

Outline Fire Safety Strategy Report
TRG-220493-RT-01-I01

Project
9-10 High Street, Hitchin, North Hertfordshire
Outline Fire Safety Strategy Report

Client
Tandem Property Asset Management
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Date of Issue
05-Jun-24



TRIGON
FIRE SAFETY ENGINEERING

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Amendments

Issue No.	Date	Author	Reviewer	Comment
Draft 01	31-May-24	R. Collins / K. Wallasch	A. Eaton	First draft for design team comment.
Issue 01	5-Jun-24	R. Collins	K. Wallasch	First issue.

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1. Introduction

1.1. Overview

- 1.1.1. The RIBA Stage 2 outline fire safety strategy presented in this report has been prepared for the proposed site at 9-10 High Street, Hitchin. The outline fire safety strategy for the design generally follows the guidance presented in Approved Document B (**ADB**) (Volume 1 – 2019 edition incorporating 2020 and 2022 amendments) [1] in order to meet the functional requirements of the Building Regulations 2010 [2].
- 1.1.2. As of 29th March 2024, amendments ADB (Volumes 1 and 2, 2019 edition incorporating 2020 and 2022 amendments) were published by HM Government. The amendments are discussed further in Section A.3.25 and A.3.26.

Note: Throughout this report references made to ADB refer to Volume 1 (2019 edition incorporating 2020 and 2022 amendments) unless explicitly stated otherwise.
- 1.1.3. This report sets out the principles of the fire safety strategy to be discussed with the design team and all stakeholders. This report is not considered appropriate to support Building Regulations submission. A detailed fire safety strategy, suitable for Building Regulations approval should be developed at the next design stage.
- 1.1.4. In some instances, where the proposals deviate from the recommendations of standard guidance, suitable fire engineering justifications have been provided to support these deviations were deemed appropriate. Any such justifications presented herein are subject to agreement with the Approval Authorities.
- 1.1.5. Unless otherwise stated in this report, detailed aspects of the design and construction should be in accordance with the recommendations of ADB, as well as other relevant British Standards and codes of practice.

1.2. Site description

1.2.1. Project brief

- 1.2.2. The client has outlined that the overall aim for this project is to “... re-provide the existing retail units on High Street together with improving the overall site through replacing the current raised parking with a high-quality residential scheme with parking beneath. The proposal considers the surrounding local context and street presence”. By refurbishing the existing retail units, the scheme will provide the opportunity to improve the High Street presence, as well as improve the condition of the existing site through the delivery of the residential units.

1.2.3. Existing site description

- 1.2.4. The site is located in Hitchin, North Hertfordshire on a sloping site accessed from the High Street on one side (south-east) at basement level, and Paynes Park (north-west) on the other side at ground floor level. Currently there are two existing retail units located on this site, which will be redeveloped into a single retail as part of the proposed works.

1.2.5. Proposed site description

- 1.2.6. The proposed works will provide a residential scheme that includes a total of 44 residential units, 32 basement car parking spaces, and a new retail unit on High Street level. The site will consist of four residential blocks.
- 1.2.7. The four residential blocks will each have three or four storeys (i.e., ground plus two upper storeys, or ground plus three upper storeys). A basement level will include entrance to Retail Unit from the High Street as well as basement car parking for the residential blocks. Each of the blocks will be provided with a single stair to access the residential units on the upper floors.
- 1.2.8. Given that each of the residential blocks are situated above the common basement level car park, with the stairs serving Blocks B and C also serving the basement level car park, the development is considered as a single building. However, for the purpose of this report, each residential 'block' has been discussed individually.
- 1.2.9. Figure 1.1 illustrates a section of the car park, retail unit and Blocks A to D. Blocks A to D are described as follows:
- **Block A** – Accessed from ground floor level and consists of three storeys (i.e., ground plus two upper floors).
 - **Blocks B and C** – Accessed from ground level (see Section 1.2.16), and consists of four storeys (i.e., ground, plus three upper floors).
 - **Block D** – Accessed from basement level along High Street and ground floor level, and consists of three storeys (i.e., ground plus two upper floors).
 - **Car Park** – Single storey basement car park accessed via ramp from Paynes Park at ground floor level or via residential cores from Blocks B and C at basement level.
 - **Retail unit** – Single storey retail unit accessed via the High Street.

Figure 1.1: Section of proposed residential blocks, car park, and retail units throughout 9-10 High Street, Hitchin.



- 1.2.10. Primary access into the residential portion of the scheme is via Paynes Park, to the west of the site. Paynes Park also provides the primary vehicle access into the basement level car park, as well as for the fire and rescue service onto the podium level (see also Section 1.2.12).
- 1.2.11. The podium level also offers various amenity spaces, such as cycle storage, refuse stores, and plant areas. The upper floor of the residential blocks, each of which are served by a single stair, has been illustrated in Figure 1.2.

Figure 1.2: Typical upper floor plan showing layout of residential Blocks A-D.



1.2.12. Basement storeys

1.2.13. The guidance in ADB defines a “basement” as:

"A storey with a floor that, at some point, is more than 1200mm below the highest level of ground beside the outside walls. (However, see Appendix B, paragraph B26c, for situations where the storey is considered to be a basement only because of a sloping site.)"

1.2.14. Therefore, as the lower ground storey contains a portion of the floor level which will be located more than 1,200mm below the highest adjacent ground level, the lower ground storey would be classified as a basement in accordance with the strict interpretations of ADB.

1.2.15. For the purposes of this report, the car park has been considered as a basement car park.

1.2.16. Measurement of height

1.2.17. As mentioned in Section 1.2.4, the 9-10 High Street site is located on a sloping site which falls from Paynes Park to the west by approximately 5m to the High Street level to the east of the site.

1.2.18. In accordance with ADB, when measuring the height to the top storey of the building, the height should be measured to the upper floor surface of the top floor of the building from the ground level on the lowest side of the building.

1.2.19. In this case, measurement should therefore be taken from the High Street level to the height of the third floor within Block B/C. When measuring the height of the residential blocks, in line with the above, the height to the top storey measures approximately 14m.

1.2.20. Indicative layouts of the proposed floorplans are illustrated in Figure 1.3 to Figure 1.7. A full list of documents and drawings used to produce this report has been provided in Appendix A.2.

Figure 1.3: Proposed basement layout of 9-10 High Street, Hitchin.

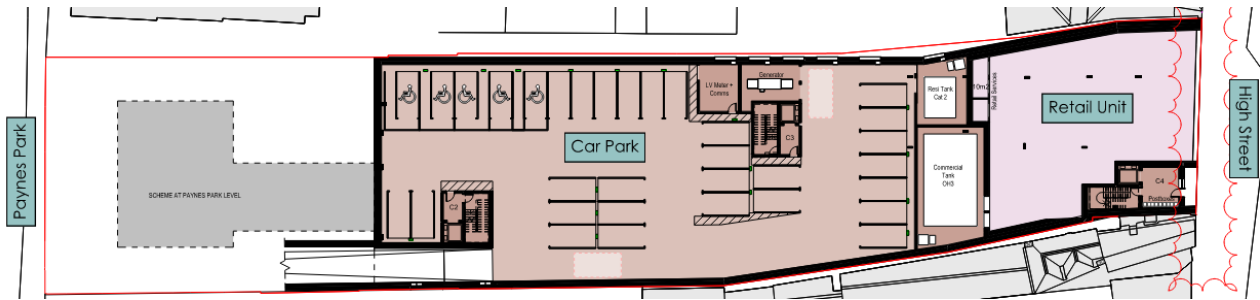


Figure 1.4: Proposed ground (podium) level layout of 9-10 High Street, Hitchin.



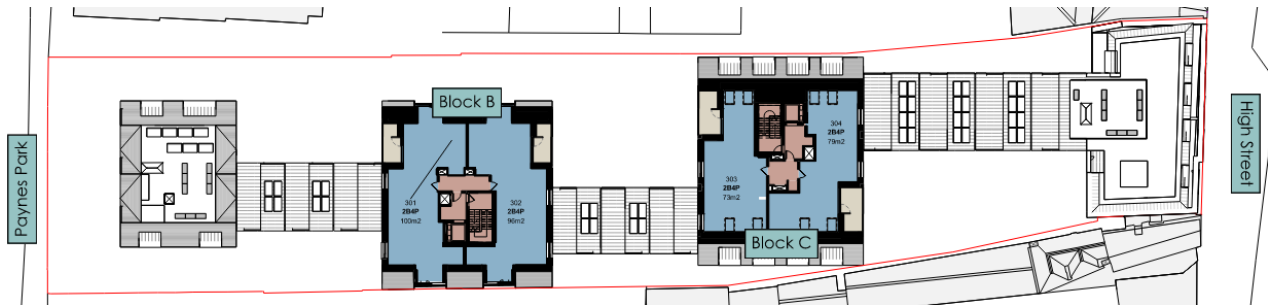
Figure 1.5: Proposed first floor layout of 9-10 High Street, Hitchin.



Figure 1.6: Proposed second floor layout of 9-10 High Street, Hitchin.



Figure 1.7: Proposed third floor layout of 9-10 High Street, Hitchin.



2. Statutory controls

- 2.1.1. Further details with regard to the statutory controls relevant to the building have been set out in Appendix A.3 of this report and summarised below.
- 2.1.2. The building works are subject to the requirements of the Building Regulations 2010 (including amendments up to October 2023) and have been considered in this report. Further detail is provided within Appendix A.3 of this report.
- 2.1.3. The outline fire safety strategy set out in this report generally follows guidance referred to in ADB and associated supporting guidance in order to meet the functional requirements of the Building Regulations 2010.
- 2.1.4. ADB makes reference to other standards and guidance documents with supplementary recommendations. For example, ADB makes reference to the guidance in BS 9999 [3] for guidance on firefighting shafts and BS 9991 [4] for flats with balcony access. Therefore, where appropriate, guidance from relevant guidance has been adopted.
- 2.1.5. "Higher risk buildings" (HRBs) are buildings over 18m in height or having at least 7 storeys and containing at least two residential units. The Building Safety Regulator, part of the HSE, regulate the design and construction process for HRBs and ensure appropriate measures are being implemented to manage risk. The 9-10 High Street, Hitchin scheme development will not consist of HRBs.
- 2.1.6. Responsibility for compliance with the Regulatory Reform [Fire Safety] Order 2005 [5] ["**FSO**"] will rest with the "responsible person" and this outline fire safety strategy has been developed on the assumption that the building will be suitably managed.
- 2.1.7. This report presents an outline fire safety strategy suitable for planning application and discussions with the design team and client. It is not considered suitable to support Building Regulations approval.
- 2.1.8. The Building Regulations are intended to ensure a reasonable standard of life safety. The protection of property, including the building itself, often requires additional measures. Insurers usually set higher standards. The design team should seek further information on the design of each building from the Client and Insurers in relevant areas as the designs develop.

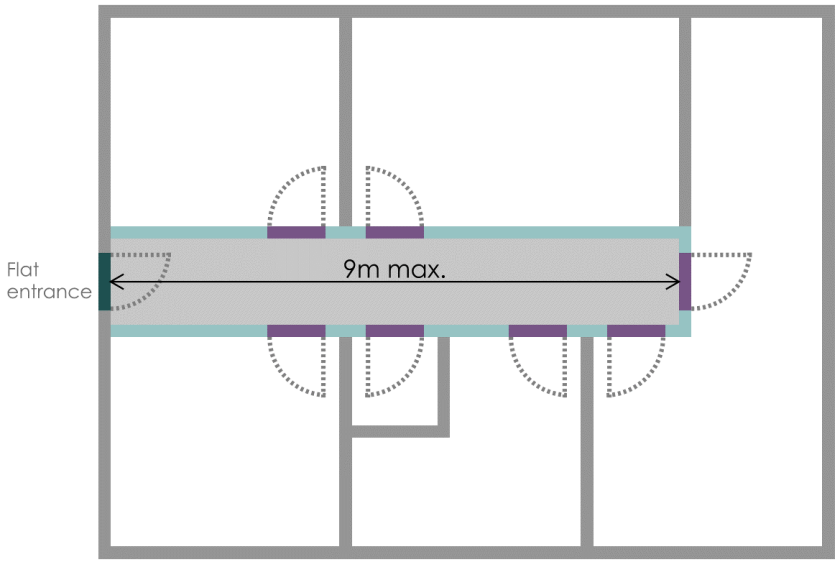
3. Fire safety measures

- 3.1.1. A summary of the fire safety strategy principles that are likely necessary to achieve compliance with the functional requirements of the Building Regulations 2010 for the current RIBA Stage 2 designs are outlined below. The level of detail provided is considered suitable to support the planning application.
- 3.1.2. In the following table, where any proposals deviate from the recommendations of standard guidance, the alternative approach remains an approval risk until agreed with the Approval Authorities. These instances are highlighted throughout. It is proposed to further develop engineering justifications to support these proposals at the next stage. The proposed fire safety arrangements therefore require further development at the next design stages and are subject to Statutory Consultation and subsequent approval.
- 3.1.3. It is proposed that during the next design stage (RIBA Stage 3 – Spatial Coordination), a detailed fire safety strategy will be produced that will be suitable to support the Building Regulations application. The report will detail the fire safety strategy and confirm the proposed design preference following discussions with the design team, client, and Building Control.

Table 3.1: Outline fire safety strategy for 9-10 High Street, Hitchin.

Provision	Comment/recommendation
Purpose Group	Table 0.1 of ADB classifies different building uses to a Purpose Group that represent the different levels of hazard. The site will predominantly contain residential units that will be classified as Purpose Group 1 (a) – Residential (flats). The retail space, and car park on the basement level, have been considered separately to that of the residential units and provided with specific recommendations set out herein. The basement car park, and retail units have been assessed in accordance with ADB Volume 2. Under ADB Volume 2, the following purpose groups are applicable: • Retail – Purpose Group 4 (shop and commercial); and • Car park – Purpose Group 7(b) (storage and other non-residential).
B1: Means of warning and escape	
Evacuation strategy	Residential units A stay-put evacuation strategy is proposed throughout the residential units, this is based on the principle that a fire is contained in the flat of origin due to the high level of compartmentation within the building. Occupants in other flats that are not affected by fire therefore may choose to remain in place. Alternatively, occupants may choose to self-evacuate, or evacuate under direction from the fire and rescue service. Retail unit The retail unit along the High Street should adopt a simultaneous evacuation strategy, whereby in the event of a fire alarm activation anywhere in the retail unit (single call point or smoke detector), all occupants within the retail unit will evacuate.

Provision	Comment/recommendation
	If activation occurs in the retail unit, the retail unit should evacuate independently of the residential units, and vice versa. Activation of the fire alarm and detection system within the retail unit should not trigger the evacuation of the residential units. However, it is recommended that occupants of the retail unit should be informed of a fire in the adjacent residential building by means of silent alarm within the fire alarm panel. This should be supported by a detailed review of the compartmentation providing separation between the residential areas and retail unit.
Fire detection and fire alarm system	Residential units In the residential units, all dwellings are recommended to have a fire detection and alarm system achieving a minimum Grade D1 Category LD1 in accordance with BS 5839-6 [6]. This provision is an enhancement on the minimum provision of a Category LD3 system as recommended within BS 5839-6. In a Category LD1 system, detectors should be installed within all areas and all rooms or areas in which fire may start. Common areas An automatic fire detection system should be provided within the protected lobbies to the communal residential stairs as well as the common corridors (Category L5 system). This system is recommended in order to activate the smoke ventilation in the lobbies, and Automatic Opening Vent (AOV) at the head of the stair (see relevant section of this report). Sounders will not be provided within the common areas of the residential blocks as there are no communal facilities provided directly off the common corridors. This will <u>not</u> sound an alarm. The detection within the stair lobbies and common corridors should be a Category L5 system in accordance with BS 5839-1 [7], with location of detection defined. This will be developed by others at the next design stage. Basement car park In accordance with the standard guidance, a manual call point will be sufficient for the ancillary spaces. However, it is recommended that automatic fire alarm and fire detection systems should be provided in the lobbies to the ancillary spaces on the ground (i.e. plant room and cycle store), and basement levels to activate the proposed ventilation to the lobbies and stair serving the basement car park. As a minimum, it is recommended that a Category L3 system is installed throughout the basement level in accordance with BS 5839-1.
Number of escape routes (Retail Unit)	ADB recommends that any room with a single exit should be limited to a maximum of 60 people.

Provision	Comment/recommendation
	As the retail unit is understood to be provided with a single escape route (i.e. onto the High Street), the retail unit should be limited to 60 people. This should be reflected to the tenant of the retail unit upon occupation.
Travel distances	Residential units Standard guidance recommends that the internal planning of flats should follow either of the following approaches: - Provide a protected entrance hall (minimum REI 30) serving all habitable rooms. - Plan the flat to meet the following conditions: - The travel distance from the flat entrance door to any point in any habitable room is a maximum of 9m. - Cooking facilities are remote from the main entrance door and do not impede the escape route from anywhere in the flat. Upon review of the proposed layouts for the residential units throughout the scheme, it is understood that each unit has been designed in accordance with the recommendations relating to protected entrance halls. It should be confirmed at the next design stage that the recommendations illustrated in Figure 3.1 have been followed within each residential unit, particularly limiting the travel distance to 9m within the protected entrance hall. The recommendations in relation to protected entrance halls have been illustrated in Figure 3.1 below. <i>Figure 3.1: Recommendations of standard guidance for the internal planning of flats with protected entrance halls.</i>  NOTE: Bathrooms do not need to have fire doorsets provided that the bathroom is separated by fire resisting construction from adjacent rooms. 30 Fire resisting construction (minutes) 30 Fire doors with smoke seals 20 Fire doors without smoke seals Protected entrance hall

Provision	Comment/recommendation
	Common areas As per Diagram 3.7 of ADB, it is recommended that where flats discharge into a common corridor, leading via a protected lobby into the stair, the travel distance from the furthest flat to the protected lobby should be limited to 7.5m. The residential blocks within this scheme will be designed such that the travel distance within the common corridors do not exceed 7.5m in any instance. See also the <i>Smoke Control Systems</i> section of this report for further information on the ventilation of the protected lobby within the residential blocks. Although the main standard guidance followed for this project is ADB, it is highlighted that BS 9991 identifies an appropriate method to extend travel distances in a single direction up to 15m if a sprinkler system is provided, and the entire escape route throughout the residential building is ventilated. All residential blocks will be fitted with a sprinkler system (see relevant section within this report), however, Trigon highlight that this is provided as an enhancement and has <u>not</u> been used as justification to extend travel distances in common areas of the residential blocks. Basement car park Car park maximum travel distance in a single direction should be limited to 25m. Where travel is possible in more than one direction this limit can be extended up 45m. See also the relevant section of this report for further recommendations relating to provision of electric vehicle charging points within the basement car park. Upon review of the proposed layout, travel distances from the basement car park are within the recommendations of standard guidance, with occupants having access to two stairs. Plant rooms Travel distance in plant rooms should be limited to 9m in a single direction (within the room). Upon review of the proposed plans, it is understood that the travel distances with plant rooms adhere to the recommendations above. The design team should consider access requirements to the plant areas and ensure that any plant configurations do not exceed travel distance limits. Cycle store Travel distances within the cycle store should be limited to 9m in a single direction (within the room). The cycle stores (and refuse stores) are situated at ground floor and discharge directly to the outside without linking to the residential areas. This is the preferred option for such spaces. The current travel distance in a single direction within the cycle store located at ground floor level is approximately 8m, therefore the proposed ground floor cycle store will meet these recommendations. Similar to that of plant rooms, the design team should consider the internal layout of cycle stores such that actual travel distance limits are not exceeded.

Provision	Comment/recommendation
	Retail unit Retail unit maximum travel distances should be limited to 18m where travel is possible in a single direction only. Where travel is possible in more than one direction, this limit can be extended to 45m. The internal layout of the Retail unit at High Street level is currently unknown. As a result, standard guidance would recommend that the direct travel distances should be measured as opposed to the actual travel distances. Therefore, two thirds (2/3) of the actual travel distance is adopted for the direct travel distance in accordance with ADB (i.e. 12m in a single direction and 30m in more than one direction). Currently, it has been assumed that escape from the Retail unit will be available in a single direction (i.e. onto the High Street). The travel distance is measured in excess of 12m (approximately 20m). A detailed fire engineered justification will be developed at the next stage to support this, once the internal layout has been confirmed. This will include the enhanced provision of a commercial sprinkler system serving the Retail unit (see relevant section of this report), beyond the minimum recommendations of standard guidance. This will be subject to agreement with the Approval Authorities.
Number of stairs	Residential units As outlined in Section 1.2.19, the height of the top storey of the residential blocks will be less than 18m in height when measured from the podium level. Based on current guidance in ADB, a single stair is deemed appropriate and in line with current guidance. This stair will <u>not</u> be a firefighting stair (see relevant section of this report); however, it will be used as a means of escape stair for residents and can be used by the fire service to access the flats as a dry riser will be provided to support firefighting operations (see relevant section of this report). Basement storey ADB recommends that an escape stair forming part of the only escape route from an upper storey should <u>not</u> continue down to serve a basement storey, unless it satisfies the following criteria as a small single stair building: • The top storey of the building is a maximum of 11m above ground level. • No more than three (3) storeys are above the ground level. • The stair does not connect to a covered car park, unless car park is open sided. • The stair does not serve offices, stores or other ancillary accommodation unless separated from the stair by a protected lobby or corridor (REI 30), with a minimum of 0.4m² of permanent ventilation or be protected from the ingress of smoke by a mechanical smoke control system. • Either of the following is provided for the fire and rescue service: (i) A high-level openable vent with a free area of at least 1m² at each storey.

Provision	Comment/recommendation
	(ii) A single openable vent with a free area of at least 1m² at the head of the stair, operable remotely at the fire and rescue service access level. Blocks B and C of the scheme do <u>not</u> satisfy all of the above requirements as the stairs connect to a covered car park at basement level, as well as the top storey of the blocks measuring more than 11m in height (see Section 1.2.19). A detailed justification will be developed at the next stage to address the single stair serving both the upper floor of the residential Blocks B and C, as well as the basement level car park. Notwithstanding this, the stairs serving the residential blocks which extend down to the car park are separated at ground floor (podium) level with both portions of the stair terminating directly to the outside at podium level (Blocks B and C). The lobbies to the stairs serving the basement level will also be served by an independent ventilation system to that serving the upper floors (see relevant section of this report). his alternative approach would be subject to agreement with the Approval Authorities.
Width of stairs	ADB recommends that the width for the common stairs should be wide enough for "everyday use", however, as the stairs serving the upper floors of the residential blocks will be used for fire service access it is recommend that the stair achieves a minimum clear width of 1,100mm. This is an additional recommendation due to the complexities associated with the fire service access (see relevant section of this report), allowing the Fire and Rescue Service (FRS) more space to carry out their role. Should the stairs be designed as traditional firefighting shafts (not recommended for a building of this height), the stairs would be recommended to achieve a clear width of 1,100mm, nonetheless. Therefore, this additional recommendation is considered acceptable to support the FRS. Upon review of the stairs serving the residential blocks, it has been identified that each stair measures at least 1,100mm in width.
Width of exits	The final exits should facilitate the evacuation of persons out of and away from the building. Accordingly, they should be of sufficient width for the number of people using the exit. Each of the stairs serving the residential blocks should lead to a final exit, either directly or via an internal passageway at ground floor. Any protected exit corridor or stair should have the same standard of fire resistance and lobby protection as the stair it serves. Upon review of the proposed plans, the final exits from the upper floors of each of the blocks escape at the podium level via the lift lobby. The escape route passing through the lift lobby at podium level is considered acceptable provided that only the lift serves this space, and no other services.

Provision	Comment/recommendation
	Upon review of the proposed plans, the final exits measure at least 850mm in clear width. This is considered acceptable considering the stay-put evacuation strategy throughout the residential blocks. A further review of the exit widths from the retail unit should be undertaken at the next stage, once more detailed designs have been developed.
Smoke control systems	As per Diagram 3.7 of ADB, where flats discharge into a common corridor, leading via a protected lobby into the stair, the stair lobby should be provided with ventilation and have no flats opening directly into it. ADB does not recommend that the common corridors are ventilated in addition, provided that the travel distance within the dead-end common corridors are limited to 7.5m in a single direction. Common corridors As outlined above, standard guidance would not recommend the provision of smoke control system serving the dead-end common corridor where the single direction travel distance is limited to 7.5m. Upon review of the proposed plans, the travel distance within the common corridors do not exceed the prescribed limits of standard guidance. Lift lobbies In addition, all lift lobbies are proposed to be provided with natural smoke ventilation achieving a minimum of 1m² aerodynamic free area. This provides people of reduced mobility in the lift lobbies waiting for use of the evacuation lift, an equivalent level of protection to the stair, which is appropriate to meet the Equality Act [9]. Residential stairs An AOV is also proposed to be provided at the head of each residential stair and should achieve a minimum aerodynamic free area of 1m². The proposed smoke ventilation strategy for ventilating the protected lift lobbies and stairs as outlined above should be discussed with the Approving Authorities during the next design stage. Basement stairs The lobbies to the two stairs serving the basement car park, should be afforded with smoke ventilation to prevent smoke ingress into the stair. It is currently unclear how the two stairs serving the basement car park are ventilated. This should be confirmed by the design team. It is recommended that the lobbies to the stairs serving the basement car park are ventilated by means mechanical ventilation. The design team have confirmed that the basement stair lobbies will be ventilated via a mechanical smoke extract system, ducted along the underside of the soffit of the carpark, exhausting directly at podium level. This allows smoke from the basement to be vented directly to outside (at podium level), whilst the portion of the shaft serving the residential floors can discharge to the head of the shaft.

Provision	Comment/recommendation
	Basement car park The basement car park should be provided with smoke ventilation via either natural or mechanical means. This can be provided in either of the following ways: • If natural ventilation is provided, the aggregate vent area should be a minimum of 1/20 of that level's floor area, at least half of which is provided equally by two opposite walls (1/80 on each side). The remaining free area can be distributed wherever possible. • If mechanical smoke ventilation will be provided which should achieve a minimum of 10 air changes per hour (ACH), capable of handling gas temperatures of 300°C and in accordance with BS EN 12101-3 [10]. Based on the presence of electric vehicle charging points throughout the basement car park, it is recommended that a mechanical system is considered as there is a greater presence of toxic gases in lithium-ion battery fires than in traditional vehicle fires. The mechanical smoke ventilation system serving the basement should be supported by the provision of a commercial sprinkler system throughout the basement (see relevant section of this report). The design team should confirm the means of ventilation in the basement car park (see also recommendations for electric vehicles within this report).
Refuge spaces	Standard guidance does <u>not</u> make recommendations with regards to refuge spaces within residential buildings, however it is proposed to provide refuge spaces within the lobby of the evacuation lift (see relevant section of this report) on all residential floors, as well as within the protected lobbies for the stairs serving the basement car park. These refuge spaces should: • be of the following dimensions: 900mm x 1,400mm; • not reduce the width of escape route; • include a blue mandatory sign worded "Refuge – keep clear". It is recommended that the refuge spaces in the lift lobby should be provided with an Emergency Voice Communication (EVC) system. This is additional to the recommendation in the current standard guidance but will support providing equitable escape for people with reduced mobility, allowing those using the evacuation lift within each block (see below) to communicate with those at ground level in an emergency. At the next design stage, the building management should confirm the proposed management provisions across each residential block in line with the above.
Lifts	In accordance with standard guidance, the lifts serving the basement level should <u>not</u> also serve the upper residential floors of Blocks B and C. Furthermore, in basements and enclosed car parks, the lift should be within the enclosure of a protected stairway. Otherwise, the lift should be approached only via a protected lobby or protected corridor (minimum REI 30).

Provision	Comment/recommendation
	Currently the lifts serving the basement level discharge into the protected lobby of the stairs serving this level. A fire engineered approach could be developed can be developed at the next stage to support the design of lifts serving the upper level <u>and</u> basement level. The fire engineered justification will likely include discussion relating to the provision of evacuation lifts that serve all levels with each respective block, as well as the provision of a commercial and residential sprinkler system throughout the scheme, and enhanced smoke control systems both within the residential blocks and basement level (see <i>Smoke Control Systems</i> section of this report).
Evacuation lifts	Whilst not recommended to meet the minimum recommendations of standard guidance, it has been highlighted to the design team that Trigon recommend that an evacuation lift is provided within the protected lobby of each residential block. This provision allows people of reduced mobility equitable escape in accordance with the Equality Act. All protected lift lobbies should also have associated refuge spaces (see relevant section within this report) to support evacuation of people of reduced mobility as described above. There will be low numbers of disabled occupants that evacuate at any one time due to the stay-put evacuation strategy, and there will be a high level of fire safety provisions throughout each block (e.g. automatic fire detection and alarm systems, compartmentation between floors and individual flats, sprinkler protection etc.). As such, it is proposed that a provision of a single evacuation lift opening into the lobby to the stair is appropriate to support the evacuation of people of reduced mobility in each residential block. The evacuation lift should be designed in accordance with Annex G of BS 9999, including a back-up power supply. It is currently proposed that the evacuation lift will be able to be operated by any occupants of the building who will need to use the lift in an emergency. At the time of writing there is no current guidance with respect to lifts being operated without management assistance (as would be the case in the residential areas). However, the proposals will be developed in conjunction with the lift engineer. In the absence of further guidance, it is also recommended that the lift can be operated on the arrival of the fire and rescue service or other responsible persons.
Doors	ADB recommends that, where possible, doors on the common escape route should swing in the direction of escape. This recommendation is not applicable to the residential areas within the development. Where a door on an escape route must be secured against entry, it should be fitted with a device that is readily operated, without a key, from the side approached by persons making their escape.
Emergency escape lighting	All escape routes should have adequate artificial lighting (including external escape routes) which illuminates the route if the main supply fails.

Provision	Comment/recommendation
	Escape lighting should be installed in accordance with BS 5266-1 [11].
Emergency escape signage	It's recommended that all means of escape routes are distinctively and conspicuously marked by emergency exit signs of adequate size complying with the Health and Safety (Safety signs and signals) Regulations [12] and the FSO. The signs should be in accordance with the guidance in BS 5499-1 [13] and BS ISO 3864-1 [14]. See also <i>Wayfinding signage</i> section later in this report.
B2: Internal fire spread (linings)	
Wall and ceiling linings	Any wall and ceiling linings should meet with the following classifications when tested in accordance with BS EN 13501-1 [15]. Residential areas - Small rooms of maximum internal floor area of 4m² should meet Class D-s3, d2 (European). - Other rooms (including garages), as well as circulation spaces within a dwelling should meet Class C-s3, d2. - Other circulation spaces (including the common areas of blocks of flats) should meet Class B-s3, d2 (European). Non-residential areas - Internal linings within small rooms of area not more than 30m² should have internal linings meeting Class D-s3, d2 (European). - Internal linings within rooms greater than 30m² should meet Class C-s3, d2. - Internal linings within circulation spaces, including the common areas, should meet Class B-s3, d2 (European).
B3: Internal fire spread (structure)	
Sprinklers	Standard guidance would recommend the provision of sprinklers within the residential blocks given that the height to the top storey measures more than 11m. Sprinklers should therefore be installed throughout each block (i.e. including the retail unit and basement car park as described further below). Residential blocks ADB recommends blocks of flats with a top storey more than 11m above ground level, should be fitted with a sprinkler system throughout the building. As outlined in 1.2.19, the height of the top storey of the residential blocks within the 9-10 High Street, Hitchin scheme measure more than 11m in height when measured from High Street level. Therefore, residential sprinklers should be fitted throughout each residential block in all residential units and ancillary areas, designed, installed and tested in accordance with a Category 2 system in accordance with BS 9251 [16]. The specification of the system should be confirmed at the next design stage by the specialist sprinkler system designer.

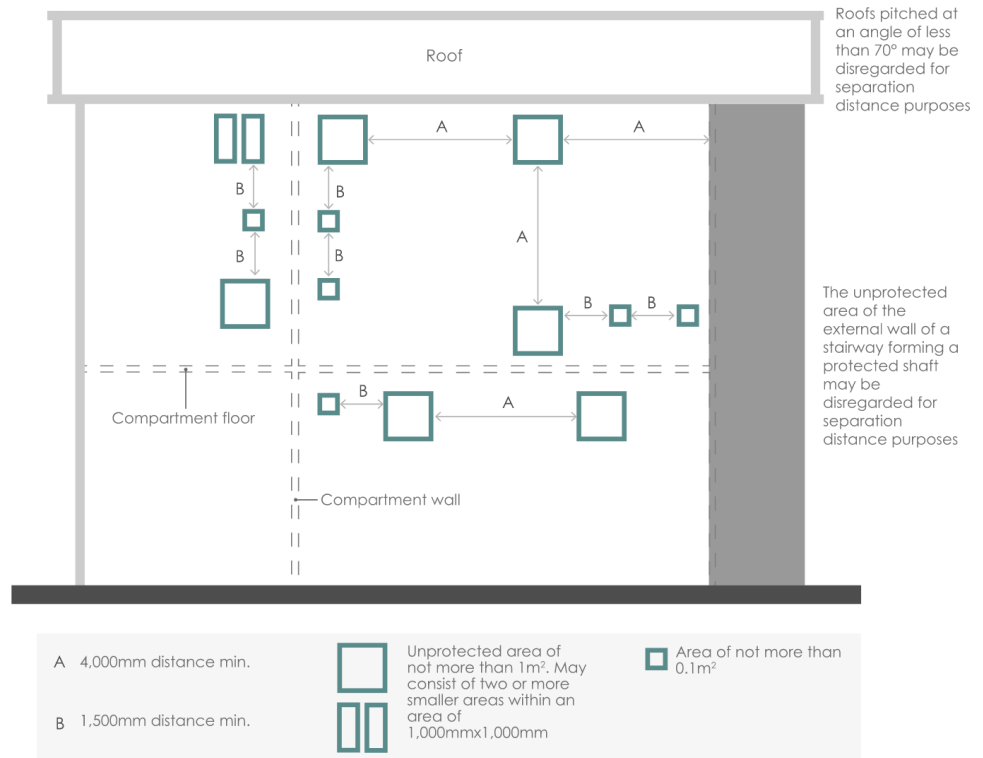
Provision	Comment/recommendation
	A residential system designed and installed to meet the recommendation of BS 9251 is deemed appropriate for the size and use of the non-residential areas provided the recommendations within Table 2 of BS 9251 are met, as per subclause 5.6. Basement car park To support the recommended provision of mechanical smoke ventilation within the basement, as the height of the top storey is over 11m, and to accommodate for the heightened fire risk presented in the car park from the electric charging points, it is strongly recommended that the provision of a commercial sprinkler system is considered. It is recommended that the system should be designed and installed in accordance with BS EN 12845 [17] OH3 category. The exact category and details of the sprinkler system should be confirmed by a specialist sprinkler system designer in the next design stage. Ancillary accommodation associated with the block of flats, such as the cycle store (see relevant section of this report), plant rooms, and car park are also recommended to be covered by the residential sprinkler system, provided that that area of the compartment does not exceed 100m², as per subclause 5.6 of BS 9251. Retail unit Standard guidance would recommend a sprinkler system to be fitted within the single storey retail unit as the building contains a block of flats with a top storey height of more than 11m. The single retail unit should be provided with a commercial sprinkler system in accordance with BS EN 12845 given the location under residential Block D.
Elements of structure	When referring to a period of fire resistance, there are three performance criteria which can be applied to each element being considered as set out in Appendix A of ADB. For information, the acronyms which denote these classifications, as defined in BS EN 13501-2 [18], have been outlined below: - Resistance to collapse (loadbearing capacity), which applies to loadbearing elements only, denoted 'R' in the European classification of the resistance to fire performance. - Resistance to fire penetration (integrity), denoted 'E' in the European classification of the resistance to fire performance. - Resistance to the transfer of excessive heat (insulation), denoted 'I' in the European classification of the resistance to fire performance. For residential block of flats fitted with a sprinkler system, with a height of top floor above ground greater than 11m, but less than 18m, elements of structure should achieve a minimum loadbearing fire resistance period of 60 minutes (R 60) when tested on exposed faces.

Provision	Comment/recommendation
Compartmentation	Residential units As outlined in Figure 3.1, the protected entrance halls of each residential unit should be designed to achieve a minimum of REI 30 when serving all habitable rooms. Residential stairs The common stairs will be used for escape purposes and should be enclosed within fire resisting walls achieving a minimum fire resistance classification of 60 minutes (REI 60) as they pass through compartment floors. The common stairs should be provided with fire doorsets achieving a minimum fire resistance classification of 30 minutes with smoke seals (E30S_a). Walls separating flats Walls separating the residential units from other parts of the building (including other flats) should achieve a minimum fire resistance period of 60 minutes (REI 60). Protected lobbies and common corridors The lift lobby is proposed to achieve a minimum of 60 minutes fire resistance (REI). The common corridor should also achieve a minimum of 60 minutes fire resistance (REI). Compartment floors The floors of the residential blocks should be a compartment floor achieving a minimum fire resistance period of 60 minutes (REI 60). All floors should be designed as compartment floors includes floors separating different purpose groups (i.e. basement and ground floor). As described in the <i>Fire service vehicle access</i> section of this report, the fire service access route is provided onto the podium level via Paynes Park. Given this is the location of the parking position for the fire service above the basement car park, it is recommended that the floor separating the basement level podium level is designed as a compartment floor achieving 90 minutes fire resistance. At the next design stage, it is recommended that other stakeholders are consulted (including insurers) to confirm this provision. The design team are aware of the above considerations and the enhanced provision of a compartment floor separating the basement and podium level will be confirmed at the next design stage. Retail unit The floor separating the Retail unit from the residential block should achieve a minimum fire resistance period of 60 minutes (REI 60). The walls separating the Retail unit from the surrounding areas should be compartment walls achieving a minimum fire resistance period of 60 minutes (REI 60). Lifts The lift shafts should be enclosed in a minimum of 60 minutes fire resisting construction with E30 doorsets where they pass through compartment floors.

Provision	Comment/recommendation
Cycle store	It is recommended that the cycle stores are enclosed in a minimum of 60 minutes fire resisting construction (REI 60). This should support to mitigate the risk of electrical vehicles (such as scooters and cycles) being stored and charged in these areas. See <i>Electric cycles/scooters</i> Section of this report for further discussion.
Smoke ventilation shafts	All smoke ventilation shaft openings should either: • have a minimum fire and smoke resistance performance of 60 min and a leakage rate no greater than 200 m³/h/m² when tested in accordance with BS EN 1366-2 [19]; or • be in accordance with BS EN 12101-8 [20]. Furthermore, doorsets enclosing smoke shafts should be provided with smoke seals and the achieve the same period of fire resistance as the wall they are sited within (i.e. E60Sa).
Rooms for life safety equipment	Any life safety equipment should be within rooms enclosed in 120 minutes fire resisting construction (REI 120) with fire doorsets achieving a minimum fire integrity of 60 minutes (E60). If a plant room does <u>not</u> contain any life safety equipment it should be enclosed in a minimum of 30 minutes fire resisting construction with fire doorsets achieving a minimum fire integrity of 30 minutes (E30).
Service shafts (Risers)	Risers passing through compartment floors would be considered protected shafts and should be enclosed in walls achieving a minimum fire resistance period of 60 minutes (REI 60) exposed on both sides. Risers should be accessed via fire doorsets achieving a minimum 30 minutes fire integrity (E 30) and if the risers are located along an escape route, then these should also have smoke seals (E30Sa). Any service risers should open directly into the common corridor, <u>not</u> into the protected lobby or stair.
Cavity barriers	Cavity barriers should be provided within concealed voids in accordance with Section 8 of ADB. Cavity barriers should be provided as follows: • To subdivide any cavity such that the distance between cavities does not exceed 10m. This distance can be increased to 20m where the surface and product exposed in the cavity is Class C-s3, d2 or better. • To close the edges of cavities, including around openings. • At the junction between an external cavity wall and compartment walls and floors. • At the junction between an internal cavity wall and every compartment wall and floor, or other fire resisting barrier. Cavity barriers should provide at least 30 minutes fire resistance for integrity and 15 minutes fire resistance for insulation (E 30 and I 15) and penetrations through cavity barriers should be suitably fire stopped.

Provision	Comment/recommendation
Fire stopping	Penetrations through protected enclosures, compartment walls and compartment floors should be suitably fire stopped in accordance with Section 9 of ADB.
B4: External fire spread	
External wall construction	The residential blocks of the 9-10 High Street, Hitchin scheme will not have a top storey above 18m, therefore, it is <u>not</u> classed as a "relevant building" under the Building Regulations. The external walls of the building will therefore not need to comply with Regulation 7(2). Standard guidance in ADB would nonetheless recommend that the external walls of the building should be Class A2-s1, d0 or better (European Class). In line with the above, it is recommended that the block of flats will be constructed to meet the requirements of Regulation 7(2), i.e. any materials which become part of an external wall, or specified attachment, of a relevant building are of European Classification Class A2-s1, d0 or better.
Space separation analysis	The external envelope of a building should not contribute to undue fire spread. This intention can be met by constructing external walls so that the materials used to construct external walls, and attachments to them, and how they are assembled do not contribute to the rate of fire spread. The extent to which this is necessary depends on the use of the building and its position in relation to adjacent buildings and therefore the site boundary. In order to achieve the intentions, set out above, the following provisions should be made: • Where the external wall of a building is on, and within 1m of the relevant boundary, it is recommended that the wall should be fire resisting from both sides. • Where the external wall of a building is 1m or greater from the relevant boundary, the amount of unprotected area (i.e., non-fire-resisting) façade will be determined at the next stage, subject to an unprotected area assessment in accordance with BR 187 [21]. It is noted that the current proposal includes external walls including windows along the boundary line and/or within 1m of the relevant boundary and therefore should be provided with at least 60 minutes fire resistance (integrity and insulation from both sides), and windows should be fixed shut. Notwithstanding this, standard guidance does provide guidance on allowable small, unprotected areas in an otherwise protected wall. Small, unprotected areas within the elevation may be disregarded where these meet the conditions of Diagram 11.5 (see also Figure 3.2 below).

Figure 3.2: Small unprotected areas that may be disregarded in assessing the separation distance from the boundary.



The design team have confirmed that where openings are situated within close proximity to the boundary line (i.e. Block B south façade and Block C north and south façades), these have been designed in accordance with the recommendations of Diagram 11.5 of ADB and are therefore considered acceptable.

To meet the current concerns and changing attitudes to external wall materials, it is recommended that all new materials which become part of an external wall or specified attachment achieve European Class A2-s1, d0 or Class A1 to BS EN 13501-1. See also the requirements of Regulation 7 in Appendix A.3.4.

At the next stage, a more detailed external fire spread assessment will be undertaken using the enclosing rectangle method in Building Research Establishment (BRE) guidance BRE 187, to determine the allowable percentage of unprotected area (UPA) on each elevation. The assessment will draw on the following assumptions:

- Radiation intensity at each unprotected area taken as 84kW/m², as per guidance in ADB and BR 187 for residential use.
- Radiation intensity at each unprotected area taken as 168kW/m², as per guidance in ADB and BR 187 for commercial use.

Provision	Comment/recommendation
	- Given that all areas of the residential blocks will be provided with sprinklers, the percentage of allowable unprotected area will be doubled, in line with the guidance in BR 187. - At this stage, it is proposed that all floors will be designed as compartment floors (60 minutes). - The relevant boundary should be taken as the site boundary, unless a façade faces onto a space that is unlikely to be developed, such as a road, canal, or river.
B5: Access and Facilities for Fire Service	
Firefighting shaft	As the building does <u>not</u> have a storey more than 18m above the fire and rescue service vehicle access level, the building will <u>not</u> have a firefighting shaft in line with the recommendations of ADB. However, as described in more detail below, each of the stairs serving the residential blocks will be used as a means of escape stair for residents and can be used by the fire service to access the flats as a dry riser will be provided to support firefighting operations.
Fire service vehicle access	Fire service vehicle access to the residential blocks is only achievable via Paynes Park to the west of the site via the podium level. The access route onto the podium level is illustrated in Figure 3.1. See also <i>Compartmentation</i> section of this report for recommendations separating the podium level and basement. <i>Figure 3.1: Site plan for 9-10 High Street, Hitchin, including access for the fire service.</i>  Access route and turning facilities The access routes around the site should meet the requirements as set out in Table 13.1 of ADB suitable for a pumping appliance as set out below: - Minimum width of road between kerbs: 3.7m - Minimum width of gateways: 3.1m - Minimum turning circle between kerbs: 16.8m - Minimum turning circle between walls: 19.2m - Minimum clearance height: 3.7 - Minimum carrying capacity: 12.5 tonnes.

Provision	Comment/recommendation
	The minimum carrying capacity outlined above is dependent on the requirements of the local fire and rescue service, however, 12.5 tonnes is recommended in ADB. It is recommended that the local fire and rescue service is consulted at a later on the minimum carrying capacity for this development. Dead-end access routes longer than 20m will be provided with turning facilities as illustrated in Diagram 13.1 of ADB. Distance from fire service appliance ADB recommends providing access for an appliance to within 45m of all points inside each flat within a block of flats, measured along the route of the hose where fire mains are not provided in the building. The proposed arrangement includes a distance of approximately 59m from the fire service vehicle parking location to the furthest point inside of the furthest flat located at the third floor (Block C, Flat 304). However, it is proposed that a dry riser will be provided to each residential block to mitigate the risk of the distance between the pumping appliance and the furthest point within each flat. The dry riser inlet should be located at the entrance to each residential blocks at the podium level and the vertical riser will be located within the stair, so that outlets will be located within the stair. The distance between the pumping appliance and the dry riser inlet should be limited to 18m. For Blocks A, B, and C, the dry riser associated with each block will be located on the podium level, at the entrance to each stair, within 18m of the parking position of the pumping appliance. For Block D, it is assumed that the fire service can park the pumping appliance along the High Street when tackling a fire in Block D. The dry riser inlet point will be provided at High Street level to the stair serving the residential Block D. Therefore, considering the limitations of the existing site and the justification identified above, it is proposed that the fire service access is suitable for 9-10 High Street, Hitchin. This approach will be developed further at the next design stage.
Wayfinding signage	In accordance with the ADB, wayfinding signage for fire service is recommended in block of flats with a height of top storey above 11m. It is proposed to follow this recommendation and include floor indication signs to assist the fire and rescue service access. Details of the signage will be provided by the design team at the next design stage.
External hydrant	External hydrants should be located within 90m of each dry riser inlet point within the building. Each fire hydrant should be clearly indicated by a plate, fixed nearby in a conspicuous position, in accordance with BS 3251 [22]. The design team have confirmed that an existing hydrant is located along the High Street level outside the existing Retail units, and it is understood that a further existing hydrant is located along Paynes Park. This is understood to provide acceptable coverage to the site.

Provision	Comment/recommendation
	Notwithstanding, the exact locations suitable for external hydrants should be confirmed at the next design stage.
Electric cycles/ scooters and electric vehicles	It is recommended that separate outlets should be provided from places of special fire hazard, such as the proposed cycle store at podium level. Due to the intense and prolonged nature of fires involving lithium-ion batteries, where cycle stores are located in basements, careful consideration should be given to the design of ventilation arrangements. This is based on evidence derived from research and recommendations from the BRE [23], FRS [24], and the National Fire Chiefs Council (NFCC) [25]. The provision of electric charging within the podium level cycle storeys are considered acceptable on the basis that: • A manual call point and Category L5 fire detection and fire alarm system should be provided in the cycle store to activate the smoke ventilation systems. This will consequently expose the fire service to less onerous conditions in the event of an electrical cycle/scooter fire and decrease the risk of smoke spread within the building. • The cycle store will be enclosed in a minimum of 60 minutes fire resisting construction with E60S_a doors. This is greater than the 30-minute fire resistance prescribed in ADB, therefore, limiting the likelihood of the fire spreading beyond the cycle store before fire service intervention. • If charging points are confirmed, the cycle store would be provided with automatic cut-off of power to charging points in the event of fire detection. It is highlighted that an automatic cut-off of charging once a connected device is fully charged should also be provided. • The cycle stores are situated on the podium level and are all open directly to the external. This will allow for heat and smoke to discharge directly to the outside, without impeding on the occupants means of escape route. Therefore, while there is no guidance on electric cycles/scooters, it is proposed that the provision of possible charging points within the cycle stores is appropriate. Similarly, to accommodate for the heightened fire risk presented in the car park from the electric charging points it is recommended that the system should be designed and installed in accordance with BS EN 12845 OH3 category. Research from RISE [26] states that cooling is the only way in which to stop a fire inside a battery pack without physically opening the battery itself, preventing the chemical reaction that creates thermal runaway. Therefore, the provision of a sprinkler system will minimise the risk of the presence of lithium-ion batteries within the basement car park.
Photovoltaic panels	The proposed plans for 9-10 High Street, Hitchin include photovoltaic (PV) panels on the roof of the building. It is recognised that the presence of such PV panels could result in fire spread along the panels and the risk would need to be mitigated. It is recommended to follow guidance provided in "RC62: Recommendations for fire safety with PV panel installations" [27].

Provision	Comment/recommendation
	The main concern with photovoltaic panels is regarding extinguishing a fire. Research carried out by BRE shows that fires involving photovoltaic panels are not common, but they would likely increase flame spread if associated with combustible roof coverings (<i>Fire and Solar PV Systems research documents by BRE</i>) [28]. The following recommendations should be considered for the photovoltaic panels: • All components of the PV panels and ancillary plant should be provided by an individual experienced provider. The same provider should install the system and carry out the inspection and maintenance of the system. The intent is to ensure the responsibility of the system is clearly defined. • It is recommended that an accredited body is commissioned to inspect the works and witness commissioning of the system. • The photovoltaic modules should not be subject to shading or shadowing. The design of the system should take this into account with a specific review to ensure any potential future shading is avoided. • Isolation equipment should be provided at readily accessible positions. This should be readily identifiable to any attending fire and rescue service. • Provide robust electrical fault monitoring systems and panels should automatically cut off in the event of a fire. • Considerations should be given to providing a photovoltaic fire detection system (such as a fibre optic heat detection) which would need to link to a constantly attended location or link into the external call centre. • Signage should be provided at the main entrance to inform the fire and rescue service of the installation of PVs and the location of the AC Isolator. • The fire resistance of the roof that PV panels are located on should achieve a minimum fire resistance of 60 minutes to prevent fire spread between compartments.

4. Conclusions

- 4.1.1. This report outlines the fire safety strategy principles for the proposed developments to the 9-10 High Street, Hitchin site located in North Hertfordshire.
- 4.1.2. The recommended guidance in ADB is proposed as a basis for developing the fire safety strategy for the building. Unless otherwise stated in this report, detailed aspects of the design and construction should be in accordance with the recommendations of ADB, relevant British Standards, and codes of practice.
- 4.1.3. This report outlines strategic principles to support a planning application, it is not considered appropriate to support Building Regulations approval.
- 4.1.4. The report sets out an outline fire safety strategy to illustrate how the proposed scheme complies with the functional requirements of the Building Regulations 2010 (as amended), areas where a fire engineered approach will be adopted, and areas that will require further development in the next design stage to address the Building Regulations approval submission.
- 4.1.5. The current proposals include variations from the recommendations of standard guidance and remain an approval risk until agreed with the Approval Authorities. It is proposed to further develop engineering justifications to support these proposals at the next stage. The proposed fire safety arrangements therefore require further development at the next design stages and are subject to Statutory Consultation and subsequent approval.

A.1. References

The following documents have been referred to in this report:

- [1] HM Government, *Approved Document B - Volume 1: Dwellings*, 2019, incorporating 2020 and 2022 amendments ed. RIBA Books, 2022.
- [2] HM Government, *Building and Buildings, England and Wales - Building Regulations 2010*. Her Majesty's Stationery Office (HMSO), 2010.
- [3] The British Standards Institution (BSI), *BS 9999: Fire safety in the design, management and use of buildings - Code of practice*. BSI Standards Limited, 2017.
- [4] The British Standards Institution (BSI), *BS 9991: Fire safety in the design, management and use of residential buildings. Code of practice*. BSI Standards Limited, 2015.
- [5] HM Government, *Regulatory Reform (Fire Safety) Order 2005*. The Stationery Office Limited, 2005.
- [6] The British Standards Institution (BSI), *BS 5839-6:2019+A1:2020 - Fire detection and fire alarm systems for buildings - Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises*. BSI Standards Limited, 2020.
- [7] The British Standards Institution (BSI), *BS 5839-1: Fire detection and fire alarm systems for buildings - Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises*. BSI Standards Limited, 2013.
- [8] The British Standards Institution (BSI), *BS EN 12101-6: Smoke and heat control systems. Specification for pressure differential systems – Kits*. BSI Standards Limited, 2022.
- [9] HM Government, *Equality Act 2010*. 2010.
- [10] The British Standards Institution (BSI), *BS EN 12101-3: Smoke and heat control systems - Specification for powered smoke and heat control ventilators (Fans)*. BSI Standards Limited, 2015.
- [11] The British Standards Institution (BSI), *BS 5266-1: Emergency lighting - Code of practice for the emergency lighting of premises*. BSI Standards Limited, 2016.
- [12] HM Government, *The Health and Safety (Safety Signs and Signals) Regulations 1996*. Her Majesty's Stationery Office (HMSO), 1996.
- [13] The British Standards Institution (BSI), *BS 5499-1: Graphical symbols and signs, Safety signs including fire safety signs. Specification for geometric shapes, colours and layout*. BSI Standards Limited, 2013.
- [14] The British Standards Institution (BSI), *BS ISO 3864-1: Graphical symbols. Safety colours and safety signs - Design principles for safety signs and safety markings*. BSI Standards Limited, 2011.
- [15] The British Standards Institution (BSI), *BS EN 13501-1: Fire classification of construction products and building elements - Classification using data from reaction to fire tests*. BSI Standards Limited, 2018.
- [16] The British Standards Institution (BSI), *BS 9251: Fire sprinkler systems for domestic and residential occupancies. Code of practice*. BSI Standards Limited, 2021.
- [17] The British Standards Institution (BSI), *BS EN 12845:2015 + A1: 2019- Fixed firefighting systems. Automatic sprinkler systems. Design, installation and maintenance*. BSI Standards Limited, 2019.
- [18] The British Standards Institution (BSI), *BS EN 13501-2: Fire classification of construction products and building elements - Classification using data from fire resistance tests, excluding ventilation services*. BSI Standards Limited, 2016.
- [19] The British Standards Institution (BSI), *BS EN 1366-2: Fire resistance tests for service installations - Fire dampers*. BSI Standards Limited, 2015.
- [20] The British Standards Institution (BSI), *BS EN 12101-8: Smoke and heat control systems – Smoke control dampers*. BSI Standards Limited, 2011.
- [21] Building Research Establishment (BRE), *BR 187: External fire spread: building separation and boundary distances*, Second Edition. 2014.

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- [22] The British Standards Institution (BSI), *BS 3251: Specification. Indicator plates for fire hydrants and emergency water supplies*. BSI Standards Limited, 1976.
 - [23] Electrical Safety First, 'Battery Breakdown: Why are e-scooter and e-bike batteries exploding in people's homes and what can be done about it?', Electrical Safety First, 2023.
 - [24] London Fire Brigade (LFB), *GN103: Guidance and principles for the charging and storage for electric powered personal vehicles*, 1 ed. 2023.
 - [25] N. F. C. C. NFCC, 'Emergency Responders Guide to Alternatively Fuelled Vehicles'. Dec. 2021.
 - [26] N. K. Reitan and A. Bøe, 'Brannsikkerhet og alternative energibærere: El- og gasskjøretøy i innelukkede rom' (Fire safety and alternative energy carriers: Electric and gas vehicles in enclosed spaces)', *SP Fire Research*, Feb. 2016.
 - [27] RISC Authority, *RC 62: Recommendations for fire safety with PV panel installations. The Joint Code of Practice for fire safety with photovoltaic panel installations, with focus on commercial rooftop mounted systems.*, Version 02. Fire Protection Association (FPA), 2023.
 - [28] Building Research Establishment (BRE), *Fire and solar PV systems- literature review*, Issue 3.4. 2017.
 - [29] HM Government, *The Town and Country Planning (Development Management Procedure and Section 62A Applications) (England) (Amendment) Order*. 2021.
 - [30] HM Government, *Building Safety Act 2022*. 2022.
 - [31] HM Government, *Fire safety risk assessment: offices and shops*. TSO (The Stationery Office), 2006.

A.2. Architectural Drawings

A.2.1. The following documents have been used to supplement the development of this outline fire safety strategy:

- Feasibility Fire Safety Strategy Review Advice Note, 9-10 High Street, Hitchin (ref: TRG-220493-AN-01-I01, dated: 23 Jan 2023).

A.2.2. The following drawings have been used to produce this outline fire safety strategy. Trigon have had ongoing discussions with the design team in the production of the drawings below in various email communications.

A.2.3. However, Trigon have not undertaken a formal independent review of the drawings listed below or any associated 'fire safety strategy drawings'. The figures included in this report are indicative and reference should be made to the architects' drawings.

Table A.2.1: Architectural drawings produced by Tigg+Coll Architects.

Title	Drawing Number	Rev	Date
Basement Floor Plan	270-HH-P-104	D	07/05/2024
Ground Floor Plan	270-HH-P-100	D	07/05/2024
First Floor Plan	270-HH-P-101	D	07/05/2024
Second Floor Plan	270-HH-P-102	B	07/05/2024
Third Floor Plan	270-HH-P-103	D	07/05/2024
Roof Plan	270-HH-P-105	C	07/05/2024
Ground Floor Plan – Block 1-2	270-HH-P-110	B	07/05/2024
Ground Floor Plan – Block 3-4	270-HH-P-111	B	07/05/2024
First Floor Plan – Block 1-2	270-HH-P-112	B	07/05/2024
Ground Floor Plan – Block 3-4	270-HH-P-113	B	07/05/2024
Second Floor Plan – Block 1-2	270-HH-P-114	A	07/05/2024
Second Floor Plan – Block 3-4	270-HH-P-115	A	07/05/2024
Third Floor Plan – Block 2-3	270-HH-P-116	B	07/05/2024
North & South Elevations	270-HH-P-200	-	07/05/2024
Proposed Site Sections	270-HH-P-300	A	07/05/2024

A.3. Statutory controls

A.3.1. The Building Regulations 2010

A.3.2. The building works are subject to the requirements of the Building Regulations 2010. For fire safety, the functional requirements of Part B of Schedule 1 to the Building Regulations 2010 are set out under the following headings:

- Requirement B1 – Means of warning and escape.
- Requirement B2 – Internal fire spread (linings).
- Requirement B3 – Internal fire spread (structure).
- Requirement B4 – External fire spread.
- Requirement B5 – Access and facilities for the fire service.

A.3.3. This report presents a fire safety strategy suitable for planning application and discussions with the design team and client, and other stakeholders. It is not considered suitable to support Building Regulations approval submission.

A.3.4. Regulation 7

A.3.5. As per Regulation 7(1) of the Building Regulations 2010 (as amended), all building work should be carried out with adequate and proper materials which are:

- appropriate for the circumstances in which they are used,
- adequately mixed or prepared, and
- applied, used or fixed so as adequately to perform the functions for which they are designed, and in a workmanlike manner.

A.3.6. Please refer to Section 'B4: External Fire Spread' of this report for guidance on the external façade and the materials recommended within the external walls.

A.3.7. Regulation 38

A.3.8. Regulation 38 of the Building Regulations requires fire safety information for new or altered buildings to be passed to the responsible person at completion of the project or on occupation, whichever comes sooner.

A.3.9. The aim of this requirement is to provide the responsible person with appropriate information to assist to operate and maintain the building in reasonable safety. This information can therefore assist the responsible person in undertaking a Fire Risk Assessment to meet the requirements of the FSO.

A.3.10. Client requirements

A.3.11. In accordance with the requirements of Regulation 11A of the Building Regulations 2010, the client must make suitable arrangements for planning, managing and monitoring a project (including allocation of sufficient time and other resources) so as to ensure compliance with all relevant requirements. For the purposes of this requirement the "client" means any person for whom a project is carried out.

A.3.12. Roles and responsibilities

A.3.13. Additional accountability and statutory responsibilities to 'duty holders' have been introduced to the Building Regulations. There are specific legal duties and roles for clients, designers, principal designers, contractors, and principal contractors. There are several responsibilities for the client which include, but are not limited to:

- Ensuring suitable arrangements to plan, manage and monitor building work to ensure compliance with the Building Regulations throughout the project.
- Take all reasonable steps to ensure that all designers and contractors are competent.
- Delegation of principal designer and principal contractors.

A.3.14. Trigon recognise our role as a designer as part of the Building Regulations and confirm that we have the competency and resources to fulfil the role outlined therein.

A.3.15. It is recommended that building information should be created, stored, and updated throughout the design and construction process and a detailed record of the as-built information should be collated.

A.3.16. Town and Country Planning Act 1990

A.3.17. The Town and Country Planning Act 1990 [29], together with the supporting secondary legislation, requires 'relevant buildings' to go through 'Planning Gateway One' (**PGO**) as part of the planning process. 'Relevant buildings', for the purposes of the planning stage, contain two or more dwellings or educational accommodation and are over 18m in height or have 7 or more storeys.

A.3.18. Therefore, the 9-10 High Street, Hitchin scheme will not be classified as 'relevant buildings'.

A.3.19. Building Safety Act 2022

A.3.20. The Building Safety Act 2022 (**The 2022 Act**) [30] gained Royal Assent on 28th April 2022. Following these secondary legislative changes supporting The Act were released on 1st October 2023. The Act has been set out with the objective of delivering the biggest changes to building safety for nearly 40 years. The reformed building safety system covers the performance of all buildings, as well as the management of fire and structural safety risks in new and existing 'higher-risk buildings' (**HRBs**).

A.3.21. HRBs are buildings over 18m in height or having at least 7 storeys and containing at least two residential units. The Building Safety Regulator, part of the HSE, regulate the design and construction process for HRBs and ensure appropriate measures are being implemented to manage risk. The 9-10 High Street, Hitchin scheme development will not consist of HRBs.

A.3.22. Statutory guidance

A.3.23. This outline fire safety strategy generally follows the guidance presented in ADB in order to meet the functional requirements of the Building Regulations 2010 (as amended). This report is an outline fire safety strategy report suitable for a planning application and discussions with the design team and client. It is not suitable to support Building Regulations approval.

A.3.24. As the requirements of the Building Regulations are functional in nature, there is no obligation to follow the standard guidance of ADB if compliance can be demonstrated in

some other way. However, this fire safety strategy has been developed on the basis of the guidance presented in ADB. In some areas reference has been made to other British Standards for example BS 9991.

- A.3.25. As of 29th March 2024, amendments ADB (Volumes 1 and 2, 2019 edition incorporating 2020 and 2022 amendments) were published by HM Government. The amendments primarily focus on the following fire safety provisions:
- A new recommendation for more than one common stair to be provided in blocks of flats with a storey 18m or more in height; and
 - Building design provisions to support the use of evacuation lifts in blocks of flats.
- A.3.26. Despite this scheme being designed with residential accommodation, the above amendments will take effect on 30 September 2026 for use in England. Notwithstanding this, this report outlines several recommendations above the minimum recommendations of current standard guidance (i.e. provision of evacuation lifts) in order to meet industry best practice and forthcoming changes to legislation and guidance. Therefore, the 2019 edition incorporating the 2020 and 2022 amendments of ADB Volume 1 remain applicable.
- A.3.27. Departures or deviations from the relevant fire safety guidance document are detailed within this report. Where not explicitly described within this report, in all other respects, detailed aspects of the design and construction should be in accordance with the recommendations of ADB, relevant supporting British Standards and codes of practice referenced therein.
- A.3.28. ADB makes reference to the guidance set out in BS 9991, however, it is recognised that the guidance in BS 9991 is currently under review and will likely be updated to include significant changes to the fire safety recommendations for residential buildings. Trigon take no responsibility for future changes in guidance that may affect this fire safety strategy.
- A.3.29. **The Regulatory Reform (Fire Safety) Order 2005**
- A.3.30. Responsibility for compliance with the FSO will rest with the "responsible person". In a workplace this will usually be the employer together with persons who may have control of other parts of the premises. In other cases, the person(s) who has control of the premises will be the "responsible person".
- A.3.31. Where building work and fire protection measures comply with Part B of the current Building Regulations, additional physical measures should not normally be required under the FSO unless high-hazard materials or processes are introduced into the building.
- A.3.32. The FSO places on the "responsible person" specific duties such as carrying out a fire risk assessment. More detailed guidance is available in a series of Fire Safety Risk Assessment Guides published by HM Government [31].
- A.3.33. This outline fire safety strategy has been developed on the assumption that the building will be suitably managed. This includes documenting the basis on which the fire safety design was planned, the type of management organisation envisaged for running the building, and the consequential management responsibilities. Guidance on fire safety management is provided in BS 9999.

A.3.34. Property protection

A.3.35. Property protection is not a requirement of the Building Regulations and therefore is not explicitly considered in this report. However, it should be noted that many of the fire safety provisions will afford some degree of property protection to the building.

A.3.36. Construction Design and Management (CDM)

A.3.37. The Construction Design and Management (CDM) Regulations 2015 must be followed during the design and construction works.

A.3.38. Under the CDM Regulations a client must make suitable arrangements for managing a project, including the allocation of sufficient time and resources to ensure that the construction work is carried out so far as is reasonably practicable. The client is also responsible to provide all pre-construction information as soon as is practicable to every designer and contractor appointed. Furthermore, it is the client's responsibility to ensure that a construction phase plan is drawn up before construction begins.

A.3.39. Where there is more than one contractor, the client must appoint a principal designer and a principal contractor to ensure the information is coordinated by responsible person(s). All designers or contractors should be ensured that they have the skills knowledge and experience, and if they are an organisation, the organisational capability, necessary to fulfil the role they are appointed to undertake.

A.3.40. Quality of work and testing

A.3.41. The successful implementation of the fire safety strategy is dependent on the quality of workmanship within the buildings. It is therefore recommended that the installation and maintenance of fire safety provisions is carried out by suitably competent persons who have been accredited to third party certification schemes for fire safety professionals.

A.3.42. Where certain fire safety performance classifications need to be met, it should be necessary to demonstrate that a system or product can meet the relevant performance classification. It is recommended that this is achieved by ensuring the system or product complies with one of the following:

- They should be in accordance with a specification or design that has been shown by a specific test to be capable of meeting that performance classification.
- They should have been designed by using relevant design standards in order to meet that performance classification.

A.4. Trigon Fire Safety

A.4.1. Our Team

A.4.2. Trigon is a wholly independent fire engineering consultancy founded in 2019. Our three Directors are Chartered Engineers, registered with the Institution of Fire Engineers, with over 50 years of combined experience. We specialise in solving unique fire safety challenges

A.4.3. All projects are led by a Chartered Engineer registered with the Institution of Fire Engineers. As per BS 7974, this would provide a good indication of competency in that a process of education, training and experience is required in order to achieve this.

A.4.4. The preparation of the fire safety strategy for the proposed development was led by Karl Wallasch. Karl has been supported by a team of fire engineers including another Chartered Engineer. Karl has extensive experience working on the design of residential and mixed-use developments of all size and complexity.

A.4.5. Management Systems

A.4.6. Trigon's Management Systems have achieved certification by a UKAS accredited body to the following standards:

- ISO 9001 - Quality Management Systems
- ISO 14001 - Environmental management systems
- ISO 45001 - Occupational health and safety management systems

A.4.7. This demonstrates Trigon's commitment to providing our clients with consistently high-quality fire safety advice. Trigon is also committed to minimising our impact on the environment and ensuring an adequate control of health and safety risks.

A.4.8. Trigon is Safety Schemes in Procurement (SSIP) accredited. This valued and recognised accreditation demonstrates Trigon's compliance with legislation and our ability to effectively manage risk. SSIP is approved by the Health and Safety Executive (HSE) and aims to promote a single standard for health and safety.