REVIEW OF BUILDING REGULATIONS

Response by the Building Engineering Services Association

The Building Engineering Services Association is the UK's leading trade organisation for building engineering services contractors – representing the interests of firms active in the design, installation, commissioning, maintenance, control and management of engineering systems and services in buildings.

The BESA welcome the independent review into the Building Regulations, and have prepared our contribution and recommendations in collaboration with our members via meetings, email consultation and online forums.

https://www.thebesa.com/

The BESA provides its members with access to a wide range of services that help them build better and more profitable businesses. Expert advice, guidance and assistance is routinely provided in relation to a broad range of commercial, legal and contractual, employment, health and safety and technical issues.

All of BESA's publications are written by industry experts in response to industry demand or changing legislation and include technical specifications, contract legislation, health and safety guidance, commercial performance standards, training resources and employment guides.

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Q1: The overarching legal requirements

The Building Regulations are the defining regulations for construction, however they are supplemented by approved documents, a raft of BS and EN standards, other established guidance on property preservation as well as many other sources of knowledge and opinion.

Building Regulations are intended to ensure that a reasonable standard of life safety is provided, not absolute protection and not property protection, the latter being an insurance issue for which the LPC give more guidance. Additionally some clients such as Network Rail have specific requirements which mean they get a higher standard of work. On top of all this individual building fire strategies can increase the requirements for sub-contractors (e.g. occupants should stay where they are in the event of a fire and await rescue).

There are too many sources of information, requirements, regulation, guidance and advice which makes it difficult for the sector to implement. This diversity and lack of coherence also leads to broad scope for interpretation, resulting in widely varying requirements over projects.

Using the Fire Engineering approach in a construction project allows even greater flexibility, which should be welcomed for allowing innovation in design but in practice leads to a number of problems; proof of compliance is really challenging for third parties, it relies almost entirely on forms of self-certification which are subject to commercial pressures. Member feedback suggests that it is used to justify cheaper solutions that fully exploit the loopholes in the plethora of regulations; this is not its intended purpose.

The work on site may be carried out by operatives working under Competent Person Schemes (CPS). This was introduced by the UK Government to allow individuals and enterprises to self-certify that their work is compliant with Building Regulations as an alternative to submitting a building notice or using an approved inspector. A Competent Person must be registered with a scheme that has been approved by The Department for Communities and Local Government (DCLG). There are currently 18 approved

CPS covering the main work types, none of which specifically include fire protection. However, it should be remembered that membership to a CPS is voluntary.

Once construction is complete, the requirements of the RRO also apply, supplemented by a wide range of knowledge and guidance from various sources. In some circumstances, it is possible that the application of RRO requires amendment to the building or compromising the fire strategy. In many respects, the faults specific to fire outlined above are reflected in the general condition of construction as clearly illustrated by Farmer et al.

Fire safety should come as a result of good building practice; a good building will be a safe building.

We know what the problems are, it is in addressing them that we have failed.

Regulatory

Regulations are sufficient, it is the interpretation, implementation and enforcement that is lacking.

- *BRs & CDM in construction links to RRO in FM (issues around backwards compliance, retrospective application, change of use)*
- *While CDM does assign design and construction responsibility, in practice this has not been tested in the courts.*
- *There is no requirement to certify the system as a whole.*
- *Although the Local Authority may test anything under BR 45, in practice this right is rarely exercised and especially not for a complete and whole building.*
- *BESA members cite cases of work-arounds, re-classification and other dodges to reduce the regulatory burden.*

There is a requirement to consider fire protection at all stages, however experience shows that project fire strategies are rarely updated during a project; it's a tick box exercise at the start rather than an active engineering process throughout. CDM also requires a design to be buildable, although no consideration to cost need be made, in practice designs are lacking. The early involvement of contractors in the design process has been shown to mitigate this problem, but this rarely happens.

The experience of our members shows that there are a number of practical issues that commonly arise; the conditions precedent to their work do not allow cost efficient compliance, there are often follow on *works that disturb their installation and between fixes other work which can hide non-conformities. Passive Fire Protection often becomes a late requirement caused by multiple changes in design and falls outside of neat Bills of Quantities and sub contractor packages. No one has priced or will get paid for this additional work so it falls "between the stools". Quick, cheap superficial solutions are therefore found and rarely is quality or compliance checked.*

Contract and Process

- *Responsibility is often split down the supply chain and therefore coherence is lost.*
- *Some projects pay for consultants to maintain and certify buildings, this results in a better outcome but clearly adds costs.*
- *Partial completion of projects leads to interface failures.*
- *Favours lowest cost (CBA), not social value benefit analysis.*
- *Technical quality often gives way to driving for lowest cost and in doing so the detail that is so vital for fire protection gets compromised.*
- *In many cases procurement precedes detail design, such that the detail is then made to "fit" the price.*
- *Procurement teams are not always sufficiently technically competent, so they make poor choices based on often misleading manufacturer information provided with products. (foam fillers in particular)*

Q2: Roles & Responsibilities

Technical fire safety is created by close attention to a multitude of details, across a wide variety of disciplines, over the life of the building and requires the maintenance of a holistic approach that sees the building as an integrated complete system. Whilst the RRO appoints a Responsible Person, it is in fact the responsibility of everyone involved in that building from designers to occupants and the detail really does matter. This is the challenge; the construction and Facilities Maintenance FM sectors are not set up to deliver this requirement effectively.

Construction and FM consist of many layers of contracts, each of which may have differing terms or incoherent responsibilities. This leads directly to a loss of co-operation, co-ordination and communication directly resulting in worse fire protection.

In order to meet the challenge, design competency must be applied to all the individual systems as well as checking the integrity of the whole building system, then extending beyond the building. There is some training available to design engineers but there is no requirement for this to be undertaken. Fire engineering is often viewed as a specialist item to be done by others, pushing responsibility away from the general practitioner. In projects where cost is a primary function, fire protection considerations are often undertaken by untrained or self-taught people. Yet in all cases judging the appropriateness of the measures to be taken is difficult because it involves a real ability to quantify risk, cost the mitigations and ensure the design reflects the requirements.

All this is even before construction starts. Once onsite, the diversity of detailed tasks and the multi-layered subcontracts lead to a loss of quality control. Fire related competency is often auxiliary to a contractors main work type (e.g. pipefitter and fire stopping). Practically this means it comes under time/cost pressure and responsibility and is not clearly defined in contract documentation.

The extensive training undertaken by operatives in their main trade does not include very much specific fire prevention training. Where it does appear, it is isolated and gives no context of the importance of creating a whole building system. For some trades there are general requirements to comply with the BR's but no defined competencies for fire prevention and control. Therefore operatives are not being sufficiently trained, which means they cannot be held accountable or certify work.

In some cases BESA members are achieving better results by using specific contractors for fire protection work that have been trained and certified through internal processes. This represents current best practice for our sector.

Evidence from members clearly indicates that BCOs are over stretched and under skilled. It is unlikely that a single person would have sufficient skills or experience to undertake a role such as Clerk of Works in a modern building. A team of people with fire protection as a specific duty are required throughout a project. In the construction phase, to be effective, it is necessary to have continuous monitoring on site. There are too many opportunities for the covering up (deliberately or not) of faulty work.

Once construction is complete the requirements of the RRO also applies. The RRO places a complex duty on the Responsible Person. We argue that this duty is too great and results in either; missed hazards, corner cutting, or reliance on others who may or may not be competent. Common FRA templates require the "responsible person" to make many judgements that are outside of their general remit or require knowledge that cannot easily be obtained (eg is the paint on the wall fire retardant?).

Q4: Competencies of key players

Competent Person Schemes were created to lower the cost and administrative burdens on projects. According to DCLG's own figures, there are approximately 134,000 members of individual CPS – this is low when you consider the possible numbers of companies active in the field across all the various disciplines. It is probably true to say that there is little evidence to understand the total amount of work carried out by tradesman/companies that is not notified and therefore unregulated and possibly done by unqualified personnel.

Q7: Quality Assurance and Testing of Materials

Product vs. system; there is a requirement to use tested & certified materials however it can be unclear how this relates to system testing. Combining individual products into systems can result in compromised fire safety as system tests are rare, and rarely considered. Specific multi-product testing for individual projects is likely to be cost prohibitive, therefore a requirement to do this may stifle innovation. Product certification is very complex and can be difficult to reconcile on a project that contains thousands of components, arranged in many combinations, purchased and used by many different contractors. Our experience has shown that consultants, engineers, contractors and operatives all find product selection difficult. In many cases the manufacturers obscure the true meaning of certification behind sales speak in order to cover up the lack of testing.

There is a requirement to keep adequate records and to hand these over contractual boundaries. In practice transfer of records between parties is rarely done properly due to time and cost pressures. Often these are in paper or proprietary system formats which leads to incomplete transfer, and then storage over the long term is difficult due to the changing IT systems. Towards the end of construction projects when time pressure is approaching maximum intensity the continuity of fire protection needs to be checked, documented and handed over. With such a large amount of data being transferred from a large number of sources it is evitable that mistakes and omissions are made, then missed.

Current "as installed" documentation consists of: a set of drawings, which are frequently either out of date, or very rapidly become out of date, as minor changes to the building are made without drawings being updated; a set of manufacturers' manuals that offer little information to the system user; a series of test certificates; and a very basic guide to the building if you are lucky.

Q8: Differentiation within the current Regulatory System

Fire Safety should not be treated as a single unrelated discipline. Fire safety comes as a consequence of building to the correct design and specification. If the building is air tight, the services operate correctly and are integrated and the user has the information to operate the building safely it would also follow that it will also meet the requirements of Part L and be energy efficient and no doubt other BRs.

The role of digital technology must not be overlooked, it offers the ability to deliver high compliance levels at low cost. Examples of current best practice and future uses include:

The use of BIM or/as digital twin to ensure compliance with the design in detail combined with immersive and virtual reality to check design prior to construction, compliance checking on site and training of operatives. Blockchain for certification of individuals, activities, materials and systems that provides an immutable record of actions in a format that is cross system compatible.
Specifically we recommend:

- *Incentivisation of innovation, training and uptake of digital technologies*
- *Definition of fire related competencies for operatives*
- *Wider uptake of fire specific training via short courses*
- *Assurance and protection of independent inspection/certification services from commercial pressures.*
- *Inclusion of fire related competencies within CPS requirements*
- *The use of digital tools to improve specification, design and requirements definition*
- *The use of digital tools to prove compliance*
- *The storage and transfer of records in an immutable, format agnostic way: eg blockchain*
- *The clear and public publication of the name of the person responsible for the fire safety of a building at all stages of its life.*
- *A route for dangerous or non-compliance to be reported and investigated that is outside of the contractual chain*

Q9: International Comparisons and Other Sectors

BESA members have developed, used and experience a number of best practice examples that would be worth wider consideration:

- *Use contractors who have been specifically trained and contracted to do work like fire stopping*
- *Photographing work done as evidence is an easy win. Added technology like geotags, time stamps and QR codes all help build confidence.*
- *In Qatar the imposition of civil defence requirements radically changed fire protection standards for the better.*
- *Ireland has a more robust system of regulations.*
- *The UK COMAH regulations provide a robust frame work that could be considered for higher hazard buildings such as tall buildings.*

However, BESA members are clear that any solutions or changes must be realistic given the nature and environment of construction today, otherwise they will be ineffective.

Without doubt the lack of enforcement of current requirements is the single biggest issue that leads to poor compliance and dangerous buildings.

Further evidence

The following are specific technical points raised during our consultation which both require resolution and illustrate the issued faced daily by contractors;

- *Plant room passive ventilation / venting heat and smoke externally – unclear requirements.*
- *Wall penetrations to exterior through cladding /near flammable materials.*
- *Flammable and A2L refrigerants.*
- *Identification of compartment walls, fire rated ductwork etc. can be difficult.*
- *Finding out the fire rating of installed components can be difficult.*
- *Flue connections / proprietary flues are a weak point in the system.*
- *Termination of fire rated ductwork.*
- *Testing of fire and smoke rated ductwork.*