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*The use of Modular Building systems is understood to offer significant advantages in terms of cost and sustainability but, as a relatively new building method presents challenges for those asked to insure and invest in them.*

*This questionnaire seeks to elicit information that could be useful in engaging with insurers and focusses on the perceived challenges of Modular Building methods in respect of compartmentation and repairability to the insurance perils of fire, and water exposure.*

*The questionnaire has been developed by insurers through the RISC Authority scheme. It is important to understand that 'compliance' with building codes is the assumed starting point (covering life-safety) and in isolation may be irrelevant to the insurability of the building. The questions herein ask for details of the consideration given to the protection of the building and the business(es) conducted within it, and the mitigations proposed together with supporting evidence that will increase resilience. The matrix that insurers will use to consider the responses is also given to assist with interpretation.*

Form: IQ 8

Version 1.0 June 2021

# IQ 8



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# Building system questionnaire: Permanent Stacked Modular Buildings

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To be completed at the design and proposal stage of building planning

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Issued by:

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#### **NOTE:** COMPLETION GUIDANCE NOTES

Completion of this form neither guarantees building performance or acceptance by the issuer. It is strongly recommended that each completed form and the supporting data be reviewed by an independent expert.

#### **DOCUMENT SCOPE:** Building System Questionnaire – Permanent Stacked Modular Buildings

This document seeks to elicit information pertaining to quality assurance in pursuit of business and property protection objectives where Modular Building methods have been used. The key challenges addressed are the insurance perils of fire, and water exposure.

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*This Version 1.0 of the IQ8 Questionnaire is accompanied by an additional reference document as a Checklist pertinent to the satisfaction of important aspects of Schedule 1. Requirements in the 2010 Building Regulations in England for Permanent Stacked Modular Building methods. Future Versions will be expanded into the requirements of the devolved administrations, and the Checklist improved with feedback from users.*

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This document has been developed through the RISCAuthority and published by the Fire Protection Association (FPA). RISCAuthority membership comprises a group of UK insurers that actively support a number of expert working groups developing and promulgating best practice for the protection of people, property, business and the environment from loss due to fire and other risks. The technical expertise for this document has been provided by the Technical Directorate of the FPA, external consultants, and experts from the insurance industry who together form the various RISCAuthority Working Groups. Although produced with insurer input it does not (and is not intended to) represent a pan-insurer perspective. Individual insurance companies will have their own requirements which may be different from or not reflected in the content of this document.

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## COMPLETION GUIDANCE NOTES:

This questionnaire is designed to elicit technical information required to assist insurers understand the building design, the construction system used, and the measures proposed for ameliorating risks from fire, and water exposure. To avoid confusion as to what information is required at each question, it is suggested that the questionnaire is read in its entirety prior to commencing completion.

IQ8 Section 3 follows the alphanumerical arrangement of the RISCAuthority publication *Permanent Stacked Modular Buildings: Technical Checklist for England - Issue 01*, which will assist in completion of this questionnaire. Please read these documents together.

In all cases, if insufficient space is provided to answer the questions in the questionnaire, continue on separate sheets. If separate sheets are used, indicate this is the case and record the document number, title, issue number and date at the location of the question.

## IMPORTANT NOTE

*Failure to be able to provide answers to any of the questions may demonstrate there to be a shortfall in the knowledge and evidence the FPA / RISCAuthority considers to be appropriate to the implementation of a resilient design.*

**Scoring matrix for completion ONLY by Insurer / Trade Association or AHJ**

The table below is for completion by the Insurer / Trade Association or AHJ and NOT by those proposing or designing the building. The matrix is made visible to ensure those completing the form understand in advance the key elements that are considered fundamental to the delivery of a resilient building.

Questions – For the risks described: -	Answer
1. Is the population of the questionnaire complete and are the answers provided of sufficient quality?	Yes / No
2. Has the overall design taken adequate specific measures to address protection of the Permanent Stacked Modular Building(including any basements, core(s), possible podium accommodation and any upper storey, roof and plant areas)in respect of:	
a. Fire risks?	Yes / No
b. Flood risks?	Yes / No
c. Escape of water risks?	Yes / No
3. Have the design and construction complied with the legal requirements of the Building Regulations in the devolved National regimes, with representative standards and test information supplied to confirm the construction methods:	
a. Structural performance in both non-fire and fire situations?  In England that means compliance with Part A, as related to Part B of Schedule 1. of the 2010 Building Regulations	Yes / No
b. Resilience against fire?  In England that means compliance with Part B of Schedule 1. of the 2010 Building Regulations	Yes / No
c. Resilience against water and moisture?  In England that means compliance with Part C, as related to Parts G, H and L of Schedule 1. of the 2010 Building Regulations	Yes / No

4. Have construction fire risks been understood and appropriately mitigated?	Yes / No
5. Is there Third Party evidence of installation of all fire resistance tested fire stopping of otherwise extensive cavities within the compartmentation at the horizontal and vertical joints between Modules, or between Modules and the Core(s), during construction?	Yes / No
6. Will all water sensitive components be adequately protected from water and moisture for all periods of exposure prior to the building being clad?	Yes / No
7. Have the primary sources of fire risk been identified and mitigated?	Yes / No
8. Have the primary sources of water and moisture risk been identified and mitigated?	Yes / No
<p>9. When fire propagates to a hidden and potentially combustible void or cavity is there an understanding of how fire spread will be mitigated and ultimately extinguished?</p> <p>There will be cavities within the compartmentation at the horizontal and vertical joints between Modules, or between Modules and the Core(s), and behind rainscreen cladding if used.</p> <p>There will be suspended ceiling and raised floor voids.</p> <p>There will be Service Risers and Shafts passing vertically as separate compartments through the compartmentation of storeys.</p>	Yes / No
<p>10. Has the Façade in general, including but not limited to the parts of the Façade comprised of Module external wall, applied cladding and attachments such as balconies complied with the legal requirements of the Building Regulations in the devolved National regimes?</p> <p>In England that means compliance with Requirement B4-(1) of Schedule 1. of the 2010 Building Regulations, as amended in Regulation 7 (2018), with statutory guidance in Approved Document Part B Volumes 1 and 2 (2019 with 2020 amendments)</p>	Yes / No
11. Is there fire resistance tested detailing between the cladding system and the cavities within the compartmentation at the horizontal and vertical joints between Modules, which will be movement joints horizontally if not vertically?	Yes / No
12. Is the plan for ultimate fire extinguishment appropriate and robust?	Yes / No

13. Is the repairability of the Modular system from fire events understood?	Yes / No
14. Is the extent of potential loss from fire understood?	Yes / No
15. Is the repairability of the Modular system from water and moisture events understood?	Yes / No
16. Is the extent of potential loss from water and moisture events understood?	Yes / No
17. Fire and Rescue Service Engagement	
a. Has there been sufficient engagement with the Fire and Rescue Service to understand the role that they may have to play in any fire scenario?	Yes / No
b. Have they committed to supplying the effort and resources to fulfil this?	Yes / No
18. Has the lifecycle of the building been considered including:	
a. Maintenance requirements?	Yes / No
b. Penetration of fire resisting floor, wall and soffit constructions?	Yes / No
c. Future modification?	Yes / No

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### IMPORTANT NOTE

Insurers perceive the greatest risk from the construction of Permanent Stacked Modular Buildings to be the possibility for uncontrolled spread of fire, smoke and water damage in the voids or cavities necessarily formed between Modules. There are horizontal and vertical cavities formed in the stacking of a Modular system, joining vertical cavities where Modules are restrained at the core of the building and vertical cavities in external Cladding systems.

These voids or cavities require fire stopping with products tested for the Permanent Stacked Modular Building method. The product fire resistance will be higher than required for cavity barriers in either Volumes 1 or 2 of Approved Document Part B (2019 as amended 2020), available here:

<https://www.gov.uk/government/publications/fire-safety-approved-document-b>

The building owner or operator and their insurers should be provided with assurance of fire stopping installation in accordance with test reports by the submission of a 100% photographic survey record of every identified void or cavity as the stack is built up, which extends to fire stopping around all openings between Modules, including around connecting door frames, throughout Service Risers and along segmental Escape Corridor compartmentation. This 100% photographic survey record should also be provided to the “Responsible Person” appointed by the building owner or operator as part of the Regulation 38 information exchange expected in the 2010 Building Regulations, available here:

<https://www.legislation.gov.uk/ukxi/2010/2214/regulation/38>

Since Movement and Tolerances of the Modular system will affect the testing and installation of the fire stopping products the Checklist in IQ8 has been developed from Part A Structure of Schedule 1. of the 2010 Building Regulations, available here:

<https://www.legislation.gov.uk/ukxi/2010/2214/schedule/1>

The technical resolution of structural Movement and Tolerances inform answers to Part B Fire Safety.

This information will be highly valued by Insurers.

## Terminology

Permanent Stacked Modular Buildings are substantially manufactured off-site consisting of repeated sections called Modules that comprise a Modular system. Modularity involves constructing Modules away from the building site, then delivering them to site. Installation of the prefabricated Modules is completed on site, and aspects of the building works finished. Prefabricated Modules are placed using a crane. The Modules can be placed side-by-side, end-to-end, or stacked in multiple storeys, allowing for a variety of configurations and architectural arrangement. After placement the Modules are restrained to the stair and lift Core(s) and joined together using inter-connections, which tie the individual Modules together horizontally and vertically in a stack, to form the overall building structure. Any corridors and Service Risers may be formed by joining individual Modules horizontally and vertically. These segmented compartments across Modules must achieve compartment separation from the accommodation of rooms. Building Services must be connected within the segmented Service Risers. Types of Modular systems include but are not limited to:

- Reinforced Concrete
- Hot Rolled Steel Framed with Cold Rolled Steel Frame System Infill
- Hot Rolled Steel Framed with Timber Frame Infill
- Cold Rolled Steel Framed System (SFS)
- Timber Stud Framed
- Structurally Insulated Panel (SIP)
- Cross Laminated Timber (CLT)

There may be Hybrid combinations of the constructions above. For example, all Modular system Types can have variants with Concrete floors to improve acoustic performance.

Framed Modular system Types can include different Timber Boards in walls and soffits, often concealed behind plasterboard to achieve fixing of Furniture, Fixtures, and Equipment (FF&E)

Timber may be Fire Retardant treated or untreated.

Combinations of many different types of combustible and non-combustible Thermal Insulation are used, with acoustic insulation tending to be Glass Fibre that is non-combustible but without fire resistance, as different to non-combustible and fire-resistant Stone Wool.

Structurally Insulated Panels (SIPs) are outer layers of Timber Board facing a plastic foamed core of Polyisocyanurate (PIR) or Polyurethane (PUR) combustible Thermal Insulation.

Cross Laminated Timber (CLT) is also a panellised system of layers of sawn, glued, and layered wood, where each layer is oriented perpendicular to the previous, achieving greater rigidity and strength in a non-fire situation. For more information refer to IQ6 Massive Timber questionnaire, available here:

<https://riscauthority.verto.site/public-resources/documents/resource/iq6-building-system-questionnaire-massive-timber-use-in-high-rise-applications-683>

1. Basic Information	
1.1 Respondent Information	
a. Name:	
b. Job Title:	
c. Company Name:	
d. Company Address:	
e. E-mail Address:	
f. Telephone Number:	

1.2 Proposed Building Name and Location	
a. Building Name:	
b. Address:	

1.3 Key Stakeholder Details	
Client Details	
Company Name:	
Main Contractor Details	
Company Name:	

Architect Details	
Company Name:	
Structural Engineer for Building other than Modular System	
Company Name:	
Modular System Manufacturer Details	
Company Name:	
Structural Engineer for Modular System Manufacturer	
Company Name:	
Fire Engineer Details	
Company Name:	
Fire and Rescue Service Details	
F&RS Name:	
Local Authority Building Control Details	
LABC Name:	

1.4 Building Details	
Build	
New Build <input type="checkbox"/> Refurbishment <input type="checkbox"/> Extension <input type="checkbox"/> Other <input type="checkbox"/>	
If Other, please specify:	

Foundation, Basement, Podium and Core(s) Structure	
Describe Foundations	
Describe Basement	
Describe Podium	
Describe Core(s)	
Permanent Stacked Modular Building System Type	
Reinforced Concrete	<input type="checkbox"/>
Hot Rolled Steel Framed with Cold Rolled Steel Frame System Infill	<input type="checkbox"/>
Hot Rolled Steel Framed with Timber Frame Infill	<input type="checkbox"/>
Cold Rolled Steel Framed System (SFS)	<input type="checkbox"/>
Timber Frame	<input type="checkbox"/>
Structurally Insulated Panel (SIP)	<input type="checkbox"/>
Cross Laminated Timber (CLT) In the case of CLT complete questionnaire IQ6 Massive Timber, available here: <a href="https://riscauthority.verto.site/public-resources/documents/resource/iq6-building-system-questionnaire-massive-timber-use-in-high-rise-applications-683">https://riscauthority.verto.site/public-resources/documents/resource/iq6-building-system-questionnaire-massive-timber-use-in-high-rise-applications-683</a>	<input type="checkbox"/>
Hybrid combinations of the constructions above	<input type="checkbox"/>
Other (please describe)	<input type="checkbox"/>
Does the Modular System have Concrete Floor Structure to improve acoustic performance?	<input type="checkbox"/>
Does the Modular System include Timber Boards in Walls and Soffits to provide fixing for Furniture, Fixtures, and Equipment (FF&E)?	<input type="checkbox"/>
Is any Timber in the Modular System treated or untreated with Fire Retardant?	<input type="checkbox"/>
Identify the Reaction to Fire Classification of all proprietary Fire, Thermal or Acoustic Insulation used in the Modular System to BS EN 13501-1, and where they are used:	

What standards for this system(s) will confirm product structural properties and manufacturing quality? (Please list)

Describe the type(s) of Cladding System and construction details

Complete Questionnaire IQ7 Cladding in the case of Rainscreen or External Thermal Insulation Composite System (ETICS), available here:

<https://riscauthority.verto.site/public-resources/documents/resource/iq7-cladding-systems-questionnaire-rainscreen-and-etics-685>

Describe the Roof covering and Plant Area construction details

**Scale**

No. of Floors:	
Floor Area:	m <sup>2</sup>
Number of Modules per Floor	
Overall Height:	m
Overall Width:	m
Overall Length:	m

**Occupancy**

Residential	<input type="checkbox"/>	Commercial	<input type="checkbox"/>	Mixed	<input type="checkbox"/>
Student	<input type="checkbox"/>	Care Home	<input type="checkbox"/>	Healthcare	<input type="checkbox"/>

**Number of Stairwells**

What will be the evacuation policy for this building?

Special Features							
Swimming Pool	<input type="checkbox"/>	Rooftop Ponds	<input type="checkbox"/>	Water Capture	<input type="checkbox"/>	Helipad	<input type="checkbox"/>
Green Roofs	<input type="checkbox"/>	Green Walls	<input type="checkbox"/>	Solar Panels	<input type="checkbox"/>	Wind Turbine	<input type="checkbox"/>
Heritage	<input type="checkbox"/>	Other	<input type="checkbox"/>	Projecting Balconies	<input type="checkbox"/>		
If Other, please specify:							
Provide examples of other complete buildings similar to this in construction methods, building products and size							

## 2. Design Principles

What Building design codes for fire have been used?

How has fire ingress from external sources been considered within the fire safety design for the building?

Has the building owner or operator been provided with assurance of fire stopping installation in accordance with test reports by the submission of a 100% photographic survey record of every identified void or cavity as the stack is built up, which extends to fire stopping around all openings between Modules, including around connecting door frames, throughout Service Risers and along segmental Escape Corridor compartmentation?

This 100% photographic survey record should also be provided to the “Responsible Person” appointed by the building owner or operator as part of the Regulation 38 information exchange expected in the 2010 Building Regulations.

If not then please explain why?

If yes then please submit a copy with this questionnaire of the 100% photographic survey record of fire stopping with the dated signature of the “Responsible Person” confirming that they have read and understood the survey document.

## 2.1. Property and Business Resilience Design Objectives

Has the Building been BS 7974 Fire Engineered to the checklist in FPA   
*RISCAuthority Guide to Fire Engineering for Property Protection and Business  
Resilience – November 2020?* The guidance is available here:

<https://www.thefpa.co.uk/member-download/153>

If not then please explain why?

Have the client's / future occupant's business continuity objectives been   
considered in the setting of design performance parameters?

If not then please explain why?

If yes, how have these influenced the design of the building over the standard (life-safety)  
measures required in law?

Loss to fire:

Loss to flood:

Loss to escape of water:

Loss to security events:

### 3. Compliance

Modular Buildings involve far more than the manufacture, transportation and installation of room sized volumetric frames lined with plasterboard, decorated and fitted out. Modules are large and heavy components stacked into a building that is partly constructed on site. They must fit together. In doing so the composition must satisfy the 2010 Building Regulations, including Schedule 1. Requirements.IQ8 Section 3 follows the alphanumerical arrangement of the RISCAuthority publication *Permanent Stacked Modular Buildings: Technical Checklist for England - Issue 01*, which will assist in completion of this questionnaire.

#### 3.A1 Loading

3.A1.1 Has a Movements and Tolerances Report been produced for the building?

3.A1.2 What is the form of construction above the below Ground works?

3.A1.3 How has total Dead Load support been considered through the building?

3.A1.4 What is the Differential Vertical Movement due to Dead Load?

3.A1.5 How has Vertical Deflection as a result of imposed Live Loads been considered?

3.A1.6 What are the Wind Load assumptions based in Weather projections?

3.A1.7 How has Horizontal Sway in the Structure due to Wind Load been considered?

3.A1.8 How has the Façade Movement due to Wind Load been considered?

3.A2 Ground movement

3.A2.1 How have Ground Conditions been ascertained by the Structural Engineer?

3.A2.2 What is the relationship of Foundation design to Movement Joint requirements?

3.A3 Disproportionate collapse

3.A3.1 How has accidental Disproportionate Collapse been considered?

3.B Fire Safety

3.B0 Fire Engineering

3.B0.1 Has the discipline of Fire Engineering been adopted on the project?

3.B1 Means of warning and escape

3.B1.1 How does the Detection and Alarm System relate to the Escape Provision?

3.B1.2 What is the Means of Escape in the fire situation?

3.B1.3 How is Smoke and Heat Exhaust Ventilation (SHEV) achieved in Escape Corridors?

3.B1.4 How has the construction of the Mechanical SHEV System been achieved?

3.B1.5 How has the construction of the Mechanical SHEV System been verified?

3.B1.6 How has the construction of the Natural SHEV System been achieved?

3.B1.7 How has the construction of the Natural SHEV System been verified?

3.B2 Internal fire spread (linings)

3.B2.1 What are the Internal Linings?

3.B3 Internal fire spread (structure)

3.B3.1 Has the Modular System been Fire Tested and Fire Engineering Assessed?

3.B3.2 How is Stability of the Primary Structure of the Module Stack maintained?

3.B3.3 How is the Interior of the Module constructed to be Fire Resistant?

3.B3.4 Where do Vertical Deflections in Risers and Shafts require Movement Joints?

3.B3.5 How have extensive Cavities within the Module Stack been constructed?

3.B4 External fire spread

3.B4.1 How is the Spread of Fire adequately resisted from one building to another?

3.B4.2 Where is the External Wall of the Module constructed to be Fire Resistant?

3.B4.3 How is the Spread of Fire adequately resisted over the External Walls?

3.B4.4 How is the Spread of Fire adequately resisted over the Roof?

3.B5 Access and facilities for the fire service

3.B5.1 What facilities assist firefighters in the protection of life and property?

3.B5.2 What facilities are provided within the site for fire appliances near the building?

3.B6 Handover of building under contract

3.B6.1 How was Building Regulation 38 complied with?

3.B7 Occupation of building in use

3.B7.1 Which “purpose group” is the building within, or is it “mixed use”?

3.B7.2 What are the specific fire hazards and risks facing occupants?

3.C Site Preparation and Resistance to Contaminants and Moisture
3.C2 Resistance to moisture
3.C2.1 How has the Façade been designed to provide Resistance to Moisture?
3.C2.2 How has the Façade with Attachments been coordinated with the Modules?
3.C2.3 Has the Façade construction been Hose tested for Weather tightness?
3.C2.4 What measures were taken to prevent Water Leakage from Sanitary Areas?
3.H Drainage and Waste Disposal
3.H3 Rainwater drainage
3.H3.1 How is Rainwater managed in the Façade from Roof, Terrace or Balcony areas?
3.L Conservation of Fuel and Power
3.L1 Conservation of fuel and power
3.L1.1 How has Architectural Fenestration been designed to be Energy Efficient?

3.L1.2 Does the need for Daylighting satisfy other Requirements?

3.L1.3 How has Thermal Performance been achieved without Condensation Risk?

3.L1.4 Has the construction been monitored using Thermographic methods?

3.L1.5 Has the completed building been Air Tightness Tested?

3.L1.6 How were the Building Services Commissioned?

3.L1.7 How does the completed building relate to Energy and Emissions Regulations?

#### 4. Construction Protection

##### 4.1 Protection against fire during construction

4.1.1 What are the primary sources of fire during construction considered to be?

4.1.2 What design measures seek to limit the likelihood of the structure (delivered / stored / erected) being involved in a fire during construction?

4.1.3 What management / system measures will be put in place during the construction phase to limit the likelihood of fire?

From accidental sources:

From malicious sources:

4.1.4 What temporary protection systems will be deployed during the construction phase – detection, alarm, suppression, security, other?

#### 4.2 Fire Service Engagement

4.2.1 Has there been consultation with the Fire Service specific to construction site fire challenges?

4.2.2 Have the water supplies been confirmed as appropriate for effective fire management by the Fire and Rescue Service?

4.2.3 What are the firefighting water supply details?

4.3 Protection against water and moisture during construction

4.3.1 What are the primary sources of water and moisture exposure during construction considered to be?

4.3.2 What measures will protect the construction from water and moisture pre-delivery to the site?

4.3.3 What measures will protect the construction from water and moisture during delivery and whilst on site before use?

4.3.4 What measures will protect the construction from water and moisture once installed and before the building is made watertight?

## 5. Fire Protection

5.1 What are the fire design objectives for:

Life-safety  Property protection  Business protection

5.2 What are the major sources of fire considered to be?

5.3 Codes, standards, and test evidence

5.3.1 What standards have the Modular components been tested to that ensures their structural performance under fire?

5.3.2 Please supply test evidence that is relevant to this design, the construction methods used, and specific products used in this building to support the above claims.

5.4 How are the major structural components of the Modules protected from fire?

5.5 How is the potential for fire spread in the voids and cavities between the Modules being managed?

--

5.6 Suppression

5.6.1 What type of fire suppression system(s) is installed?

--

5.6.2 For each suppression system, please specify

Type		Design Standard	
Type		Design Standard	
Type		Design Standard	

5.6.3 How has the fire protection system design accounted for the additional fuel load combustibles in the Modules may add (in addition to the compartments' contents) – such as timber and combustible insulation materials?

--

5.6.4 What consideration has been given to reduce consequential damage of the Modules from water-based fire suppression systems if used?

--

5.6.5 Does suppression extend to the protection of all hidden potentially combustible voids?

5.6.6 Does the suppression system extent to all electrical rooms and car parks?

5.6.7 How will the fire safety of the building be managed during periods of impairment (when the suppression system is not operational due to fault or maintenance)?

5.7 Passive fire protection

5.7.1 What methods will be used to firestop voids and cavities within compartmentation, and service penetrations running through Module walls, floors and soffits?

5.7.2 Where these devices are passing through combustible construction within compartmentation please supply performance test evidence of their suitability in this configuration.

5.7.3 What specific passive protection will be in place to prevent fire spread in any cavities?

## 5.8 Extinguishment

5.8.1 How will a fire ultimately be extinguished, both for visible fires within accommodation and for concealed fires that may be smouldering within cavity construction?

5.8.2 If there is a dependency on the Fire and Rescue Service, are they confident that they have the equipment, resources, training, familiarity, and risk appetite to assure this?

Please submit a letter from the Fire and Rescue Service to substantiate any answer.

5.8.3 What measures have been taken to ensure future changes to Fire and Rescue Service response policy do not impact upon the safety and survivability of the building?

--

5.8.4 In what time must the fire be extinguished to meet the fire design objective?

--

5.8.5 What are the consequences of not achieving extinguishment within this timeframe?

--

**5.9 Recovery Plan**

5.9.1 Following a fire event, which components of the Permanent Stacked Modular Building will need replacing, in each of the following scenarios?

Structurally damaged	
Visually altered from fire but structurally undamaged	

<p>Visually altered from water damage from suppression system and firefighting activities but structurally undamaged</p>	
<p>Visually and structurally undamaged but residual odour</p>	
<p>5.9.2 What is the anticipated scale of damage from a single fire event within the building (i.e. number of compartments and floors affected)?</p>	
<p>Lost to fire damage</p>	
<p>Lost to smoke damage</p>	
<p>Loss to heat damage</p>	
<p>Loss to fire-water damage from suppression system and firefighting activities</p>	

5.9.3 Will unaffected building components require replacement or removal whilst undertaking repair?

Please identify % likely uplift on loss in the answers to question 5.9.2?

5.9.4 For a single anticipated event, how much of the building will need to be vacated during the repair phase?

5.9.5 Please provide evidence that the methods for repairing the type(s) of Permanent Stacked Modular Building used following fire damage are known and mature.

6. Water and Moisture Protection	
6.1 What are the major sources of moisture and water considered to be that might expose the Permanent Stacked Modular Building to harm?	
6.2 What in-built design elements seek to limit the extent of possible damage to the Modules from these sources?	
Fail to safe design (e.g. provision of drains / safe routing of services)	
Fail to safe plumbing fittings	
Waterproof coverings and encapsulations	
Other	

6.3 What systems and management controls will be in place to limit damage from each of these sources?	
Flood (i.e. first floor concrete)	
Escape of water (i.e. water leak detection, alarm, isolation devices)	
Escape of water (i.e. isolation valves and labelling)	
6.4 Flood Recovery Plan	
6.4.1 Following a flood, escape of water or moisture exposure event, what components of the Permanent Stacked Modular Building will need replacing?	
Structurally damaged	
Visually altered from water (staining / mould / growth / rusting of metal components) but structurally undamaged	

Structurally and visually undamaged but with residual odour	
6.4.2 What is the anticipated scale of damage from a flood, escape of water or moisture exposure event within the Permanent Stacked Modular Building?	
Number of floors / compartments affected	
6.4.3 Please provide evidence that the methods for repairing type(s) of Modular system used from water or moisture damage are known and mature	
6.4.4 What are the long-term consequences of water saturation and elevated moisture levels (i.e. adhesive performance, accelerated mould growth, etc.)	

#### 7. Further Information

Any other information deemed important to a potential insurer of the Permanent Stacked Modular Building. If it is related to a previous question, please use the question's number for reference.

#### Commentary and Recommendations on Test Evidence

- Evidence submitted to support the understanding of Permanent Stacked Modular Building reaction to fire and water, and of capabilities to model performance accurately, should be supplied from independent and credible Third Party sources.
- References to supporting standards should be accompanied by test reports that are specific to the system used.
- The test body shall be accredited by UKAS for undertaking such work.
- Test reports shall be presented in full.
- Test evidence shall be made at a scale that is relevant to end-use.
- There shall be full traceability between fire testing and subsequent application.
- The limitations of testing shall not be exceeded in application.
- There should be assurance of fire stopping installation in accordance with test reports by a 100% photographic survey record of every identified void or cavity as the stack is built up, which extends to fire stopping around all openings between Modules, including around connecting door frames, throughout Service Risers and along segmental Escape Corridor compartmentation.

7. Declaration	
I am authorised to represent the company identified below making this submission. I have supplied full and accurate information as required by this form.	
Name (please print)	
Signature	
Date	
Representing (please print company name and address)	