



Green Fire Safety Issues Conference 17th May 2023

Professor Jim Glockling
Visiting Professor University of Central Lancashire



Insurance challenges of Mass Timber and an introduction to the Mass Timber Insurance Playbook (MTIP)

The Mass Timber Insurance Playbook:
A guide to insuring mass timber buildings



Co-authored by Peter Calow and Jim Glockling
Foreword by Nelson March and Guroh
Resilience Solutions.



Revision 1.0 January 2022

Insurance challenges of massive timber construction and a possible way forward



David Williams
Chairman of RISCAuthority

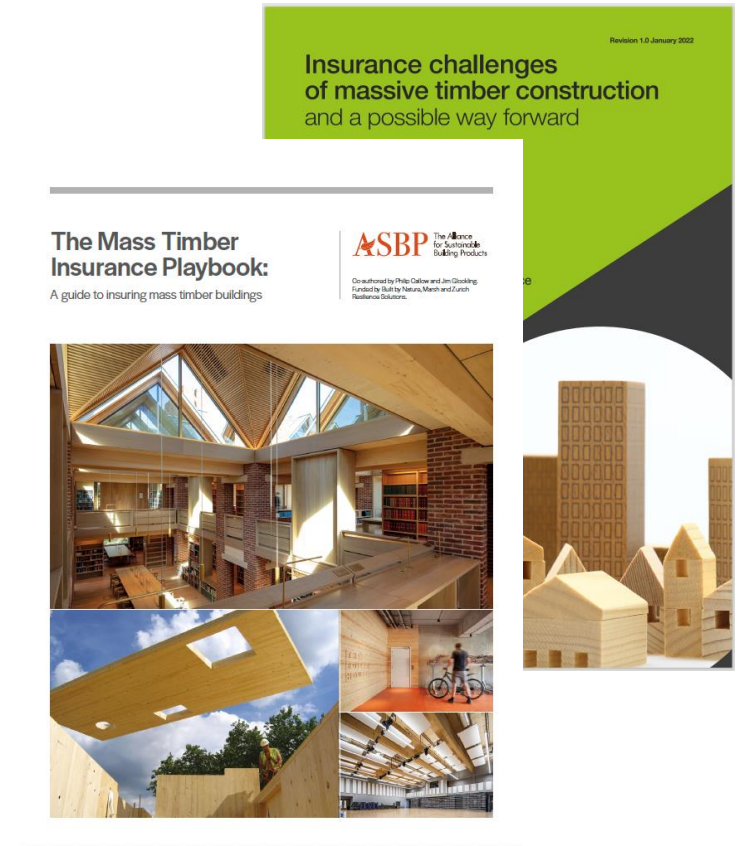
“ It should not be a surprise that insurance models and insurance customer expectations developed around historic solid walled, non combustible construction types, may need to alter quite radically to address these very substantial changes in construction methods and material use ”



RISCAuthority

Contents

- A crude introduction to insurance
- ~~Drivers behind move to modern methods of construction~~
- Consequences of change for Material Damage and why Building Regulations exert great influence
- Potential design solutions
- Introducing the Mass Timber Insurance Playbook



Takeaway(s) – In a nutshell

‘Designers will need to build in features that enable the insurer to assign an Estimated Maximum Loss (EML) value that is something other than 100% (or even >100% where multiple buildings are considered) - this does not happen natively when ‘compliance’ is the only design goal (UK)’



Also: the construction debate is not just about wood, and it's not just about fire

Estimated Maximum Loss



EML ~ 4 floors of 17

But what about if certain design features or materials stop this model from working?



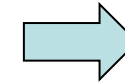
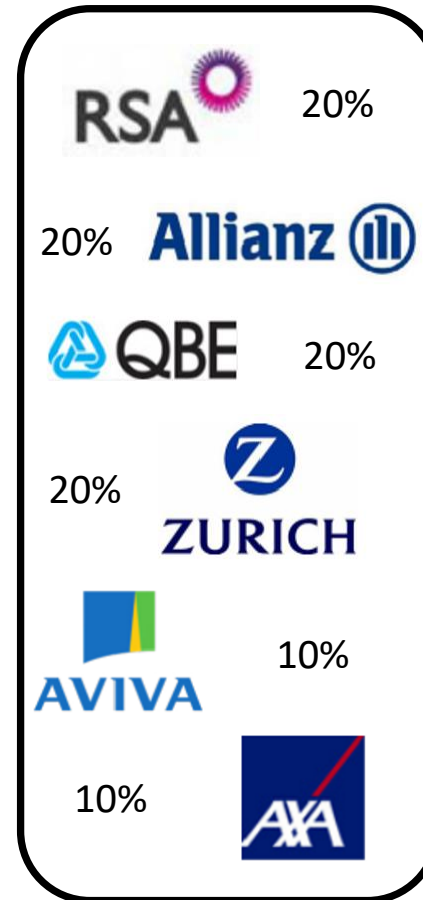
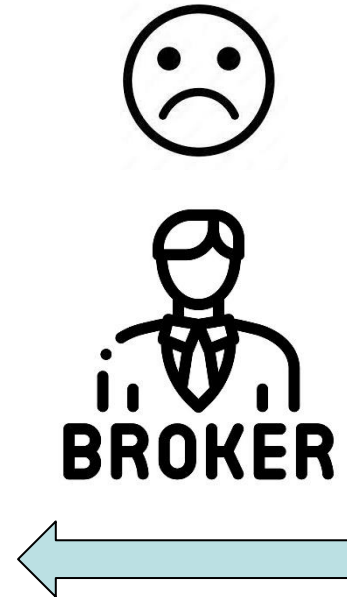
Insurance and insurability

Underwriting Relevant Building Features

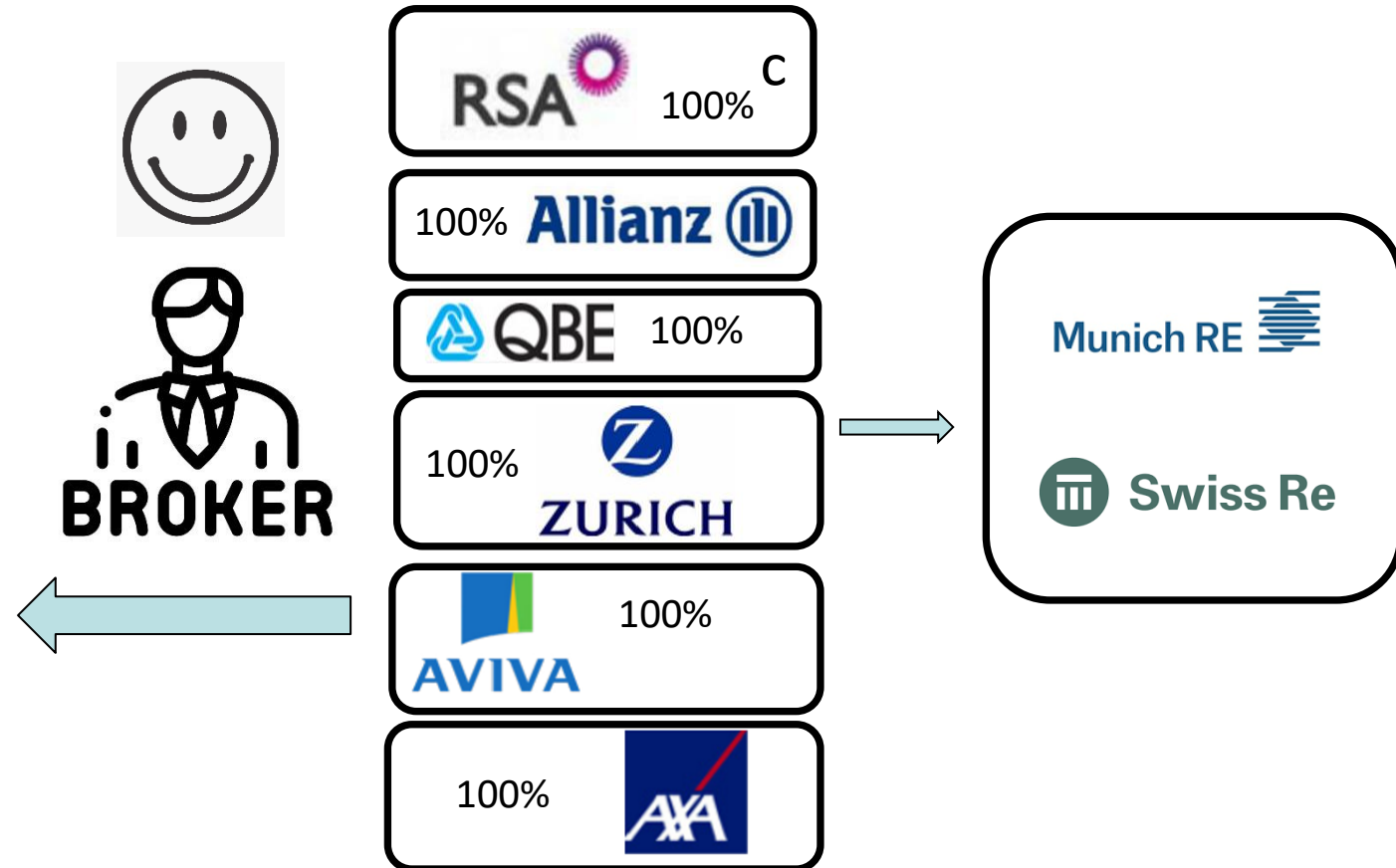
(compliant building assumed)

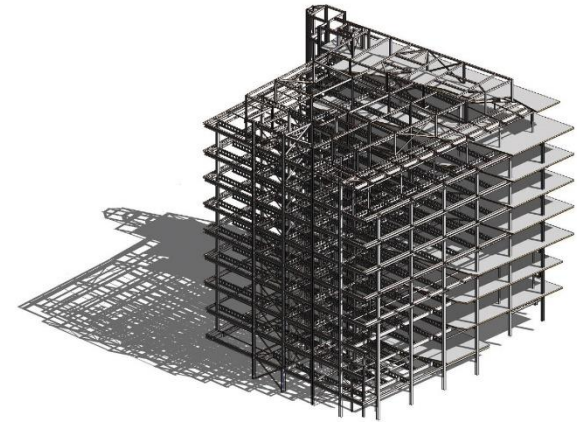
	Building scenario described		
Occupancy & use	1 Occupancy and use	Residential Apartment Block	
	2 Number of Storeys above ground	< 4 Storeys	
	3 Building footprint	900m2<1,600m2 (40mx40m)	
Scale	4 Size of largest compartment by Area	20% of building footprint	
	5 Size of largest compartment by Volume	20% of building volume	
Structure & Fabric	6 Ground floor structure	Same as building structure	
	7 Structural material	Structural Timber Modular Stack	
	8 Construction method	Modular	
	9 Core structure	Same as Structure	
	10 Floor / Ceiling	Timber alternating with concrete	
	11 Cladding system	Rainscreen with NC insulation and NC Cladding	
	12 Interior Surfaces	Bare structure	
	13 Atria	Yes - open	
	Other risk factors	14 Basement car parks	Yes
		15 Balconies	No
16 Swimming pools / spa baths		Yes	
17 Hazardous materials		No	
18 Green surfaces		Green Roof	
Fire mitigations	19 Green Energy	Wind & Solar	
	20 Combustible void protection	Dry lined	
	21 Suppression system protection	No Suppression	
	22 Separation	5m<10m	
	23 Firefighter provisions	Wet Risers	
	24 Stairwells	2	
Water-peril mitigations	25 Designed for flood	Yes - Raised on water insensitive stilts	
	26 Designed for EoW	Detection, Control, and Fail-to-safe devices	

A lack of trust / technical concern
= a lack of available insurance capacity



Trust and good technical understanding
= choice, excess capacity, and competition

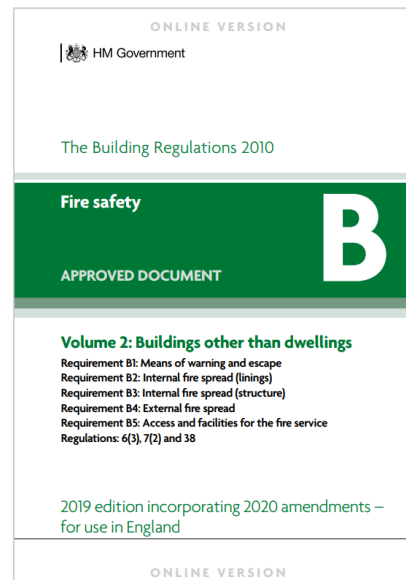






What has NOT changed (UK)?

- Our Building Regulations
- All of the other factors that contribute to a building's insurability
- How people expect buildings to perform in fire
- Expectation of availability, and cost of insurance / lending
- Any sign of climate change abatement

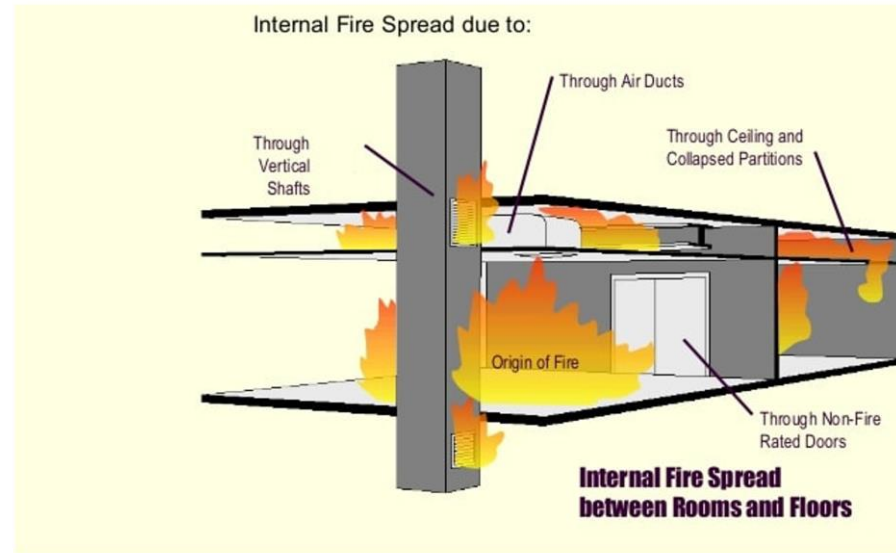


Building scenario described	
Occupancy & use	1 Occupancy and use
Scale	2 Number of Storeys above ground
	3 Building footprint
	4 Size of largest compartment by Area
Structure & Fabric	5 Size of largest compartment by Volume
	6 Ground floor structure
	7 Structural material
	8 Construction method
	9 Core structure
	10 Floor / Ceiling
	11 Cladding system
	12 Interior Surfaces
	13 Atria
	14 Basement car parks
	15 Balconies
Other risk factors	16 Swimming pools / spa baths
	17 Hazardous materials
	18 Green surfaces
Fire mitigations	19 Green Energy
	20 Combustible void protection
	21 Suppression system protection
	22 Separation
	23 Firefighter provisions
Water-peril mitigations	24 Stairwells
	25 Designed for flood
	26 Designed for EoW

Fire Spread mechanism (1) - External

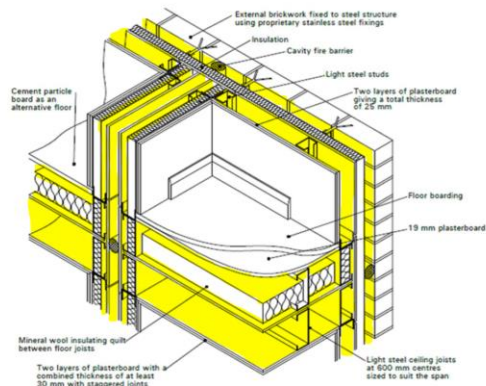


Fire Spread mechanism (2) - Internal



Fire Spread mechanism (3) - Voids

- A new, and particularly problematic dominant mechanism

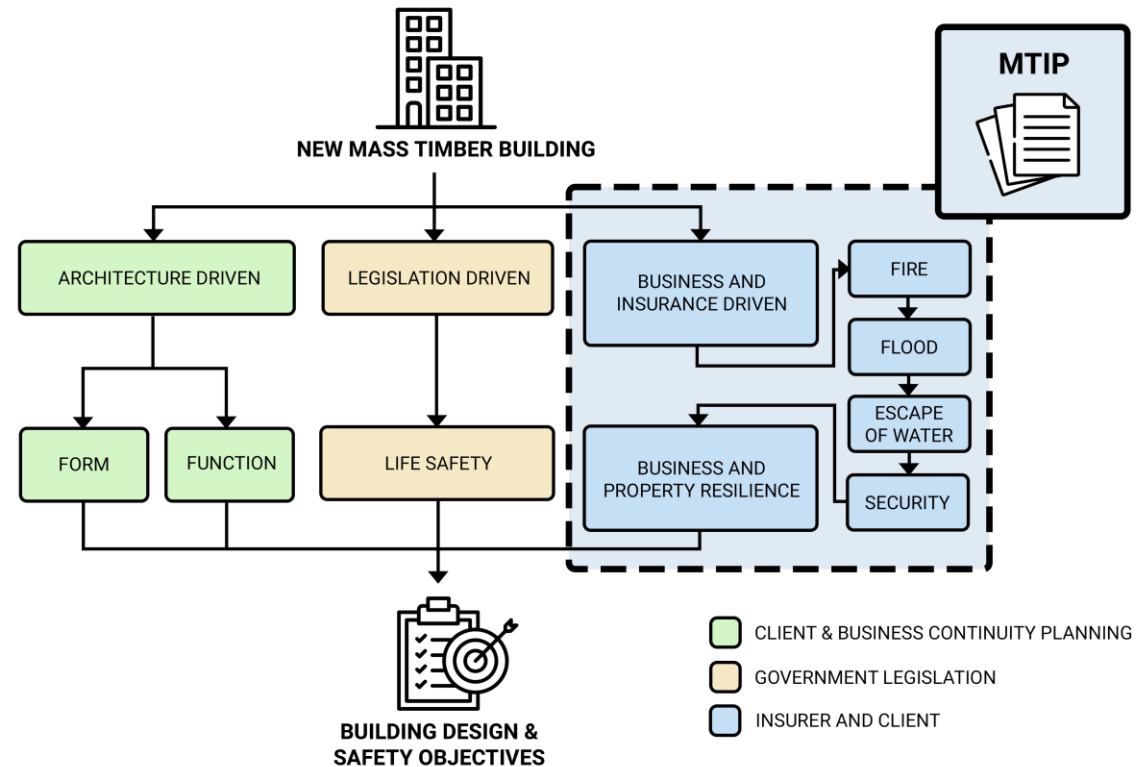
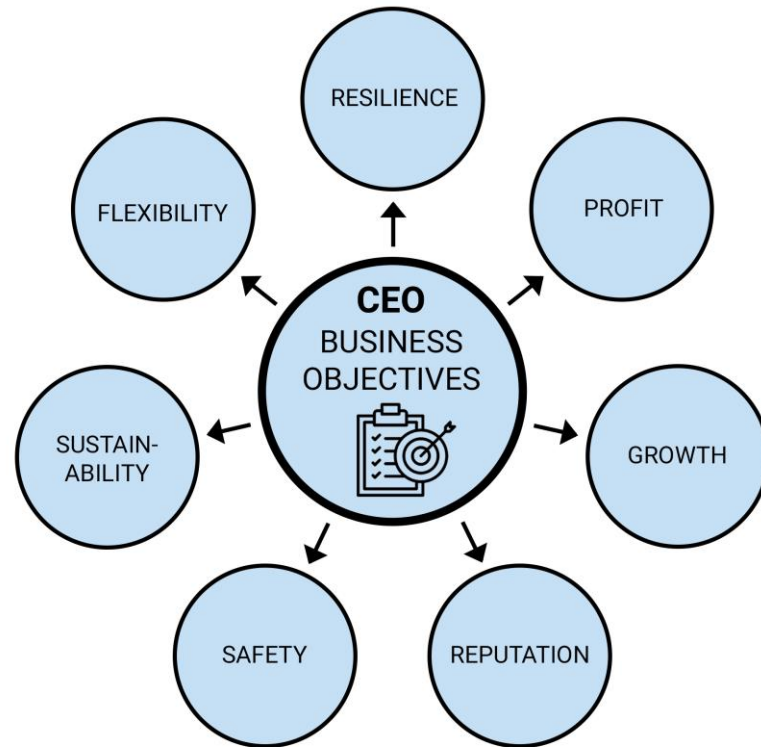
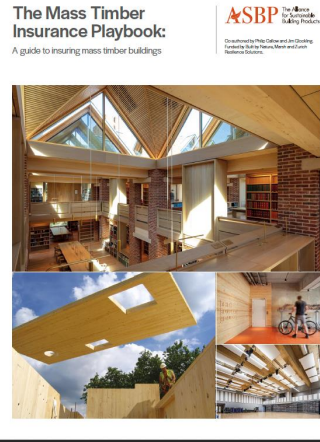


Fire Spread mechanism (4) – Between Buildings



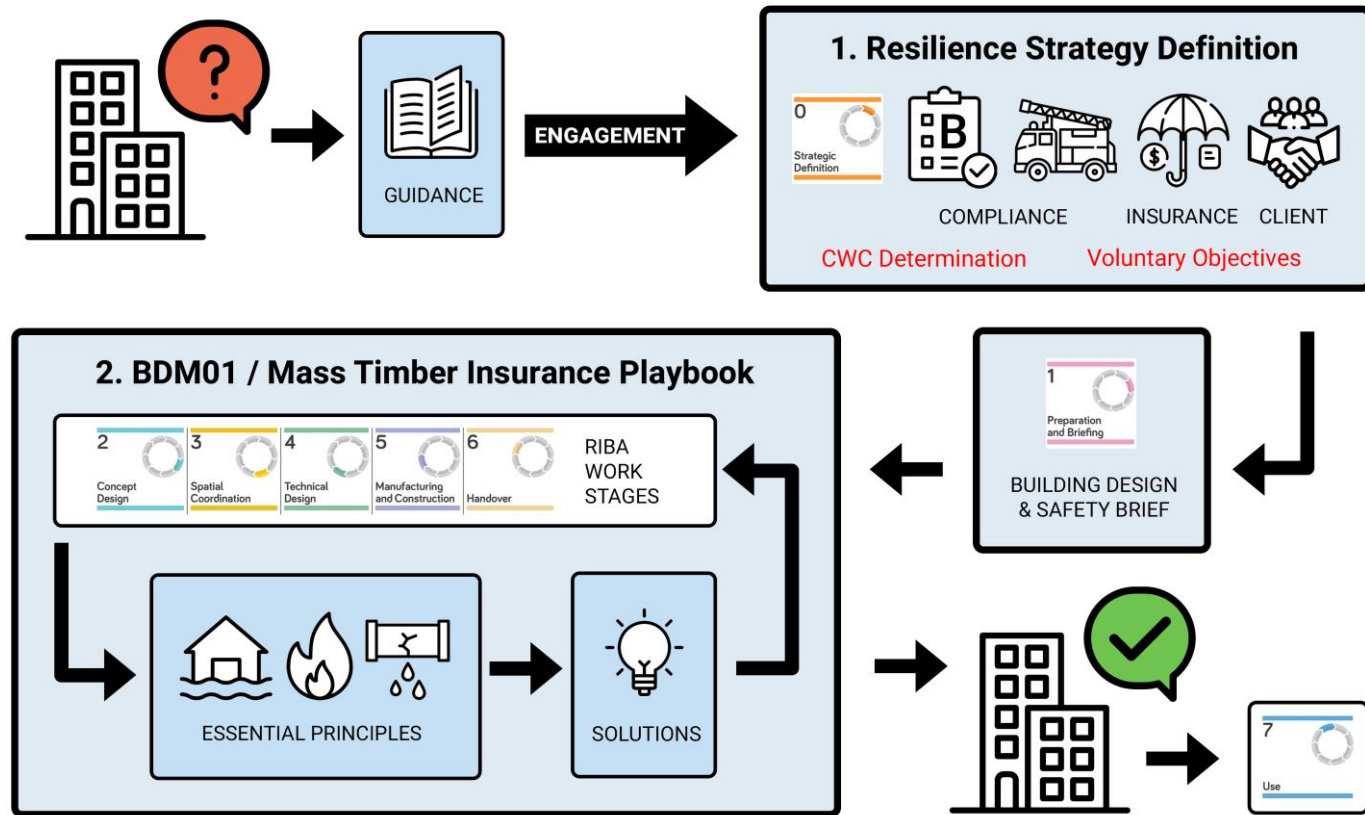
3 masters to satisfy?

- The Government
- The Client
- The Insurer

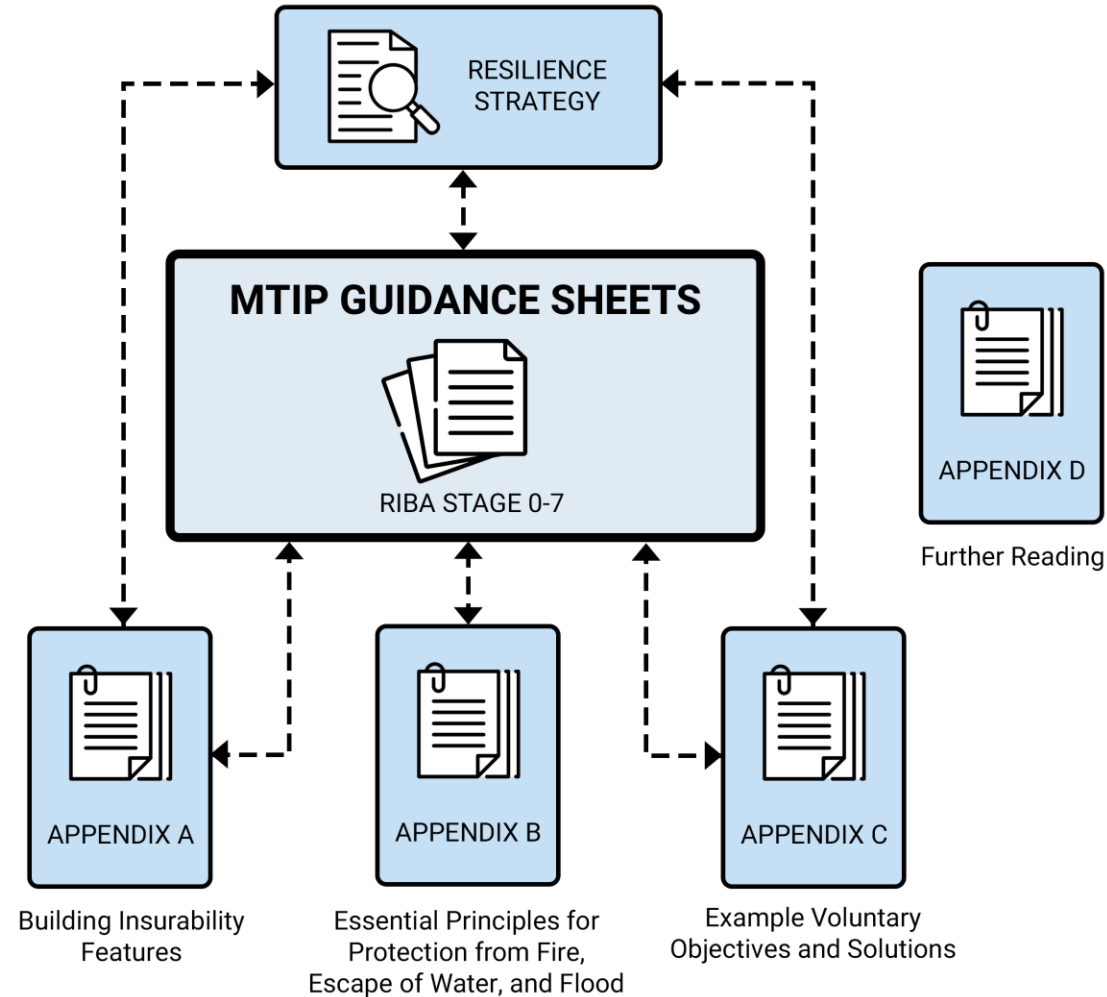


How to use the MTIP?

- Qualitative Design Review
- Solutions engineering (MTIP)
- Peer Review
- Compliance Objectives
- Voluntary Objectives











Structure of the MTIP?



Guidance Sheets – Follow RIBA Stages



0  Strategic Definition	1  Preparation and Briefing	2  Concept Design	3  Spatial Coordination	4  Technical Design	5  Manufacturing and Construction	6  Handover	7  Use
<p>← Projects span from Stage 1 to Stage 6; the outcome of Stage 0 may be the decision to initiate a project and Stage 7 covers the ongoing use of the building. →</p>							
<p>The best means of achieving the Client Requirements confirmed</p> <p>If the outcome determines that a building is the best means of achieving the Client Requirements, the client proceeds to Stage 1</p>	<p>Project Brief approved by the client and confirmed that it can be accommodated on the site</p>	<p>Architectural Concept approved by the client and aligned to the Project Brief</p> <p>The brief remains "live" during Stage 2 and is derogated in response to the Architectural Concept</p>	<p>Architectural and engineering information Spatially Coordinated</p>	<p>All design information required to manufacture and construct the project completed</p> <p>Stage 4 will overlap with Stage 5 on most projects</p>	<p>Manufacturing, construction and Commissioning completed</p> <p>There is no design work in Stage 5 other than responding to Site Queries</p>	<p>Building handed over, Aftercare initiated and Building Contract concluded</p>	<p>Building used, operated and maintained efficiently</p> <p>Stage 7 starts concurrently with Stage 6 and lasts for the life of the building</p>
<p>Prepare Client Requirements</p> <p>Develop Business Case for feasible options including review of Project Risks and Project Budget</p> <p>Ratify option that best delivers Client Requirements</p> <p>Review Feedback from previous projects</p> <p>Undertake Site Appraisals</p> <p>No design team required for Stages 0 and 1. Client advisers may be appointed to the client team to provide strategic advice and design thinking before Stage 2 commences.</p>	<p>Prepare Project Brief including Project Outcomes and Sustainability Outcomes, Quality Aspirations and Spatial Requirements</p> <p>Undertake Feasibility Studies</p> <p>Agree Project Budget</p> <p>Source Site Information including Site Surveys</p> <p>Prepare Project Programme</p> <p>Prepare Project Execution Plan</p>	<p>Prepare Architectural Concept incorporating Strategic Engineering requirements and aligned to Cost Plan, Project Strategies and Outline Specification</p> <p>Agree Project Brief Derogations</p> <p>Undertake Design Reviews with client and Project Stakeholders</p> <p>Prepare stage Design Programme</p>	<p>Undertake Design Studies, Engineering Analysis and Cost Exercises to test Architectural Concept resulting in Spatially Coordinated design aligned to updated Cost Plan, Project Strategies and Outline Specification</p> <p>Initiate Change Control Procedures</p> <p>Prepare stage Design Programme</p>	<p>Develop architectural and engineering technical design</p> <p>Prepare and coordinate design team Building Systems information</p> <p>Prepare and integrate specialist subcontractor Building Systems information</p> <p>Prepare stage Design Programme</p> <p>Specialist subcontractor designs are prepared and reviewed during Stage 4</p>	<p>Finalise Site Logistics</p> <p>Manufacture Building Systems and construct building</p> <p>Monitor progress against Construction Programme</p> <p>Inspect Construction Quality</p> <p>Resolve Site Queries as required</p> <p>Undertake Commissioning of building</p> <p>Prepare Building Manual</p> <p>Building handover tasks bridge Stages 5 and 6 as set out in the Plan for Use Strategy</p>	<p>Hand over building in line with Plan for Use Strategy</p> <p>Undertake review of Project Performance</p> <p>Undertake seasonal Commissioning</p> <p>Rectify defects</p> <p>Complete initial Aftercare tasks including light touch Post Occupancy Evaluation</p>	<p>Implement Facilities Management and Asset Management</p> <p>Undertake Post Occupancy Evaluation of building performance in use</p> <p>Verify Project Outcomes including Sustainability Outcomes</p> <p>Adaptation of a building (at the end of its useful life) triggers a new Stage 0</p>

Guidance Sheets – Follow RIBA Stages



Essential Principals for Fire Mitigation

Key Themes

Risk Mitigation Actions

Insurance Actions

	0 Strategic Definition	1 Preparation and Brief	2 Concept Design	3 Spatial Coordination	4 Technical Design	5 Manufacturing & Construction	6 Handover	7 Use
Essential Principals for Fire Mitigation	A	A,Q,D	A,B,Q,D,E,F,G,H,I,J,K,Q,Q,S	E,G,H,L,O	A,Q,D,E,F,G,H,I,J,K,L,M,N,Q,Q,R,T	Q,D,E,F,G,H,I,J,K,L,M,N,Q,R,Q,T,U,W	U,V,W,X,Y,Z	W,X,Y,Z
Key Themes	Undertake Early Consultation Establish the client attitude/ motivation for using mass timber (Sustainability/ Visual)	Undertake Early Consultation Mitigate risk of fire and water Ensure competency of specialists in identifying and mitigating risk	Present Fire Starting Lower Property Loss Enhance Design Robustness including undetected moisture ingress	Present Water Damage and Fire Lower Property Loss Enhance Design Robustness including undetected moisture ingress	Present water damage and fire Lower Property Loss Enhance Design Robustness including undetected moisture ingress	Present water damage and fire Lower Property Loss Enhance Design Robustness Check Construction Achieved Improve Facilities Management	Check Construction Achieved Improve Facilities Management	Improve Facilities Management
Risk Mitigation Actions:	<p>Risk Mitigation needs to be a key pillar of design, construction and operation of the building from Stage 0 to Stage 7. Be prepared to demonstrate this at any stage. Design and construction methodologies must be underpinned by risk mitigation.</p> <p>Delivery team selection/make up:</p> <ul style="list-style-type: none"> • Suitable experience, competency, training and resources • Architect • Fire Risk Engineering • Structural and MEP engineers • Project Managers <p>Contractual relationship – Design and build may require additional peer review to ensure competency of design for risk mitigation. Lay foundations for a long and equitable partnership.</p> <p>Design must lead all aspects of risk mitigation:</p> <ul style="list-style-type: none"> • Improve risk profile – reduce EML • Limit scope to within current knowledge • Set principles for peer review • No combustibles • Resistance against fire and water paths • Reparability • Foundations for Fire Management (including STA 16 Steps to Fire Safety and Fire Prevention on Construction Sites – Joint Code of Practice 10th Edition (FPA & RSC/Authority)) • Foundations for Water Management (including essential principals for escape of water as well as water ingress) • Non-negotiables • Legals – do not let aesthetic design reduce risk mitigation 	<p>Incorporate learnings and principals established at Stage 0.</p> <p>Give direct reference in the Brief to how risk of fire and water damage has been or is to be managed.</p> <p>Delivery partners</p> <ul style="list-style-type: none"> • Assess based on experience • Design-assist or pre-services agreements with specialists • Specific Fire Risk Engineering • Guidance or Performance based • Demonstrate rationale for either or EML modelling <p>Application of the STA Site Safe registration program and STA 16 Steps to Fire Risk Mitigation and Fire Prevention on Construction Sites – Joint Code of Practice 10th Edition (FPA & RSC/Authority) during construction.</p> <p>Explore how use of modern technology can help deliver the project (e.g. Construction Project Management Platforms), apply the principles of the Golden Thread legislation.</p> <p>Durability risk assessments.</p> <p>Moisture management planning.</p>	<p>Incorporate learnings and principals established at Stages 0 & 1.</p> <p>Give direct reference in the Brief to how risk of fire and water damage has been or is to be managed.</p> <p>Delivery partners</p> <ul style="list-style-type: none"> • Assess based on experience • Design-assist or pre-services agreements with specialist contractors • Specific Fire Risk Engineering • Guidance and/or Performance based • Demonstrate rationale for either or peer review <p>Application of the STA Site Safe registration program and STA 16 Steps to Fire Risk Mitigation and Fire Prevention on Construction Sites – Joint Code of Practice 10th Edition (FPA & RSC/Authority) during construction.</p> <p>Durability risk assessments.</p> <p>Moisture management planning.</p>	<p>Incorporate learnings and principals established at Stages 0,1 and 2.</p> <p>Choose delivery partners and justify why based on risk mitigation criteria.</p> <p>Develop Water and Fire mitigation plans accordingly.</p> <p>Detail how the digital track record of the building will be created. Be proactive in the use of technology for a successful project outcome.</p> <p>Build on the requirements of Regulation 38, but deliver this first and then use as a framework to comply with obligations at project completion.</p> <p>Set and agree policy tolerances with your insurers – i.e. structural integrity vs architectural aesthetic.</p> <p>Application of the STA Site Safe registration program and STA 16 Steps to Fire Risk Mitigation and Fire Prevention on Construction Sites – Joint Code of Practice 10th Edition (FPA & RSC/Authority) during construction.</p>	<p>Final design and strategy with risk management at the core.</p> <p>Demonstrate this across:</p> <ul style="list-style-type: none"> • Design • Fire risk engineering (including guidance and/or performance) • Fire management • Water management • Reparability • Lead-times for re-manufacture • Experience of delivery partners • Design out contentious areas and/or set a strategy for how to construct – i.e. an atrium or multi-level opening, establish how to use temporary measures to prevent fire spread or water damage <p>Set and agree policy tolerances with your insurers – i.e. structural integrity vs architectural aesthetic.</p> <p>Application of the STA Site Safe registration program and STA 16 Steps to Fire Risk Mitigation and Fire Prevention on Construction Sites – Joint Code of Practice 10th Edition (FPA & RSC/Authority) during construction.</p>	<p>Work to your plan and regularly review fire and water damage management plans.</p> <p>Reduce inspection heard in daily activities and conduct.</p> <p>Use temporary measures to prevent fire spread or water damage.</p> <p>Maintain a digital track record and utilise applied technology.</p> <p>Proactive, forward thinking Regulation 38 reporting.</p> <p>Application of the STA Site Safe registration program and STA 16 Steps to Fire Risk Mitigation and Fire Prevention on Construction Sites – Joint Code of Practice 10th Edition (FPA & RSC/Authority) during construction.</p>	<p>Share learnings, positive and negative. Conduct a forward looking review meeting with key delivery partners, where possible make open-source and make available for peer review.</p> <p>Set a maintenance strategy.</p> <p>Use technology – moisture monitoring.</p> <p>Water management – auto shut-off valves.</p> <p>Have tenants plan and procedures to ensure proper use of the property</p>	<p>Demonstrate how final design and strategy with risk management at the core show that this building is as resilient as it can be.</p> <p>Demonstrate this across:</p> <ul style="list-style-type: none"> • Design • Fire risk engineering (including guidance and/or performance) • Fire management • Water management • Reparability • Lead-times for re-manufacture • Experience of delivery partners • The digital track record • Be proactive in the use of technology for operation and maintenance <p>Set a maintenance strategy.</p> <p>Use technology – moisture monitoring.</p> <p>Water management – auto shut-off valves.</p> <p>Have tenants plan and procedures to ensure proper use of the property</p>
Insurance Actions:	<p>Select your Insurance Broker (Not all market relationships are equal, do your research and don't be afraid to insist on relevant experience. Lack of experience is not a barrier but insist on senior brokers taking the lead).</p> <ul style="list-style-type: none"> • Check market appetite/trends • Action points from this? <ul style="list-style-type: none"> o Recent learnings • Map out strategy together based on MTP • Be realistic with timelines • Broker led insurance market research • Broker to risk markets to be involved at this stage and seek to speak to insurers' risk engineers if appropriate <p>Promote effective two-way communication between all parties.</p> <p>It is and will be a learning curve for all parties. Be open and transparent, all parties want the project to succeed for mutual financial success (few win in the event of a claim).</p> <p>Persuade for Property Insurance. Some broker is preferable and push for common insurance if possible.</p>	<p>Highlight risk mitigation actions to your broker and insurers.</p> <p>Guidance and/or Performance based testing: run your broker through this, ideally fire risk engineer should present to the broker. Explain major contributing factors to assist in EML determination. Broker to identify markets and pre-engage.</p> <p>High-light experience and lessons learnt from delivery team and peer review process.</p>	<p>Highlight risk mitigation actions to your broker.</p> <p>Guidance and/or Performance.</p> <p>Run your broker through this, ideally fire risk engineer should present to insurers. Explain how EML can be modelled.</p> <p>Concept design with total focus on risk management to be presented to insurers.</p> <p>Broker to identify insurers to provide quotation.</p> <p>Delivery team plus owner to make market presentation.</p> <p>High-light non-negotiables in terms of design/risk mitigation and be explicit to what areas are unknown at this stage. Explain the use of technology, idea of the Golden Thread legislation, and how this will impact upon quality control and provide digital track record (note significant positive implications for Professional Indemnity cover).</p> <p>Be prepared for ongoing Q&A.</p>	<p>General updates as and when required.</p>	<p>Present final risk details to the market.</p> <p>Highlight all design changes and justify regarding risk management (both why and implications for insurer or for works).</p> <p>Demonstrate total control of all risk parameters based on design and execution and present Loss Control and Quality Control plans.</p> <p>High-light use of technology as a benefit:</p> <ul style="list-style-type: none"> • Water monitoring • Use of project management platforms • Professional indemnity and a digital track record • Other tech that improves risk management, product control, etc. <p>Collectively agree a risk surveying strategy.</p> <p>Establish this alongside a digital track record to greatly enhance Property Insurance.</p> <p>Be proactive, invite inquiry from your insurers – upskill all parties.</p> <p>Bind an equitable policy.</p>	<p>Comply with all aspects of the insurance contract.</p> <p>Be proactive with information.</p> <p>Carry out agreed survey plan.</p> <p>Property Insurance:</p> <ul style="list-style-type: none"> • Appoint a suitable Broker (refer Stage 0) • Use technology, digital track record, surveys and collate for insurers review. • Carry out forward looking Property insurance surveys with your Broker and possible insurers 	<p>Bind equitable Property Insurance</p> <p>Regarding Construction Insurance:</p> <p>Conduct a forward looking review meeting with your Broker and Insurers.</p> <p>Two-way communication as to lessons learnt and how these can be shared to collectively advance Mass Timber.</p> <p>Make open-source if possible.</p>	<p>Demonstrate how ongoing maintenance and surveying of the building will be conducted.</p> <p>Facilitate insurance surveys.</p> <p>Maintain a digital track record of maintenance and building safety.</p> <p>Where using technology explain and demonstrate the value to your Broker and Insurers.</p> <p>Share tenants plan and procedures and highlight how this helps ensure proper water and fire management</p>
	<p>Essential Principals for Fire Mitigation - Key</p> <p>A: Strategically Assess Resilience B: Engage Insurers Early C: Support Fire Lighting Operations D: Maximise Non-Combustibility E: Anticipate Arson Attempts F: Monitor Building Services G: Address Occupational Issues H: Extend Structural Stability I: Reduce Fire Severity J: Control Compartment Cavities K: Separate External Openings L: Resist Fire Ingress M: Expect Adverse Weather N: Minimise Consequential Damage O: Facilitate Simple Repair P: Plan Salvage Operations Q: Follow Identified Standards R: Provide Reliable Detection S: Complete Performance Tests T: Procure Quality Materials U: Require Competent Work V: Worry Recorded Information W: Manage Fire Safety X: Action Statutory Assessments Y: Keep Maintenance Commitments Z: Critically Review Experience</p>							

Guidance Sheets – Working Examples



4 Technical Design

4.6 Technical Design

Key Themes:

Undertake early consultation.
Prevent water damage and fire.
Lower Property Loss.
Enhance Design Robustness including undetected moisture ingress.

Risk Mitigation Actions:

Final design and strategy with risk management at the core.

Demonstrate this across:

- Design
- Fire risk engineering (including guidance and/or performance)
- Fire management
- Water management
- Reparability
- Lead times for re-manufacture
- Experience of delivery partners
- Design out contentious areas and/or set a strategy for how to construct – i.e. an atrium or multi-level opening, establish how to use temporary measures to prevent fire spread or water damage
- Demonstrate any improvement in risk profile and how key risks will be managed

Detail how the digital track record of the building will be created. Be proactive in the use of technology for a successful project outcome.

Build on the requirements of Regulation 38, but deliver this first and then use as a framework to comply with obligations at project completion.

Set and agree policy tolerances with your insurers – i.e. structural integrity vs architectural aesthetic.

Application of the STA Site Safe registration program and STA 16 Steps to Fire Risk Mitigation and Fire Prevention on Construction Sites – Joint Code of Practice 10th Edition (FFA & RSCA) during construction.

Essential Principles for Fire Mitigation

- | | |
|-------------------------------------|----------------------------------|
| A: Strategically Assess Resilience | K: Separate External Openings |
| Q: Support Fire Fighting Operations | L: Resist Fire Ingress |
| D: Maximise Non-Combustibility | M: Expect Adverse Weather |
| E: Anticipate Arson Attempts | N: Minimise Consequential Damage |
| F: Monitor Building Services | O: Facilitate Simple Repair |
| G: Address Occupational Issues | Q: Follow Identified Standards |
| H: Extend Structural Stability | R: Provide Reliable Detection |
| I: Reduce Fire Severity | T: Procure Quality Materials |
| J: Control Compartment Cavities | |

Insurance Actions:

Present final risk details to the market.
Highlight all design changes and justify regards risk management (both why and implication for better or for worse).

Demonstrate total control of all risk parameters based on design and execution and present Loss Control and Quality Control plans.

Highlight use of technology as a benefit:

- Water monitoring
- Use of project management platforms
- Professional Indemnity and a digital track record
- Other tech that improves risk management, product control, etc.

Collectively agree a risk surveying strategy.

Establish this alongside a digital track record to greatly enhance Property Insurance.

Be proactive, invite inquiry from your insurers – upskill all parties. Bind an equitable policy.



5 Manufacturing and Construction

4.7 Manufacturing and Construction

Key Themes:

Prevent water damage and fire.
Lower Property Loss.
Enhance Design Robustness.
Check Construction Achieved.
Improve Facilities Management.

Risk Mitigation Actions:

Work to your plan and regularly review fire and water damage management plans.

Reduce inception hazard in daily activities and conduct.

Use temporary measures to prevent fire spread or water damage
Maintain a digital track record and utilize applied technology.

Proactive, forward-thinking Regulation 38 reporting.

Application of the STA Site Safe registration program and STA 16 Steps to Fire Risk Mitigation and Fire Prevention on Construction Sites – Joint Code of Practice 10th Edition (FFA & RSCA) during construction.

Essential Principles for Fire Mitigation

- O: Support Fire fighting Operations
- D: Maximise Non-Combustibility
- E: Anticipate Arson Attempt
- F: Monitor Building Services
- G: Address Occupational Issues
- I: Reduce Fire Severity
- J: Control Compartment Cavities
- K: Separate External Openings
- L: Resist Fire Ingress
- M: Expect Adverse Weather
- N: Minimise Consequential Damage
- O: Facilitate Simple Repair
- P: Plan Salvage Operations
- Q: Follow Identified Standards
- R: Provide Reliable Detection
- T: Procure Quality Materials
- U: Require Competent Work
- W: Manage Fire Safety

Insurance Actions:

Comply with all aspects of the insurance contract.
Be proactive with information.
Carry out agreed risk survey plan.

Property Insurance:

- Appoint a suitable Broker (refer Stage 0)
- Use technology, digital track record, surveys and collate for insurers review
- Carry out forward looking property insurance surveys with your broker and possible insurers



Guidance Sheets – Key Takeaways



- Voluntary objectives/BCP – Owner/Developer to take the lead
- Broader and early engagement
- Fire Risk Engineering and EML modelling
- Reparability – commentary as well as level of cover, i.e. aesthetic vs structural
- Tech/Digitisation & Golden Thread – new opportunities to share information and manage risk – two way
- Other Tech – IoT – Water management, moisture monitoring, weather tracking, etc..

Potential for hybrid designs

Location of all plant and electrical intakes in concrete core, and vertical routing of services – this:

- Replaces significant concrete usage with timber
- Reduces combustible void challenges
- Improves building stability
- Supports firefighting activities

Locating all bathrooms and kitchens within a concrete core of a massive timber building – this:

- Replaces significant concrete usage with timber
- Reduces the potential for escape of water damage
- Supports built in drain-to-safe features

CLT panel waterproofing membrane – this:

- Reduces the potential for water damage during delivery and construction before weather proofed.

Alternating CLT floors in concrete or steel framed buildings – this:

- Reduces concrete usage
- Preserves a higher level of (insurance relevant) compartmentation
- Improves building stability under fire
- Supports firefighting activities



Successfully deployed

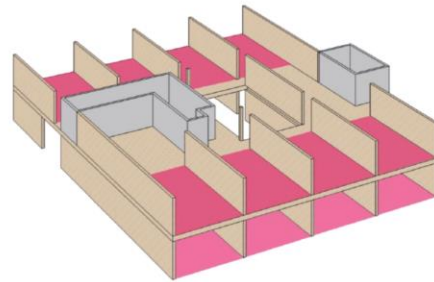
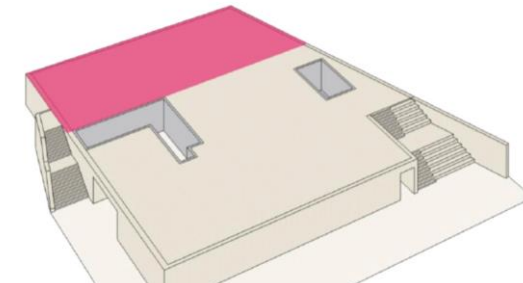
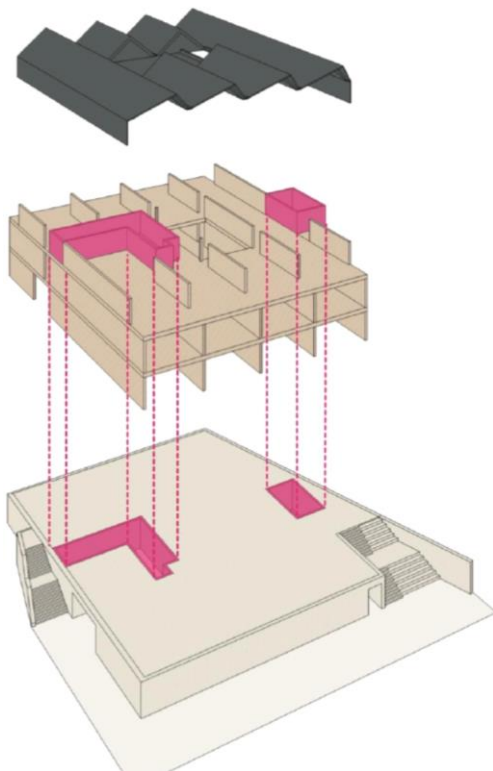
SCHOOL SCIENCE BLOCK

whitby wood

Catering Kitchen

Located at ground floor in concrete plinth

All kitchen ventilation service routes contained within ground floor



Science Labs

Compartmented design

Automated suppression system – sprinklers

De-centralised ventilation & heating reduces ducts & voids running between rooms

Auto-extinction tested structure

Non-combustible linings to floors

Non-combustible linings to walls where required; design preference to have 1-2 walls of exposed CLT if possible

Escape of Water

Bathrooms

Located within concrete plinth and concrete cores to reduced potential for escape of water damage

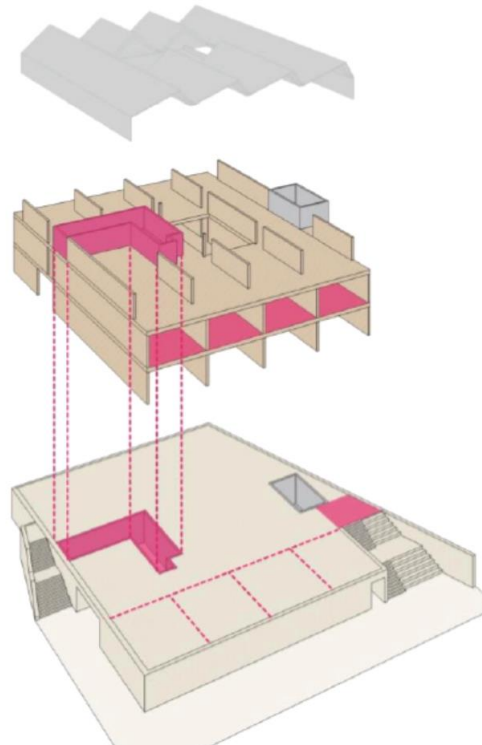
Science Lab Sinks

Drain-to-safe place

Labs on first floor are on concrete slabs – only on CLT at second floor

NC waterproofing membrane over CLT slab at second floor – Siga

NC cement board over CLT slab at second and third floors



Thank you

Dr Jim Glockling

jim@glockling.co.uk

+44(0)7900 692911

The Mass Timber Insurance Playbook:

A guide to insuring mass timber buildings



Co-authored by Philip Dalwe and Jim Glockling
Funded by Allianz, Marsh and Zurich
Resilience Solutions



Revision 1.0 January 2022

Insurance challenges of massive timber construction and a possible way forward



David Williams
Chairman of RISC Authority

“ It should not be a surprise that insurance models and insurance customer expectations developed around historic solid walled, non combustibile construction types, may need to alter quite radically to address these very substantial changes in construction methods and material use ”



RISC Authority