



Kiddapore Avenue

Site overview

Concept Fire Strategy Report – V2

Project No:

June 2015

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This report has been prepared for the sole benefit, use and information of the Kidderpore Avenue Design Team for this project only and the liability of Fire Design Solutions Limited, its Directors and Employees in respect of the information contained in the report will not extend to any third party.

Issue	Date	Amendment Details	Author	Checked
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This report is formulated on the basis of the information and experience available at the time of preparation. It is applicable to the above-mentioned project only in accordance with the client's instructions. It is only valid provided no other modifications are made other than those for which a formal opinion has been sought and given by FDS Consult Limited.

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1.0 INTRODUCTION

1.1 REPORT SCOPE AND OBJECTIVES

- 1.1.1 FDS Consult has been appointed to produce a Fire Strategy for the Kidderpore Avenue development in North London.
- 1.1.2 This Fire Strategy is intended for discussion within the design team and to assist them in gaining approval in principle from the Approving Authorities. Individual detailed strategies have been developed for the various building types and should be read in conjunction with this strategy.
- 1.1.3 This report is based on the guidance in Approved Document B (ADB) to the Building Regulations, April 2007 Edition as well as other relevant guidance, such as British Standard BS9991 and BS9999.
- 1.1.4 The report follows the main sections in ADB however in some specific areas fire engineering has been proposed to as a means to maintain the design intent. Such deviations are explained in each section as appropriate.
- 1.1.5 Typically the adoption of a fire engineering approach can result in a greater design freedom and reduced project and building lifetime costs, whilst maintaining or often exceeding the level of fire safety inferred by ADB.
- 1.1.6 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.
- 1.1.7 As this document forms a concept approach for fire matters, the design team must ensure the contents of the report are incorporated in the building.
- 1.1.8 Some indicative marked up plans are attached. These are purely preliminary and will need detailed attention before any submission.

1.2 Building Description

- 1.2.1 The buildings (see site plan and table in appendix A) consists of existing listed buildings currently understood as being used for student accommodation that are being converted to residential accommodation together with a number of new residential buildings and an underground car park.
- 1.2.2 The different uses within the development are classified into the following Purpose Groups under ADB:

Accommodation	Purpose Group
Residential Flats	1(a)
Residential houses	1(b)
Assembly	5

Plant Rooms	7(a)
Car Park	7(b)

1.3 Fire Strategy Overview

1.3.1 The proposals outlined in this document aim to demonstrate a level of fire safety equal to or greater than the general standard implied by compliance with the recommendation in Approved Document B. This level of safety will therefore satisfy the functional requirements of the Building Regulations relating to fire safety.

1.3.2 The buildings are intended as living accommodation centred around a residential strategy. The main elements of the fire strategy described in this report can be summarised as follows:

- Means of escape will be based on each apartment/house evacuating independently in the residential accommodation.
- The car park and any commercial/assembly areas will have independent means of escape and have a simultaneous evacuation strategy.
- Common area travel will generally be code compliant or will have an engineered mechanical smoke extract system where travel is extended

Individual detailed strategies have been developed for the various building types and should be read in conjunction with this strategy.

1.3.3 Issues to be bottomed out

This is an existing site that has listed buildings included which are generally being updated to current standards where possible during the refurbishment works. Section 0.20 of ADB provides a definition of material alteration to a building and indicates that 'once building work has been completed, the building as a whole must comply with the relevant requirements of Schedule 1 or, where it did not comply before, must be no more unsatisfactory than it was before the work was carried out'.

- Agreement on how much of the site can be considered as exiting condition
- Firefighting access – especially extended access distances
- Use of Chapel and protection

1.4 Legislation

1.4.1 The main fire legislation applicable to this building is The Building Regulations and The Regulatory Reform (Fire Safety) Order 2005.

1.4.2 This document forms a concept approach for fire matters. The design team must ensure the contents of this report are incorporated in the building. This concept will not prevent a fire occurring and good housekeeping will be encouraged to reduce the risk. This strategy is mainly concerned with getting occupants out of the building safely and providing measures, where necessary, to assist the fire fighters in their operations.

1.4.3 The concept is only valid where the systems are designed correctly and maintained in an operating condition. If there is a failure in the management approach and a fire occurs, this concept will not reduce the impact on contents and building damage. Until this report is

agreed with the approving authorities, the content should only be used 'As Preliminary Information'.

- 1.4.4 Following occupation the developer / management of the premises are required under current legislation to carry out a fire risk assessment. This document will be developed following completion of the fit out works and will form part of the fire manuals developed for the premises (BS9999 provides appropriate guidance in this area).

1.5 Building Regulations

- 1.5.1 The construction or modification of any building in England & Wales needs to comply with the statutory requirements of the Building Regulations. These regulations deal with the minimum standards of design and building work for the construction of domestic, commercial and industrial buildings. The Building Regulations contain a list of requirements, referred to as Schedules, which are designed to ensure the health and safety of people in and around buildings. There are 14 Parts, which cover subjects such as structure, fire safety, ventilation, drainage, etc.
- 1.5.2 In the case of fire, the regulations are dealt with under the functional requirements B1 to B5 of Schedule 1 of the Building Regulations, produced under the Building Act 1984. There are a number of prescriptive documents, which can be adopted to show compliance with the Schedules. These include ADB and the British Standards BS5588 'Fire Precautions in the design, construction and use of buildings' suite of standards (now superseded by BS9999 and BS9991), which are considered as adequate to provide general guidance for the more common buildings. An alternative approach is to adopt Fire Safety Engineering, which integrates fire engineering calculations, life safety systems, building inherent features and professional judgement, to produce a fire strategy that achieves appropriate levels of safety to a specific building and use.
- 1.5.3 Responsibility for deciding if the requirements of the Regulations have been met rests with the building control body (a Local Authority Building Control Officer or an Approved Inspector).

1.6 Regulatory Reform (Fire Safety) Order 2005

- 1.6.1 The Fire Safety Order is the primary piece of legislation relating to fire safety in existing, non-domestic premises, and is usually enforced by the local fire authority.
- 1.6.2 The duty of ensuring that the requirements of the Order are met rests with the Responsible Person, who must undertake a risk assessment for the purpose of identifying any necessary fire precautions and other duties.
- 1.6.3 During the Building Regulations application process, the building control body is required to formally consult with the local fire authority. The purpose of this consultation is to give to fire authority the opportunity to make observations with respect to the Building Regulations and to provide an opportunity to make the applicant aware of action that may have to be taken to meet the requirements of the Fire Safety Order.
- 1.6.4 The consultation should allow both parties to reach mutually compatible views on whether the building meets the requirements of both pieces of legislation. In the exceptional event

that the fire authority propose to require physical changes to the building to meet the requirements of the Fire Safety Order, the building control body should make the applicant aware.

1.7 Construction, Design and Management Regulations

- 1.7.1 Projects undertaken in the UK are subject to the requirements of the Construction (Design and Management) Regulations 2007 (CDM), or within the European Union, that particular country's interpretation of the European Union Directive.
- 1.7.2 This report defines the strategy for meeting the functional and performance requirements for fire safety in the finished building. It is intended to form part of the submission for approval under the Building Regulations, Part B (Fire safety). Where any conclusions or recommendations contained within this report specify particular materials, products or forms of construction these will have been assessed, in accordance with CDM Regulations 11 and 18 (duties for designers).
- 1.7.3 In the event that these involve significant residual risks or health and safety critical assumptions, this information will be made available to the CDM Coordinator. Where the architect or other consultants use all or part of this report to specify works, they are understood to be competent in alerting the Client, CDM Coordinator, Designers, Contractors and Building Occupier of issues arising under the CDM Regulations.

2. Means of Escape

2.1.1 Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B1, Means of warning and escape:

“The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times.”

2.1.2 The general philosophy for means of escape is that the occupants of a building should be able to turn their back on a fire and escape via the nearest exit without additional assistance from other occupants or fire fighters. This is achieved by providing alternative escape routes where necessary, limiting travel distances, providing sufficient exit width and escape routes that, depending upon the use of the building, will have specified periods of fire resistance.

2.1.3 The buildings are being designed as a residential occupancy with the enhanced features necessary to provide a ‘stay put’ strategy. The general philosophy for means of escape of occupants within apartments in residential buildings, which in this case are either one or two bed flats, is that there is satisfactory means of giving warning of a fire within the apartment and travel distances (normally in a single direction) are limited. Once outside the apartment door, occupants are in a place of relative safety, with the fire in an enclosure behind them and can make their exit unhindered until reaching the outside as a place of ultimate safety. Guidance on these provisions is given within Approved Document B (ADB) and is distinctly divided into escape within the apartment and escape within the common areas.

2.1.4 The provisions for means of escape for flats are based on the assumptions that:

- fire will occur within the flat (e.g. not in a stairwell);
- there can be no reliance on external rescue (e.g. a portable ladder);
- the building will have a high degree of compartmentation and therefore there will be a low probability of fire spread beyond the flat or maisonette of origin, so simultaneous evacuation of the building is unlikely to be necessary; and
- where fires do occur in the common parts of the building, the materials and construction used in such areas will prevent the fire from spreading beyond the immediate vicinity (although in some cases communal facilities exist which require additional measures to be taken).
- escape routes enable a person confronted by an outbreak of fire to make a safe escape without outside assistance.

To facilitate escape it might be necessary that common escape routes are safeguarded by some form of smoke control

2.1.5 For the reasons outlined above residential means of escape is somewhat different to many other types of buildings in that only the particular apartment that has a fire in it is immediately evacuated. The Fire Service carries out evacuation of the other apartments if necessary.

2.1.6 The car park, storage and plant facilities included on the site will be considered completely independent of the residential elements. It is proposed that these areas adopt a

simultaneous evacuation approach. This is particularly important for areas that may have members of the public who are unfamiliar with the building and any evacuation procedures.

2.2 TRAVEL DISTANCES

2.2.1 Travel distances for the different parts of the buildings on the site will be in accordance with the travel distances recommended in ADB (see table below).

Purpose Group	Accommodation	Travel within	Maximum travel distance (m)	
			In one direction	More than one direction
1(a) – Flats	Within Apartment	Flat Protected Hallway	9m	N/A
	Within Common Areas	Common areas / Common Corridor	7.5m	30m
	Sprinklered		15m	60m
7(a)	Plant Room	Escape within room	9m	35m
		Enclosed escape route	18m	45m
		Escape route in open air	60m	100m
7(a)	Storage area	Storage and non-res	25m	45m
7(b)	Car Park	Car Park	25m	45m

Note: it is possible to extend the single end travel distance in residential flat common corridors up to 30m using smoke control. If this approach is followed it is detailed in the individual building strategy.

2.3 ESCAPE WITHIN THE APARTMENTS

2.3.1 **Conventional internal lobbied:** The travel distances within the hallway of apartments with an internal protected lobby should be within the recommended travel distances described in Section 2.2.1.

2.3.2 **Open plan apartments:** If the travel distance from the furthest point in the apartment to the entrance door is within 9m, it is not necessary to provide the entrance hallway with 30mins fire resistance. For other open plan flats or where the bedroom is in an 'inner room' the following design criteria should be applied (BS9991):

- a. It is fitted throughout with a sprinkler system designed and installed in accordance with BS EN 12845 or BS 9251 and
- b. A fire alarm system in accordance with BS 5839-6, Grade D, LD1.
- c. The size of the open-plan flat should not exceed 16 m x 12 m.
- d. The ceilings should have a minimum height of 2.25 m.
- e. The kitchen should be enclosed in open-plan flats having an area exceeding 10 m x 8 m.

- f. Cooking appliances in open-plan flats having an area smaller than 10 m × 8 m should not be adjacent to the entrance of the flat (normally a separation distance of 1.8m from the hob is acceptable).
- 2.3.3 The details of each apartment will need to be considered individually.
- 2.3.4 **Duplex/triplex apartments:** the guidance recommends that duplex apartments have an internal protected stair. Where this is not the case we can normally apply the open plan criteria above but careful thought will have to be given to the location of the internal stair which should discharge close to the front door and clear of any cooking area.
- 2.3.5 The layouts of the larger Kidderpore Hall, Skeel and Dundin apartments together with the town houses have been considered in detail and are outlined in individual fire strategies.

2.4 ESCAPE WITHIN THE COMMON AREAS OF THE RESIDENTIAL ACCOMMODATION

- 2.4.1 Where a building is sprinklered it is possible to have travel distances of 15m from the front door of a flat to a stair in a single direction. In an unsprinklered building this is limited to 7.5m (or 4.5m where there is no stair lobby in small buildings) but can be extended to 30m by the use of an enhanced mechanical smoke control system. These are proposed for the LC and RF blocks which can then be accessed via single stairs.
- 2.4.2 **Smoke ventilation:** is required to the residential corridors where flats are located. The type of system required is itemised in principle in the table in appendix A.
- 2.4.3 If entrance to a flat is direct from outside or an open stair no ventilation is required.
- 2.4.4 For the smaller blocks with a top floor level less than 11m from ground and a maximum of 2 flats per floor this is as simple as a 1m² opening vent at high level in the stair. No lobby is required between the stair and the apartments.

2.5 ESCAPE WITHIN THE CAR PARK

- 2.5.1 Travel distances in the car parks will be limited to 25m where escape is in a single direction and 45m where escape is possible in more than one direction.
- 3.6.3 The car parks, storage, plant and other basement areas will be provided with a BS5839 L3 standard fire alarm and detection system.

2.6 ESCAPE WITHIN THE ANCILLARY ACCOMMODATION

- 2.6.1 Due to the potential uses of these areas, the plant rooms are considered to be “places of special fire risk” and are therefore treated with greater caution over the general accommodations.
- 2.6.2 The travel distance requirements from plant rooms are broken down into two stages i.e. escape within the room itself and the overall escape route. In this case the maximum respective single and multiple direction travel distance within a plant room itself will be 9m and 35m. The maximum overall travel distances from the furthest point in the plant room to a storey or final exit are 18m in a single direction or 45m where there is more than one direction of escape. If the escape route beyond the plant room is in the open air then the

overall escape distances become 60m in a single direction and 100m where there is more than one direction of escape.

2.7 DISABLED EVACUATION

- 2.7.1 The residential buildings are not proposed to be provided with disabled refuges as the high degree of compartmentation in building provides adequate protection and refuge for occupants to be able to safely remain in a separate compartment.

2.8 FIRE ALARM AND DETECTION SYSTEMS

- 2.8.1 **Residential Accommodation:** The fire alarm and smoke detection within the apartment blocks will be designed in accordance with the BS5839 Part 6: 2004 to a category LD1 standard where the apartments are open plan, duplexes or triplexes. This includes the town houses.
- 2.8.2 For 'normal' apartments with an internal lobby a BS5839 Part 6: 2004 category LD3 is sufficient
- 2.8.2 If a mechanical extract system is fitted a zoned smoke detection system will be provided in the common corridors on each floor of each block. The sole purpose of the detection system is to initiate the operation of the life safety automatic ventilation system. No sounders or manual call points will be provided in the residential common areas.
- 2.8.3 As part of any mechanical smoke ventilation system, manual controls will be provided at ground floor level at the entrance to the staircase to allow the Fire Service to override the system. This will be located adjacent to a status panel that will be provided within the entrance lobby, which will inform on the location of fire (via dedicated floor).
- 2.8.4 In addition to the smoke venting arrangements if the common corridors include an environmental ventilation system the following operations will be incorporated into the environmental venting system design to ensure that a high level of fire safety is maintained.
- a. In everyday mode the proposed smoke venting systems and AOV's will be closed and switched off. The environmental ventilation system can run continuously or on a thermostat as desired.
 - b. In the event of smoke being detected in any common corridor the environmental cooling system will be shut down and a 30 minute fire damper will close at each level to separate the vertical riser (where provided) from the corridor. These actions will be automatic based on the activation of a single smoke detector.
 - c. Once the environmental venting system has shut down the proposed smoke venting systems will operate as discussed earlier.
- 2.8.5 **Car Park:** will be provided with a ventilation system and an automatic fire detection and alarm system. This system will be designed and installed in accordance with BS5839 Part 1 and be a minimum of L5 standard with detector coverage equivalent to an L3 layout.
- 2.8.6 The fire alarm panel for the car park will need to be provided. The location of the fire alarm panel will need to be confirmed by the smoke venting contractor in liaison with the fire service. It is likely that this will repeat back to the site concierge.

2.8.7 **Plant:** The plant rooms will each be provided with at least a single head with a local audible alert will be provided to the entrance lobby (i.e. a buzzer). Dependent on the ambient noise level within each plant room, beacons may be required.

2.8.8 **Reception and ancillary areas:** These will be provided with local automatic detection to an L3 standard. Sounders will operate in this area only:

2.9 Emergency Lighting

2.9.1 In the event of a fire within the building, it is very unlikely that the power to the normal light circuit would be lost in the early stages while the occupants are escaping.

2.9.2 However, to cater for the event of a power failure, BS 5266 emergency lighting will be provided to each of the common areas and final exit routes including:

- Underground or windowless accommodation
- Corridors and staircases
- Open plan area more than 60m²
- External escape routes

2.10 Escape Signage

2.10.1 Escape signage will be provided above storey exits and final exit doors from the common areas within the residential accommodation and in the car park. Emergency escape signage will be required to meet the requirements of the Regulatory Reform (Fire Safety) Order. Such signage will meet the recommendations of BS5499 Part 4 and will be located as follows, except for escape routes which are in ordinary use:

- All designated escape routes or escape routes across open areas will be provided with signage, especially stairs and other changes in level and direction.
- The position of all doors and other exits sited on escape routes, including storey exits and final exits will be identified by signs.
- Where an escape route from a room is not conspicuous or confusion could occur, the route will be indicated by a sign, including intermediate signs where necessary.
- All changes of direction in corridors, stairways and open spaces forming part of an escape route will be marked with intermediate signs. Each intermediate door or junction will be similarly signed.

2.10.2 It is suggested that the final signage provision is agreed with the Regulatory Authorities prior to occupation of the complete building.

2.10.3 Except for front doors to apartments, or fire doors within apartments, fire resisting doors and fire exit doors and escape routes in and around the building will be provided with signage meeting the recommendations of BS5499 Part 5.

2.11 MANUAL FIRE FIGHTING EQUIPMENT / FIRE EXTINGUISHERS

- 2.11.1 Manual firefighting equipment is not necessary under Building Regulations however the Regulatory Reform (Fire Safety) Order 2005 does request that first aid firefighting facilities should be provided in places of work.
- 2.11.2 At this stage a general guide for the extent of fire extinguisher provisions would be typically one extinguisher per 200m² of floor area with the type appropriate for the risk (i.e. Liquid fires – Powder or CO₂, General fires - Water etc.).
- 2.11.3 Manual firefighting equipment will not be installed within the residential accommodation or residential common areas.

3.0 Fire Spread Control

- 3.0.1 Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B2, Internal fire spread (linings):

(1) To inhibit the spread of fire within the building the internal linings shall-

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

(2) In this paragraph 'internal linings' means the materials lining any partition, wall, ceiling or other internal structure.

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B4, External fire spread:

(1) The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of building.

(2) The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.

The following sections discuss the implications of the proposed building design and seek to demonstrate that a satisfactory standard of fire safety is achieved with respect to both requirements stated above.

3.1 Wall and Ceiling Linings

- 3.1.1 All linings within the protected stairway and lobbies/corridors will be Class 'O' in accordance with Approved Document B.

Location	National Class	European Class
Rooms of area not more than 30m ²	3	D-s3, d2
Other rooms	1	C-s3, d2
Other circulation spaces	0	B-s3, d2

- 3.1.2 Any room with an area less than 30m² will have a surface lining complying with Class 3 surface spread of flame in accordance with BS 476: Part 7. All linings in spaces with an area greater than this will have a minimum Class 1 surface spread of flame in accordance with BS 476: Part 7. This is summarised in the table opposite.

- 3.1.3 For the purposes of this document the internal surfaces and linings includes only the floors within stair cores, the upper surface of all other floors are not subject to these limitations.

Doors, door frames, window frames and frames in which the glazing is fitted, architraves and skirting are also exempt from these limitations.

3.2 Space Separation

- 3.2.1 This is an existing site already put to a residential use. The alterations and new build will result in a high level of sub-compartmentation and the inclusion of sprinklers in many areas.
- 3.2.2 Whilst the existing condition is being improved in many areas once the layout and elevations are confirmed a full building by building analysis will be necessary to consider possible spread building to building within the site (as it falls into the residential purpose group) as well as off site.
- 3.2.3 Provided all external elevations are at least 1m from the site boundary this is not seen to be a particular issue at this time.

3.3 EXTERNAL WALL CONSTRUCTION

- 3.3.1 Any external wall within 1000mm from the boundary will achieve at least Class 0 (national class) or Class B-s3, d2 European Class) or better.
- 3.3.2 An external wall more than 1000mm from the boundary can have unprotected openings described in Section 3.2. Protected external surfaces will need to achieve an Index (I) of not more than 20 (national class) or class C-s3, d2 or better (European Class).
- 3.3.3 In order to protect any external staircase or walkway access routes from a fire on the floor plates the wall construction within 1.8m of the staircase or walkway should be fire rated to 30 minutes. The external envelop of the building should not be a medium for fire spread.

5.0 Construction

- 5.0.1 Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B3, Internal fire spread (structure):

- (1) The building shall be designed and constructed so that, in the event of fire, its stability should be maintained for a reasonable period.
- (2) A wall common to two or more buildings shall be designed and constructed so that it adequately resists the spread of fire between those two buildings.
- (3) To inhibit the spread of fire within the building, it shall be sub-divided with fire resisting construction to an extent appropriate to the size and intended use of the building.
- (4) The building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited.

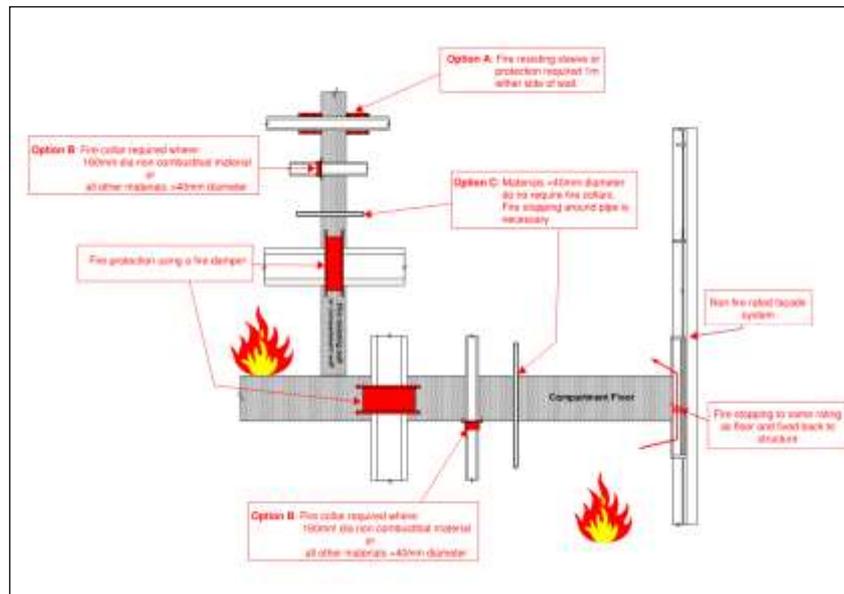
The following sections discuss the implications of these requirements on the proposed design of the building.

5.1 Elements of Structure / Compartmentation

- 5.1.1 Where one element of structure supports or gives stability to another, the supporting element should have no less fire resistance than the other element. The measures also provide for elements of structure that are common to more than one building or compartment to be constructed to the relevant provisions. Any elements of structure which only support themselves or a roof do not require any specific fire resistance. ADB recommends that residential buildings, over 5m but less than 18m in height should have a 60 minute structure.
- 5.1.2 All floors will be constructed as compartment floors and will achieve a 60 minute rating. All protected shafts, smoke shafts etc. passing through compartment floors will be protected to the same standard and fitted with FD30 doors/dampers.
- 5.1.3 All common corridors will be separated from the associated residential accommodation by 60 minute walls with FD30S front doors, fitted with self-closers to the apartments. The individual apartments themselves will be separated by 60 minute construction.
- 5.1.4 The internal lobbies and or stairs within apartments or houses will be formed by 30 minute fire rated construction with FD20 doors. No self-closers are required.
- 5.1.5 All ancillary accommodation will be separated by 60 minute construction with FD30S doors and will be lobby separated from the accommodation.
- 5.1.6 Refuse areas will require 30 minutes fire resistance with FD30 doors and if off residential floors approached by a ventilated (0.2m²) lobby.
- 5.1.7 Plant rooms will be separated from the car park and ancillary areas by at least 30 minutes of fire resisting construction and FD30 doors. Any ventilation ducts serving these areas will be protected to a similar period of fire resistance to the outside.
- 5.1.8 Places of special fire hazard (transformer rooms, switch gear rooms, boiler rooms, storage space for fuel and flammable substances should be enclosed by fire resisting construction affording 30 minutes resistance. Cleaner cupboards, all stores and utility rooms will also be enclosed in 30 minutes fire resistance with FD30 doors.
- 5.1.9 In order to protect the final exit routes from the building all wall construction within 1.8m of the final exit points will be fire rated to 30 minutes. In general most final exits are compliant as there are two directions of discharge from the exit, however where escape is only possible in a single direction and the exit route in the open air is within 1.8m of the building then fire rated "integrity only" glazing will be provided. The final escape route should be clear of any risk from fire and therefore will not be included in any fire load or any combustibile materials.

5.2 Concealed Spaces & Fire-stopping

- 5.2.1 Any openings for services breaching compartmentation will be fire stopped, as shown below, to prevent the passage of fire and assist in retarding the movement of smoke. Joints between elements of structures that serve as barriers to fire will be fire-stopped to prevent the passage of fire and smoke.



5.3 Cavity Barriers

- 5.3.1 Cavity barriers will be included in any large cavity with the potential for extensive unseen fire spread. The key areas that require cavity barriers are as follows:

- At the junction between an external cavity wall and a compartment wall that separates buildings; and at the top of such an external cavity wall.
- At the junction between an external cavity wall and every compartment floor and compartment wall.
- At the junction between a cavity wall and every compartment floor, compartment wall, or other wall or door assembly that forms a fire-resisting barrier.
- In a protected escape route, above and below any fire-resisting construction that is not carried full storey height.
- Where the corridor should be sub-divided to prevent fire or smoke affecting two alternative escape routes simultaneously.
- To sub-divide any cavity (including any roof spaces but excluding any under floor service voids) so that the distance between cavity barriers does not exceed 20m.
- Within the void behind the external face of rain screen cladding at every floor level, and on the line of compartment walls abutting the external wall, of buildings which have a floor 18m or more above ground level.
- At the edges of cavities (including around openings).

- 5.3.2 In addition to the above locations cavity barrier are also normally required in cavities (including ceiling voids and under floor service voids) where the cavity exceeds 20m. However ADB makes the recommendation those cavity barriers (including dampers in air conditioning ductwork) can be omitted, resulting in unlimited cavity sizes providing the criteria outlined in Paragraph 9.12 of ADB are adopted.

- 5.3.3 The cavity barriers will provide a 30 minute fire rating (i.e. 30 minutes integrity and 15 minutes insulation). Any penetrations through the cavity barriers will be either;
- Fitted with a proprietary sealing system
 - Pipes of limited diameters that are sealed with fire-stopping, or sealed with sleeving of non-combustible pipe material

6. FIRE SERVICE ACCESS

6.1 EXTERNAL VEHICLE ACCESS / INTERNAL ACCESS

6.1.1 Fire service vehicle access to the interior of the site will be the most challenging element of this project. Whilst the site is four sided access is only available from one side from Kiddepore Avenue with limited penetrations into the site. The site plan and table in appendix A indicates the main proposed fire service access points, dry riser inlets etc. The key principles that will be followed include:

- a. As none of the buildings is in excess of 18m in height firefighting shafts are not required.
- b. Access will generally be available to the main entrances of the buildings via entrance lobbies at ground floor level.
- c. Where the building is fitted with a dry rising main it will meet the recommendations of BS9990 and access will be available to within 18m of the inlet which will generally be on the face of the building.
- d. Where access to a building is constricted due to the nature of the site the building will be sprinklered.
- e. The dry riser outlet will be fitted within a protected stair enclosure.
- f. Where a dry riser is fitted all areas of the floor will be accessible within 45 meters of the dry riser outlet measured along a route suitable for laying hose.
- g. Where access to the dry riser inlet is extended much beyond 18m sprinklers will generally be installed as a compensatory feature.
- h. For the town houses where sprinklered access must be available to the furthest point of the top floor within 90m measured along a line suitable for laying hose.
- i. For sprinklered flats a similar length to f above can be used if a dry riser is not fitted.

6.2 SMOKE VENTING

6.2.1 The smoke venting proposals for the common areas have been discussed in detail earlier. In residential buildings the ventilation used for means of escape is considered suitable for firefighting.

6.2.2 The layout and details of the basement ventilation are yet to be agreed but each basement level will probably be fitted with a mechanical system achieving 10 air changes per hour

comprising of jet/induction fans together with final extract fans. Sprinklers are not required in this case.

6.3 HYDRANTS

6.3.1 ADB recommends that a fire hydrant should be provided to within 90m of an entrance to the building and that hydrants are not more than 90m apart.

6.3.2 Also any firefighting dry riser main inlet should be within 90m of a fire hydrant.

6.3.3 The site location should be checked with the local water authority to ensure that this is the case and if not a private hydrant(s) will have to be provided to meet this recommendation.

6.4 EMERGENCY POWER SUPPLIES

6.4.1 Each life safety system provided within the building will have an independent power supply which would operate in the event of a failure of the main supply. This will be,

- Automatic opening vents,
- Mechanical Smoke Venting systems,
- Firefighting lift
- Fire Alarm Systems,
- Emergency lights and signs.

6.4.2 Secondary power supply can be provided from two different power supply sources (e.g. a generator) or via two separate routes (remote from each other) from the mains to the substation and then two separate routes (remote from each other) within the building.

6.5 Sprinklers

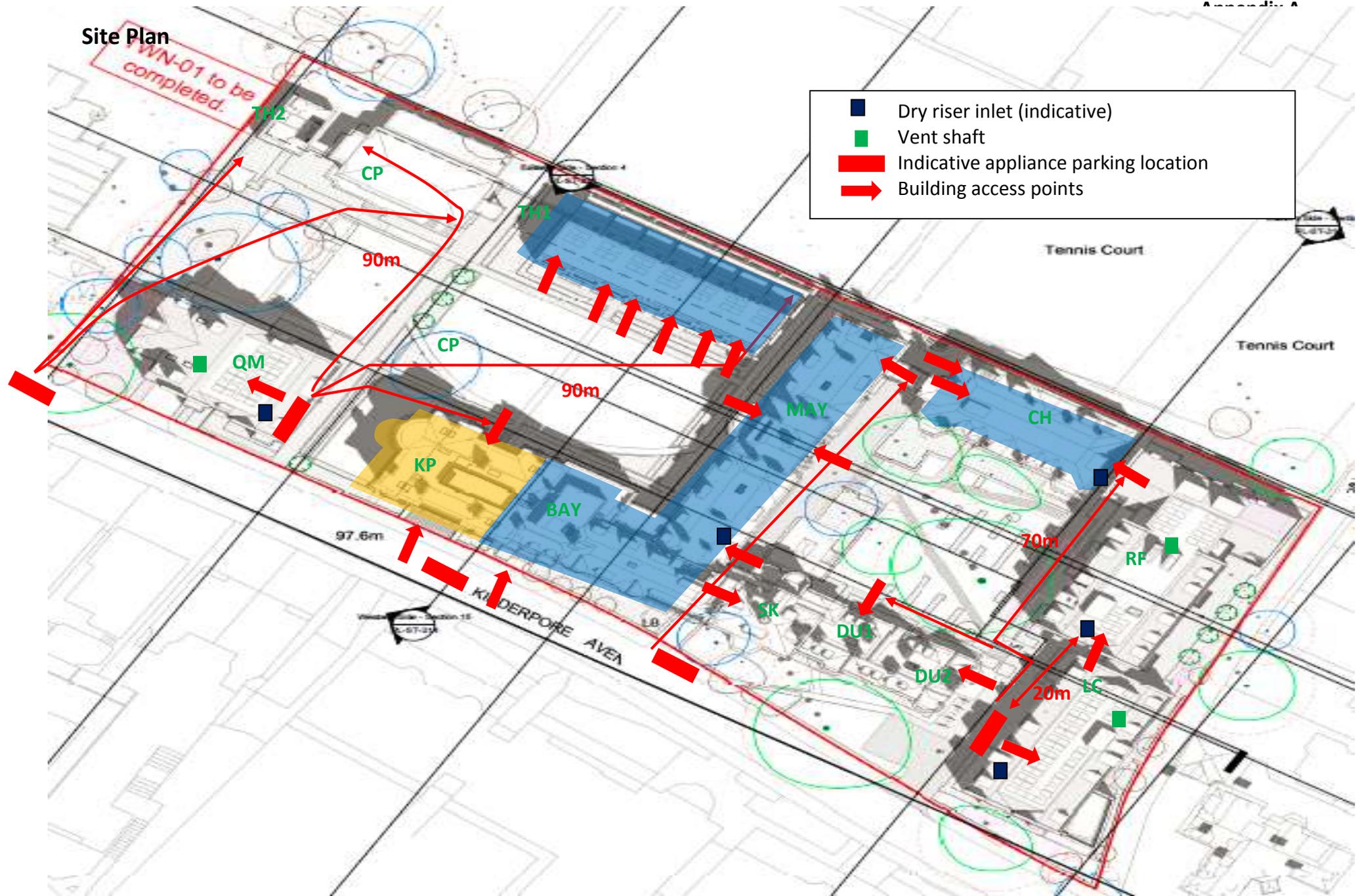
6.5.1 A number of the buildings will require sprinklers, see table appendix A. As none of the buildings is in excess of 30m in height the residential floors will be fitted with a BS EN 12845 or BS 9251 category 1 domestic system.

6.5.2 The use of the chapel is currently unknown. If the use is commercial and not low risk e.g. a swimming pool then consideration may have to be given to fitting a commercial sprinkler or other type of suppression system e.g. water mist.

Site Plan

WV-01 to be completed.

- Dry riser inlet (indicative)
- Vent shaft
- ➡ Indicative appliance parking location
- ➡ Building access points



Appendix A

Building	Type	Floors	Dry riser	Travel to entrance	Sprinklers	Smoke control	Comments
LC Hall	Flats	B,G + 4	Yes	<18m	No *	Mech	Corridor travel 16m i.e. >7.5m * If open plan then sprinklered
QM Hall	Flats	B,G + 3	Yes	<18m	No*	Mech	No outboard lobby for natural vent * If open plan then sprinklered
RF Hall	Flats	2B,G + 4	Yes	<18m	No*	Mech	Corridor travel 24m i.e. >7.5m. * If open plan then sprinklered
Townhouses 1	Houses	B,G + 3	No	90m	Yes	N/A	Travel 90m to furthest point of house
Townhouses 2	Houses	B,G + 3	No	90m	Yes	N/A	Travel 90m to furthest point of house
KP Hall	Flats	B,G+2	No	See comment	No	N/A	Full listing, all parts accessible within 45m of appliance parking position own entrance
Maynard 1	Flats	B,G+2	No		Yes	Natural 1m ² OV in stair	Small single stair all parts within 90m of appliance parking position
Maynard 2			No				Small single stair all parts within 90m of appliance parking position
Maynard 3			No				Small single stair all parts within 90m of appliance parking position
Skeel	House	B,G+2			Yes	N/A	Travel 90m to furthest point of house
Bay	Flats	G+1	No		Yes		Small single stair all parts within 90m of appliance parking position
Dudin 1	Flats	G+1	No		No	Natural 1m ²	Small single stair all parts accessible within 45m of appliance parking position
Dudin 2	Flats		No		Yes	OV in stair	Small single stair all parts within 90m of appliance parking position
Chapman 1	Flats	B,G+2	Possible		Yes	Natural 1m ²	70 m to entrances may require both sprinklers and dry riser
Chapman 2					Yes	OV I stair	
Chapel			No				Use will have to be finalised but may need a suppression system depending on use. This may be a commercial system
Car park		2B	No		No	Mech	10 air change system plus jet/induction fans