

BB7

KEYNOTE PRESENTATION – AUCKLAND, NEW ZEALAND 2023

The evolution of a **Fire** Strategy

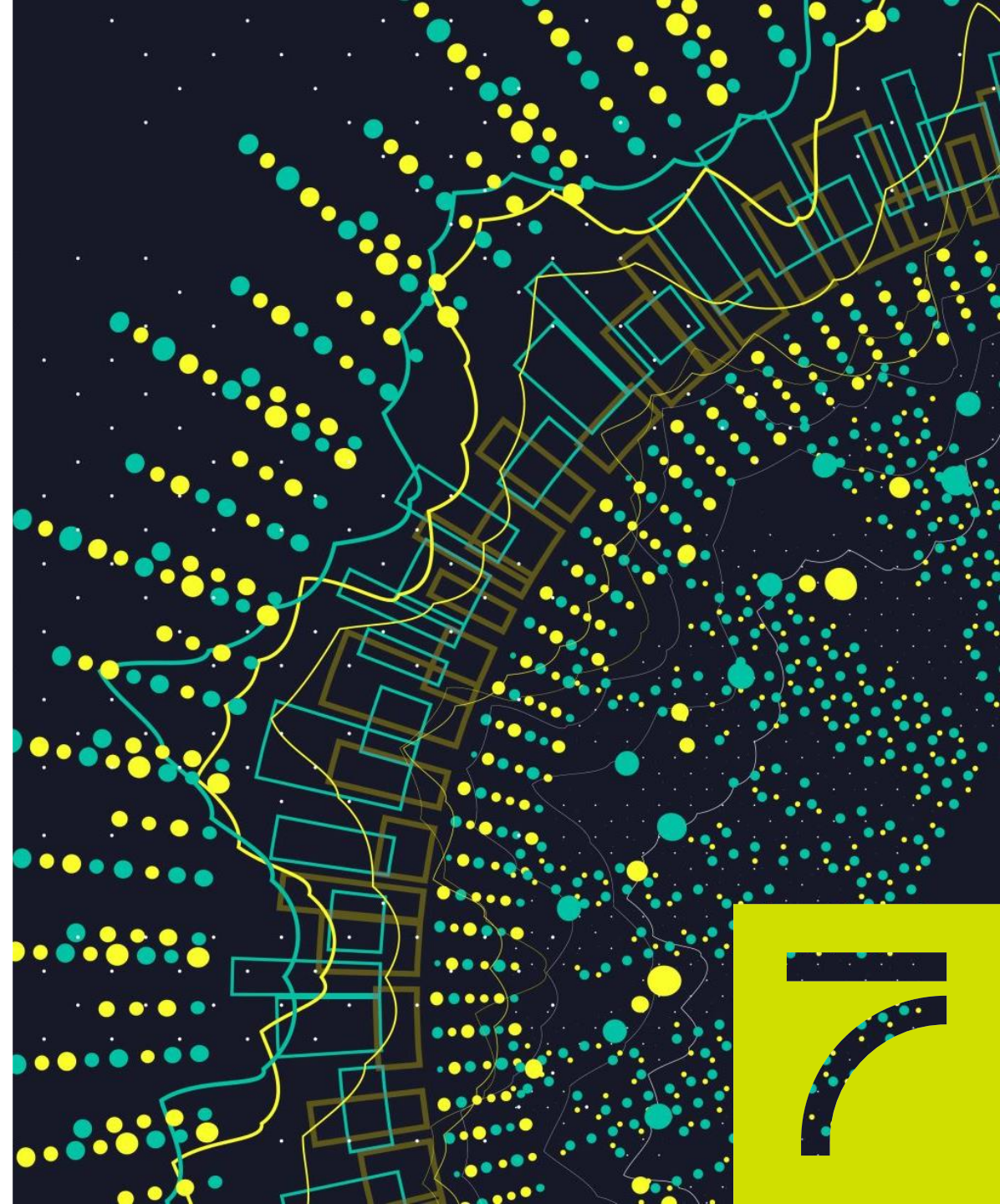


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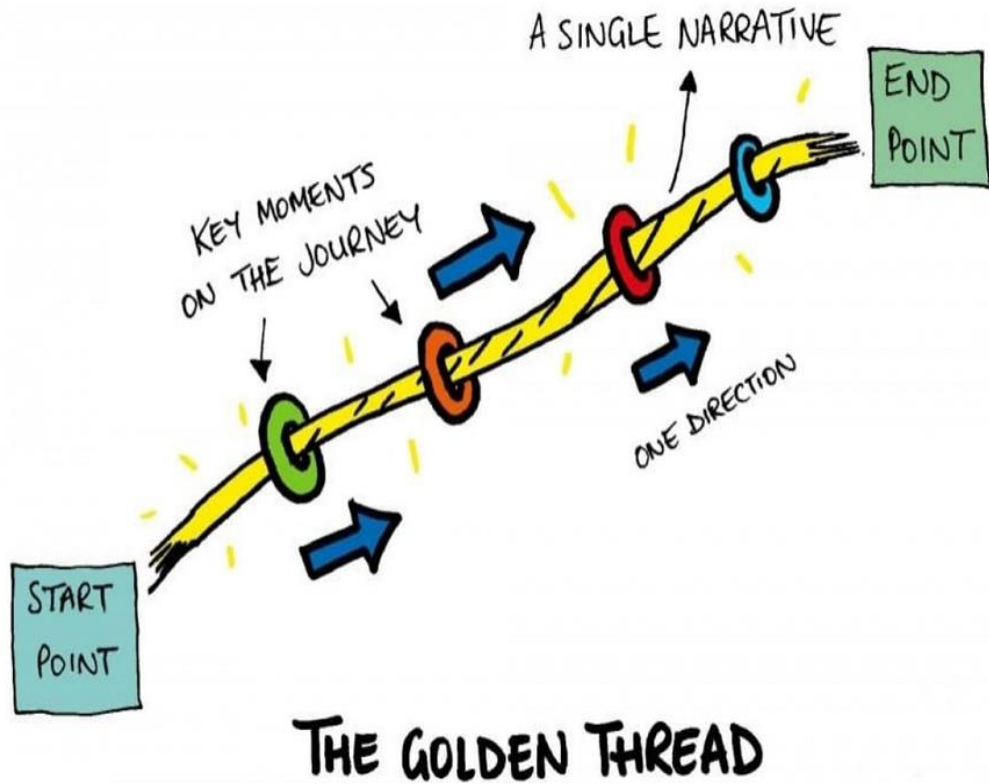
About BB7

Founded 26th November 2009 (Almost 15yrs)

- Founded on seven values, hence the name.
- A fire + façade consulting firm
- Ten locations throughout UK, Ireland and Cyprus.
- Heading towards 200 people (2023)
- Working toward B-Corp Certification
- Striving to be an outstanding employer
- Best Companies rated (Outstanding)
- Please do check out www.bbseven.com



The Golden thread



<https://www.linkedin.com/pulse/one-golden-thread-many-ben-bradford/?trackingId=sUD2XJHeSvK9vehwr%2FMMFA%3D%3D>

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WHAT IS A FIRE STRATEGY AND HOW ARE THEY DEVELOPED?

<https://www.linkedin.com/pulse/fire-strategies-design-brief-final-beyond-ben-bradford/?trackingId=EocN4cO9SgaTqif3ggX1VA%3D%3D>

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A fire strategy could be described as...

"Information which describes the fire safety issues and how they are addressed. It acts as a guide for the design team, by identifying standards or setting performance criteria, e.g., for the capacity of a smoke extract system, and/or the fire resistance of elements of structure.

It is the basis of the submission to the approving authorities i.e., Building Control Body and Fire Authority.

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Seven key considerations, it should..

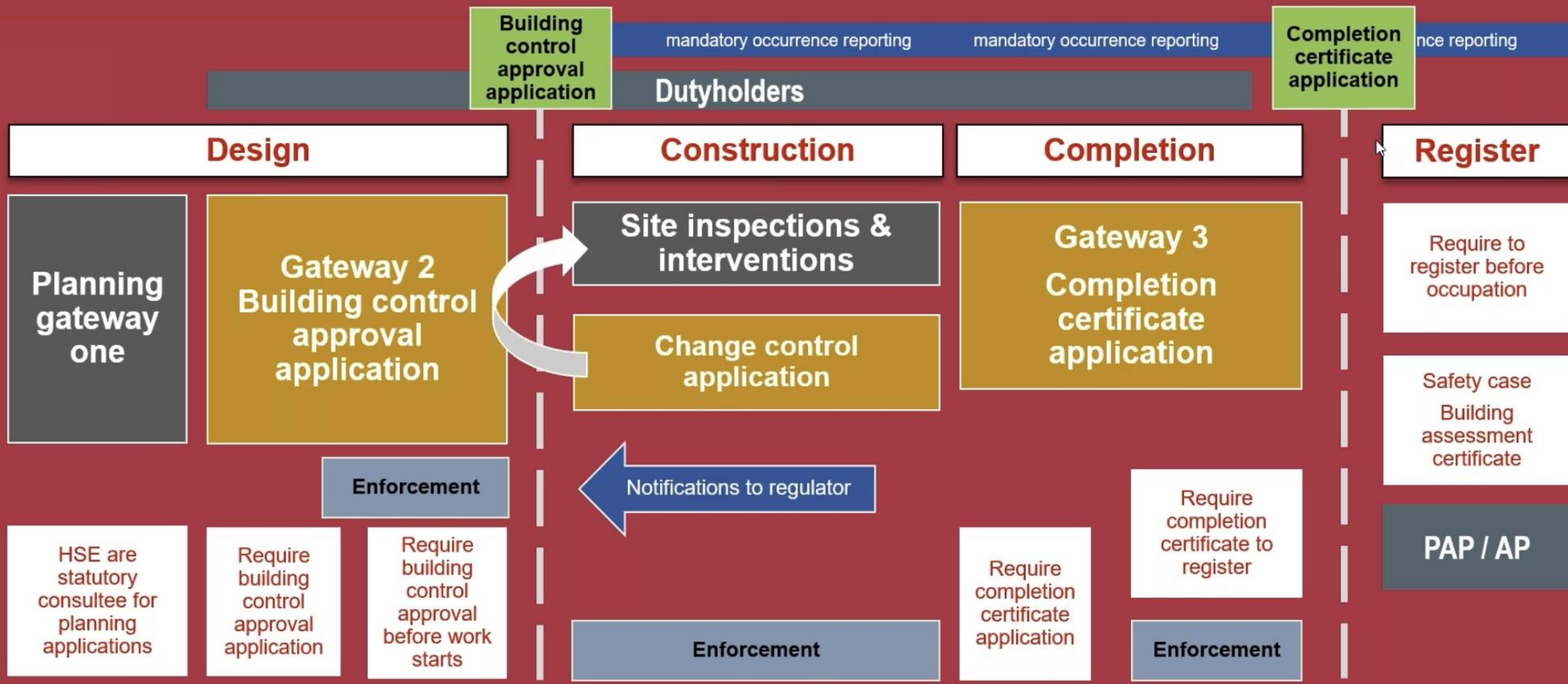
- 1) A plan of action designed to achieve specific goals and objectives;
- 2) Thorough assessment of the current situation;
- 3) Evaluation of potential risks and uncertainties;
- 4) Risk mitigation strategies to address these challenges;
- 5) Effectively communicate the strategy to all relevant stakeholders;
- 6) Multiple audiences
- 7) Document? - BIM is a process for creating and managing information on a construction project throughout its whole life cycle. It is here;S

Hopes and dreams

- We need standardisation of what is essential at each stage;
- We need standardized terms and definitions;
- Internationally accepted performance-based requirements would be helpful;



BSR Building control authority



It all begins with a fire design brief.....

A summation of client aspirations at RIBA Stage 1

The fire design brief should **outline the overarching goals and aspirations of the project**. It includes a clear statement of what the client aims to achieve with the building or development.

The Design Brief should clearly define the **scope of the project**, including the intended uses of the building, the spatial requirements, and any specific constraints or limitations that may need to be considered.

The development of a fire strategy is indeed an **iterative process** in which the strategy itself is refined and improved over time and with input from multiple stakeholders.

Fire design brief informs fire statement

The fire design brief will highlight **regulatory requirements** that the project must adhere to, including planning permissions, building regulations, and other relevant legislation. It will identify all dutyholders.

It will include **details about the location and site** of the project. This may involve information on the site's context, topography, access, and any other relevant site-specific considerations and an Approved Material Register (AMR).

In recent years, **sustainability and environmental** considerations have become increasingly important. The fire design brief may clarify certain sustainability targets or environmental goals that the project should aim to achieve.

What's on the horizon?

The building performance gap

The building performance gap refers to **the disparity between the predicted energy consumption of buildings and their actual energy use**. The causes of the disparity are understood to result from uncertainties in the environmental conditions, workmanship and occupant behaviour. Narrowing the gap is required to enable **Designers to make meaningful comparisons between the embodied and operational carbon impacts of design decisions**.

Embodied carbon

Embodied carbon refers to the total GHG emissions generated to produce, maintain, deconstruct and dispose of a built asset. It is defined by the UK Green Building Council as the **“total greenhouse gas emissions generated to produce a built asset, this includes emissions caused by extraction, manufacture/processing, transportation and assembly of every product and element in an asset and may also include maintenance, replacement, deconstruction, disposal and end-of-life**

Operational carbon (OC)

Operational carbon (OC) refers to **the GHG emissions arising from all energy and water consumed by a building in use over its life cycle**.

Whole life carbon (WLC)

Whole life carbon (WLC) is a measure of **the total emissions generated by a building from construction to occupation and operation, through to demolition and disposal**. A whole life carbon assessment of a built asset should provide an accurate account of its carbon impact on the environment.



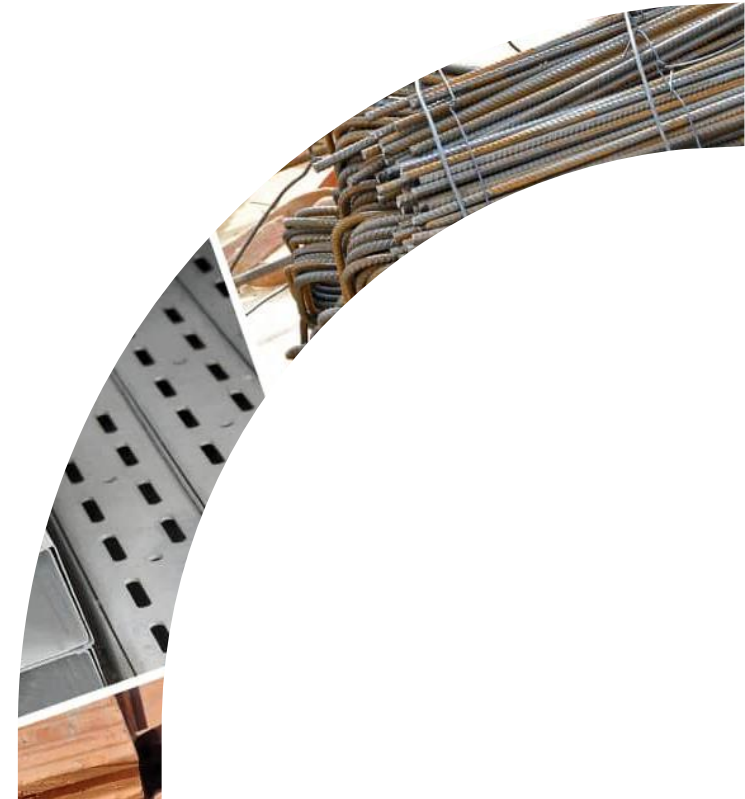
Approved Material's Registers?

Material passport

A material passport refers to a document that describes all the materials and components that comprise a product, system or asset in order to give them a value for their original intended purpose, their **recycling capacity and their reusability**.

Material stewardship

Material stewardship broadly describes the process by which **the societal value of materials lent to projects is preserved**. Material stewardship **relies upon data exchange, book keeping, and prevention** of activities that would trigger downcycling by all those parties involved in the extraction, processing, working or fabricating, shipping, maintaining, disassembling and returning to the supply chain.



Stepping off on right foot, best foot forward at RIBA Stage 1

It should incorporate **feedback from key stakeholders**, such as end-users, local authorities, or community representatives. **Understanding their needs and aspirations** can help shape the project's objectives.

An outline of the **project's timeline and key milestones** is often included in the Fire Design Brief. It provides a sense of the project's duration and critical deadlines from a client and approving authority perspective.

This is an extremely important stage in the delivery of appropriate project outcomes. Like all other disciplines, this is where you **define how success will be measured** and achieved from a fire safety perspective.

This research helps inform the subsequent stages of the design process and forms the basis for the fire statement to be submitted at Planning gateway one.



Capturing roles and responsibilities from the off.



Is the brief for fire limited to life safety (Building Regs / future compliance with FSO etc.) or does it extend to property protection objectives, business continuity and resilience?

Who is responsible for fire safety on the project at each stage? Who signs off risk decisions / deliverables?

What deliverables are expected and who will produce them i.e., are specialist appointments required?

This all needs to be captured in the responsibilities matrix at this stage so there is no ambiguity. A list of duty holders and key personnel will be produced.

An opportunity to embed **fire risk management thinking**, right from the off!

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Fire strategy concept

RIBA Stage 2

During this stage, the initial project brief is further refined and developed. Fire Engineers **collaborate closely with the client and their design teams** to gain a deeper understanding of their requirements, aspirations, and specific needs for the project.

Based on the clients preferred conceptual design options outline by the Fire Engineer, the architect refines and develops the design further. This includes refining the floor plans, elevations, sections, and other architectural drawings to provide a more detailed representation of the building's form and layout.

Based on the research and exploration, the design team begins generating design concepts which lead to the production of **Fire Strategy Concept**.



Detailed and technical design fire strategies for Gateway 2 (Final design?)

Detailed Fire Strategy Report at RIBA Stage 3

There is a **discrepancy industry wide** with the level of information contained in these reports. Some go too detailed at RIBA 3 and some add more detail at RIBA 4.

R3 Example: A fire detection and alarm system designed and installed observing the principles contained in BS 5839: Part 6 to a category LD1 Grade D1 or D2.

R4 Example: Same text that would then incorporate detector heads in xyz locations.

Design iterations will involve refining and improving the initial concepts based on feedback and collaboration within the design team and other key stakeholders and this work will often culminate in a **Detailed Fire Strategy Report** at RIBA 3

Technical Design Fire Strategy at RIBA Stage 4

As the design takes shape, the design document starts incorporating more **specific details and specifications** which become a Technical Design Fire Strategy as the design document reaches its final form at RIBA 4. It includes all the refined design concepts, specifications, and any additional documentation required for the design implementation.

More detail on smoke control, more detail on sprinklers and compartmentation.

Example: Not good enough to simply say a 60-minute wall. We need to say how that 60 minutes will be installed on site and address the buildability and construction detailing aspects. We need to obtain that information from the specialists.

Buildability now more critical

Buildability inextricably linked to project success

Buildability is an integral concept in the construction industry that pertains to the **ease with which a building can be constructed, assembled, and completed** efficiently. Ensuring buildability during the project planning phase significantly impacts construction schedules, costs, and overall project success.

Design Simplicity: Simplified designs that use standardized components and construction methods are easier to construct and reduce the likelihood of errors or delays.

Material Selection: Opting for readily available and easily handled materials improves on-site productivity and minimizes logistical challenges.

RIBA 5 Change Control Applications post Gateway 2.

Construction Sequence: The order in which building elements are constructed can impact the efficiency of the entire process. Strategic sequencing can minimize conflicts and streamline progress.

Site Constraints: Anticipating and addressing site-specific challenges, such as limited access or existing structures, ensures smoother construction operations.

Importance of fire strategy buildability:

- Cost and Time Savings
- Enhanced Safety
- Improved Quality
- Efficient Resource Allocation

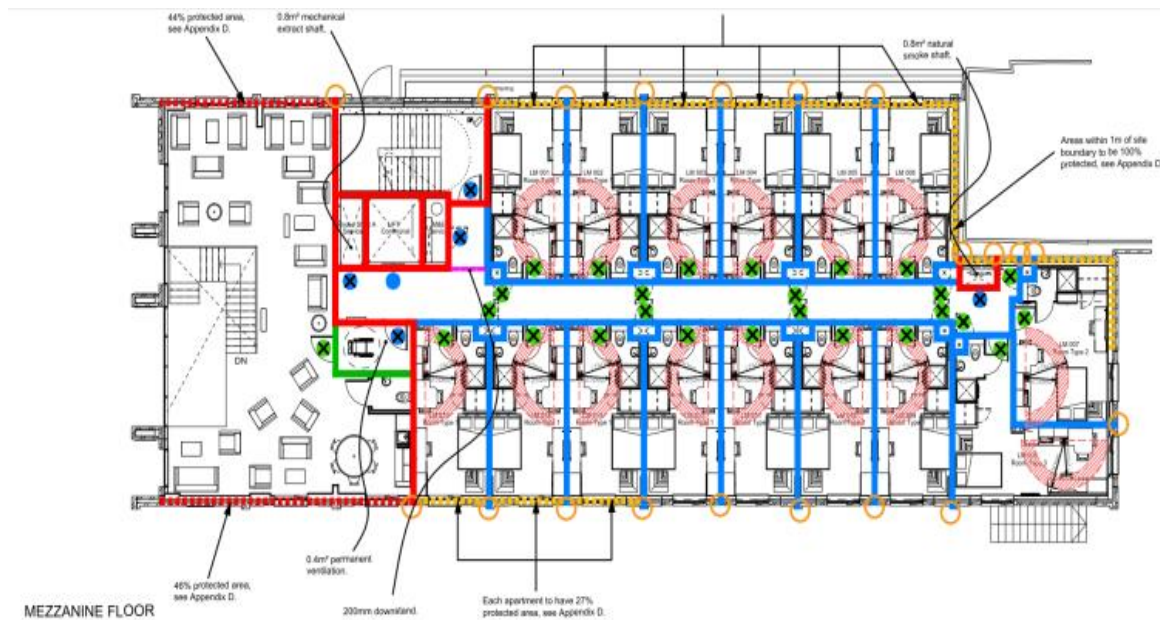
Responsibility and liability now much more of a concern

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Fire strategy drawings can bring the fire story to life



Fire Strategy Drawings (indicative)

To accompany the Fire Strategy Report, it is usually required by the approving authority to provide a set of fire strategy plans (or fire strategy drawings). These are a set of floor plans that show all or some of the following:

- Escape routes and travel distance;
- Fire detection (detector heads, manual call points and fire alarm panel location);
- Exit signage;
- Evacuation/emergency lights;
- Fire resistance for compartment walls (and floors);
- Location of special fire safety items such as fire/smoke curtains.

The style of the plans varies according to how they have been produced. In many cases they will be drawing plans generated using a computer design package with the information overlaid in 'layers' within the program. Otherwise, they may be single line drawings produced using a rudimentary drawing facility. **We could do with a globally accepted way or standardized approach for how this information is presented.**

<https://www.linkedin.com/pulse/does-your-building-have-as-built-fire-safety-drawings-ben-bradford/>

SARs inform final design fire strategy are ancillary but must be seamless.

Safety Assurance Reports (SARs) – RIBA Stage 5

The end user will often want to establish that the construction stage of the building has been completed, fire **strategy implemented**, and necessary fire safety **design measures incorporated** prior to handover and subsequent occupation.

Safety Assurance Reports (SARs) are comprehensive documents that provide **evidence and assurance** that a building system, its construction process, and ultimately the final product meets the required safety requirements and standards. **These reports often accompany, compliment and support the Final Design Fire Strategy**

<https://www.linkedin.com/pulse/envisage-safer-future-where-fire-safety-embedded-seven-ben-bradford/?trackingId=PD0%2BCiB%2BRIOs6iBNC88kew%3D%3D>

Pre-occupation safety assessments RIBA - 6

A pre-occupation safety assessment is the process of identifying fire precautions in a newly constructed building, considering the approved fire strategy, and deciding whether the new or refurbished premises is likely to be fit for occupation. This assessment can help ensure a smooth transition from the design and construction phase to the operational phase of new premises”.

Gateway three, RIBA 6 completion application to register completion prior to occupation.

Final Design Fire Strategy 2.0

Construction stage fire strategy captures the design aspects picking up test data, manufacturers literature and SAR's and Pre-occupation safety assessment ensure we are ready to conclude and issue the Final Design Fire Strategy.

The Final Design Fire Strategy captures the input from approving authorities and other stakeholders who were involved in bringing the design to life. The evolution of a fire strategy to this point is an iterative and collaborative process to refine the design based on research, feedback, and testing often using computational tools, modeling and visualization.

A final design document is a comprehensive and detailed outline of a project, capturing all the essential information required for its implementation. It serves as a roadmap for developers, designers, and stakeholders involved in the project, or those who may need to manage the building or make alterations in future.



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Fire risk management strategy - How do we get there?

Fire Risk Management Strategy

Defines the building, premises or organization's fire risk management system, and method of implementing their overarching fire policy and approach to risk management. A fire policy will often describe the 'what and why' and this strategy addresses management responsibilities, accountabilities and the 'how, who and when'. This section discusses the need to appropriately manage fire risks. It shall include recommendations on how to ensure a detailed explanation of the function and delivery of the fire risk management system can be made. Normative references to BS 9997 to be made.

<https://www.linkedin.com/pulse/bs-9997-2019-fire-risk-management-systems-guidance-use-ben-bradford/?trackingId=8LZT50R8RaG%2BUtFWEhFbDA%3D%3D>

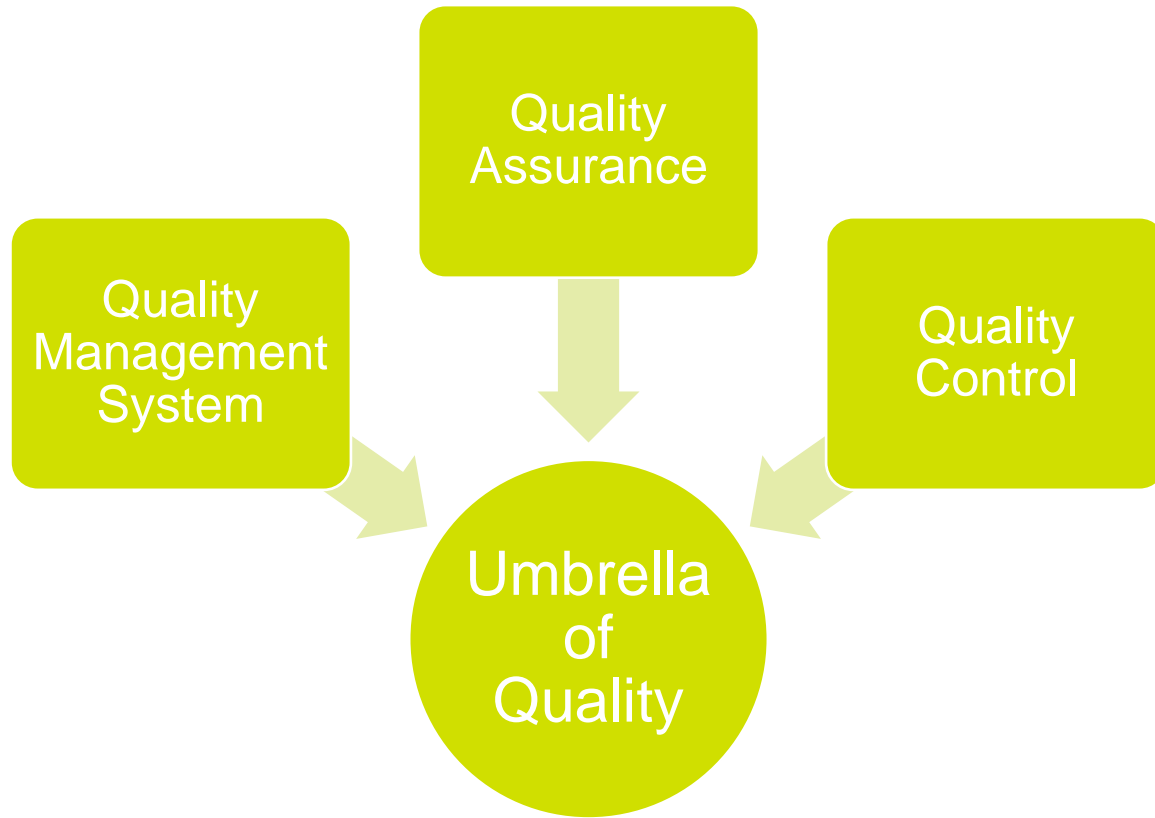
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<https://www.linkedin.com/pulse/seven-steps-successful-fire-risk-management-audit-ben-bradford/?trackingId=PD0%2BCiB%2BRIOs6iBNC88kew%3D%3D>



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The Quality Umbrella – Are you covered?



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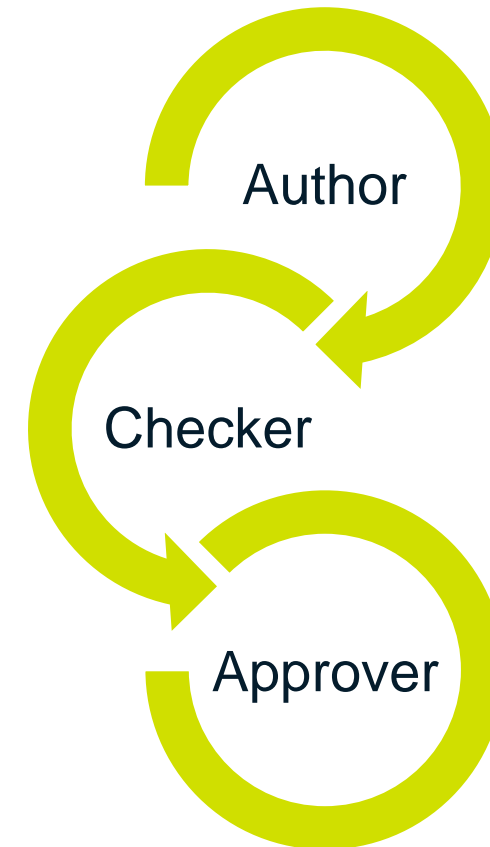
Quality assurance processes within the professional service firm

There are three primary roles in developing a fire strategy

Strategy development begins with **the author** who is responsible for ensuring accuracy and correctness. They are responsible for ensuring that the checker and approver comments are taken onboard. The professional service firm must determine the necessary competence of the person(s) doing work under its control that affects the coherence and correctness of the strategy.

The checker who takes full responsibility for a full and detailed check must be competent. The professional service firm must verify that these persons are competent on the basis of appropriate knowledge, training or experience; and retain appropriate documented information as evidence of competence.

The Approver must be a Chartered Professional. Preferably CEng but Chartered Professional with relevant experience in fire safety as they take ultimate responsibility for the report.



Traceability (Internally it's folder management / Externally it's minuting significant meetings)

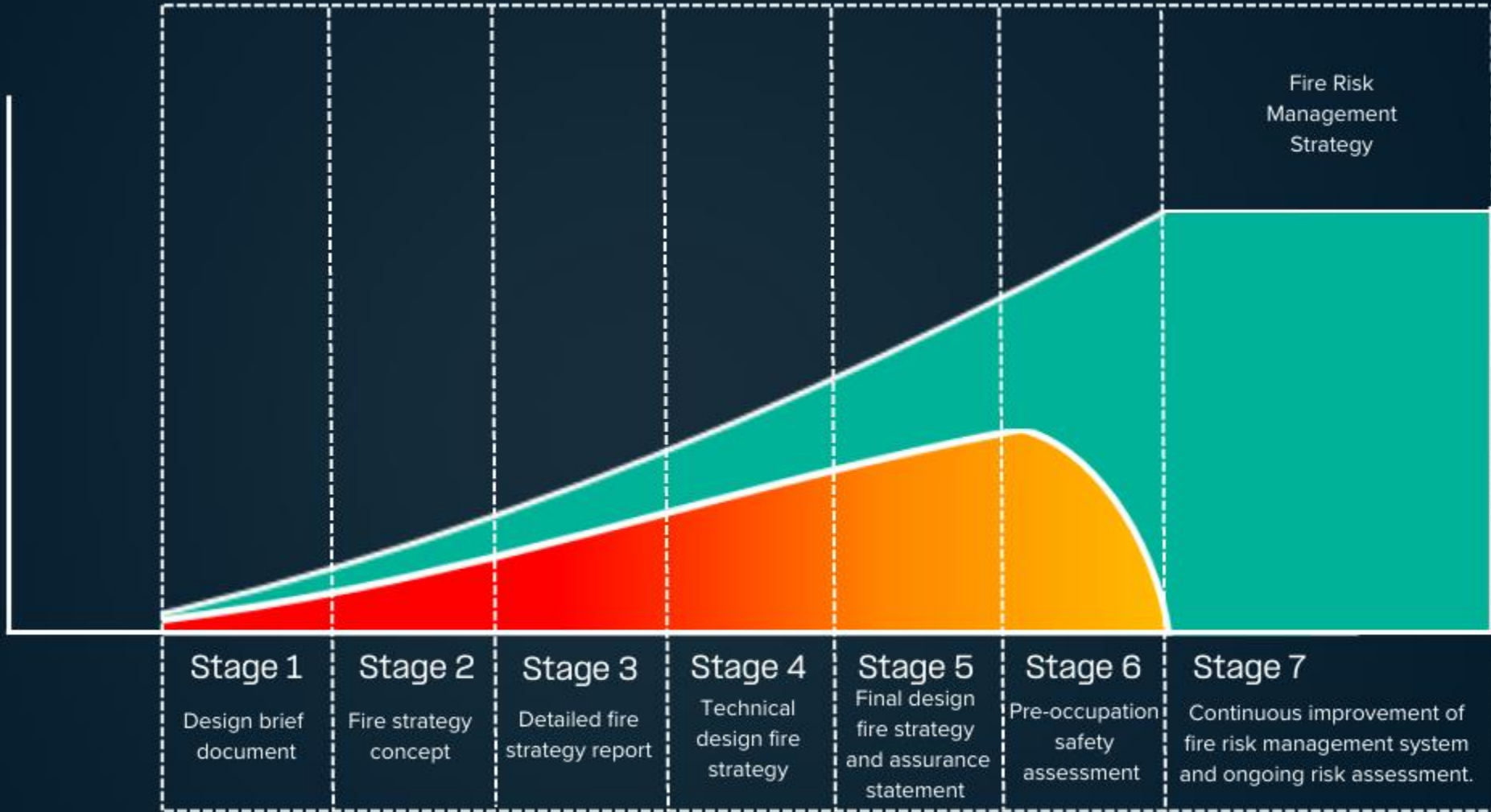
Traceability can refer to **decisions** during the design process or **products** and the ability to **track and verify the history**, location, and usage of a product, **material**, or component throughout its lifecycle.

It involves **documenting and recording information** about the origin, processing, distribution, and disposal of an item to ensure **transparency, quality control, and compliance** with regulations or standards.

Traceability provides developers and building owners with valuable insights, **control, and accountability throughout the building lifecycle**. It enables them to address issues promptly, make informed decisions, and **build trust** with customers, regulators, and other stakeholders.



Cumulative inputs from specialist fire team



Fire Risk Management Strategy

Fire Safety Design and Engineering — Fire Safety Assurance — Fire Risk Management

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Why is the evolution of a fire strategy important?

A final design fire strategy or fire risk management strategy are invaluable to a fire risk assessor when undertaking a fire risk assessment.

Because...

A fire risk assessment is the process of identifying fire hazards and evaluating the risk to people, property, assets and environment arising from them, taking into account the adequacy of existing fire precautions, and deciding whether or not the fire risk is acceptable without further fire precautions.





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