- B. *Development proposal should achieve the highest standards of accessible and inclusive design. They should:*
 - 1) *be designed taking into account London's diverse population*
 - 2) *provide high quality people focused spaces that are designed to facilitate social interaction and inclusion*
 - 3) *be convenient and welcoming with no disabling barriers, providing independent access without additional undue effort, separation or special treatment*
 - 4) *be able to be entered, used and exited safely, easily and with dignity for all*
 - 5) *be designed to incorporate safe and dignified emergency evacuation for all building users. In all developments where lifts are installed, as a minimum at least one lift per core (or more subject to capacity assessments) should be a suitably sized fire evacuation lift suitable to be used to evacuate people who require level access from the building. – See Section 4.0*
- C. *Design and Access Statements, submitted as part of development proposals, should include an inclusive design statement.*

1.5 Declaration

Provided that the design complies with the fire safety strategy and provisions mentioned in this statement, the fire safety of the proposed development and the fire safety information should satisfy the requirements of

London Plan Policy D12A and the functional requirements of the Building Regulations. The draft Fire Safety London Plan guidance (Feb 2022) was also considered when developing the fire strategy for these buildings.

Jensen Hughes (formerly JGA) were employed to advise the design team in developing the fire strategy for the development. Jensen Hughes have extensive experience in developing high rise residential buildings in the UK and the rest of the world.

The report has been approved by Ross Skellett, CEng, MEng (Hons) MIFireE.

Ross is a Director at Jensen Hughes with over 9 years of experience. Ross is working on a number of projects across the UK and has experience working on a number of international projects. These include new buildings and refurbishing or reconfiguring existing buildings. Ross has worked on a range of different buildings including shopping centres, residential, office, mixed use, leisure, educational and industrial. Ross is currently in interim CEng status with the IFE and awaiting the outcome of his CEng application.

As part of Jensen Hughes, Ross can draw from the experience of other fire engineers in the UK and around the world, which will ensure the quality and the robustness of the fire strategy developed for the project.

Report by: Antti Paavola, BEng

Checked by: William Barker, MEng, AIFireE

Approved by: Ross Skellett CEng, MEng (Hons), MIFireE

2.0 THE BUILDING'S CONSTRUCTION METHOD AND PRODUCTS AND MATERIALS USED

As required by the London Plan D12 B1, this section sets out the building's construction method and products and materials used as summarised below.

- Building frame: The main structure will be a propped steel portal frame while the first-floor offices and plant decks will be constructed as a simple steel frame with steel beams supporting an in-situ concrete floor slab on composite metal decking. Internal separating walls between the warehouse and offices will be constructed in full height, fully insulated, non-combustible composite panel systems.
- Façade: The facades are proposed as a twin-skin built-up wall system constructed from metallic coated steel external sheets. Curtain walls will be constructed from a polyester powder coated aluminium system.
- Roofs: Steel cladding panels in a twin-skin built-up trapezoidal profile.

Building materials will achieve the minimum standard for fire resistance as outlined within this statement for passive fire protection. All internal linings, external wall materials and roof coverings will achieve the minimum requirements of Building Regulation guidance documents, as discussed in Sections 5.0 and 7.0.

Building methodologies were designed with consideration to fire safety of the neighbouring building and adjacent areas.

3.0 MEANS OF ESCAPE

3.1 Evacuation Strategy

Each unit will operate on a simultaneous evacuation strategy. This means that upon activation of the fire detection and alarm system, all occupants in that building will start their evacuation. Unaffected units will not evacuate in the event of a fire elsewhere on the site.

3.2 Occupancy

The occupancy of each unit has been assessed in line with ADB recommendations as follows: -

- Warehouses: 30m² per person,
- Offices: 6m² per person.

Each reception has an assumed occupancy of two permanent members of staff, with transient occupants not included to avoid double counting.

The resulting occupancy for each building is summarised in the table below:

Unit Number	Use	Area	Occupancy
1	Warehouse Office Plant	1,692m ² 176m ² 141m ²	57
			32
			5
			Total: 94
2	Warehouse Office Plant	1103m ² 110m ² 84m ²	37
			21
			3
			Total: 61
3	Warehouse Office Plant	1,372m ² 149m ² 84m ²	46
			27
			3
			Total: 76
4	Warehouse Office Plant	1,867m ² 231m ² 118m ²	63
			41
			4
			Total: 109

Table 1: Occupancies

3.3 Travel Distances

3.3.1 Assessment Criteria

ADB limits the travel distances for different use areas as shown in the table below. Where the internal layout is not currently known, direct distances assessed based on two-thirds of the actual travel distance are used to provide a benchmark of the flexibility for fit out.

Area	Travel Distance Limits			
	Pre-Fit Out		After Fit Out	
	Single Direction	Multiple Direction	Single Direction	Multiple Direction
Warehouses (normal hazard)	16m	30m	25m	45m
Offices	12m	30m	18m	45m
Roof	40m	66m	60m	100m

Table 2. Allowed Travel Distances

ADB generally recommends that plant room single direction travel distances will be limited to 9m in the plant room itself and 18m overall. A single direction travel distance limit of 18m has been used within the plant rooms themselves though as discussed in Section 3.3.4

Warehouse travel distances are based on a normal hazard use, if a tenant were to use the warehouse for higher hazard uses such as manufacturing, processing or storage of hazardous goods, this would need to be reassessed or justified as part of the tenant's Building Regulations application.

3.3.2 Warehouses (Ground Floor Level)

Distributed exits will be provided at the front and rear of each of the units. These exits will be located so that travel distances are within the limits given in Table 2. The final fit out of the scheme should be designed to within the after fit out limits set out above.

Travel distances within the warehouse are within the pre-fit out limits and give good flexibility for fitout as shown below.

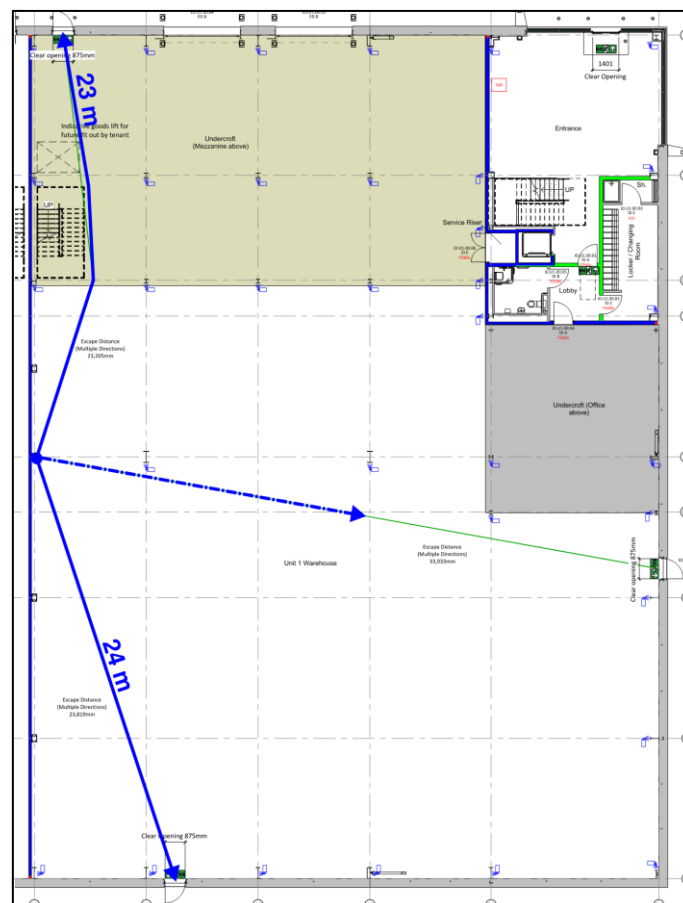


Figure 2. Unit 1 Ground Floor Travel Distances

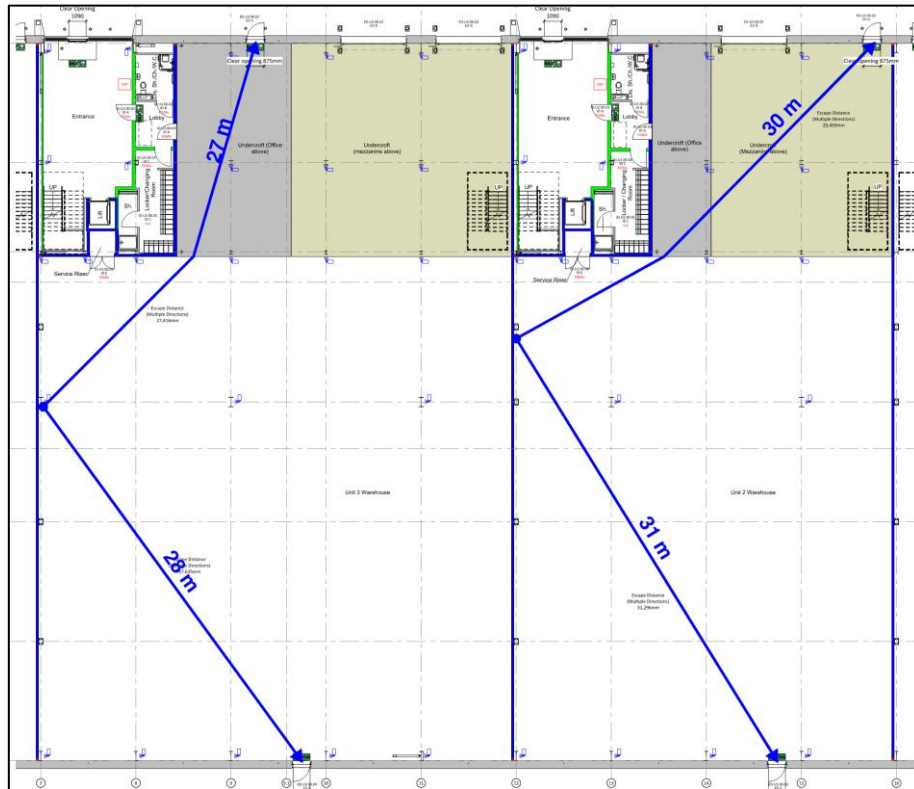


Figure 3. Units 3 (Left) and 2 (Right) Ground Floor Travel Distances

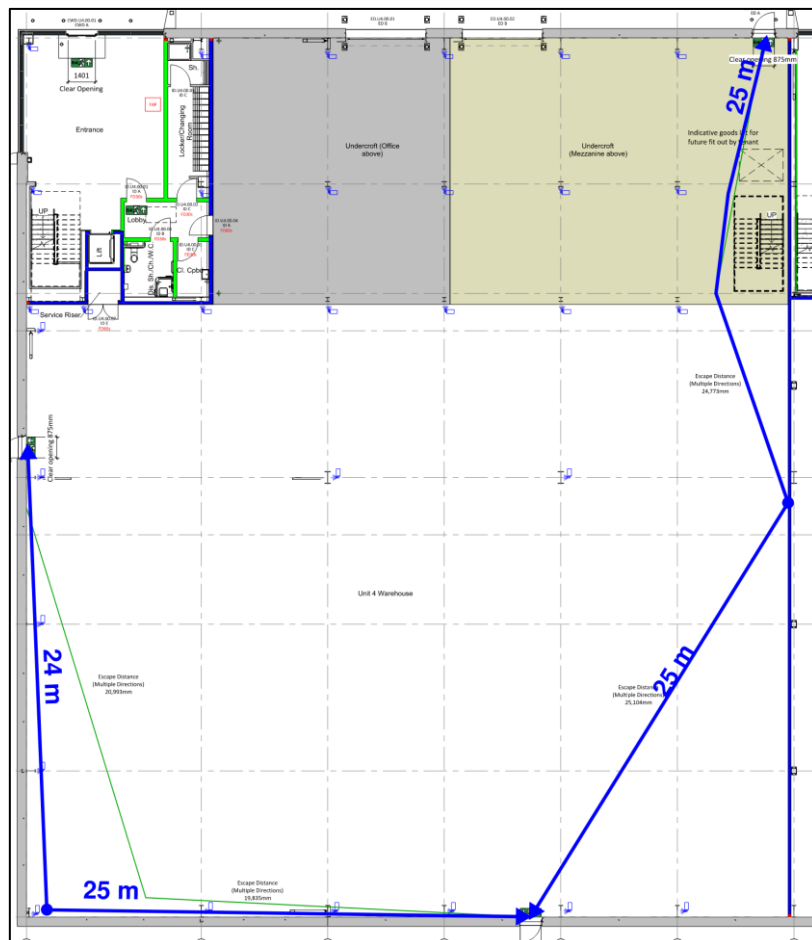


Figure 4. Unit 4 Ground Floor Travel Distances

3.3.3 Offices and Mezzanines (First Floor)

Storey exits will be provided from both the mezzanine and office sections within each unit. These exits will be located so that travel distances are within the limits given in Table 2.

Pre-fitout travel distances have been shown in the figures below for the first floor offices and mezzanines. The overall pre-fitout travel distances are slightly exceeded in units 1 and 4. The final fit out of the scheme will be designed to be within the allowed limits.

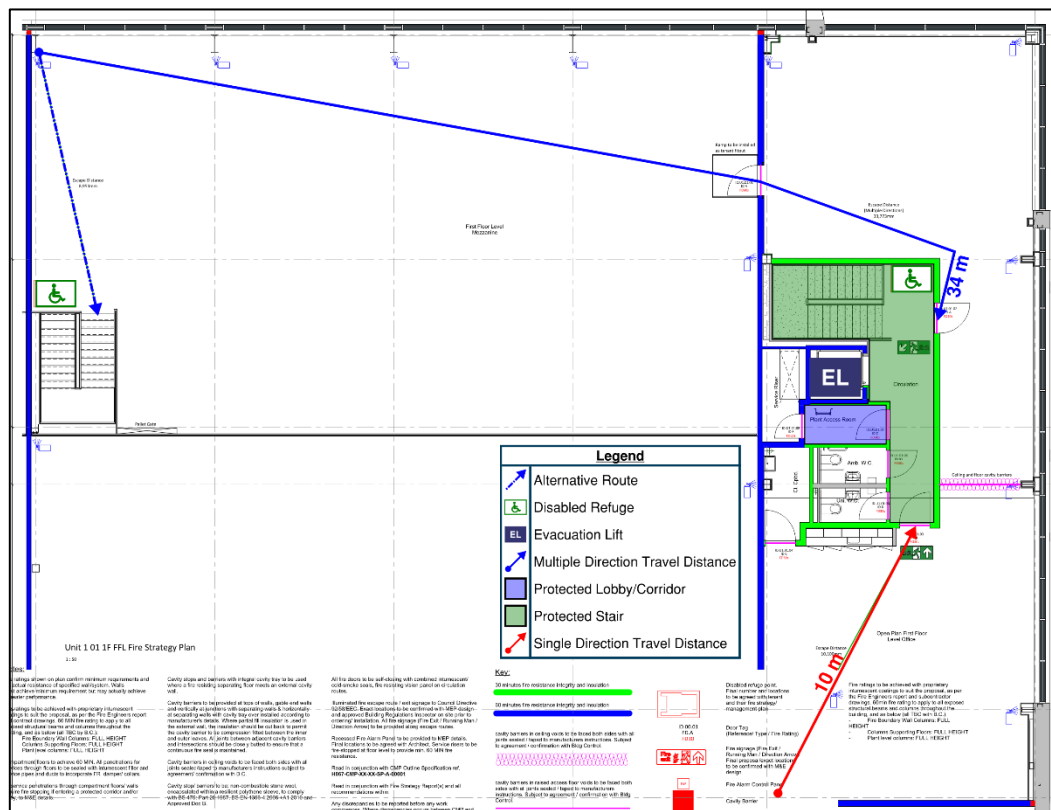


Figure 5. Unit 1 – First Floor Travel Distances

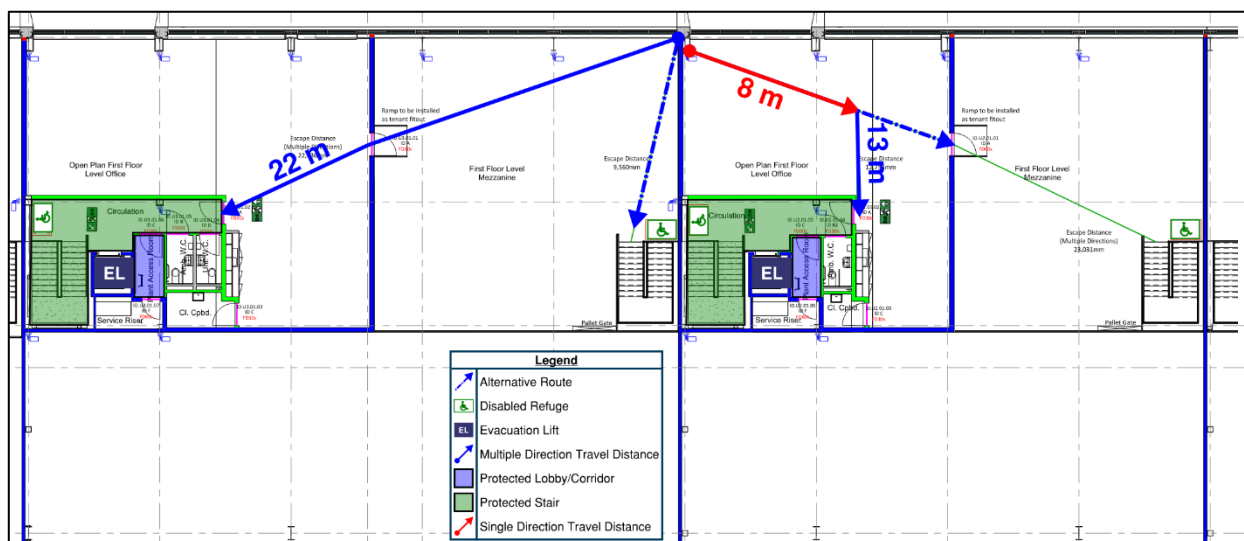


Figure 6. Unit 3 (Left) & Unit 2 (Right) - First Floor Travel Distances

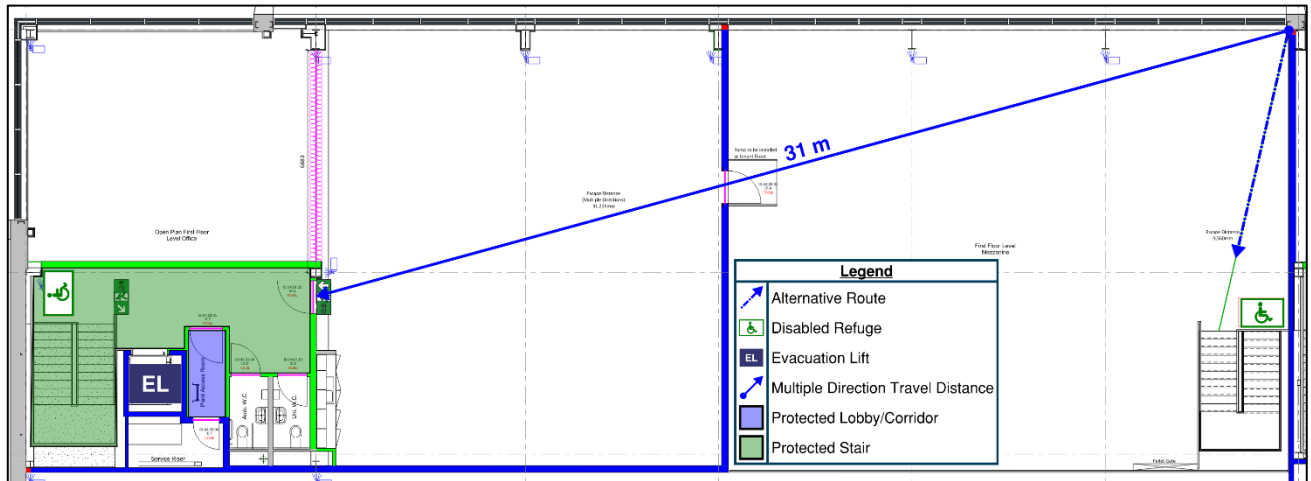


Figure 7. Unit 4 - First Floor Travel Distances

3.3.4 Plant Rooms

Travel distances in the plant rooms extend to 13.4m pre-fitout in Unit 1 and 10m in Unit 4. This exceeds the ADB recommended single direction limit of 9m within the plant room. This is proposed on the basis that the plant room will only contain low risk plant equipment (i.e., low voltage equipment, AHUs, etc) and therefore a travel distance increase to 18m would be appropriate given the following:

- The room's contents will be low risk plant which poses a reduced risk, comparable to the storage within the larger warehouse space where travel distances can extend up to 25m in a single direction.
- The room will be infrequently accessed for maintenance purposes only and the occupants will be trained members of staff who would be familiar with the escape routes from the space.
- The room is small and should have a relatively open layout after fit out with automatic fire detection. A plant room occupant would therefore be expected to notice a fire quickly, reducing pre-movement times.

Beacons will be provided to the plant room to compensate for any potential noise due to the machinery which could mask the fire alarm sounders.

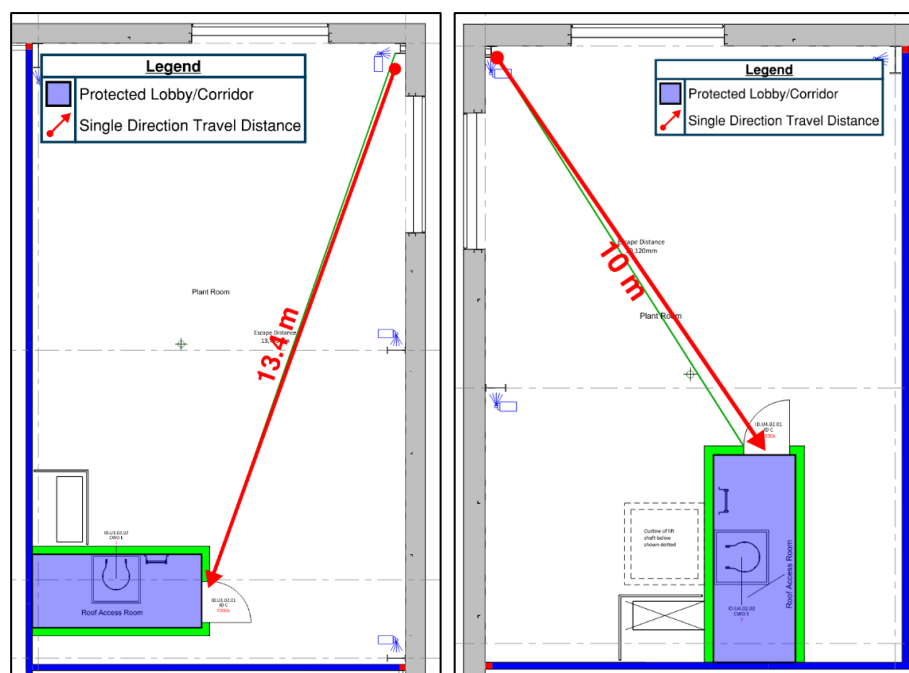


Figure 8. Plant Room Single Direction Travel Distances (left: Unit 1, right: Unit 4)

3.3.5 Roof Escape

The roofs of each warehouse will be provided with a single escape route via an access hatch. Single direction travel distances on the roof extend to 60m, in line with the limits given in Table 2 as shown in the figure below.

Any flat section of the roof / plant deck or any route within these spaces where a mansafe system is not available will be clearly defined and guarded to protect from falling.

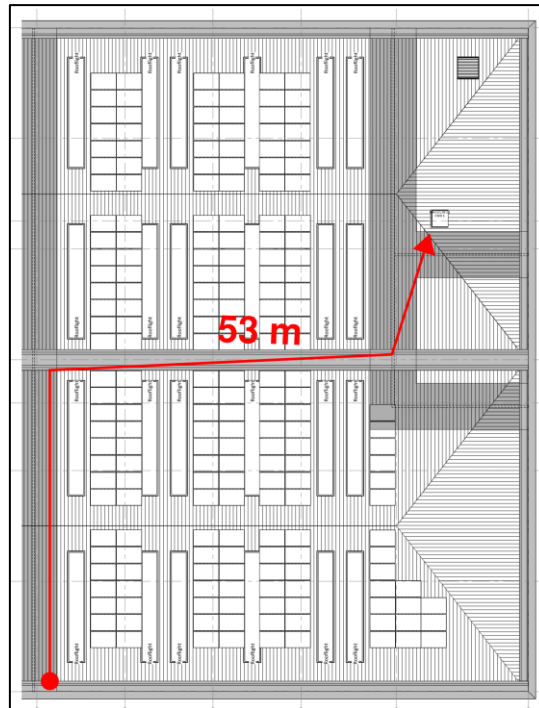


Figure 9. Unit 1 Roof Escape and Travel Distances



Figure 10. Unit 3 (Left) and Unit 2 (Right) Roof Escape and Travel Distances

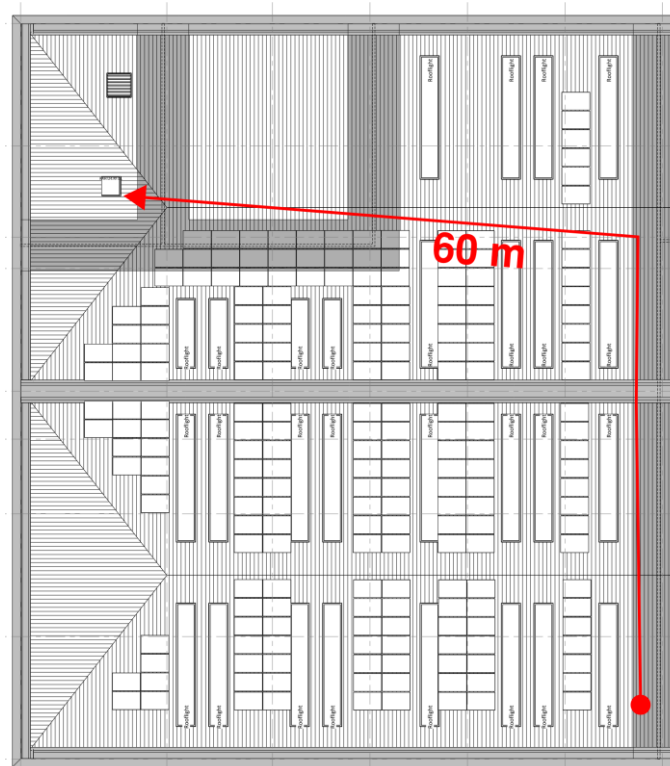


Figure 11. Unit 4 Roof Escape and Travel Distances

3.4 Stairs and Stair Capacity

Each first-floor office will be provided with a single protected internal stair measuring at least 1,000mm clear width.

The mezzanines will be provided with open accommodation stairs onto the ground floor warehouse space. These accommodation stairs will serve as an alternative means of escape from the mezzanine in the event that a fire blocks access to the protected stair located within the office and will measure at least 1,000mm clear width.

For each unit, after discounting one stair due to a fire either in the reception or the warehouse, the remaining stair will provide capacity for 150 persons. This is sufficient for the combined office and mezzanine occupancy in each warehouse.

The proposed stair arrangement is shown for Unit 4 below.

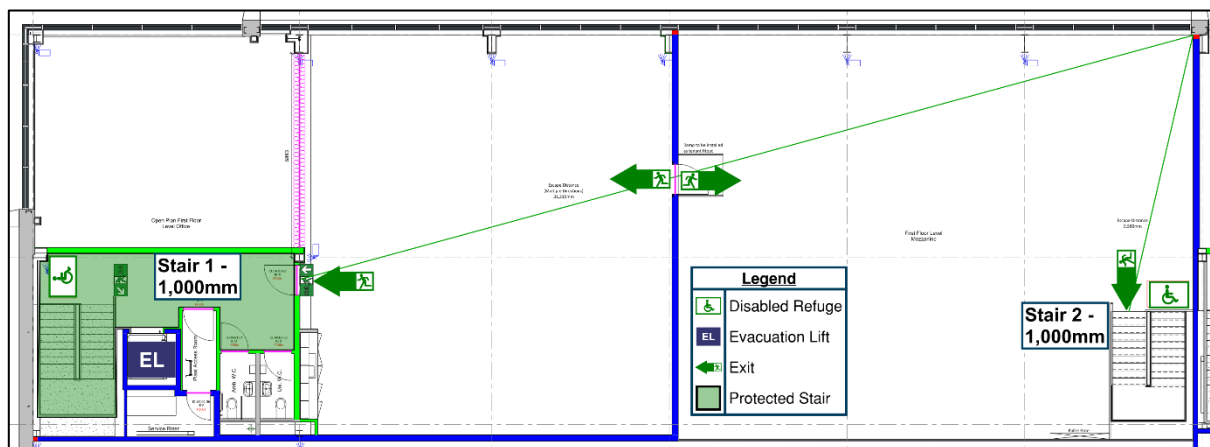


Figure 12. Typical Stair Configuration at First Floor (Unit 4)

3.4.1 Stair Final Exits via Reception

The protected stairs will exit via the ground floor reception for each unit. This is proposed on the basis that the reception will be limited to 10m² of fire load in line with ADB recommendations and that, in the event of a reception fire, the offices will also have an alternative escape route via the mezzanine accommodation stair.

3.4.2 Plant Deck and Roof Ladders

The roofs and plant decks for each unit will be provided with a single escape route via a cat ladder enclosed in at least 30 minutes fire rated construction with FD30S doors which opens into the protected office stair via a protected lobby. This arrangement is in line with the building regulations guidance.

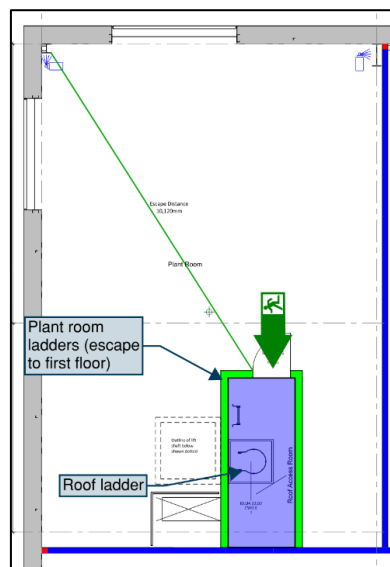


Figure 13. Escape from Plant Deck Levels (Unit 4)

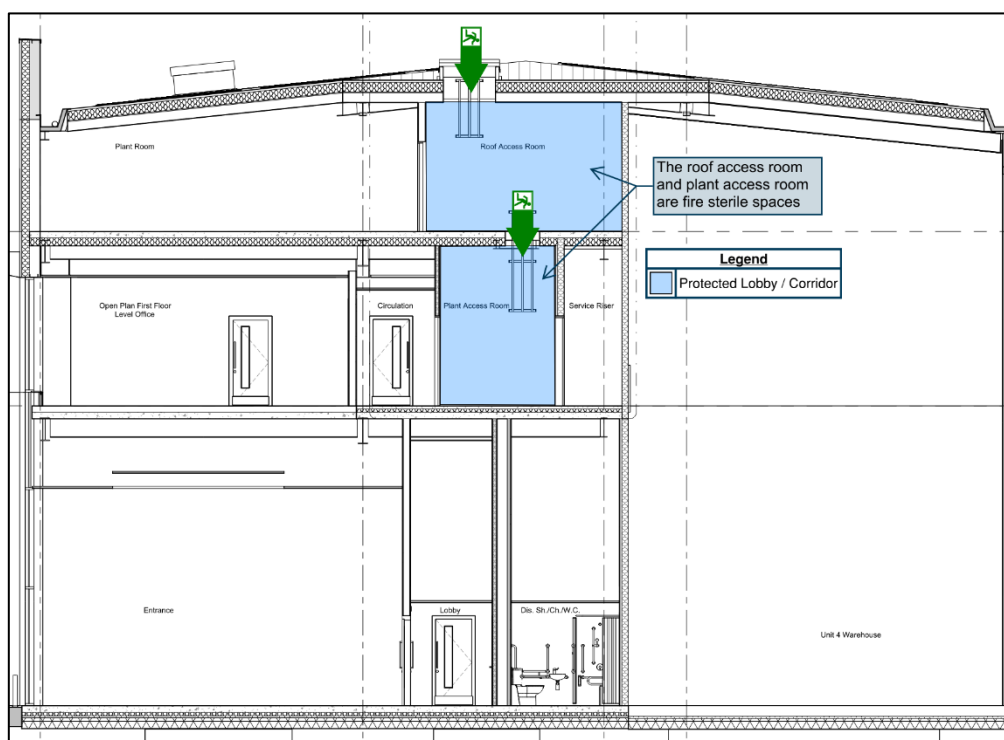


Figure 14. Escape from Roof and Plant Deck Levels (Unit 4)

3.5 Storey Exits and Escape Capacity

The offices in each unit will be provided with two exits, one into the protected stair and one onto the mezzanine as shown in Figure 12. These exits will measure at least 850mm clear width and open in the direction of escape; this will provide capacity for 110 persons for each office after discounting the largest exit. Therefore, the exit capacity is sufficient for the occupancy calculated in Section 3.2.

The reception exits to outside in each unit will measure at least 1m clear width, in line with the minimum stair width, and will provide sufficient capacity to support the office stair and low reception occupancy.

The reception entrance and stair exit will be a set of sliding doors in each unit. These will be designed to either fail open on loss of power or fire detection to break open from any position throughout their operating parameters (BS 7273-4).

The warehouses will be provided with distributed exits measuring at least 850mm clear width. These exits will provide sufficient capacity for the warehouses' occupancies.

3.6 Occupants of Reduced Mobility

To meet the requirements of Policy D5 of the London Plan, an evacuation lift will be provided within the protected stair core of each warehouse unit's office designed in accordance with BS EN 81-70. This will allow the lift to be used as part of the evacuation strategy prior to the arrival of the fire and rescue service. The lift will be operated under the control of the fire safety manager or by someone trained and authorized in the use of the lift.

Disabled refuges will be provided in the protected stair and adjacent to the mezzanine accommodation stair in each unit and will be provided with Emergency Voice Communication Systems (EVC) in accordance with BS 5839-9. Disabled refuges will measure at least 1,400mm x 900mm in size and will not obstruct escape. Refuges are shown in Figure 12.

There is one step difference between offices and mezzanine at upper level. As part of tenant fitout, a ramp will be provided to allow step free access to an alternative escape route for mobility impaired occupants.

3.7 Inner Rooms

Each unit will contain a shower room accessed via a protected lobby into the locker rooms. This forms an inner-inner room arrangement.

This is proposed on the basis that the showers will be low occupancy and infrequently accessed. Additionally, single direction travel distances from the shower are low (up to 7.6m) and a choice of escape is available into two separate fire compartments: the reception or the warehouse. The warehouse fire alarms will be audible from within the shower to alert occupants of a fire.

The inner-inner room is shown in red and the inner room in yellow in the figure below.

3.8 External Escape Routes

Perimeter gates will be provided to the rear of Unit 1 and to the side of Unit 4. These gates will be provided with panic fastenings in accordance with BS EN 1125 to allow occupants escaping via the Unit 4 rear exits to travel in either direction. These are shown in the figure below.

The eastern elevations of the units will be fire rated as discussed in Section 7.2. This will protect occupant escape from Units 1-3 where escape is only available in a single direction within 1.8m of the elevations.

4.0 ACTIVE FIRE SAFETY SYSTEMS

4.1 Sprinklers

Sprinklers will not be provided within the scheme.

As the units will be below 20,000m² in size and have a height below 18m, sprinklers are not necessary to comply with ADB guidance.

4.2 Fire Detection and Alarm System

A minimum L3 automatic fire detection and alarm system will be provided to each unit in accordance with BS 5839-1. The unit fire alarm systems will be designed on a standalone basis and will not be interlinked or interface with each other.

Beacons and sounders will be provided within the plant decks and to the roofs to alert maintenance staff of a fire within the units. The plant room beacons will compensate for any potential noise due to machinery which could mask the fire alarm sounders.

4.3 Smoke Control

The warehouse units will not be provided with smoke control.

4.4 Emergency Lighting

Emergency lighting will be provided in accordance with BS 5266-1 to illuminate escape routes in the event of mains failure.

4.5 Escape Signage

Escape signage will be provided in accordance with current BS ISO 3864-1 and BS 5499-4.

4.6 Emergency Power Supply

Life safety systems will be provided with a secondary back-up power supply where necessary to meet British Standards.

4.7 Emergency Voice Communication System

Refuges will be provided with an emergency voice communication (EVC) system complying with BS 5839-9 and with connections to building management / reception of each unit.

5.0 PASSIVE FIRE SAFETY MEASURES

5.1 Structural Fire Resistance

The office and mezzanine floors in the units will be 7m above ground level.

The offices are considered an ancillary space as, in each unit, the office compartment has a total floor area greater than 280m² and they are separated from the warehouse by 60 minutes compartment walls. Elements of structure to the office will therefore achieve at least 60 minutes fire resistance.

In the warehouse spaces, elements of structure will be designed to 60 minutes fire resistance, with the mezzanine levels designed as raised storage decks in line with the below:

- The mezzanines will have a single tier and will be used for storage only,
- Occupants on the mezzanines will not be members of the public and are expected to be low given the use of the space,
- The floor is open above and below to the wider warehouse,
- The units are provided with automatic detection as discussed in Section 4.2,
- The mezzanine floors are not greater than 20m in length or width,
- The mezzanines are not greater than half the area of the warehouse space's floor.

The roof will contain plant such as PV panels. Structure supporting the roof will therefore achieve 60 minutes fire resistance.

The parts of the roof forming an escape route and any openings within 3m of the route will be fire protected from the underside of the roof by 30 minutes for integrity and insulation construction.

5.2 Compartmentation

Compartmentation will be as follows:

Element	Fire Resistance	Fire Door
Compartment walls and floors between offices/reception and the warehouse	1 hour	FD30S
Compartment walls and floors between plant and the warehouse	1 hour	N/A
Party walls between units	1 hour	N/A
Service risers	1 hour	FD30 ("S" rating if forming part of the enclosures of a protected stairway)
Protected stairs including evacuation lifts	30 minutes	FD30S, Lift Doors: FD30
Plant/roof access ladder space	30 minutes	FD30S
Protected lobbies	30 minutes	FD30S
Locker rooms	30 minutes	FD30S
Cleaner's cupboard, small storages	30 minutes	FD30S
Escape routes on roof	30 minutes (from underside)	N/A
Life-safety plant rooms	2 hour	FD120S

Table 3. Compartmentation Requirements

5.3 Cavity Barriers

Cavity barriers will be provided in concealed spaces including ceiling and floor voids in line with Section 9 of ADB.

Cavity barriers, tested from each side separately, will provide a minimum of both of the following: -

- 30 minutes' integrity (E 30)
- 15 minutes' insulation (I 15).

Provision of cavity barriers is described in the figure below: -

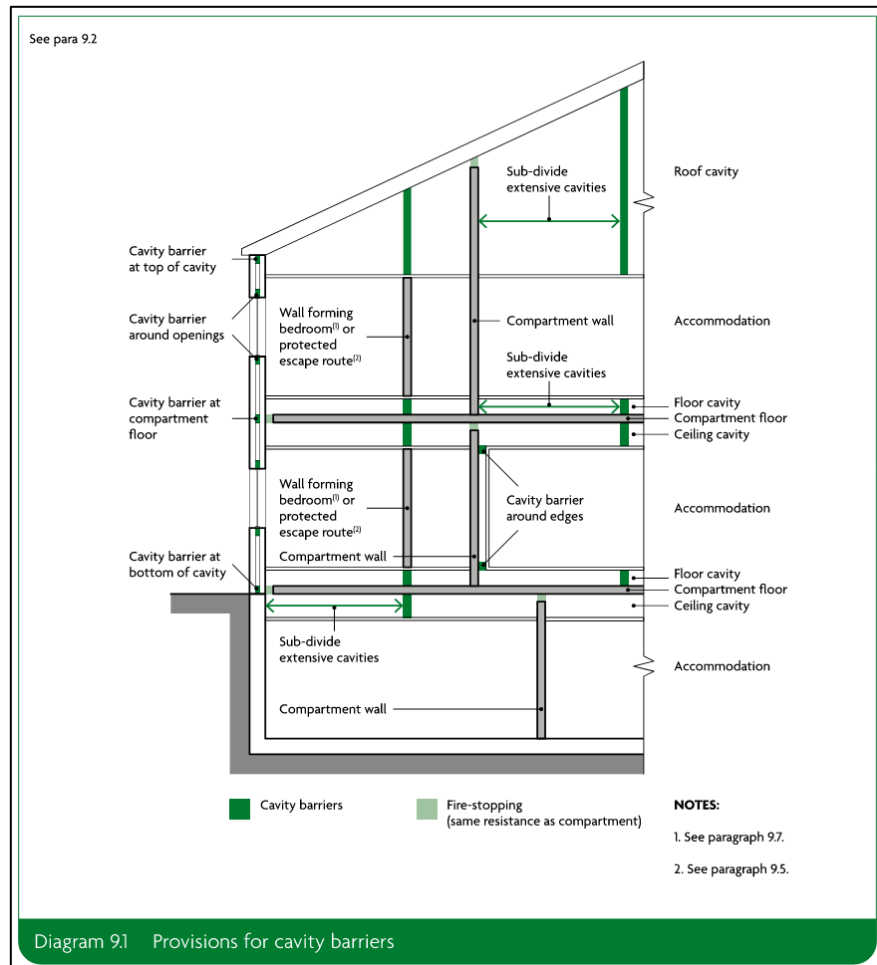


Figure 15. Provision for Cavity Barriers (ADB Volume 2 Diagram 9.1)

Maximum dimensions of cavities are given in the figure below: -

Table 9.1 Maximum dimensions of cavities in buildings other than dwellings (purpose groups 2 to 7)		
Location of cavity	Class of surface/product exposed in cavity (excluding the surface of any pipe, cable or conduit, or any insulation to any pipe)	Maximum dimension in any direction (m)
Between roof and a ceiling	Any	20
Any other cavity	Class C-s3, d2 or better	20
	Worse than Class C-s3, d2	10

Figure 16. Maximum Dimensions of Cavities (ADB Volume 2 Table 9.1)

5.4 Fire Stopping

Fire stopping materials will be provided in fire rated walls and floors in line with Section 10 of the Approved Document B Volume 2.

If air handling ducts pass through fire-separating elements, the load-bearing capacity, integrity and insulation of the elements will be maintained using one or more of the following four methods.

- Method 1 – thermally activated fire dampers (should not be used for extract ductwork serving kitchens)
- Method 2 – fire resisting enclosures.
- Method 3 – protection using fire resisting ductwork.
- Method 4 – automatically activated fire and smoke dampers triggered by smoke detectors (should not be used for extract ductwork serving kitchens)

Method 1 will not be used for extract ductwork passing through the enclosures of protected escape routes.

In addition to methods 2-3, an ES classified fire and smoke damper which is activated by a suitable fire detection system (method 4) may also be used for protected escape routes.

Smoke detectors will be sited so as to prevent the spread of smoke as early as practicable by activating the fire and smoke dampers. Smoke detectors and automatic release mechanisms used to activate fire dampers and/or fire and smoke dampers will conform to BS EN 54-7 and BS 5839-3 respectively.

5.5 Wall and Ceiling Surfaces

Wall and ceiling linings will be provided in line with the recommendations of the Section 6 of ADB as summarised by the table below:

Location	European Class (BS EN 13501-1)
Small room of area not exceeding 30m ²	D-s3, d2
Other Rooms	C-s3, d2
Circulation Spaces	B-s3, d2

Table 4: Wall and Ceiling Linings

6.0 ACCESS AND FACILITIES FOR THE FIRE SERVICE

6.1 Fire Service Access

6.1.1 Perimeter Access

Each unit will be accessed via the adjacent car park, accessed from Rigby Lane.

The total perimeter access available for each unit has been summarised in the table below.

Unit Number	Total Floor Area (All Floors)	Total Perimeter	Accessible Perimeter	Required Perimeter Access
1	2,226m ²	116m	34m (29%)	58m (50%)
2	1,480m ²	48m	24m (50%)	7.2m (15%)
3	1,833m ²	60m	30m (50%)	9m (15%)
4	2,424m ²	126m	40m (31%)	63m (50%)

Table 5: Fire Vehicle Perimeter Access

As shown in the table above, Units 2 and 3 have a total floor area below 2,000m² and therefore only require 15% perimeter access. This is achieved, with each unit achieving 50% perimeter access.

Units 1 and 4 both exceed 2,000m² total floor area and therefore ADB guidance states that they should achieve at least 50% perimeter access. However, the actual warehouse floorplates, including the mezzanines, to Units 1 and 4 measure 1,704m² and 1,880m² respectively. It is the offices in each unit which bring the total floor area above 2,000m².

It is therefore proposed to sub-divide Units 1 and 4 by fire resisting construction so the office and warehouse spaces form two separate fire compartments and to provide these units with 30% perimeter access on the following basis:

- The total floor area for each unit does not greatly exceed 2,000m²,
- The warehouse compartments in these units are each below 2,000m²,
- Warehouse units of this size would only require 15% perimeter access under ADB guidance. 30% perimeter access to the warehouse compartment, while the office compartment will be provided with 100% perimeter access,
- The offices could serve as a fire separated route for fire service access more deeply into the units in the event of a warehouse fire. This fire separated route is a benefit as compared to a compliant design where the offices and warehouses are separate buildings without any links where each space has the minimum 15% perimeter access.
- By sub-compartmenting the units via 1 hour fire rated construction, this will help contain a fire to a smaller area, improving firefighting conditions compared to a larger, uncomparted design.

Based on the above, it is viewed that the proposed fire service access provides a comparable standard of safety to a compliant arrangement and achieves the functional requirements of the Building Regulations.

Fire service access is shown in the figure below.

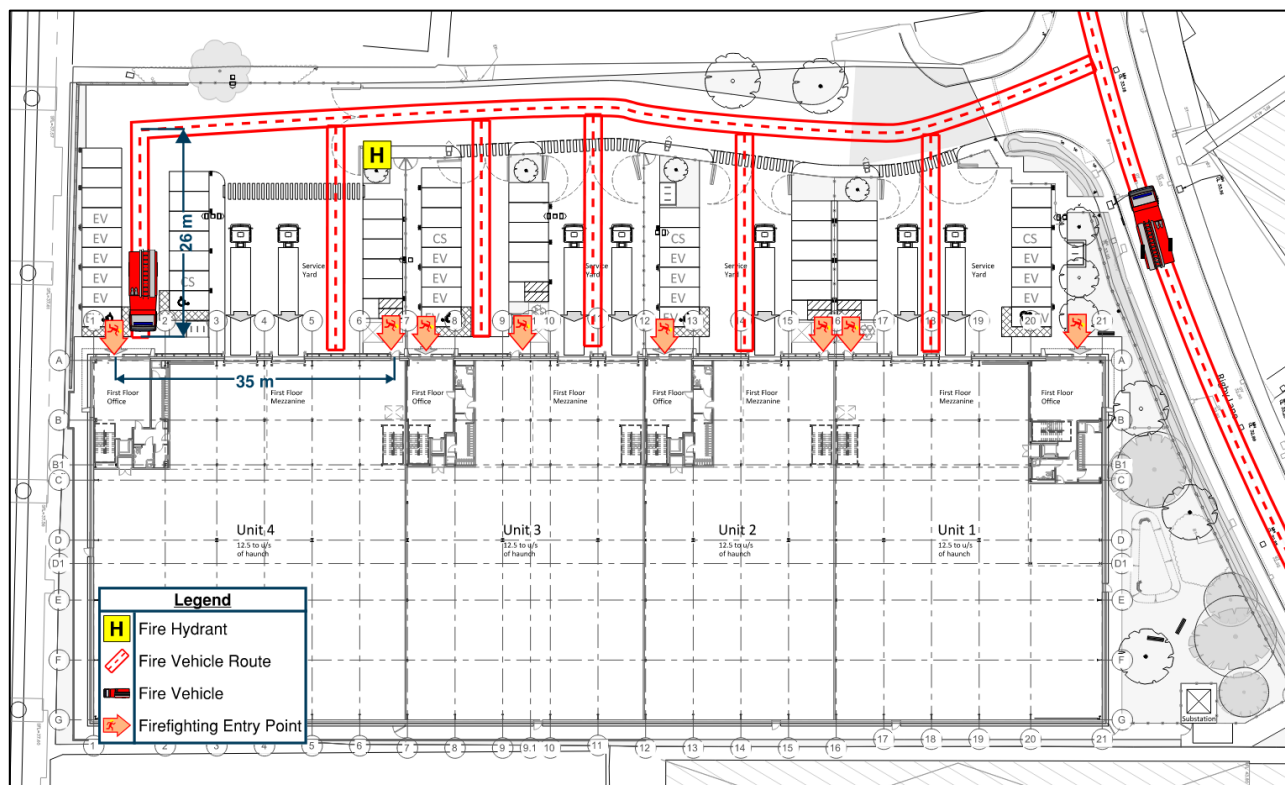


Figure 17. Fire Service Access

It is noted that the maximum distance between doors or between doors and the end of an accessible elevation for each unit is 35m as shown in the figure above. This is within the 60m limit recommended by ADB guidance.

6.1.2 Fire Vehicle Dead End Access

The site is accessed from Rigby Lane and the site itself is a dead end from the road. However, a tracking study was carried out which demonstrated that fire vehicles could carry out a manoeuvre to turn around via the lorry parking without needing to reverse over 20m as shown in the below figure.

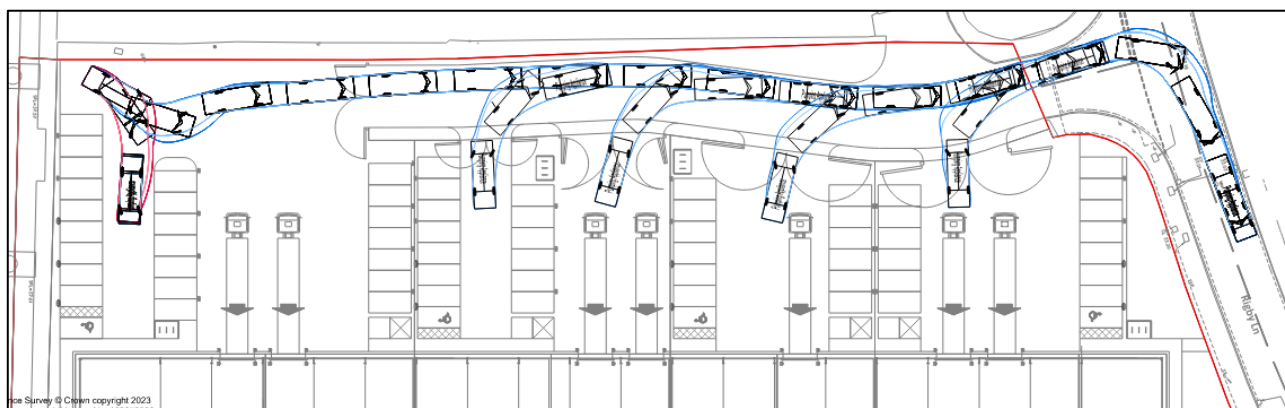


Figure 18: Fire Vehicle Access Tracking Study

The distance from a reversing point for each individual unit is over 20m, extending up to 26m as shown in Figure 17. However, this extension is considered reasonable given the size of the units, the limitations / constraints of the site and that the access shown above will provide the fire service more than the minimum 15% perimeter access recommended by Building Regulations guidance; circa 30-50% of available perimeter respectively. In addition, the fire service can also access each unit via either the parking bays or the loading areas which will give greater operational flexibility for the fire service. Therefore, the access shown is considered to meet the functional requirements of the building regulations.

6.1.3 Fire Service Road Requirements

Any new access roads and areas used for fire vehicle access will meet the following access road performance criteria for a high reach appliance (warehouses) and for a pump unit (Offices) in line with the table below.

	*Pump (P)	32m Turntable Ladder (TL)	64m Turntable Ladder (TL)	Fire Rescue Unit (FRU)	Special
Min width between kerbs (m)	3.7				
Min Width of gateway (m)	3.2				
Max. width considering equipment trays, any extending legs (m)	4.18	5.6 without spreader plates	6.4 with spreader plates	5.34	4.4
Min clearance height (m)	3.505	3.45	4.15	3.3	4.25
Appliance length(m)	8.13	10.3	12	9.2	9.9
Min sweep circle (turning circle between walls) (m)	17	19.5	23.5	18.6	24.5
Min turning circle between kerbs (m)	16	17.5	21.5	17	22
Gross Vehicle Weight (GVW) (KG)	16000	20500	32000	14500	26000
Capacity, Gross Laden Weight (GLW) (KG)	14838	17284	30173	12900	24600

* NB: Pump (P) appliance includes new Zero Emissions Pumping Appliance (ZEPA) requirements

Table 1- Typical vehicle access route specification

Figure 19. Fire Vehicle Access Route Specification (GN_29 rev 15)

6.2 Fire Hydrants

A new hydrant will be located within 90m of the unit entry points. The location of this fire hydrant is shown in Figure 17 above.

7.0 ELEVATIONS

7.1 External Wall Build-up

The buildings are not relevant buildings and are therefore not subject to Regulation 7(2). As the buildings are below 18m in height and over 1m from the relevant boundaries, there are no specific Building Regulations restrictions on the materials used in the external wall build-up.

However, it is necessary to meet the functional requirements of the Building Regulations where the proposed design of the external walls should adequately resist the spread of fire over the walls and therefore the external wall cladding has generally been constructed from Class A1 materials.

7.2 External Fire Spread

To meet Building Regulations guidance, it is necessary to restrict the potential for fire to spread to an adjacent site.

Guidance allows for the boundary distance to be taken to either the site boundary or to a notional boundary such as the midpoint of a road or river on the basis that future development is unlikely, this allows the southern elevation to be taken from the centre of the train tracks. The relevant boundary distances have been shown on the figure below.

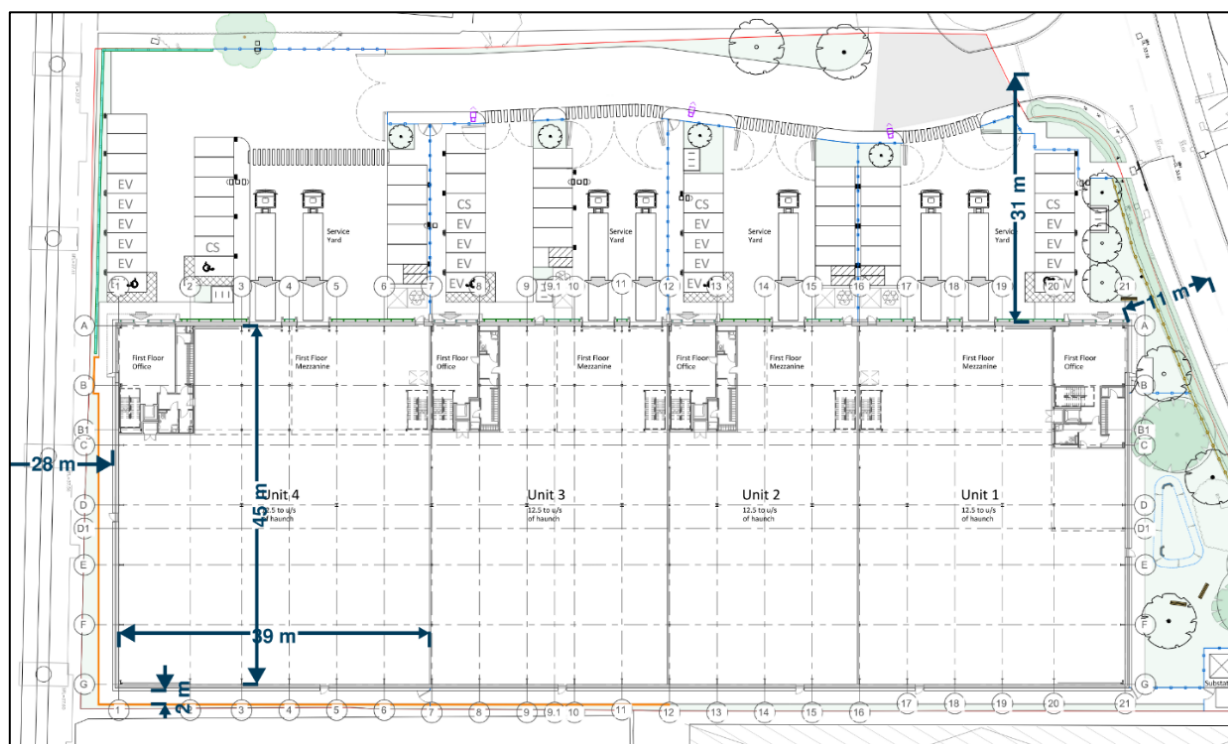


Figure 20. Site Boundaries

The external elevations have been assessed using the BR187 enclosing rectangles method as described in BR 187: *External Fire Spread – Building separation and boundary distances* to determine the maximum unprotected area permitted on each elevation.

The results of this assessment are as follows: -

Unit Number	Elevation	Compartment Size	Boundary Distance	Unprotected Area
Unit 1	North	16m x 47m	11m	29% (211m ²)
All Units	East	16m x 40m	2.6m	Fully Protected
Unit 4	South	16m x 46m	28m	100%
All Units	West	16m x 40m	31m	100%

Table 6: Unprotected Areas

Table 6 above shows the permitted areas for each elevation. Where an elevation cannot be fully unprotected, i.e., 100% above, then the elevation will achieve at least 60 minutes fire resistance for integrity and 15 minutes for insulation from the inside.

Further details of these calculations are provided in Appendix A.

7.3 Roofs

Roof materials will achieve B_{roof} (t4) classification where parts of the roof are located within 6m of the relevant boundary.

Roof materials will achieve C_{roof} (t4) classification where parts of the roof are located at least 6m from the block relevant boundary.

7.4 PV Panels

Photovoltaic (PV) panels with an isolation switch will be provided on the roof of each unit. The PV panel isolation switch will be provided within the reception space of each unit.

Currently, there is no Building Regulations life safety guidance for PV installation on roofs, but it is recommended that consideration for power shut off is included within the design for additional protection.

To provide adequate protection for this installation, where PV panels are situated above combustible roof elements, a 30-minute fire resistant layer will be provided between the PVs and the combustible roof.

8.0 MANAGEMENT

The building fire strategy document will form part of the building regulations application. This will also be used to inform any future alterations to the building to ensure that the fire safety measures and strategy is not compromised.

The building owners will be responsible for implementing a management plan for the ongoing maintenance of fire safety installations and the provision of safe access routes to and within the buildings. These plans shall be in line with the requirements of the Regulatory Reform (Fire Safety) Order and relevant British Standards for the fire safety equipment.

9.0 FUTURE PROOFING – THE GOLDEN THREAD OF INFORMATION

In line with the recommendations for providing a 'golden thread' of information, digital records of the fire safety components during the design and construction phases will be recorded. Records will be initiated by the relevant duty holders during the design and construction phase. On completion of work the records will be handed over to the building owners to maintain for the life of the building.

A Fire and Emergency File (FEF) will be established for this development to record prevalent information throughout the design, construction and life of the building. The FEF will include this fire statement and fire strategy as outlines of the key fire safety design provisions of the building, including assumptions of fire loads, occupant characteristics, evacuation strategies, passive fire safety measures, active fire safety systems, fire safety equipment, key fire properties of building materials, access for fire and rescue services. As the design develops relevant documents shall be recorded including technical specifications and product datasheets, detailing specific information on the building materials, safety systems and equipment. On completion of construction the commissioning documents and the operation and maintenance manuals shall be recorded. Throughout the life of the building regular inspections and maintenance are required to ensure the fire strategy is upheld and fire safety systems are operational. Records of inspections, fire risk assessments and maintenance work shall be recorded.

The details of the information retention systems will be determined by the client.

Modification of the following elements of the building may adversely affect the original fire safety strategy:

- Fire detection and alarm systems
- Fire suppression systems
- Increasing population
- Changing the use of the areas
- Escape routes
- Number and dimension of escape stairs
- Refuge areas
- Wall and ceiling linings
- Fire protection of the building structures
- Changing fire and smoke doors
- Changing, penetrating fire compartments, cavity barriers
- Increasing fire load in certain areas
- Creating, changing openings on the external envelope
- Changes in the external envelope of the building
- Changes in the environment of the building related to the fire service access points and parking.

10.0 INFORMATION, LIMITATIONS AND ASSUMPTIONS

The information limitations and assumptions used in the preparation of this report are noted below: -

Drawings

This report is based on drawings issued to us. Dimensions have been taken from these drawings. The following drawings were used: -

Drawing Name	Drawing Number
Site Plan	H067-CMP-SI-ZZ-DR-A-00100 (Rev. T2)
Fire Strategy Site Plan	H067-CMP-SI-ZZ-DR-A-00350 (Rev. T3)
Unit 1 Typical Cross Sections Sheet 02	H067-CMP-BD-00-DR-A-00251 (Rev. T2)
Unit 4 Typical Cross Sections Sheet 01	H067-CMP-BD-00-DR-A-00265 (Rev. T2)
Unit 1 Ground Floor Level Fire Strategy Plan	H067-CMP-BD-00-DR-A-00350 (Rev. C03)
Unit 2 & 3 Ground Floor Level Fire Strategy Plan	H067-CMP-BD-00-DR-A-00355 (Rev. C03)
Unit 4 Ground Floor Level Fire Strategy Plan	H067-CMP-BD-00-DR-A-00360 (Rev. C03)
Unit 1 First Floor Level Fire Strategy Plan	H067-CMP-BD-01-DR-A-00351 (Rev. C05)
Unit 2 & 3 First Floor Level Fire Strategy Plan	H067-CMP-BD-01-DR-A-00356 (Rev. C05)
Unit 4 First Floor Level Fire Strategy Plan	H067-CMP-BD-01-DR-A-00361 (Rev. C05)
Unit 1 Plant Floor Level Fire Strategy Plan	H067-CMP-BD-00-DR-A-00352 (Rev. C03)
Unit 2 & 3 Plant Floor Level Fire Strategy Plan	H067-CMP-BD-00-DR-A-00357 (Rev. C03)
Unit 4 Plant Floor Level Fire Strategy Plan	H067-CMP-BD-00-DR-A-00362 (Rev. C03)
Unit 1 Roof Level Fire Strategy Plan	H067-CMP-BD-RF-DR-A-00353 (Rev. C03)
Unit 2 & 3 Roof Level Fire Strategy Plan	H067-CMP-BD-RF-DR-A-00358 (Rev. C03)
Unit 4 Roof Level Fire Strategy Plan	H067-CMP-BD-RF-DR-A-00363 (Rev. C03)

Building Regulations

This report considers building regulations, which deal with life safety. Property protection and insurance issues are not addressed in this report. Guidance on property protection and insurance requirements can be found in the document *Approved Document B: Fire Safety (Volume 2) – Buildings other than dwellinghouses Incorporating Insurers' Requirements for Property Protection*, RIBA Publishing 2015.

Other Limitations

Complying with the recommendations of this report will not guarantee that a fire will not occur.

Unless otherwise described in this report, the fire strategy assumes that the building design, the mechanical and electrical systems, construction methods and materials specifications will comply with current Building Regulations guidance, and relevant British Standards and Codes of Practice. The design of mechanical and electrical systems such as fire alarm and sprinklers is a specialist area. Fire Strategy recommendations are given in this report, however, the design and specifications need to be developed at the appropriate stage in consultation with the specialist designers of these systems.

This report has been prepared for the sole benefit, use and information of Wrenbridge (FRELD Hayes) LLP and the liability of Jeremy Gardner Associates Limited, its directors and employees in respect of the information contained in the report will not extend to any third party.

OFFICES AND CONTACT INFORMATION

Should you have any queries with this report please contact our Birmingham Office.

Birmingham Office:

5th Floor

126 Colmore Row

Birmingham

B3 3AP

Tel: +44 (0) 121 281 4513

birmingham-jga@jensenhughes.com

OTHER JH OFFICES AT:

Manchester Office:

Suite 9C

Manchester One

53 Portland Street

Manchester

M1 3LD

Tel: +44 (0)1612366527

manchester-jga@jensenhughes.com

Edinburgh Office:

22 Hanover Street

Edinburgh

EH2 2EP

Tel: +44 (0)131 226 1661

edinburgh-jga@jensenhughes.com

Dublin Office:

16 Clanwilliam Terrace

Grand Canal Quay

Dublin 2

D02 DR98

Tel: +353 (0)1 661 4925

dublin-jga@jensenhughes.com

Galway Office:

Office 3, Monterey Court

Salthill, Galway

Ireland

Tel: +353 (0)91 528 342

galway-jga@jensenhughes.com

London Office:

209-215 Blackfriars Road

London

SE1 8NL

Tel: +44 (0)20 7202 8484

london-jga@jensenhughes.com

Glasgow Office:

Suite 2.1, 106 Hope Street

Glasgow

G2 6PH

Tel: +44 (0)141 847 0446

glasgow-jga@jensenhughes.com

Belfast Office:

19A Weavers Court Business Park

Linfield Road

Belfast

BT12 5GH

Tel: +44 (0)2890 230 300

belfast-jga@jensenhughes.com

Cork Office:

Office 126 Cube Building

Monahan Road

Cork

Ireland

T12H 1XY

Tel: +353 (0)1 661 4925

cork-jga@jensenhughes.com



JENSEN HUGHES