

# Planning Fire Safety Strategy

Project: M&S Eastbourne Pacific Drive, Eastbourne Project Reference: FE1457 Revision: 1

Date: August 2022



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## **DOCUMENT TRACKER & REPORT OVERVIEW**

Project Address	Pacific Drive, Eastbourne			
Project Reference	FE1457			
Current Revision	1			
Client	McCarthy & Stone			
Architect	Bright Space Architects			
Local Fire Service	East Sussex Fire and Rescue Service			
Building Control Body	TBC			
Revision	Description	Prepared by	Date	
1	Planning Fire Safety Strategy	J Dowd	26.08.2022	
Prepared by	John Dowd MSc BEng (Hons) CEng MIFireE MCABE			

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This report relates to a project that is subject to review from Approval Authorities. It should be ensured that the contents of the report are agreed with all relevant approval bodies prior to implementation.

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#### EXECUTIVE SUMMARY

Solas Realta Ltd has been appointed to produce a Planning Fire Safety Strategy report for the proposed new 'retirement living' building at Pacific Drive, Eastbourne for McCarthy and Stone.

This report is aimed at only providing supporting information for this planning application and does not represent a detailed fire safety strategy. All aspects of this report are subject to development by the design team and ultimately agreement with the Building Control Body including their statutory consultation with the local Fire Service. It is understood that this will be carried out at RIBA Stage 3-4.

The project represents a new-build, four storey (G+3) residential building. It will be L-shaped and will include two stairs and one lift serving all floors. The top occupied floor will be less than 11m above the lowest adjoining ground.

The evacuation strategy for the residential units will be 'defend in place' with only the flat of fire origin evacuating. Ancillary areas will employ simultaneous evacuation upon detection within those areas or within common escape routes serving these areas.

Automatic fire suppression is not currently proposed, as it not a minimum requirement as per BS 9991 due to the building height being less than 11m.

The building will include protected lobbies in front of the staircases, which will include 1.5m<sup>2</sup> AOVs into the building facade. The staircases will each include a 1.0m<sup>2</sup> AOV at the head of the stair.

All flats will employ protected entrance hall design. The guest suite will employ studio flat design.

The overall building complies with travel distance limitations as recommended by BS 9991.

The compartmentation strategy will follow typical residential building design, with all dwellings, ancillary areas, corridors, stairs, lift and risers forming individual fire compartments achieving the same level of protection as the structural fire resistance of the building (60 minutes). Protected entrance halls within flats will achieve 30 minutes fire resistance.

It is recommended as good practice that the external wall system achieves compliance with the amendment to Regulation 7, even if the building is not a 'Relevant Building'. Space separation calculations indicate sufficient separation from the relevant boundaries.

Fire Service vehicle access will be provided within 18m and line of sight of the entrance to Stairs 1 and 2. These staircases will include a dry rising main to ensure all areas are within 45m hose laying distances.

Provided the recommendations within this report are followed, it is Solas Realta Ltd's professional opinion that the proposed design associated with the planning application can satisfy the functional requirements of Part B of the Building Regulations.

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#### INTRODUCTION 2

#### **2.1 SCOPE**

- 2.1.1 Solas Realta Ltd has been appointed to produce a Planning Fire Safety Strategy report for the proposed new 'retirement living' building at Pacific Drive, Eastbourne.
- 2.1.2 The report is intended to provide an outline of the key fire safety considerations associated with the project in relation to the requirements of Part B of the Building Regulations as presented below:
  - B1 Means of warning and escape (see Section 3).
  - B2 Internal fire spread (linings) (see Section 4).
  - B3 Internal fire spread (structure) (see Section 4).
  - B4 External fire spread (see Section 5).
  - B5 Access and facilities for the fire service (see Section 6).
- 2.1.3 Solas Realta Ltd has not reviewed any issues within the project other than those identified in our report. Solas Realta Ltd offers no comment on any other aspects of the development and any absence of such comment should not be regarded as any form of approval.
- 2.1.4 This report is aimed at only providing supporting information for this planning application and does not represent a detailed fire safety strategy. All aspects of this report are subject to development by the design team and ultimately agreement with the Building Control Body including their statutory consultation with the local Fire Service. It is understood that this will be carried out at RIBA Stage 3-4.

#### 2.2 PROJECT DESCRIPTION

- 2.2.1 The project represents a new-build, four storey (G+3) residential building. It will be L-shaped and will include two stairs and one lift serving all floors. The top occupied floor will be less than 11m above the lowest adjoining ground (approximately 10m).
- 2.2.2 The building will be used as 'retirement living' accommodation with single storey flats on all floors. The ground floor will also include a guest suite, along with ancillary accommodation (e.g. communal lounge, reception, office, buggy store, refuse, stores, plant rooms, etc.).
- 2.2.3 It is understood that all residents within the proposed building will initially be capable of evacuating independently in the event of a fire. This represents a fundamental assumption in support of the building design. Due to the nature of the building, management should undertake regularly, a 'Person-Centred Fire Risk Assessment' in order to ensure that all occupants are capable of evacuating independently.

#### 2.3 DESIGN BASIS AND GUIDANCE

- 2.3.1 BS 9991 will be the design guidance employed in order to indicate that the functional requirements of Part B of the Building Regulations have been satisfied.
- 2.3.2 Where departures from the guidance are proposed, compensatory arguments and / or gualitative arguments will be provided to demonstrate that the overall level of safety achieved by full conformance to the guidance documents is not compromised.
- 2.3.3 Regulation 7 of the Building Regulations identifies a building with a storey at least 18m above the ground level and which contains dwellings to be classed as a 'Relevant Building'. The proposed building is not a 'Relevant Building' as defined by this regulation. Notwithstanding this, it is recommended as good practice that the external walls are designed in accordance with the requirements for a 'Relevant Building'.

#### 2.4 REFERENCED INFORMATION

- 2.4.1 This report has been developed based upon information contained in the latest drawings provided by the Architect. This report should be read in conjunction with these drawings and other supporting documentation prepared and submitted by other consultants who are acting on behalf of the design team. Table 1 presents the drawing plan schedule.
- 2.4.2 This report is not intended to provide detailed system specification, as this information is expected to be included within manufacturer's recommendations or British Standards. Therefore, all system designers should refer to the latest version of the British Standards referenced within this report and any associated manufacturer's recommendations.

Drawing Number	Description	Revision	Date			
LSE-2819-03-AC-1000	GA Ground Floor Plan	А	27.07.2022			
LSE-2819-03-AC-1001	GA First Floor Plan	A	27.07.2022			
LSE-2819-03-AC-1002	GA Second Floor Plan	А	27.07.2022			
LSE-2819-03-AC-1003	GA Third Floor Plan	А	27.07.2022			
LSE-2819-03-AC-0001	Site Plan	А	05.08.2022			
Table 1 - Drawing Plans and Information						



Figure 1 – Site Plan

#### Table 1 – Drawing Plans and Information





#### 3.1 EVACUATION STRATEGY

- 3.1.1 The evacuation strategy in the residential units will be based on a 'defend in place' strategy, whereby residents in unaffected flats may remain protected within their flats until such time as the Fire Service initiate a phased evacuation of the building, or residents decide to evacuate.
- 3.1.2 The evacuation strategy within ancillary areas (e.g. communal lounge, reception, office, buggy store, refuse, stores, plant rooms, etc.) will be simultaneous, whereby if a fire detector or manual call point is activated, sounders will activate in these areas only.

#### 3.2 FIRE ALARM & DETECTION SYSTEM (FADS)

- 3.2.1 In all residential units, a Category LD1 Grade D1 FADS should be provided in accordance with BS 5839-6. Only the sounders within the flat where a local detector activates should operate.
- 3.2.2 In the common areas of the building (including ancillary areas), a Category L5 FADS should be provided in accordance with BS 5839-1. The residential units will not be covered by this system.

#### 3.3 AUTOMATIC FIRE SUPPRESSION

- 3.3.1 Automatic fire suppression is not a requirement for a building of this height (<11m) in accordance with the recommendations of BS 9991, or Approved Document B.
- 3.3.2 Notwithstanding this, it is recommended that consideration is given to including automatic fire suppression within the building. The inclusion of automatic fire suppression will significantly reduce the risks associated with fire for the; residents, firefighters, and property, as well as further proofing the building to potential legalisation changes.

#### 3.4 SMOKE VENTILATION

- 3.4.1 All corridors or lobbies adjacent to a staircase should be provided with smoke ventilation via automatically openable vents (AOVs) into the building facade, achieving a minimum of 1.5m<sup>2</sup>.
- 3.4.2 An AOV achieving a minimum of 1.0m<sup>2</sup> should be provided at the head of each staircase.
- 3.4.3 The refuse store lobby should be provided with 0.2m<sup>2</sup> permanent ventilation.

#### 3.5 HORIZONTAL ESCAPE

- 3.5.1 All residential units will be designed as flats with protected entrance halls, serving all habitable rooms and achieving 30 minutes fire resistance.
- 3.5.2 Private balconies are considered inner rooms and should also comply with the following:
  - The escape route should not have to pass through more than one access room.
  - Detection in the access room should ensure an audible alarm on the balcony.
  - Any cooking risk in the access room should be remote (minimum 1.8m) from the balcony doors and associated escape route.
  - Storage of combustibles, barbequing or any naked flame should be prohibited from balconies.
- 3.5.3 The common corridors will represent a hybrid between Figure 7a) and Figure 7.b) of BS 9991 for a multi stair building. Corridors with escape possible in a single direction, as well as all stair lobbies, will include smoke ventilation (see Section 3.4.1).
- 3.5.4 Travel distance limitations are presented in Table 2. It is noted that the current drawings indicate compliance with these travel distance limitations.

- 3.5.5 Escape routes should include suitable emergency lighting in accordance with the relevant parts of BS 5266 and emergency escape signage in accordance with the relevant parts of BS 5499.
- 3.5.6 External escape routes should conform to Approved Document M. All routes from a final exit door and up to a Fire Muster Point are considered external escape routes. Landscape and security design should ensure escape is not obstructed for residents.

#### 3.6 STAIRS

- 3.6.1 The building will be provided with two stairs as shown indicatively in Figure 1 and should:
  - Achieve 1000mm minimum clear width.
  - Be constructed of materials achieving European Class A2-s3, d2 or better. •
  - Stairs should discharge directly to a final exit at ground floor level.
- 3.6.2 It is recommended as good practice that a refuge area is provided within each staircase on each floor level in order to assist with vertical evacuation. Refuge areas should be at least 900mm by 1400mm. The location of a refuge area should not obstruct escape routes.

Area	Single direction travel distance <sup>(1)</sup>	Multiple direction travel distance <sup>(2)</sup>
Protected Entrance Halls and Guest Suite	9	N/A
Common Corridors	7.5	30
Communal Lounge, Reception, Office	18	45
Buggy Store, Refuse Store, Plant Room, Stores	9	18
Roof	60	100
Notes:		

- 1. Travel distance should be measured up to a place where two alternate escape routes are available, either at least 45° apart or separated by fire resisting construction.
- 2. Travel distances should be measured up to a storey exit (i.e. exit into a stair or a final exit).

#### Table 2 – Travel Distance Limitations

Item	Size (m <sup>2</sup> )	Floor	Location	Position
AOV	1.5	All	Stair 1 lobby	External wall
AOV	1.5	All	Stair 2 lobby	External wall
AOV	1.0	Roof	Stair 1	Head of stair
AOV	1.0	Roof	Stair 2	Head of stair
AOV	0.2	Ground	Refuse Lobby	External wall

Notes:

1. If smoke is detected in the common corridor or lobby, the following should occur

- The vent serving the corridor or lobby should open.
- The vent at the head of the adjoining stair should open.
- subsequently detected on other storeys.

Table 3 – Smoke Ventilation

Corridor or lobby vents on all other storeys should remain closed, even if smoke is



#### INTERNAL FIRE SPREAD 4

#### 4.1 WALL AND CEILING LININGS

4.1.1 Restrictions are placed on the wall and ceiling lining materials. This is to limit spread of fire and production of smoke in specific areas. The surface lining of the walls and ceilings should meet the classifications shown in Table 4.

#### 4.2 LOADBEARING ELEMENTS OF STRUCTURE

4.2.1 All elements of structure should achieve 60-minutes fire resistance. An element of structure is any member forming part of a structural frame of a building or any other beam or column.

#### 4.3 COMPARTMENTATION

- 4.3.1 All floors should be compartment floors achieving 60 minutes fire resistance. Therefore, any shafts penetrating compartment floors (i.e. staircases, lift, service risers, etc.) should be constructed as protected shafts achieving 60 minutes fire resistance.
- 4.3.2 Any dwelling, common corridor / lobby, or fire hazard room (see section 4.4.1) should be constructed as a separate fire compartment achieving a minimum of 60 minutes fire resistance.
- 4.3.3 Common corridors should be subdivided using construction achieving 30 minutes fire resistance to separate:
  - Corridors where escape is possible in single direction.
  - Storey exits.
- 4.3.4 The overall compartmentation in the building should be in accordance with Table 3. Fire resisting walls should be constructed effectively up to each compartment floor or the roof.
- 4.3.5 Junctions of a compartment wall with a roof should include a zone of the roof 1500mm wide on each side of the wall, with a roof covering of BROOF(t4) on substrate or deck achieving A2-s3, d0 or better.
- 4.3.6 If a fire separating element is to perform as intended, every joint or imperfect fit, or opening to allow services to pass through the element, should be adequately protected by sealing or fire stopping to the same fire resistance rating so that the fire resistance of the element is not impaired.

#### **4.4 ANCILLARY AREAS**

- 4.4.1 Ancillary areas include the communal lounge, reception, office, buggy store, refuse, stores, plant rooms, etc. These areas should be constructed to form 60 minutes fire resistant compartments and should be separated using protected lobbies from the following areas:
  - Any staircase.
  - Any corridors where escape is possible in a single direction.
- 4.4.2 Service risers should be fire stopped at each floor level to achieve 60 minutes fire resistance. Service risers should not open directly into a staircase.

#### 4.5 PROTECTION OF DUCTWORK

4.5.1 Ductwork passing through fire resisting elements should either be fire resisting to the same rating or be provided with fire and smoke dampers interlinked to the fire detection and alarm system. However, fire and smoke dampers are not suitable for escape stairs, and therefore, fire resisting ductwork should be provided.

#### 4.6 CONCEALED SPACES

4.6.1 Cavity barriers should be provided within cavities for all other areas, in all the following locations: At the edge of cavities, including around openings (windows, doors, service penetrations, etc). At the junction of a cavity and a compartment floor / wall or a fire resisting partition.

- To limit the size of any cavity to 20m.

Drawing Number	European Classification
Circulation Spaces Outside Dwellings	B-s3, d2
Circulation Spaces Within Dwellings	C-s3, d2
Other Rooms	C-s3, d2
Small Rooms (not more than 4m <sup>2</sup> )	D-s3, d2
Notes:	
A wall or ceiling does not include the following:	

celling does not include the following

- Doors and door frames.
- 2. Window frames and frames in which glass is fitted.
- 3. Picture rails, skirtings, exposed beams, and similar narrow members.

#### Table 4 – Wall and Ceiling Linings

Building Element	Minimum Resistance Rating <sup>(1)</sup>	Method of Exposure	Fire Doors <sup>(2)</sup>
Structure	60 R	Exposed faces	N/A
Compartment Floors	60 REI	From below	N/A
Residential Flats and Studio Flat	60 REI	Each side separately	FD30S
Common Corridors	60 REI	Each side separately	FD30S
Ancillary Rooms	60 REI	Each side separately	FD60S
Staircases	60 REI	Each side separately	FD30S
Passenger Lift	60 REI	Each side separately	FD30
Service Riser	60 REI	Each side separately	FD30S
External Walls (Protected)	60 REI	Each side separately	N/A
Corridor Sub-division	30 REI	Each side separately	FD30S
Protected Entrance Halls	30 REI	Each side separately	FD30
Cavity Barriers	30 RE, 15 I	Each side separately	FD30
Mataa			

Notes:

1. "R", "E" and "I" - are the European classification for fire performance in respect to load-bearing capacity, integrity and insulation tested to the relevant part of BS 476 or European Standard. 2. All fire doors should be tested to the relevant part of BS 476 or European Standard. "S" denotes

smoke seal.

Table 5 – Fire Resisting Construction



#### 5.1 RELEVANT BOUNDARIES

- 5.1.1 Relevant boundaries depend on the exact site arrangements as presented below:
  - a) Where a building is facing a public road, railway, canal or river, the relevant boundary is taken as the centreline of that public road, railway, canal or river. (Elevation A, C, and E).
  - b) Where a building is facing only the site boundary, the relevant boundary should be taken as the actual site boundary. (Elevation B, D and F).
  - c) For large sites with more than one building on the same site, relevant boundaries should be taken as notional boundaries in between buildings on the same site, if any of the buildings include a sleeping risk, or are open for members of the public.

#### 5.2 EXTERNAL WALL CONSTRUCTION

- 5.2.1 Regulation 7 of the Building Regulations identifies a building with a storey at least 18m above the ground level and which contains dwellings to be classed as a 'Relevant Building'. The proposed building is not a 'Relevant Building' as defined by this regulation.
- 5.2.2 Notwithstanding this, it is recommended that the external walls are designed in accordance with the requirements for a 'Relevant Building'. Therefore, it is proposed that materials forming part of the external wall achieve European Class A2-s1, d0 or better in accordance with BS EN 13501, as good practice. The Designer should refer to Regulation 7 of the Building Regulations for further details on a 'Relevant Building'.
- 5.2.3 Irrespective of Regulation 7, all balconies should also achieve European Class A2-s1, d0 or better.
- 5.2.4 Cavity barriers should be provided within external wall cavities, in accordance with Section 4.1.12.
- 5.2.5 Fire resisting external wall areas achieving 60 minutes fire resistance should be provided within 1.8m of the following areas:
  - Either side of re-entrant corners (i.e. corners of 130° or less) in order to limit fire spread in between different fire compartments (including, but not limited to, flats and staircases).
  - External escape routes which are in a single direction of escape.

#### 5.3 SPACE SEPARATION

- 5.3.1 To prevent the risk of external fire spread from one building to another, the amount of unprotected area that is allowed on an elevation should be limited, or the separating distance should be sufficient as to reduce the risk of excessive radiation causing fire spread.
- 5.3.2 BR 187 has been employed in order to assess space separation. The radiation intensity has been selected as 84kW/m<sup>2</sup> all areas except stores and plant rooms, which have been assigned a radiation intensity of 168kW/m<sup>2</sup>.
- 5.3.3 Figure 2 and Table 6 present the results of the assessment, indicating the largest enclosing rectangle on each elevation (for both normal and high radiation intensity compartments). The design team should review the dimensions identified in Table 6 to ensure these are accurate.

#### 5.4 ROOF COVERINGS

5.4.1 A roof is defined as having a slope less than 70° to the horizontal plane. Any part of a roof greater than 70° to the horizontal plane, will be classified as forming part of the wall.

5.4.2 Performance of the resistance of roofs to external fire exposure, is measured in terms of penetration through the roof construction and the spread of flame over its surface. The roof should achieve European Class B<sub>ROOF</sub>(t4).

Building Elevation	Enclosing Rectangle (H × W) (m)	Unprotected % Required	Minimum Boundary Distance Required for 100% Unprotected (m)	Actual Boundary Distance (m)	Unprotected Area Allowed (m <sup>2</sup> )
A <sup>(1)</sup>	3 × 15	100	4.0	>4.0	45
B <sup>(1)</sup>	3 × 15	100	4.0	>4.0	45
B <sup>(2)</sup>	3 × 6	100	4.0	>4.0	18
C <sup>(1)</sup>	3 × 9	100	3.5	>3.5	27
C <sup>(2)</sup>	3 × 9	100	5.0	>5.0	27
D <sup>(1)</sup>	3 × 15	100	4.0	>4.0	45
D <sup>(2)</sup>	3×6	100	4.0	>4.0	18
E <sup>(1)</sup>	3 × 15	100	4.0	>4.0	45
F <sup>(1)</sup>	3 × 9	100	5.0	>5.0	27

Notes:

- 1. Applies to all areas classified as normal fire load (84kW/m<sup>2</sup>).
- 2. Applies to all areas classified as high fire load, such as stores and plant rooms (168kW/m<sup>2</sup>).





Figure 2 – Elevations Identification



#### 6.1 VEHICLE ACCESS

- 6.1.1 Access to and around the site will be via Pacific Drive, which allow access into the site car park. From here, vehicle access is provided within 18m and line of sight of the entrance to Stairs 1 and 2, respectively. The access route is presented in Figure 3.
- 6.1.2 Any access or security measures in and around the site (e.g. bollards preventing vehicle access) should be by-passable by the Fire Service. The details of the bypass arrangements should be developed and agreed with the Fire Service.
- 6.1.3 Due care should be given to ensure that the vehicle access route meets the requirements of a pumping appliance as presented in Table 7.
- 6.1.4 Turning facilities should be provided in any dead-end access route that is more than 20m long.

#### 6.2 FACILITIES FOR THE FIRE SERVICE

- 6.2.1 Access into the building for Fire Service personnel is provided via the entrance doors to Stairs 1 and 2. The access points are presented in Figure 3. Access directly from the outside is also provided via the reception, and into stores.
- 6.2.2 Stairs 1 and 2 will include a dry rising main each in order to ensure all areas on each floor are within 45m hose laying distance. Dry rising mains will be in accordance with BS 9990.
- 6.2.3 Each dry rising main should be independent for each stair and should comprise of:
  - A dry riser inlet box positioned adjacent to the entrance to the staircase, including appropriate signage.
  - Vehicle access should be within 18m and line of sight of the dry riser inlet box.
  - The horizontal section of the dry riser should not exceed 18m.
  - Dry riser outlet valves should be provided on all floors on the full landing of the staircase.
- 6.2.4 A fireman's switch should be provided within each staircase, controlling each smoke ventilation systems (i.e. AOV) that are associated with the staircase and any adjoining corridors or lobbies.
- 6.2.5 Despite the topmost storey height not being more than 11m tall, it is recommended to include wayfinding signage for the responding Fire Service. Each floor level should have its floor number clearly marked on each landing within each staircase. Additionally, flat indicator signs which provide information relating to the flat number accessed on each storey should be provided.

#### 6.3 WATER SUPPLIES

- 6.3.1 There should be a hydrant in accordance with BS 9990 within 90m of each dry fire main inlet. Each fire hydrant should be clearly indicated by a plate, affixed nearby in a conspicuous position in accordance with BS 3251.
- 6.3.2 A site survey should be carried out to confirm the above criteria are achieved based on any existing hydrant provisions. If this survey establishes that the existing hydrants are inadequate, then additional private hydrants should be included on site.

Appliance type		width of	Minimum turning circle between kerbs	turning circle	Minimum clearance height	Minimum carrying capacity
Pump	3.7m	3.1m	16.8m	19.2m	3.7m	12.5 tonnes
Notes:						

1. Fire appliances are not standardised. The local Fire Service may use other dimensions. Table 7 – Typical Fire Service Vehicle Access Route Specification







#### DRAWING PLANS 7

#### 7.1 INFORMATION

7.1.1 A drawing plan markup with notes has been developed by Solas Realta to assist the Architect with design implementation. This have been issued in conjunction with this Report to the Client, and is identified with reference: FE1457\_SolasRealtaMarkups\_V1\_26.08.2022.

### 7.2 FLOOR PLANS



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#### 7.3 SITE PLANS



