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Operation Nettlefire

MOD015 – RIBA 2 Design Report

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Prepared for

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Introduction

1.1 General

The Nettlefire Fire Engineering Consultants have been appointed by Home Office (HO) to provide fire safety engineering advice for the MOD015 Site.

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Notwithstanding the provisions above, this strategy report may be used by the end user of the site and the buildings on site in the development of any fire safety management procedures and plans considered necessary to fulfil their responsibilities under the Regulatory Reform (Fire Safety) Order 2005 referred to as 'RR(FS)O' and any other applicable fire safety legislation.

The findings and opinions expressed are based on the conditions encountered and/or the information reasonably available at the date of issue of this document and shall be applicable only to the circumstances envisaged herein. No person except the Client shall have the benefit of this document by virtue of the Contracts (Right of Third Parties) Act 1999.

The Nettlefire Fire Engineering Consultants makes no warranties or guarantees, actual or implied, in relation to this report, or the ultimate commercial, technical, economic, or financial effect on the project to which it relates, and bears no responsibility or liability related to its use other than as set out in the contract under which it was supplied.

1.2 Objectives / Limitations

This report provides details about how the design can satisfy Part B (Fire Safety) of the Building Regulations 2010 and associated Building (Amendment) Regulations referred to as 'Part B of the Building Regulations' herein. This includes the following:

- B1 – Means of Warning and Escape.
- B2 – Internal Fire Spread (Linings).
- B3 – Internal Fire Spread (Structure).
- B4 – External Fire Spread.
- B5 – Access and Facilities for the Fire Service.

Where aspects of the design which do not currently comply with Part B of the Building Regulations are identified within the proposed design these will be either justified by a qualitative or quantitative appraisal

(where appropriate), or an alternative code compliant solution will be suggested. All aspects of the fire strategy will be subject to formal approval from the relevant authorities.

The principal guidance documents to the Building Regulations 2010 adopted for the scheme are:

- BS 9999: 2017 – Fire Safety in the Design, Management and Use of Buildings – Code of Practise
- BS 9991: 2024 – Fire Safety in the Design, Management and Use of Residential Buildings – Code of Practise
- BS 5839-1: 2019 and BS 5839-6:2017 - Fire detection and fire alarm systems for buildings

This report is subject to formal approval by Building Control and consultation with other relevant authorities (i.e. Local Fire Brigade). Unless specifically identified within this report, all other elements of the scheme design are assumed to be commensurate with standard guidance.

It is assumed that all building work will be carried out in accordance with Regulation 7 of the Building Regulations. Therefore, to ensure that the proposed fire safety systems detailed within this report achieve the appropriate fire performance, it is recommended that all products, components, materials, or structures relating to the fire strategy are installed using competent companies/persons and, where applicable, third party accreditation/ certification.

This fire strategy is concerned only with the life safety of occupants of the building, and the report does not specifically include property protection measures (although the life safety measures will provide some consequential property protection). It is recommended that the client confirms any insurers' requirements that may need to be considered.

1.3 Design Guidance

This report details the fire safety provisions that will be used to demonstrate compliance with Part B of the Building Regulations.

The principal guidance documents on which the fire safety design is based are British Standard 9999:2017 *Fire Safety in the Design, Management and Use of Buildings – Code of Practice* (BS 9999) (hereinafter referred to as “BS 9999”) and British Standard 9991:2024 *Fire Safety in the Design, Management and Use of Residential Buildings – Code of Practice* (BS 9991) (hereinafter referred to as “BS 9991”) .

Where this report does not give specific details of any particular fire safety aspect, reference should be made to BS 9999 and BS 9991 as appropriate.

1.4 The Construction (Design and Management) Regulations

Projects undertaken within the UK are subject to the requirements of The Construction (Design and Management) Regulations 2015 (CDM). The objective of CDM Regulations is to reduce risks to health and safety during construction and maintenance of construction sites and occupied buildings.

This report defines the strategy for meeting the functional and performance requirements for fire safety in the finished building. Where any conclusions or recommendations have been arrived at which specify

particular materials, products, or forms of construction these will have been assessed, in accordance with CDM Regulation 9 (Duties for Designers). In the event that these involve significant residual risks or health and safety critical assumptions, this information will be made available to the Principal Designer. Where the architect or other consultants use the standards put forward in this report to specify works, they are understood to be competent in alerting the Client, Principal Designer, Contractor, and Building Occupiers of CDM issues.

1.5 The Regulatory Reform (Fire Safety) Order 2005

Other regulations such as the Regulatory Reform Order (RRO) need to be considered for the period whilst the building is occupied and construction works are being carried out, as well as when the building is completed and handed over. Under the Regulatory Reform (Fire Safety) Order 2005 each and every owner, occupier and operator of a premises is required to adequately manage the safety of the areas under their control. Under this legislation a “Responsible Person or Persons” is or are required to be appointed in order that the necessary level of safety can be implemented, with an inherent necessity for competence in the area of fire safety.

The fire authority having jurisdiction has the power to inspect the premises to check that the Responsible Person(s) comply with the duties under the Order and will look for evidence that the Responsible Person(s) has carried out a suitable fire risk assessment and acted upon significant findings of that assessment.

It is therefore important that the Responsible Person(s) takes on board the information provided in this fire safety strategy when preparing the fire risk assessment reports accordingly to reflect any changes that may need to be made to fire safety policies and procedures.

1.6 Sources of Information

This fire strategy has been based upon information contained within the drawings for the scheme produced by the Nettlefire Architecture Team.

Note: Figures in this report are for explanatory purposes; for relevant details reference should be made to the actual project drawings.

Table 1 - Sources of Information

Document Title	Reference	Date	Revision	Owner
MOD015 Bicester QHSE Scoping Inspection Report		Issued: 03/25/2026	01	HO
PROPOSED SITE PLAN	15-SK002	Issued: 04/17/2026	02	Nettlefire Architecture Team

2. Project Description

2.1 General

The MOD 015 site will provide temporary accommodation comprising of residential buildings, dining and kitchen facilities, generator units, and other ancillary structures. The development of the existing site will incorporate the conversion of existing buildings alongside the construction of new volumetric modular contraction (VMC) accommodation blocks.

The site is to be constructed across multiple phases as shown in Figure 1.

Individual fire strategies will need to be produced for the residential blocks, healthcare centre, gymnasium, dining hall, recreation block, offices, and any other buildings that may require it if added in the future.

3. Risk Profiles

BS 9999 classifies buildings within different risk profiles which represent levels of hazard. The main risk profiles within the site are identified in Table 2 below.

Table 2 - Main Risk Profiles for MOD015 Site

Area	Risk Profile
Staff-occupied Buildings	A2 – Awake and Familiar
Medical Centres	B2 – Awake and Unfamiliar
Temporary Accommodation Blocks	C2 – Likely to be asleep

Risk profile will determine the level of fire design requirements to design any building. The Letter ranging from A to C describe occupancy types of use that a building may have. While the number ranging from 1 to 4 determines the speed of fire growth in such a building.

3.1 Cluster Accommodation

The main new builds that will be present on site will house 2 storey, temporary modular accommodation blocks. The accommodation blocks will be provided with sleeping areas only, as separate kitchen, wash and toilet facilities will be provided on-site. Each modular unit will be accessed via an external corridor, and it is proposed that each block will be treated as one cluster and therefore no fire resistance will be provided between individual bedrooms. The requirements for cluster accommodation are set out in clause 8.7 of BS 9991 and will be discussed throughout the remainder of this report.

4. Fire Safety Systems

4.1 Fire detection and alarm

4.1.1 System category

Alarm systems should be installed throughout all areas of buildings to provide occupants with the earliest possible warning of fire. These should be designed to the requirements of BS 5839-1 (2025) and in accordance with the client specification. The category of alarm system will be determined for individual buildings based on risk profile of each specific building and will be outlined in that buildings specific fire strategy once more information on individual buildings has been provided.

For cluster accommodation, the minimum required system is L1 or LD1 as stated in Clause 8.7.1 of BS 9991. More information is required to give specific requirements on the category. Simultaneous evacuation will still be in place for these accommodation buildings.

4.1.2 Fire Alarm Panel

Locations of the fire alarm panels local to each building must be in an area that firefighters can easily access.

The alarm status of each building should be fed through to a central building that oversees all alarm systems within the site. This allows responsible staff to prepare for the arrival of the fire brigade and conduct and evacuation and investigation.

4.2 Emergency Lighting

Emergency escape lighting shall be provided to all buildings in accordance with Table 8 of BS 9999 for non-residential, BS 5266-1, and BS EN 1838 floor all types of accommodation (including residential). A summary of the recommendations is provided in Table 3. Emergency lighting should remain activated for at least 1 hour.

Table 3 - Emergency Escape Lighting

Occupancy characteristic	Areas requiring Emergency Lighting
A	Stairways in a central core or serving storey(s) more than 18m above ground level Internal corridors more than 30m long Open-plan areas of more than 60m ²
B	All escape routes
C	All common escape routes, except in two-storey blocks of flats
Any use	All sanitary accommodation with a floor area over 8m ² Windowless sanitary accommodation with a floor area not more than 8m ² Electricity and generator rooms Switch room/battery room for emergency lighting system Emergency control room

4.3 Escape signage

Exit signs in accordance with BS 5499-10 and BS 5499-4 should distinctively and clearly mark exits within all buildings. In communal areas, approved and readable signs should be provided to indicate and identify access to exits, emergency safety features, potential hazards, and features intended for the safety of occupants and where the way to reach an exit is not obvious. Either they should be illuminated, or an emergency luminaire should be provided nearby, i.e. within 2 m.

5. Means of Escape

5.1 Evacuation Strategy

All buildings on site will operate a simultaneous evacuation policy where everyone within the building of fire origin will evacuate when instructed. All stair and exit widths should be designed to accommodate the simultaneous evacuation of all occupants within the building.

5.2 Horizontal Means of Escape

More information about individual buildings is required for a full review on horizontal means of escape throughout MOD015 and therefore no specific values can be provided.

5.2.1 Travel Distances

For non-residential buildings, maximum travel distances should comply with the given values in Table 11 of BS 9999 will be determined based on the risk profile of the individual building.

For cluster accommodation, travel distances are given in Section 8.7.1 of BS 9991. However, as all rooms area accessed via an external corridor it is expected that all travel distances will be compliant.

5.2.2 Minimum Number of Exits

In the event of a confirmed fire occupants should be provided with sufficient number of exits and suitable clear widths to ensure all occupants can evacuate the building prior to escape routes becoming compromised by the effects of fire and smoke. The minimum number of escape routes required from each area is determined based on the maximum expected occupancy of the area as outlined in in accordance with Table 4.

Table 4 - Absolute Minimum Number of Escape Routes

Maximum Expected Occupancy	Minimum Number of Exits/ Routes
60	1
600	2
More than 600	3

5.3 Vertical Means of Escape

More information about individual buildings is required for a full review on vertical means of escape throughout MOD015 and therefore no specific values can be provided.

5.3.1 External Stairs

External stairs are provided on the cluster accommodation blocks and should meet the following requirements:

- Should not form part of an escape route except in the case of:
- Flats or maisonettes having an exit to a storey not more than 6 m above ground level and;
- Flats or maisonettes having an exit to a storey not more than 6 m above a roof or podium that is itself served by an independent protected escape route.
- Any wall within 1.8 m of, or within 9 m vertically below, any external escape stairway should be of fire-resisting construction. The doors to the stair should be fire-resisting and self-closing.
- Where the escape route from the stair is in one direction only, any ventilation outlets or extract systems and any doors or windows that are not fire-resisting should not be sited within 3m of the escape route.

5.4 Evacuation of Disabled People

Final exits should not present a barrier for disabled people. Where the route to a final exit does not include stairs, a level threshold and, where necessary, a ramp should be provided to facilitate safe means of escape.

Refuges should be provided wherever staircases are present and are to be sized with minimum dimensions of 900 mm x 1 400 mm and should be sited so that they do not impede the escape routes.

The refuges should be provided with Emergency Voice Communications system (EVC). These should be designed and installed in accordance with BS 5839-9.

Note: *Refuges should not be sited in close proximity to fire alarm sounders as this may interfere with communications.*

The occupier will be required to develop a Personal Emergency Evacuation Plan (PEEP) for any person requiring assistance during a fire. Generic PEEPs may be developed for any visitors to the building, to ensure their needs are met.

5.5 Assembly point

Exterior assembly points should be provided for the occupants according to best practice. Areas designated as exterior assembly points should be provided remotely from the exterior wall of the building served and provide a clear area of a minimum of 0.5 m² per occupant expected.

Exterior exit discharge routes should be maintained clear of obstructions and be provided with both signage and lighting on either emergency power or on an alternate supply from the building.

It is recommended that the assembly point is coordinated with relevant stakeholders (Neighbouring sites) and located at least 20 m away from the building and also away from the emergency vehicle access routes.

6. Internal Fire Spread (Linings)

Once specific information has been provided, a full survey can be undertaken to ensure linings are within compliance across MOD015 site.

The interior wall and ceiling surfaces in a building may have a significant influence on how fast a fire may develop.

The purpose of providing the linings with suitable fire resistance is to:

- Adequately resist the spread of flame over their surfaces; and
- Have, if ignited, a rate of heat release or a rate of fire growth, which is reasonable in the circumstances.

Building Regulations requires that internal linings shall adequately resist the spread of flame over their surfaces and, if ignited, have either, a heat release rate or a rate of fire growth, which is reasonable in the circumstances.

For non-residential buildings internal linings should meet the requirements set out in clause 34 of BS 9999 and are summarised below:

Table 5 – Non-Residential Internal Linings

Location	Lining
Small rooms not exceeding 30 m ²	D-s3, d2
Other Rooms	C-s3, d2
Circulation Spaces	B-s3, d2

For residential buildings internal linings should meet the requirements set out in clause 26.1 of BS 9991 and are summarised below:

Table 6 - Residential Internal Linings

Location	Lining
Small rooms not exceeding 4 m ²	D-s3, d2
Circulation spaces within dwellings	C-s3, d2
Circulation Spaces within common areas	B-s3, d2

7. Internal Fire Spread (Structure)

7.1 Elements of Structure

To give specific structural requirements, more information is necessary for both repurposed existing buildings and all new VMC buildings. A survey and desktop study can be carried out to provide values for different structural elements to meet the BoD design intent.

7.2 Fire Resistance Summary

The fire resistance required to elements of structure, compartmentation requirements, protection to escape routes and ancillary accommodation should be in accordance with BS 9991 and BS 9999. When specific GA plans and building heights are provided fire resistance requirements will be specified in individual building fire strategies.

8. External Fire Spread

8.1 Reaction to Fire Classification

Reaction to fire classification is to be determined when specific GA plans and building heights are provided.

8.2 Space Separation

Space separation calculations will also be undertaken to determine the maximum unprotected area of each elevation for every building. In order to undertake these calculations GA plans and elevations of each building will be required.

9. Access and Facilities for Firefighting

9.1 General

Fire-fighting facilities should include, where appropriate:

- The provision of vehicular access for fire appliances to the perimeter of the building or site;
- Provision of easy and speedy entry points to the site and/or the interior of the building for fire-fighters and their equipment, as the site has a secure fence around its perimeter information on how they will gain access through this will be needed;
- Provision of and access to sufficient supplies of a fire-fighting medium;
- Means of enabling fire-fighters, once they have entered a building, to reach any point within that building in the shortest possible time.
- Means of ensuring that once fire-fighters have arrived at a location within a building, they can remain there in relative safety whilst they carry out their fire-fighting operations;
- Provision for fire and rescue service communications;
- Provision for removing spent fire-fighting extinguishing medium; and
- Provision of a 'fire safety box' that supplies the fire service with all relevant information required (including hard copies of floor plans).
- Consultation with the Fire Service should be conducted to establish their recommendations relating to access roads and hard-standings details (such as load-bearing capability, turning circles, widths, lengths, headroom, proximity to fire main inlets).

9.2 Fire Vehicle Access

9.2.1 Non-Residential Buildings

Fire vehicle access should be provided in line with clause 21 of BS 9999.

- For buildings that are not fitted with fire mains, a percentage of perimeter access should be provided to building based on the gross internal floor area of the building. All areas of the proposed perimeter access should be within 18 m of a fire appliance parking position.
- In the case of a building fitted with dry fire mains, there should be access for a pumping appliance to within 18 m of each fire main inlet connection point, typically on the face of the building, and the inlet should be visible from the appliance.

9.2.2 Residential Buildings

Fire vehicle access should be provided in line with clause 46.1 of BS 9991.

- Buildings that are not fitted with fire mains should have vehicle access for a fire appliance not more than 45 m from all points within each dwelling, measured on a route suitable for laying hose.
- Buildings fitted with dry fire mains should have access for a fire appliance to within 18 m of each fire main inlet connection point.

9.3 Fire Vehicle Access Routes

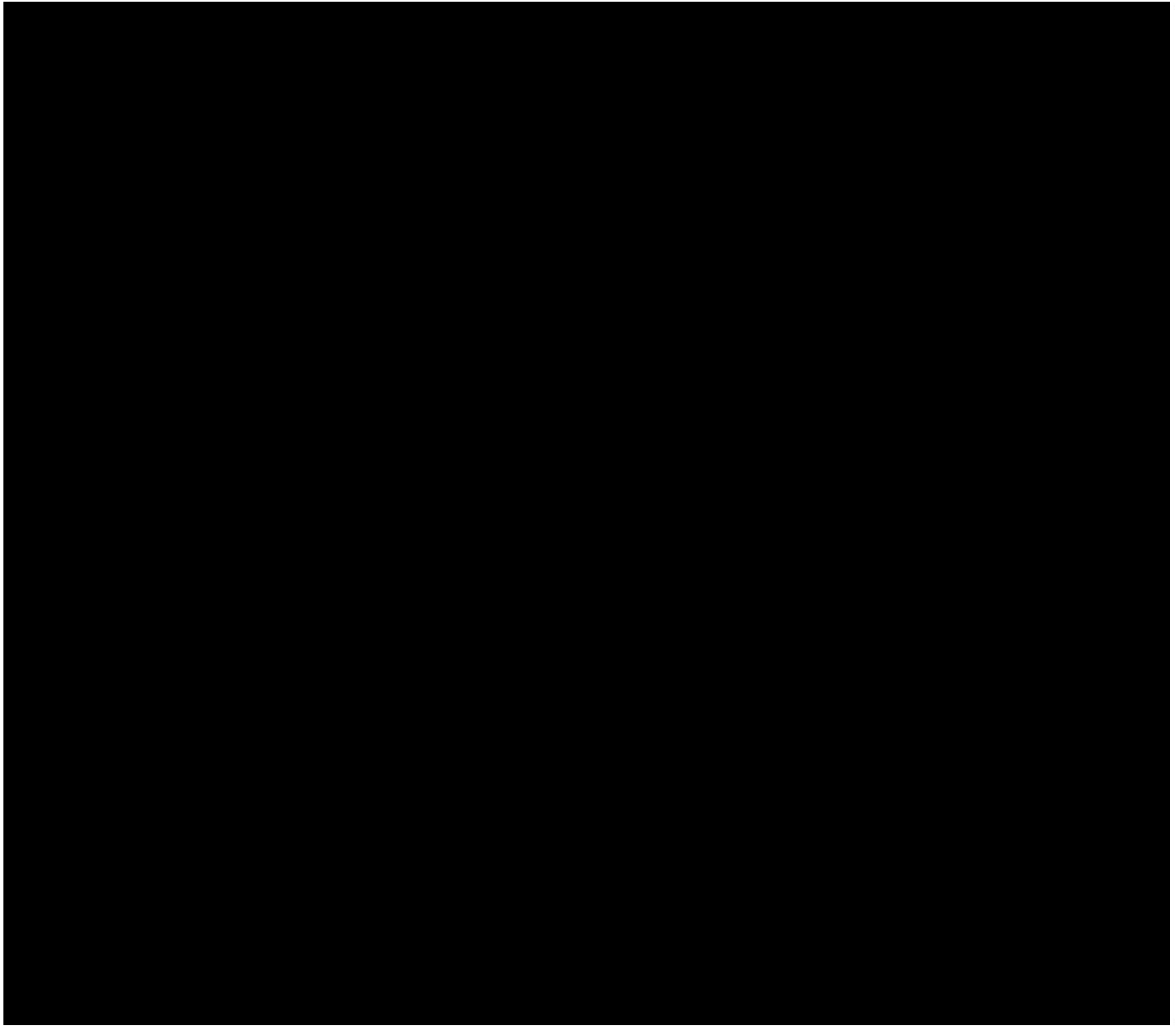
The fire service vehicle access routes should generally comply with the requirements listed in Table 7. Fire service vehicles are however not standardised and therefore a check should be made to ascertain if any local fire service access requirements for their vehicles exceed the ones **Error! Reference source not found..**

Table 7 - Vehicle Access Route Specification

Appliance Type	Minimum Width of Road between Kerbs, m	Minimum Width of Gateways, m	Minimum Turning Circle between Kerbs, m	Minimum Turning Circle between Walls, m	Minimum Clearance Height	Minimum Carrying Capacity, tonnes
Pump	3.7	3.1	16.8	19.2	3.7	12.5
High Reach	3.7	3.1	26	29	4	17

Suitable turning facilities must also be provided to ensure the fire vehicle is not required to reverse more than 20m. This can be achieved by providing a hammerhead or turning circle facility.

Fire vehicle access routes are shown in **Error! Reference source not found..**



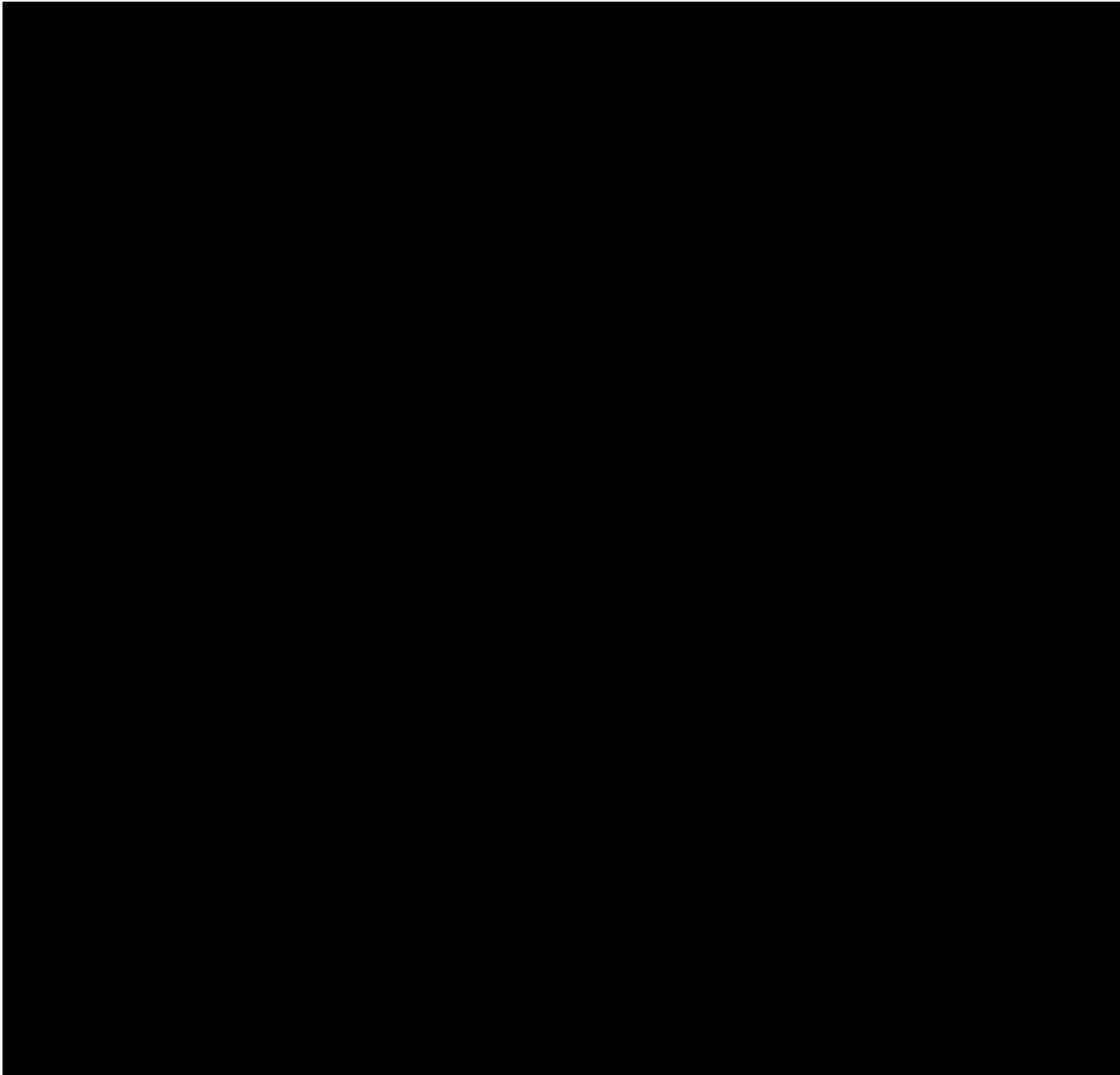
9.4 Water Supplies

For buildings not provided with dry fire mains, hydrants should be provided within 90 m of an entry point to the building and not more than 90 m apart.

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

As there are no existing hydrants on site a new system will have to be installed to meet the above requirements

An indicative hydrant location plan is shown in **Error! Reference source not found..**



10. Design Risks

Table 8 - Design Risks

Section Number	Subject	Comment
N/A	Lack of Information	Due to the current lack of information at this stage, accurate fire engineering judgements cannot be made for all buildings
8.2	Space Separation	As the layout and height of individual buildings is currently unknown, space separation calculations are unable to be undertaken and therefore the requirements for spacing between buildings or the minimum unprotected area of building elevations is currently unknown.

