



Report

Project	The Oracle, Reading
Report Title	Planning Fire Strategy
Our Ref	GL8287/R1 Issue 2

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1.0 THE PROJECT

1.1 Introduction

1.1.1 Site Location and Description

The Site is located at The Oracle shopping centre, Reading in the Borough of Berkshire.

The development involves the construction of two new residential buildings with mixed use accommodations.

Yield Hall Place 1 has two towers with the following heights:

- East Tower – 7 storeys / 25.8m
- West Tower – 19 storeys / 61.8m

Yield Hall Place 2 has three towers with the following heights:

- East Tower – 4 storeys / 16.1m
- Central Tower – 14 storeys / 44.5m
- West Tower – 16 storeys / 53.4m

Each tower in Yield Hall Place 1 will be provided with two stair cores. The towers will comprise of residential accommodations, with retail, office and plant areas at Ground and Mezzanine Floors.

The Central and West towers in Yield Hall Place 2 will be provided with two stair cores, while the East tower will be provided with one. The towers will comprise of residential accommodations, with cinema, plant, storage and retail spaces located at Ground and Mezzanine Floors.

Figure 1 and Figure 2 below indicates the Sites.

1.1.2 Description of The Oracle

The Oracle comprises of a large indoor shopping and leisure mall in Reading. The site first opened in 1999 and contains over 90 individual shopping stores and two car parks for occupants of the centre. The adjacent Oracle Riverside area contains breweries, restaurant and walking paths around the site and is bisected by the River Kennet.

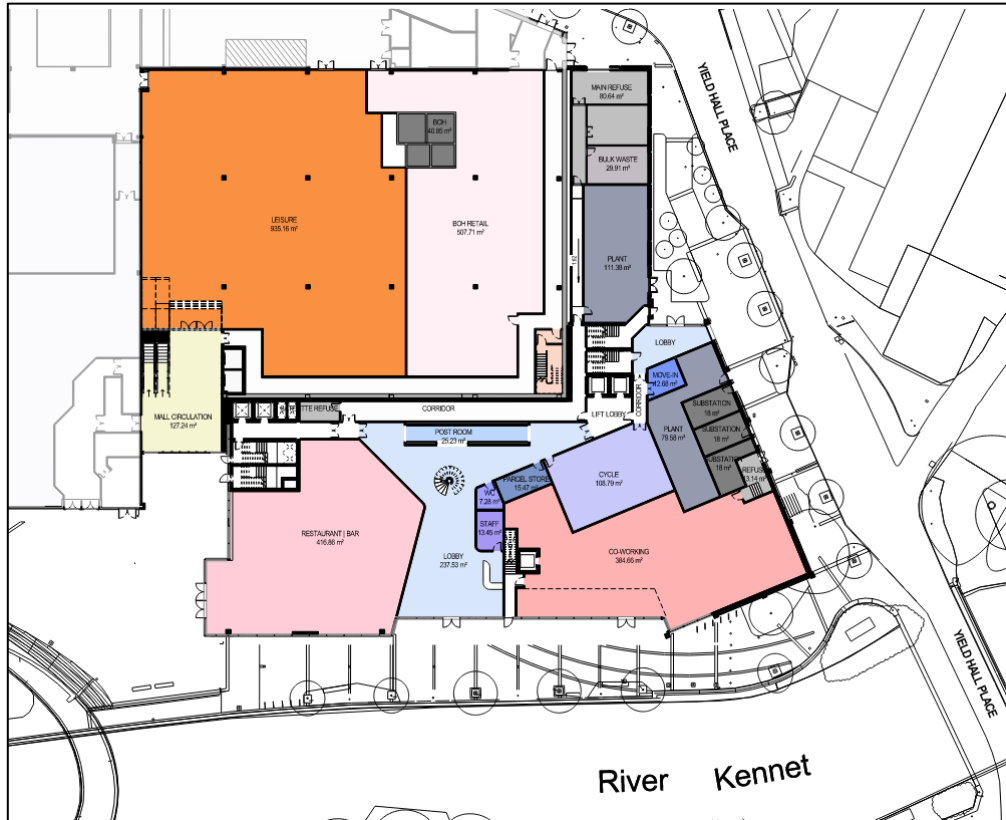


Figure 1 – Yield Hall Place 1 Site

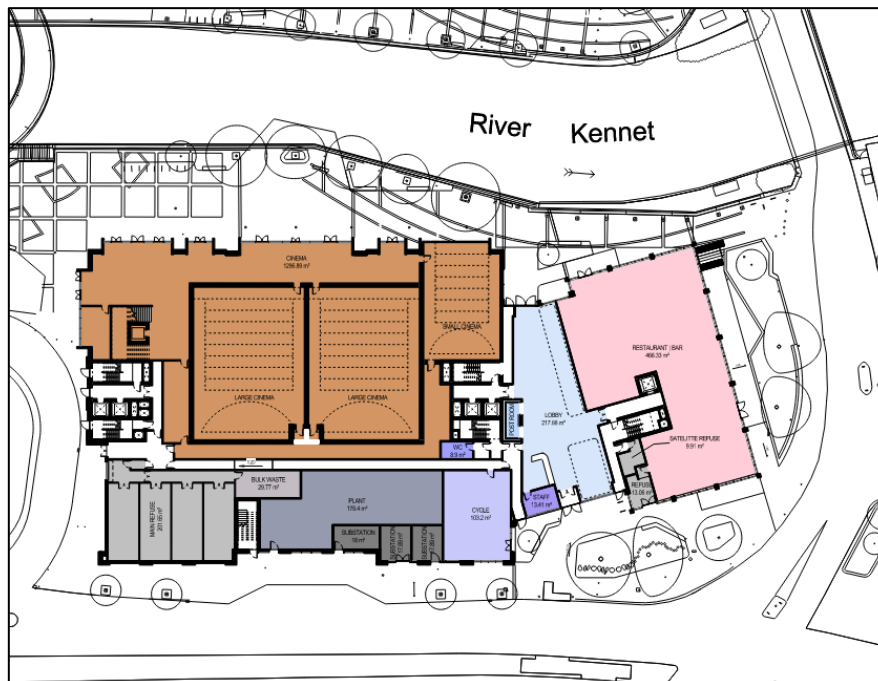


Figure 2 – Yield Hall Place 2 Site

1.2 Aim of Report

This report describes the key fire strategy principles for the building and is intended to identify the main fire safety features, fire fighter access facilities and fire strategy principles in accordance with Building Regulations guidance and is intended to accompany the Planning Application for the building.

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

This report describes the fire strategy for The Oracle Yield Hall Places 1 and 2 and only addresses life safety not property protection.

This report is not intended for Building Control.

1.3 Relevant Guidance

The fire strategy for the residential areas has been developed following guidance given in BS 9991: 2015 *Fire safety in the design, management and use of residential buildings – Code of practice* and draws from guidance in Approved Document B Volume 2 2019 for the commercial units.

The fire strategy for the building has also been prepared using guidance in the draft BS 9991 to reflect anticipated changes to guidance in relation to stair cores, evacuation lifts and smoke control in tall buildings. It is intended to form part of the package of information for the Planning Application for this Plot.

1.4 Declaration

Jensen Hughes (formerly JGA) have been 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 Nick Harvey, BEng (Hons) CEng MIFireE. Nick Harvey is a Chartered Engineer through the Institution of Fire Engineers. Nick is the Managing Director of Jensen Hughes (England) and has over 20 years of experience in developing building Fire Strategies. He has extensive experience in fire strategies for residential buildings ranging from Private residential, Private Rented Sector, co-living, and Student Residential buildings. He has extensive experience in developing fire engineering solutions including fire and smoke and evacuation modelling for all range of building types, including extensively in residential buildings.

As part of Jensen Hughes, Nick 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 Lindsay Huffert, BSc

Checked by Luke Roscoe, MEng, AIFireE

Approved by Nick Harvey BEng (Hons), CEng, MIFireE

2.0 QUALITATIVE DESIGN REVIEW

2.1 Guidance

BS 9991:2015 provides guidance on achieving the functional requirements of the Building Regulations for residential buildings. It advises that the recommendations of the document can be applied to residential buildings of any height, as described in Section 0.7 of BS 9991.

However, guidance acknowledges there are greater demands on structural integrity, services, fire safety systems, means of firefighting and evacuation for buildings exceeding a height of 50m might require a holistic evaluation using a Qualitative Design Review (QDR) in accordance with BS 7974.

0.7 Tall and very tall buildings

The recommendations in this British Standard can be applied to residential buildings of any height.

Experience and research has shown that the inherent principles supporting a stay put strategy, in particular those requiring increased fire resistance as the height of a building increases, coupled with the installation of AWFSS, ensure that the level of risk from fire remains equivalent across the height range of residential buildings from low rise to tall buildings.

However, the increased design demands on structural integrity, services, fire safety systems, means of fire-fighting and evacuation generated by buildings in excess of 50 m high might mean that specific evaluation of all fire safety provisions is needed using a qualitative design review in accordance with BS 7974. This is to determine whether the recommendations in BS 9991 are appropriate, or whether a full fire engineered solution is required.

Enhanced measures of protection might be needed compared with single occupancy or lower risk building types. Those enhanced measures could be, for example, higher levels of fire resistance (either in terms of time or insulation) together with stronger measures in detection and alarm and a stronger emphasis on escape plans and directions to residents.

Figure 3 – BS 9991 Tall Building Guidance

The QDR establishes if any additional fire safety systems or features are needed as part of the overall safety case. This safety case is to establish if the usual fire safety rules are appropriate or whether an engineered design with additional fire safety measures are needed due to the high-rise nature of these buildings. How the buildings will be managed, and the expectations of the client/end user will form a key part of this.

2.2 QDR Process

As part of the QDR Process, it will be assessed if the fire safety provisions to the scheme at N16 are sufficient to address the high-rise nature of the building. This may include fire safety enhancements over and above what would typically be needed to meet standard Building Regulation's guidance as recommended in the Approved Document B and BS 9991.

The QDR Process will involve consultation with Building Control and the London Fire Brigade. The process will be continually reviewed as the design progresses, identifying fire safety enhancements where appropriate.

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

The design for the buildings will be a reinforced concrete frame and slab with a brickwork façade. The typical wall build up will comprise non-combustible mineral wool insulation. Cladding used in the external wall system will be non-combustible. Steel framing system with cementitious sheathing, vapour barriers insulation and fire barriers will be provided to the internal frame. Metal balconies, glass reinforced concrete framing, spandrel panels and other conventional construction materials will be provided throughout the buildings.

Building materials will be required to achieve the minimum standard for fire resistance as outlined below for passive fire protection. All internal lining, external wall materials and roof coverings will achieve the minimum requirements of Building Regulation guidance documents.

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

4.0 MEANS OF ESCAPE AND EVACUATION STRATEGY

4.1 Evacuation Strategy

4.1.1 Stair Cores

All towers except for Yield Hall Place 2 East tower will be provided with two escape stair cores as they are over 18m. All stairs will be provided with a 1m² automatically opening vent at the head of the stair.

In Yield Hall Place 1, all stair cores exit directly to outside at Ground Floor.

In Yield Hall Place 2, all stair cores exit to outside at Ground Floor via protected corridors. Protected corridors will not interface with non-residential areas.

4.1.2 Residential Areas

The residential areas, i.e. sleeping accommodations at Mezzanine Floor for Yield Hall Place 1 and Yield Hall Place 2 and above will operate with a “stay put” evacuation strategy.

In this scenario, only the apartment where the alarm originated will evacuate initially, however subsequent evacuation may occur through fire service notification if necessary. This strategy is in line with the guidance of BS 9991.

An evacuation alert system (EAS) designed to BS 8629 will be provided to the building, which will allow for the progressive evacuation of the building if required.

4.1.3 Communal and Ancillary Areas

The communal areas/ancillary areas listed below will all evacuate upon detection in any of the common areas of the building. This includes evacuation of all common areas, such as:

- Bin/Bike Stores
- Plant Rooms
- Shared amenity spaces e.g. gym, terrace

The detection of a fire within the ancillary spaces will not necessarily signal the evacuation of the apartments. This includes Mezzanine Floor in both sites, where both residential and non-residential areas are located.

An evacuation alert system (EAS) designed to BS 8629 will be provided to the building. As these areas will be ancillary to the residential floors, the systems will be extended to the areas and will be connected to the residential alarm systems to allow for fire service use and coordination.

4.1.4 Non-Residential Areas

The non-residential areas at Ground and Mezzanine Floors in both buildings will be independent of the rest of the building and will follow their own evacuation strategy. This includes the following areas:

- Yield Hall Place 1 and 2 retail units
- Yield Hall Place 1 coworking space
- Yield Hall Place 2 cinemas

The units will evacuate immediately upon alarm in the unit; a fire alarm activation will not cause the evacuation of the rest of the building.

4.1.4.1 Evacuation

Escape of occupants of reduced mobility from the amenity spaces will be provided via evacuation lifts that are ancillary to the residential areas and will follow the same requirements of residential lifts.

The emergency voice communication points in refuges could have contact with the FCC room or another suitable staffed area. Details of the management plan will be developed as the scheme progresses.

4.2 Means of Escape – Apartments

4.2.1 Studio Apartments

Some studio apartments will be designed with an open plan arrangement. To accommodate this, the following will be met in accordance with BS 9991:

- Studios will be provided with sprinklers and a Category LD1 automatic fire detection and alarm system;
- Travel distances within the flats will be limited to within 20m;
- The cooking hobs/kitchens will be adequately separated from the apartment entrance doors and escape routes.

4.2.2 Flats with Separate Habitable Rooms

Some flats will be designed with habitable room arrangements. To accommodate this, the following will be met in accordance with BS 9991:

- Flats will be provided with sprinklers and a Category LD1 automatic fire detection and alarm system;
- A protected internal hallway will be provided that leads off to all habitable rooms having a travel distance not exceeding 9 m from the flat entrance door to the door of any habitable room;
- The cooking hobs/kitchens will be adequately separated from the apartment entrance doors and escape routes.

4.3 Means of Escape – Residential Common Areas

4.3.1 Communal Areas

4.3.1.1 Residential amenity areas

Residential amenity areas will be provided across the buildings:

- Yield Hall Place 1 and 2 cycle stores
- Yield Hall Place 1 and 2 refuse stores
- Yield Hall Place 1 Mezzanine amenity room
- Yield Hall Place 2 Mezzanine gym
- Yield hall Place 2 West tower 12th storey amenity space and terrace

In line with code guidance, travel distances within the residential amenity areas will be limited to 18m in a single direction and 45m where more than one direction of escape is available.

4.3.1.2 Number of Exits

From the ancillary areas, sufficient means of egress will be available via the stair cores and exits direct to outside to meet code guidance and the requirements of BS9991.

At Yield Hall Place 1 Mezzanine Floor, residents will be able to evacuate via both the East and West tower stair cores via the lift lobby and stair lobby respectively. The connection to the residential area as a means of escape will be designed in accordance with BS 9991 guidance, taking note of specific guidance in the Draft document.

At Yield Hall Place 2 Mezzanine Floor, residents will be able to evacuate via the East and Central stair cores via a protected corridor. At the 12th Floor, residents will have access to the West tower stair cores via the residential corridor.

4.3.1.3 Plant Areas

An external plant area will be provided at Yield Hall Place 2 Second Floor between the Central and West towers. Additionally, internal plant rooms will be located on the Second Floor of Yield Hall Place 1 West tower

and Yield Hall Place 2 Central and West towers. These spaces will be used to house plant equipment and will not be accessible by residents. A single means of egress is provided from the spaces; this is reasonable given the familiarity of the occupants using the space and the short travel distances to the nearest stair core.

Plant areas accessible for maintenance only will also be provided at Ground and Mezzanine Floors of both buildings.

Travel distances within ancillary areas will be limited to 18m in a single direction and 45m where more than one direction of escape is available. Within individual plant rooms, travel distances will not exceed 9m in a single direction or 18m overall, when measured to the room exit.

Escape routes will terminate direct to the outside or via a protected route.

4.3.2 Stair Lobbies

Each stair will be adjoined by a fire sterile protected stair lobby at each level. These lobbies will be provided with mechanical smoke ventilation, designed in line with BS 9991 requirements. The stair lobbies will serve the firefighting lifts and evacuation lifts to the cores.

The stair lobbies will be designed following guidance in the Draft BS 9991 regarding Evacuation Lift Lobbies.

4.3.3 Common Corridors

Common corridors will be provided to apartments from the stair lobbies.

In line with guidance from BS 9991, and considering the provision of sprinklers to the building; the common corridors will be designed per the following:

- Where travel distances do not exceed 7.5m in a single direction, an unvented corridor will be provided to serve the apartments.
- Where travel distances exceed 15m in a single direction, the corridor will be provided with mechanical smoke ventilation.

4.3.4 Occupants of Reduced Mobility

Residential buildings follow a stay-put evacuation strategy and for that reason guidance does not make any specific recommendation for the need for additional features to assist mobility impaired occupants from the building. However, the draft BS9991 proposes that at least one lift per core should be usable for mobility impaired escape.

Firefighting lifts are designed to operate in a fire and potentially could be used by mobility impaired occupants who need to escape from the fire flat. However, once the fire brigade arrives on site, they will take control of the lift for operational firefighting activities. Therefore, additional evacuation lift provisions will be provided.

In both buildings, the primary cores for each tower except for Yield Hall Place 2 East tower will be designed as firefighting shafts; evacuation lifts will be provided in addition to the firefighting lifts. The Yield Hall Place 2 East tower will not be designed as a firefighting shaft due to the tower height.

Therefore, there should always be at least one lift available per core, in addition to the lifts being used by the fire service. Any need to change the mix of evacuation and firefighting lifts will be assessed as part of the QDR process.

Occupants of reduced mobility can either independently use the evacuation lift to make their escape, or they can temporarily wait in the protected refuges. The EAS will allow for the progressive evacuation of the building if required.

Both buildings will be designed as rented tenancy with on-site management, i.e. a part- or full-time concierge. Management staff can be trained to assist with occupant evacuation, and will be discussed and agreed with the building operators as the scheme progresses.

4.4 Means of Escape – Commercial Units

Guidance recommends travel distances in the commercial units be limited to 18m in a single direction and 45m where there is a choice of escape.

The fit-out of the unit will be designed to be within these limits.

Where a unit is provided with a single escape route the capacity will be limited to 60 occupants.

The retail/cinema and residential areas will be completely fire separated from all adjacent units with no internal connection.

4.5 Means of Escape – Office Unit

Guidance recommends travel distances in the office co-working unit in Yield Hall Place 1 be limited to 18m in a single direction and 45m where there is a choice of escape.

The fit-out of the unit will be designed to be within these limits.

Where a unit is provided with a single escape route the capacity will be limited to 60 occupants.

The co-working areas will be completely fire separated from adjacent units with no internal connection.

5.0 ACTIVE FIRE SAFETY SYSTEMS

5.1 Sprinklers

Sprinklers will be provided throughout both buildings.

For the residential areas, a residential sprinkler system will be designed and installed in accordance with BS 9251:2020.

The non-residential ancillary/amenity areas of the building will be protected with a sprinkler system. The design of the sprinkler system in the non-residential areas that falls outside the scope of BS 9251:2021 will conform to BS EN 12845:2015.

The commercial and retail units at Ground and Mezzanine Floors will be protected with a commercial sprinkler system designed in accordance with BS EN 12845:2015.

5.2 Automatic Fire Detection

A domestic automatic fire detection and alarm system will be provided within the apartments in accordance with BS 5839-6 to a category LD1 standard.

A category L5 automatic fire detection will be provided to the residential common corridors/lobbies to operate the smoke control systems in accordance with BS 5839-1.

The remaining areas of the building, i.e. the non-residential ancillary areas, will be provided with at least a category L2 automatic fire detection and alarm system in accordance with BS 5839-1.

The commercial and retail units will be provided with at least a category L2 automatic fire detection and alarm system in accordance with BS 5839-1. An alarm in the retail area will be detected on the residential main fire alarm panel. The signal will be for information only and will not trigger any evacuation of the residential areas.

5.3 Smoke Control

Dedicated smoke control systems will be provided in accordance with code guidance, including:

- Mechanical smoke shafts serving protected stair lobbies,
- Mechanical smoke shafts serving common corridors
- 1m² automatically opening vent at the head of each stair core.

5.4 Emergency Lighting

Emergency lighting will be provided in accordance with relevant code guidance, including the Approved Document B, BS9991 and BS 5266-1:2016.

5.5 Signage

Signage will be provided throughout the buildings and in accordance with the recommendations of relevant code guidance, including the Approved Document B, BS 9991 and BS ISO 3864-1:2011.

5.6 Secondary Power Supply to Life Safety Systems

A secondary source of power will be provided for all life safety systems in line with the BS 9991 guidance.

6.0 PASSIVE FIRE SAFETY MEASURES

6.1 Structure

The structural elements of the East tower of Yield Hall Place 2 will achieve 60 minutes fire resistance.

The structural elements of the East tower of Yield Hall Place 1 will achieve 90 minutes fire resistance.

The structural elements of the Central tower of Yield Hall Place 2 and the West tower of both Yield Hall Place 1 and 2 will achieve 2 hours fire resistance.

If the structure in Yield Hall Place 1 supports both towers, then both towers will achieve 2 hours fire resistance.

6.2 Compartmentation

Structure and compartmentation will be provided in accordance with recommendations in BS 9991.

6.3 Cavity Barriers and Protection of Openings

Cavity barriers will be provided within any external wall cavities or floor voids in accordance with the guidance in Clause 19 of BS 9991:2015.

7.0 ACCESS AND FACILITIES FOR THE FIRE AND RESCUE SERVICE

7.1 Firefighting Facilities

Where buildings have a top floor height of more than 18m, a firefighting core is needed. Where a floor exceeds 900m² and is over 18m above access level, two firefighting shafts should be provided. Only the East tower of Yield Hall Place exceeds 900m², therefore two firefighting cores will be provided.

The Central tower of Yield Hall Place 2 and the West towers of Yield Hall Place 1 and 2 will be provided with a single fire fighting core is sufficient to meet Building Regulations guidance.

The firefighting cores will include the following:

- A dedicated firefighting lift including backup power supply located within 7.5m of the door to the stair on all floors;
- Firefighting stair at least 1.1m wide;
- 2 hours fire resisting enclosure around the stair and the firefighting lift;
- Fire mains with an outlet located within the stair enclosure on all floors;
 - Dry risers will be provided for towers under 50m in height
 - Wet risers will be provided for towers over 50m in height
- 1m² automatically opening vent at the head of the stairs.

As discussed above, the firefighting lift will be in addition to the evacuation lift.

Hose cover will be within recommended limits to the furthest point of accommodation from fire main outlets and fire vehicle parking positions in all blocks.

7.2 Fire Vehicle Access

Yield Hall Place 1 will be accessible to fire vehicles via Yield Hall Place and the river side pathway.

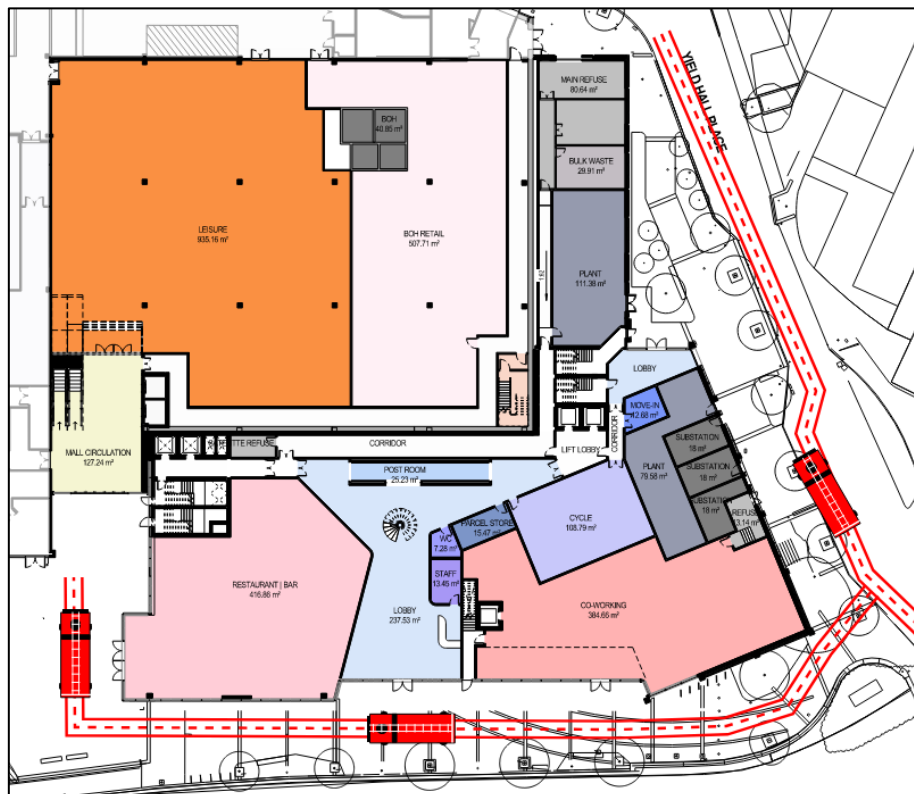


Figure 4: Yield Hall Place 1 Fire Vehicle Access

Yield Hall Place 2 will be accessible to fire vehicles via Yield Hall Place, London Street and A329 and the river side pathway.

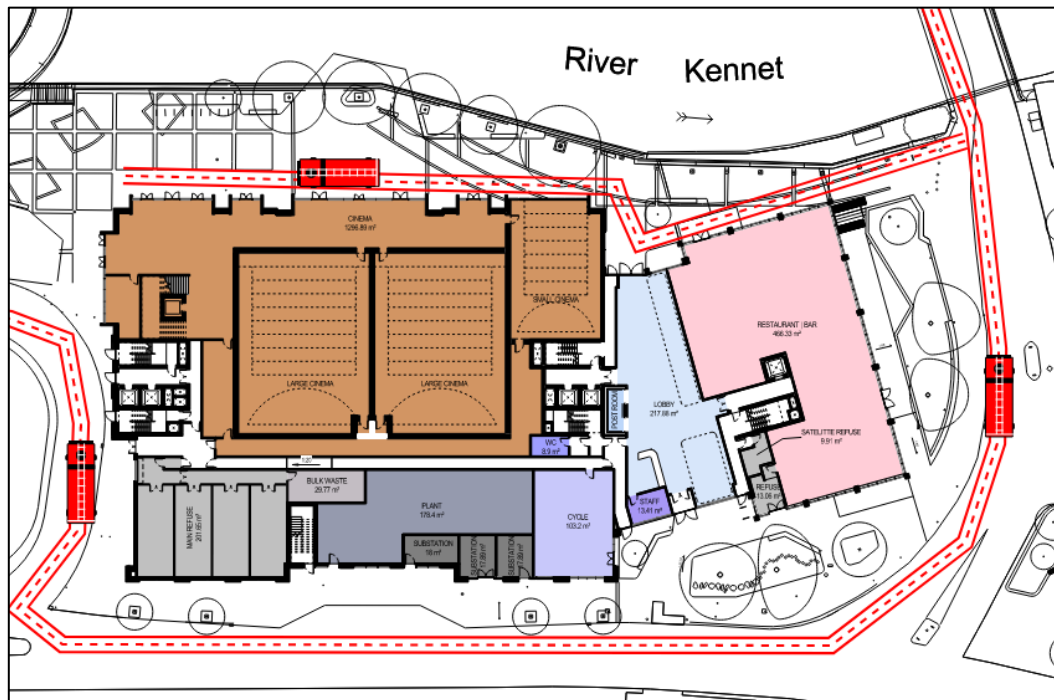


Figure 5: Yield Hall Place 2 Fire Vehicle Access

Fire vehicle access will be available to within 18m of the entrance to each firefighting shaft and within sight of the emergency replenishment inlet.

7.3 Fire Hydrant Provision

The location of existing hydrants is currently unknown. If there is an existing fire hydrant within 100m of each of the fire main inlets, then additional provisions will not be required. If there are no existing hydrants within 100m of each fire main inlets, then new hydrants shall be installed to be within 90m of each dry fire main inlets.

8.0 ELEVATIONS

8.1 External Wall Build-up

All parts of the external wall of the buildings will be constructed of either A1 or A2-s1,d0 materials in accordance with BS EN 13501-1:2007. This includes specified attachments such as balconies.

There are specific exemptions noted in Regulation 7(3) and these will be followed as appropriate.

8.2 Terraces and Roofs

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

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

9.0 MANAGEMENT

Management procedures have not been developed at this stage of the project. However, any areas requiring a level of management and a management strategy will be provided as necessary. This will be developed at a later stage.

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 the wet fire mains and 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.

The building operators will be responsible for staff training to assist with the evacuation of mobility impaired occupants.

10.0 FUTURE DEVELOPMENT OF THE ASSET AND THE 'GOLDEN THREAD' OF INFORMATION

In line with the recommendations for providing a 'golden thread' of information, digital records of core fire safety components during the design and construction phases. Records will be initiated by the relevant dutyholders 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 subsequent fire strategies 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.

11.0 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:

Yield Hall Place 1

• Ground Floor	GA Plan	TOR-CRL-A1-00-DR-AR-1201000	P2
• Mezzanine	GA Plan	TOR-CRL-A1-ZZ-DR-AR-1201	P2
• Level 01	GA Plan	TOR-CRL-A1-01-DR-AR-1201001	P2
• Level 06	GA Plan	TOR-CRL-A1-06-DR-AR-1201007	P1
• Level 07	GA Plan	TOR-CRL-A1-07-DR-AR-1201008	P1
• Level 19	GA Plan	TOR-CRL-A1-19-DR-AR-1201019	P1

Yield Hall Place 2

• Ground Floor	GA Plan	TOR-CRL-A2-00-DR-AR-1202000	P2
• Mezzanine	GA Plan	TOR-CRL-A2-ZZ-DR-AR-1202090	P2
• Level 01	GA Plan	TOR-CRL-A2-01-DR-AR- 1202001	P2
• Level 02	GA Plan	TOR-CRL-A2-02-DR-AR- 1202002	P1
• Level 05	GA Plan	TOR-CRL-A2-05-DR-AR- 1202005	P1
• Level 12	GA Plan	TOR-CRL-A2-12-DR-AR- 1202012	P1

Information

The following information was used for the preparation of this report:

- The Oracle Schedule of Areas – Callison RTKL, 3rd November 2022

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 Hammerson 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.

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