

The Architectural and Specialist Door Manufacturers' Association (ASDMA)

Submission for the Building Regulatory Independent Review concerning Fire Safety

12 October 2017

Part 1: Main themes in ASDMA's submission and main recommendations

How member views were assembled

We have set out to represent as faithfully as we can the views of our members in line with their experience, with as much opportunity for them to contribute as time and process allowed.

The main steps we followed are in line with ASDMA's processes:

- Attention to the agreed policies and principles of the Association, established with member endorsement over several general meetings, according to constitution.
- Discussion devoted to this review and ASDMA's submission in an open forum members' meeting.
- Several individual telephone conversations and email interchanges to gather input, including individual details from members, both before and after the open meeting.
- Attention to ASDMA best practice guidance and advice documents, both major and summary guidance, approved by members and provided on the ASDMA web site.
- Approval and circulation of the submission to members.

Evidence for the issues that can arise in the supply of products with a prime fire safety function can be found in the detailed guidance produced by ASDMA, on the Association's web site.

Our web site information is provided in response to core issues that arise in interacting with specifiers, clients, users and those in construction. The objective, as defined by our constitution, is to promote best practice fire safety and to do what we can to raise levels of awareness of the technical considerations that apply for high quality door assemblies used for fire safety purposes.

The web site forms a central hub where relevant and appropriate key information can easily be accessed. It primarily includes sector and product-specific detail to ensure good performance with information on developments in standards, regulations and other aspects of fire safety.

We therefore draw your attention to the web site guidance, as an example of industry guidance. It is an important part of the evidence for this submission.

Reference: "Knowledge Centre" on www.asdma.com.

Observations on culture and the regulatory system

The Regulatory Review document refers to potential shortcomings in the regulatory system for ensuring fire safety – described as including legal requirements, roles and responsibilities, compliance processes, competency aspects, enforcement, sanctions and quality assurance.

The document also notes that the Review is interested in anything that may impact on the building life cycle, including any cultural issues which impact on the focus on maximising fire safety.

We have included those aspects throughout, summarised in Part 1 and detailed in the Q&A, Part 2.

We agree that there are cultural issues which significantly affect attitudes to fire safety – and that these can in turn lead to critical weaknesses in the robustness of constructions against fire.

ASDMA believes that maintenance of the specification for elements of construction is particularly crucial from design along the supply, procurement, fabrication and construction chain to completion.

And we suggest that the way the contract chain works should be an important consideration for this Review, as an important aspect of the way the regulatory system as a whole works in practice.

We therefore draw particular attention to the 4 considerations, in turn: changes to specification; low level priority devoted to fire safety; the regulatory regime; and market control mechanisms.

Changes to specifications

- Mutation of the performance specification along the supply, procurement and construction chain for reasons other than fire safety is a major risk to the robustness of constructions against fire.
- Issues particularly arise as others than the original specifier effectively take on a specification role, especially concerning product selection and purchase. The various influencers along the chain, however, may not have either the necessary professional standing or a wider awareness of the whole project, so they may not be as alert to how the specification fits into the overall fire safety strategy. They may also be more exposed to pressing commercial demands, and more involved with other immediate objectives, probably subject to resource and cost pressures.

A lower level of priority given to fire safety

- Fire safety tends to be relegated to a lower priority, with a lower profile compared with other functions, which can lead to reductions in fire safety specifications, and reduced care in providing less than adequate fire safety provisions as performance levels are reduced or eliminated.
- Fire safety products, product systems and the fire safety principles that govern their use are all highly technical. Products for use in fire have to be high performing and high quality, since fire can be so intense, fast spreading and unpredictable.

Fire safety products therefore need to be robust, with a margin of safety should conditions turn out to be different from those anticipated. But prevailing cultural factors tend to work against a technical focus, in stark contrast to what is needed to back applications for fire safety.

The regulatory environment

- The regulatory regime is effectively a relatively liberal “light touch” one, based on functional objectives rather than prescriptive performance-based solutions, which requires a significant degree of individual interpretation, commitment and judgment in application.

Guidance is provided as recommendations, with some latitude in their use, e.g. from AD B Use of Guidance: “... *there may well be alternative ways of achieving compliance with the requirements. Thus, there is no obligation to adopt any particular solution contained in an Approved Document if you prefer to meet the relevant requirements in some other way.*”

- The Regulatory Reform (Fire Safety Order) in 2005 introduced a significant step-change with its stronger emphasis on a risk-based methodology and its shift of focus to individuals in control of buildings and the Fire Authority as enforcer.

The FSO provided a much-needed shift of focus on to individual responsibility and competency.

But it does not provide sufficient direction on what core competencies, levels of knowledge and know-how are necessary to be a sufficiently accredited expert. And the FSO in effect assumes that risk-based decision-making is an innate skill that can be relied upon implicitly, without appropriate training and guidance to emphasize the sharp distinction on one hand between judicious risk management, backed by qualitative knowledge-based analysis, and risk-taking with only shallow knowledge on the other.

- There are also doubts from academic research that a de-regulatory enterprise environment - with reliance on self-regulation and self-assurance of performance - is really the most suitable to expect a proper nurturing of fire safety, when decisions are so vulnerable to substantially cost-driven and competitive commercial pressures.

Fire safety requires a great deal of technical diligence. It also has a major moral, ethical and social dimension. There is therefore reason to ask if a dominant enterprise culture founded on a philosophy that emphasizes risk-taking, cost-cutting and low-price, short-cut solutions is the best one to encourage and promote fire safety. The “invisible hand” of the market does not always serve the best interests of fire safety. And if fire safety is to thrive, then it needs a special focus, and more of a hand in support from Government.

References

1. “*Deregulation is so nineteen eighties, we’re into better regulation now. Consequences of self-regulation through enterprise in the passive fire protection industry*” Stephanie Russell and Matthew Brannan, 2009 www.liverpool.ac.uk/media/livacuk/.../docs/abstracts/.../RussellBrannanpdf
2. “*Regulators, Conformers and Cowboys: The Enterprise Discourse, Power and Resistance in the UK Passive Fire Protection Industry*”, Russell and McCabe, 2015, *Organization Studies* Vol 36 (12) 1693-1714

- It is easy to understand the view that decisions for fire safety surprisingly don’t come out at the top of the list for primary attention - but tend to be seen only as desirable or just additional rather than essential. In common thinking, fire safety is assumed to be a top priority, especially where there are known vulnerabilities, but the system as seen by the public just does not seem to work to ensure that is an automatic outcome.

(Observation by John Humphreys, on air in interview, Radio 4’s *Today*, Saturday 7th October)

Market mechanisms

- The functional approach adopted by regulations is, however, appropriate and suitable given the complexity of the built environment. But that in turn means that controls across the market need to be better acknowledged and supported.

There is a need for flexibility in design and innovations if we are to continue to cope with higher building commercial value and increased urban developments with the pressures that exist on using the most of urban space and building footprints. There has to be scope for individual tailored design and build solutions which are not unduly restricted by prescriptive rules. But balance is necessary such that fire safety is not compromised or lost in the process.

- That should mean, in turn, that the mechanisms for focus and attention that have been developed by the fire safety sector as a whole need to be recognised, and far better supported.

A policy that says, in effect, “leave it to the specialist sector” is not sufficient. Fire safety needs a national perspective and support from centre, extended locally, to get the attention it justifiably needs in view of the potential disastrous consequences of fire in today’s built environment.

The fire safety sector provides products, systems, methods, materials, expertise, specialist testing, advice and guidance – but the sector is not responsible for construction. Others have the dominant influence on application and practice. That’s especially design, building, property development, building ownership, commercial and public management.

- There are extensive developments by the fire safety sector that can be followed further and more widely adapted as a model for better control and focus on fire safety.

Those include a focus on specialist expertise and know-how, awareness and information programmes with detailed supporting product-related guidance, linked to development of core skills and competencies.

Third-party product certification schemes (TPC) are also well developed for several product groups, especially for passive fire protection – encouraged by industry, which has to a major degree led the development of suitable processes and disciplines. TPC especially allows tighter control of products and product systems to increase confidence and trust in products through assurance of product fire safety performance, both at an assured level of performance and with an appropriate degree of performance and quality consistency.

However

It would be a fundamental mistake for this Review to assume that regulatory guidance is fine, that failings are solely systemic due to the prevailing culture or errors in how the regulatory process rolls out. Potential failings are not all in a lack of application, enforcement and compliance.

There is good reason to review regulatory guidance - not just for clarity and user friendliness, but in parts for some technical aspects as well.

But the user group is a wide one, not just building professionals and authorities who have the required background. Guidance therefore needs to be far more explicit regarding roles, responsibilities and expected core competencies, and in parts the specifics of the guidance need to be made more explicit with less room for reading between the lines.

Key ASDMA recommendations

ASDMA has 5 priority recommendations for improvements in levels of fire safety.

1. Mandatory third-party certification (Better quality assurance: Q7. and Q5.)

It is now time for third-party certification of products and product systems to be made obligatory. That should also be introduced for fabricators, installers, and those who carry out subsequent maintenance and repair of specialist fire safety measures during building occupation.

Not only are levels of assurance and control on product performance, product claims and validation of performance under building regulations weak, and sanctions unimpressive, there is now a risk of collapse in confidence in these respects given recent tragic events.

Third party certification is specifically designed to raise levels of confidence and provide trust in products, product systems, their testing and properties. (Ref BS EN ISO/IEC 17065:2012 *Conformity assessment – Requirements for bodies certifying products, processes and services.*)

2. Increased responsibility for key specification professionals (Reference: Q2 and Q3)

A greater level of responsibility is required for the architectural specifier to justify and sign off the specification, and to be accountable for tracking that specification through to installation to ensure that the essential fire safety provisions, and especially key fire safety performances, are maintained

3. Attention to weaknesses in smoke control (Please see Q1. for more detail.)

We are aware where fire doors are concerned that there are weaknesses in the regulatory guidance concerning smoke control - in particular smoke penetration into the supporting structure around door and window frames, door threshold leakage, and measures needed to better minimise the risk of smoke logging in escape stairways.

4. Conflicts between different regulatory guidance (Q1.)

There are potential conflicts arising in practice between the provisions of separate aspects of regulatory guidance, defined in isolation and without sufficient consideration of how different requirements can work together, or against each other, in practice. That can lead to a compromised performance, in one respect or another.

E.g.

A major issue for door manufacturers is the conflict between requirements for fire door assemblies to close effectively and fully under AD B (strong closing forces, and a fire door's prime function) but to be easy to open with equal access for all under AD M (i.e. reduced opening and closing forces). Reconciling Secured by Design security requirements with fire safety, at an acceptable market cost, is also a similar difficulty that needs design accommodations (especially regarding glazing options).

5. Much tighter control of non-compliant products (Reference Q7. and Q5.)

Fitness-for-purpose for fire safety products is critical. And specialist manufacturers devote a great deal of commitment and resource to ensure that is the case. But there are non-compliant products; and non-conforming suppliers. Those need to be brought into line, since products that do not meet requirements, and suppliers who break the rules, fundamentally undermine the whole process of establishing fire safety standards.

The importance of testing and supporting technical assessments

The development of fire-resistant fire doors is fundamentally founded on the furnace testing of full assemblies, tested as the assembly is to be put together and used. All necessary design features and essential door components are included.

Results are reported in a formal test report which details the arrangement as tested, completed by an approved test authority according to rigorously defined criteria.

The various door components are also separately validated by fire resistance tests as part of functioning assemblies by specialist component manufacturers and suppliers. That includes for example door hardware (e.g. as handles, locks, latches, hinges), fire-resistant glass and glazing systems including glazing gaskets, door leaf blanks and door edge seals.

There is accordingly a great deal of test information going back over several years. Individual door components under the processes that apply are likely to be tested several times in different types and designs of doors, by the responsible component manufacturer as well as by door manufacturers who need to have access to their own door test evidence.

There is therefore a considerable body of fire resistance test evidence and experience in companies and test organisations, which in turn allows the use of approved and rigorous technical assessment processes to supplement and extend the application of test data.

It is important to note that door product developments carried out by the specialist fire door industry are critically dependent on the use of technical assessments founded on test data.

The specialist door sector simply could not operate effectively without such technical assessments.

It is equally important to note that technical assessments for fire resistance because of their importance are governed by formal rules and procedures agreed by the sector.

Reference: *"Guide to undertaking assessments"* The Passive Fire Protection Federation (PFPF) June 2000, ISBN: 1 870409 90 6 pfpf.associationhouse.org.uk "Publications"
Also ftsg.co.uk/pubs.html Resolutions 64/82/84 The Fire Test Study Group

Key considerations to note are as follows:

- a) Assessments are determined by reference to relevant and applicable test evidence. They are particularly useful for supporting the use of components to accommodate modified design features, without the necessity of carrying out further testing when the basic door configuration stays the same (i.e. for component substitution, minor modifications and extended application).
- b) The organisation responsible for assessments maintains a quality management system which includes monitoring of assessor core competencies, professional experience and CPD progress.
- c) Global assessments are important as an overview of the full range of test evidence available for a group of products, or a particular product type for scope of application, concerning the approved combinations or permutations that are available.
- d) The point of assessments is to make maximum use of test evidence, using both primary and secondary data to provide greater choice for the development of alternative design options.

Part 2

Detailed Q&A : ASDMA's responses to the Call for Evidence questions

Please note the accompanying single page which provides summary **CONCLUSIONS**.

The overarching legal requirements

Q1. To what extent are the current building, housing and fire safety legislation and associated guidance clear and understood by those who need to follow them?

- **What parts are clear and well understood by those who need to follow them?**
- **And, if appropriate, where specifically do you think there are gaps, inconsistencies and/or overlaps (including between different parts of the legislation and guidance)?**
- **What changes would be necessary to address these and what are the benefits of doing so?**

Q1. Immediate Response

- Not easy to answer this question categorically; and not without broad generalisations. There is now such a wide spectrum of potential users for regulatory guidance that not all will be sufficiently familiar with the basic fire safety principles that underpin the main guidance provisions; and some will not have the familiarity that comes from regular use and application.

But the guidance should really be largely clear to those who read it carefully, who have the necessary level of knowledge and understanding concerning how to use, access and apply the guidance, with some background in fire safety. The question is whether all those who should go to the main documents for guidance actually have the necessary background and commitment.

The guidance is not just for design, building and fire professionals. There are many in the supply, procurement and construction chain who really need to access core aspects of the guidance and understand the fire safety rationale that underpins the guidance.

- However, there are of course gaps in the guidance, and parts where better clarity is required. It really is challenging to produce one set of guidance that covers all possibilities, given the complexity of today's built environment with its mix of the old, new and very new side by side. In fact, it isn't realistic now, if it ever was, to rely on just one core guidance document to cover all eventualities. And some of the guidance can be said to be dated, at least sufficiently to justify a close examination and review of its continuing applicability and suitability.

Q1. Main Recommendations: What steps and changes?

1. Review AD B for clarity and practical usability. Note Fire Sector Federation recommendations.
2. Supplementary guidance should be provided to explain the underlying design principles and core concepts that underpin the recommendations provided by AD B (to promote understanding and assist use and informed interpretation).

3. Specific provisions in the guidance need to be reviewed to see if they are still as relevant as they were when first introduced against the changes that have since happened. There are quite a few developments to review. For example: modern methods of construction; modern products and product systems, new materials and technologies; especially higher levels of thermal insulation and the higher fire loads that result from the generally more extensive use of plastics in modern buildings; higher living building densities in congested urban districts. In all, big changes. Is guidance fixed more than 20-30 years' ago still appropriate? Probably not: review is necessary.
4. Introduction of more robust provisions for safe escape where escape is not immediately possible before conditions become untenable. That applies where occupiers may be forced to stay longer in the building than underlying safety provisions and firefighter tactics have assumed, with a risk of being exposed to developed serious fire or smoke conditions.
5. There does need to be a more flexible and adaptable way of keeping core guidance up-to-date and in touch with technical and building developments without waiting for a regular 5-yearly full review (or longer). Introduce a system of supplementary bulletin guidance.
6. Provide separate fire safety guidance introduced for refurbishments, renovations and repairs that do not normally fall within scope of AD B as material alterations and change of use.
7. Where fire doors are concerned, all fire safety plans and strategies for buildings should identify important and critical locations along escape ways where the door must have a dedicated fire door performance for smoke and fire control (with other required functions being secondary requirements). Example: Main access lobbies and access doors to escape stairs.
8. Where necessary the locations for power-assisted opening and closing doors should be defined under the regulatory guidance, together with requirements for assisted or accompanied escape, according to the occupancy profile specified for the building and its type of use.
9. Development of a smoke leakage test and introduction of a regulatory requirement for sealing of joints to the supporting structure around door frames and window frames to restrict the possibility of smoke penetration into the structure.
10. Fire-resistant and smoke control lobbies instead of single door access for all designated escape stairways in high-rise buildings (especially if there is only a single escape stair).
11. Bring regulatory guidance into line with the latest guidance in door and design standards concerning under door threshold gaps, reference BS 8214: 2016 *Timber-based fire door assemblies – Code of Practice*.
12. Provide better clarity on a hierarchy of relative priorities for regulated performances, instead of assuming that all performance targets can each be adequately met, even when there is potential conflict between the different objectives Where fire doors are required then make the fire resistance and smoke control properties of door assemblies the priority functional requirements.
13. Regulatory guidance needs to better recognise specialist industry guidance for products and product systems since that is where the first-hand specialist know-how and expertise exists.

Q1. General Commentary

- Even though some aspects of the detail in the guidance may not be entirely clear and unambiguous (as Counsel observed at the Lakanal House Inquest), there really should be no room for a misunderstanding of the core functional objectives that set the tone for the guidance, even if individuals are not fire safety specialists in any way. Much of what the guidance sets out to do is common sense. There should be no cause for misinterpretation of core targets.

For example: There should be no misunderstanding of B4.(1) of AD B where it says *“The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to height, use and position of the building.”*

- AD B has served fire safety well for several decades since the guidance was first put together. But that does not mean that there can never be an appropriate time for review and update. Many of the provisions are based implicitly on traditional constructions; often rooted in discussions some decades ago, without sufficient explanation of the rationale for arriving at design and performance decisions.

There is a justifiable case to re-evaluate provisions in view of modern developments. High rise residential blocks are an example, where a certain style of building and design has come to be established without sufficient critical analysis of the needs of residents, and without sufficient attention to the likelihood and risk of fire. That applies equally as well to other building types.

- There needs to be more thought given to the user group for regulatory guidance. It isn't any longer just for authorities and building control or design professionals.

The construction and design industry is fragmented, the supply line often long. And many individuals involved in the process that unrolls from design through to building work completion can affect fire safety, perhaps being significantly unaware of fire safety aspects, and of the consequences of decisions they take, both large and small. There are too many generalists who have in practice to consider specialist fire safety factors, without the necessary training.

- It is natural to think that faced with such a wide potential and diverse user group a reversion to more prescription could be helpful, leaving less doubt and less room for individual interpretation. In some respects that could be welcomed by parts of manufacturing industry, because prescription dispels uncertainty.

But prescription runs counter to the generally well received trend that has been adopted towards a more risk-based approach, with the necessary knowledge, expertise and awareness. It is however understandable for more prescription and higher levels of protection to be introduced where there are higher risks to vulnerable groups, in potentially vulnerable situations and building types where the fire safety risks justify more assured levels of protection.

- We find that that application of guidance is too often left to others, frequently with an assumption that it is for approval authorities such as Building Control, or the Fire and Rescue Service, to take prime responsibility for ensuring proper compliance. In some cases, the fabricator, installer or joiner, for example, can assume that architectural drawings are correct concerning key properties such as fire resistance, and cannot be questioned because they come from a designated professional - when there may be important caveats, provisos or conditions that require attention, such as *“for others to determine fire resistance”*.

Q1. Specific gaps, inconsistencies and overlaps

- Potential conflicts between regulations

Compromises in fire safety performance can arise when regulatory guidance for different objectives, or other requirements from authorities, are defined without sufficient consideration of the potential difficulties that can arise due to interaction between different targets. Conflicts can easily occur when equal priority is attempted for different regulated requirements. It may just not be possible to adequately meet all requirements in that way. And compromises can result where the outcome for one performance is less than optimum, at an acceptable cost.

Examples for fire doors are:

a) Trying to reconcile Part M requirements for ease of opening (i.e. reduced opening and closing forces) with fire resistance and reduction of smoke leakage (requiring full closing and strong closing action against the friction from edge seals of various types).

b) Satisfying Secured by Design (SBD) stipulations to prevent illegal entry together with fire resistance - which entails more expensive doors and more costly testing, and particularly difficulties in glazing selection since the laminated glass type required by SBD is a hazard in fire (because the glass cracks, and the interlayer melts and flows like water followed by copious smoke generation and flaming).

Careful door design and selection of the right component hardware is necessary. But an adequate solution in all respects - including a cost that fits the client's budget - may not always be entirely possible or acceptable. And additional requirements, such as acoustic insulation with the need for acoustic seals, can provide further complications.

It would be helpful for regulatory guidance to be absolutely clear where a dedicated fire safety performance, regarding fire resistance and smoke control, is really the first, prime priority.

- Differentiation between E30 and FD30S doors

Section B2 in the Government Guide for Offices and Shops suggests that an E30 door (i.e. just integrity fire resistance, tested to 30 minutes) is equivalent to a FD30S fire door. The "S" symbol indicates an additional requirement for restriction of smoke leakage at ambient temperatures (separately evaluated, with different types of edge seals). And the distinction between the two functions is an important one, that should not be confused.

- Better protection against smoke logging of escape and access stairways

The filling of stairways by smoke in major fire incidents is a well-known problem - for residents trying to reach a place of safety, and for firefighters seeking to operate in difficult conditions.

High rise blocks should have more than one escape way (whatever the height). And protection of entry points to escape stairs should be provided by smoke control and fire resistance lobbies on each floor to minimise the risks of smoke penetration and fire spread into stairways should doors be left open in panic situations when residents are just seeking to get out. Protected lobby areas should also have smoke evacuation and clearing systems.

- Smoke control: Threshold gaps under the door leaf

AD B refers to restricted smoke leakage at ambient temperatures provided by proven seals only at the head and jambs of the door. The test that is used for evaluating the smoke control of doors is an air pressure leakage test. No smoke is involved.

But the test standard requires the gap underneath the door edge to be taped so that it remains closed and effectively sealed. That provision is made because the level and type of floor where the door is to be installed in a specific location cannot be known when type testing is carried out. Floor condition is accordingly not a feature of the standard leakage test - so head and jamb edge seals are subjected to a leakage test on a door, but threshold seals are customarily not required to be tested.

The testing protocol means that when doors come to be installed there can be large gaps left underneath the door unless care and attention is taken early enough when the door is specified in consideration of the floor level and covering, so that clear guidance can be provided by the specifier to the door manufacturer (to produce an assembly to a known datum level). Much depends on the awareness and experience of the specifier.

AD B needs to be updated to reflect the latest guidance.

Standard BS 9999:2017 *Fire safety in the design, management and use of buildings – Code of Practice* provides more detail, with three main options: an automatic drop seal, which is designed to provide progressive floor contact as the door opens; a fixed seal that maintains contact with the floor covering throughout the door opening curve (but which risks some friction with the floor); or a maximum gap of 3mm, and no more, underneath the door (as a practical rule of thumb). BS 9999 also refers to the latest standard for door assemblies, BS 8214: 2016 *Timber-based fire door assemblies – Code of Practice*.

- Sealing the joints around door and window frames against smoke

Currently there is no test, and no suitable provision in building regulatory guidance, for the sealing of the junction between a door-frame and the surrounding supporting structure against the risk of ambient smoke penetration. The same applies for the joint around glazing frames.

BS 8214 provides a list of robust solutions to seal the joint to the structure against flame and fire penetration. Sealant materials are recommended to comply with the fire resistance test for linear joints, or the whole assembly may also be evaluated in a fire resistance furnace test, including the joint to the supporting construction.

That testing does not include evaluation of smoke penetration into the structure through the joint. There is an implicit assumption that sealing for fire and flame penetration also provides an adequate level of sealing against ambient smoke (without fire). But that might not be so.

Roles and responsibilities

Q2. Are the roles, responsibilities and accountabilities of different individuals at each stage of the building process clear, effective and timely (in relation to adhering to fire safety requirements or assessing compliance)?

- Where are the responsibilities clear, effective and timely and well understood by those who need to adhere to them/assess them?
- And, if appropriate, where specifically do you think the regime is not effective?
- What changes would be necessary to address these and what are the benefits of doing so?

Q2. Key Recommendations

1. The regulatory system is particularly weak in ensuring maintenance of fire safety specifications. More responsibility needs to be assigned to the specifier, typically an architect or engineer, who is responsible for the original fire safety performance specification, as the key professional to follow the specification through the full process from design to completion and handover, also to attest by formal sign-off together with the main contractor that the fire safety requirements in total have been satisfactorily met according to the specification. (ASDMA recommendation No. 2)
2. Re-introduction of a “Clerk of Works” role, as a qualified professional to provide a thread of control through the design and build process on behalf of the building owner (or project owner), and through the owner on behalf of those who will eventually live, work or reside in the building.

Q2. Further Recommendations

3. The Government should discuss with the Fire Sector Federation (FSF) supplementary explanatory guidance to help clarify how the regulatory process is expected to function.
E.g.
The FSF has produced procedural guidance under its enforcement workstream for any person who has influence over the building’s fire safety arrangements. There is an opportunity to develop that initiative, to include better explanation of the stages that apply in the design and construction chain for fire safety, and the obligations that apply for individuals.
4. A RIBA plan of works scheme to be introduced specifically for fire safety, including roles and responsibilities – especially including identification of the responsibilities of those along the supply, procurement and construction chain who may get involved in specification and material selection, who are not qualified architects or engineers.
5. The Government should act to bring the construction sector and representative bodies for specifiers together with the Fire Sector Federation to develop guidance and promote messages that underline the responsibilities of all in the chain through to building completion.
6. That should include a communication campaign amongst construction trades, together with leaders in construction, to raise the profile of fire safety and the responsibilities that apply to individuals carrying out building work.

Q2. Commentary on Roles and Responsibilities

- We believe that there is a need for better definition of the roles, responsibilities and accountabilities for individuals in the design, specification, procurement, supply and construction chain who can in practice, through their positions in the chain, affect fire safety, whilst being unaware of what is expected of them. There should be no surprise if a culture of “somebody else’s responsibility, not mine,” develops such that nobody in practice does take responsibility. (E.g. Reference evidence from the Lakanal House inquest.)
- One of the main issues concerning the provision of fire safety is fragmentation of the construction and contracting industry that allows specialist activities, requiring specialist knowledge, to be carried out by general building trades, without the required levels of awareness and sensitivity to potential failures that normally comes with specialist knowledge.
- There needs to be better recognition by authorities that the list of those who need to know the content of fire safety guidance is a long one, and that there are many who may not have the necessary core competencies or even an awareness that they need to know the guidance and associated details (which may be realised or not realised; acted upon, or not).

There are a number in the supply-construction chain who have, through their roles, a practical responsibility to keep at least keep in mind fire safety. That includes, for example, designers and specifiers, of course – but also others along the chain through to building work completion that in effect act as specifiers, but without the disciplines of professional status and accreditation. Those who need to know about fire safety include manufacturers, suppliers, merchants, and fabricators; contractors, builders and installers, as well as those who undertake a product selection role in procurement; building trades for maintenance and repairs; building owners and developers; risk assessors and safety or maintenance managers during building occupation.

(The wide potential readership for AD B was remarked upon by the Coroner, Her Honour Francis Kirkham, of the Lakanal House fire inquest in her letter to the Secretary of State for Communities and Local Government at the time, the Rt Hon Eric Pickles MP, March 2013.)

- But official guidance that exists, including DCLG’s Procedural Guidance, fails to spell out in sufficient detail what roles and responsibilities are expected of individuals in the chain.

Guidance accordingly needs to be far more specific than the current advice, i.e. just *“for anyone carrying out building work to comply with the relevant requirement”* (ref Procedural Guidance, 1.15). Individuals, it seems, are expected to know their obligations and responsibilities, and to discharge those dutifully and diligently, with the necessary knowledge and core competencies.

- The responsibilities of those carrying out maintenance and modification work also needs to be more fully recognised in core guidance.

Fire safety is a property of a whole construction, yet it is possible for individual trades to carry out individual work on a specific aspect (such as service penetrations) without anyone taking overall responsibility for the whole element of construction, such as the wall itself, in its entirety.

Q3. Does the current system place a clear and over-arching responsibility on named parties for maintaining/ensuring fire safety requirements are met in a high-rise multi-occupancy building?

- **Where could this be made clearer?**
- **What would be the benefits of doing so?**

Q3. Response

- There should be no doubts concerning over-arching responsibilities incumbent on named parties under the Fire Safety Order 2005 for occupied buildings, including for high rise multi-occupancy residential buildings (and other occupied buildings as well). But in multi-occupancy residential buildings those responsibilities only apply to fire safety precautions in common areas. What falls within that scope, however, may not be entirely certain. For example: Does cladding and insulation for external walls qualify within scope of the FSO? Further clarity is needed.
- Much of the considerations governing the resilience of the building against fire arise during new build and other building work, when over-arching responsibilities are much less clearly defined, less strongly enforced and, in effect, left too much for individuals to know, without adequate direction. And the building owner or the Responsible Person for the building when occupied will have little opportunity to take on any responsibility for what is built into the building.

Q3. Key Recommendations

1. We recommend the introduction of a Responsible Person, supported by nominated Competent Persons, as named individuals for the design and construction stages.

Building work should include new build, renovation and refurbishment, even repair projects. Responsible and Competent Persons are required to oversee the whole building project from start to finish and implementation, adopting the successful model for clarifying responsibilities and accountabilities under the Fire Safety Order for occupied buildings. The individuals should be qualified architects, surveyors or engineers, with demonstrated fire safety competencies.

2. Part of the role of the Responsible Person for Construction would be to: a) monitor the development and application of the performance specification for important elements of construction central to the fire safety strategy; b) oversee product substitutions or changes in construction methods and systems that could threaten to compromise fire safety; and c) scrutinise product performance claims and supporting evidence to check that the product fits the defined requirements of the fire safety performance specification.
3. The regulatory system needs to better reflect the disconnect that can arise between the main stages in carrying out major building work – that is between design, construction, completion and handover to the building owner or Responsible Person who will undertake the stewardship whilst the building is occupied, on behalf of residents.

Regulation 38 already exists to ensure the passing on of important fire safety information and plans. But it isn't well known enough or sufficiently recognised; and its enforcement is weak.

Q3. Further Recommendations

4. Government need to provide clear guidance as a supplement to regulations:

1.a) defining roles and responsibilities for the main influencers in the chain from design through to completion, currently missing in current guidance, leaving individuals to decide independently their own duties without the benefit of sufficient direction;

1.b) supplementary guidance that spells out the obligations on contracting and installation companies to provide assurances regarding their work, and to properly inform building owners and managers of plans and specifications when making major modifications and other changes.

We recommend a much more tightly controlled process involving:

- a) sign off by the contractor and responsible architect at the end of construction;
- b) a Certificate of Occupancy endorsed by responsible Local Authority Building Control and Fire Service Fire Safety (reference requirements of the regulatory system in USA and Ireland, ref Q9);
- c) confirmation that the requirements of Regulation 38 have been met;
- d) obligatory annual inspections under the Fire Safety Order during occupation of the building, to include recording of maintenance work on main fire safety measures.

- 5. Articles 5(3) and 5(4) of the Fire Safety Order need to be emphasized, that they can apply to those carrying out building repair work, or maintenance of individual elements such as fire door assemblies - effectively extending the duties of a proxy-responsible person to anyone who has, to any extent, control of premises so far as duties under the FSO relate to matters within the control of that person (including contracts for maintenance and repair).
- 6. The provisions of Regulation 38 regarding the provision of fire safety information should equally apply to refurbishment, repair and re-modelling building works as they do to new build and major change of use developments.

Q3. Commentary

- For occupied buildings the obligations of the building owner, or managing company acting on behalf of the owner, should be clear and readily understood under the Regulatory Reform (Fire Safety) Order 2005, the FSO, in terms of the roles defined for Responsible Persons and Competent Persons. But, the FSO concerns only measures and means for safe escape, including fire precautions in the common parts of the building (excluding private areas).

It is questionable whether those means and measures for safe escape would extend to the ability of the external envelope to sustain fire, and for fire to spread and develop from the outside.

- It should be clear that major modifications and refurbishments to an existing building should fall within the scrutiny of the Responsible Person concerning considerations affecting the likelihood of fire which could threaten or prevent safe escape. Section 24(2)(d) refers to duties regarding internal construction and materials used in construction. But it isn't clear if those responsibilities are taken on board in practice.

It is difficult to see how that responsibility can sensibly be undertaken for fundamental features of the building, such as its core construction and original design, when those were determined several years in the past, under a different management and regulatory control regime. Many of the features of construction determined decades ago may well be unknown and unknowable without a fundamental and invasive professional building survey. And the fire safety concepts employed at the time may have been somewhat different from current thinking. It is understandable if the Responsible person should be somewhat unsure of the extent of their responsibilities in those respects.

Competencies of key players

Q4. What evidence is there that those with responsibility for:

- **demonstrating compliance (with building regulations, housing and fire safety requirements) at various stages in the life cycle of a building; and**
 - **assessing compliance with those requirements**
- are appropriately trained and accredited, and are adequately resourced to perform their role effectively (including whether there are enough qualified professionals in each key area)?**
If gaps exist how can they be addressed and what would be the benefits of doing so?

Q4. Response

- There is a flaw in the regulatory and construction system concerning competency development, fire safety related key knowledge and personal accreditation – particularly concerning products and product systems by those who use, supply and install them.
- We tend to assume that the building control professionals in the regulatory system for checking and approving compliance are appropriately trained and accredited – though whether the knowledge is always as deep and broad as it should be, and applied with as much awareness as it needs to be, is a valid question that needs re-assurance. Whether resources are adequate and supported well enough is another question. Practitioners are best able to answer.
- We are, however, less sure that the depth of necessary knowledge and awareness is high enough, and applied well enough, for those responsible in the building management and specification-supply-construction chain as necessary for securing compliance.

There are valid questions over training and accreditation, including vocational knowledge and skill programmes tapping into the know-how and experience of the specialist fire safety product and service sectors. Gaps do exist. But filling those requires much stronger Government direction and leadership. And maintaining enough qualified professionals must be a concern.

Q4. Recommendations: Training, Qualification and Certification

1. Mandatory third-party certification should be made obligatory for fabricators, installers and fire risk assessors, under UKAS-accredited independent schemes. That should be for those involved in specialist fire safety activities or other activities that can directly affect fire safety.
2. Much greater Government encouragement is needed for the development of nationally recognised qualifications and associated education programmes in fire safety, especially by reducing the process complexities and frictions that apply in developing those programmes.
3. Government recommendations on where to go to find good information would be useful regarding products, product systems and associated best practice guidance. (Perhaps checked and confirmed on behalf of Government by the Fire Sector Federation, for example?) That could usefully be, for example, a Government directory of qualifying sources where good and relevant specialist information can be found.

Q4. Commentary

- Specialist trade associations in the fire safety sector have been aware for some years that levels of knowledge, understanding and awareness are not high enough.

That is why several specialist representative associations have worked consistently to improve standards through various training methods based on their particular areas of expertise (for example, fire safety and product technology articles, presentations on a CPD basis, events, training days and freely available best practice guidance documents). ASDMA's evidence from its web site is an example of industry guidance (ref www.asdma.com).

Fire safety industry associations and member companies have a great deal of anecdotal and circumstantial evidence - derived from contacts, and training and awareness presentations - that the level of understanding of the broad and specific aspects of fire safety regarding products and product systems is nowhere near as high as it should be across the construction, materials and building supply sector, even in parts of the fire safety sector such as fire safety and risk assessors.

- One good development following the introduction of the Fire Safety Order has been the wider awareness of the need to raise the profile of competency requirements. That needs to be given much greater emphasis through the regulatory processes - not just for specialist practitioners but also for generalists who should know at least the basics of fire safety, especially where individual actions can without sufficient care completely undermine fire safety provisions in buildings.
- Various schemes are now available from several organisations for certification of risk assessors, (for example including Exova Warrington Certification Ltd, Institute of Fire Engineers, Institute of Fire Safety Managers). Such initiatives are all sector and industry driven, and they ideally require and deserve better Government recognition and acknowledgement than they currently receive.

- Developing formal industry-initiated qualification and accreditation programmes can prove to be difficult. Part is due to the relatively complicated and drawn out system for getting programmes off the ground; and part to the lack of groundswell support to drive the development through. For example, The Glass and Glazing Federation (GGF) specialist fire-resistant glazing group (FRGG) has worked hard on best practice training for glaziers, with some successful presentations. But interest has not been sustained. Steps extending over about 15 years to try to develop specialist fire safety qualification programmes have by-and-large fallen by the wayside (despite major personal commitment from some individuals). Initiatives have not been followed through.
- The Construction Skills CSCS card system could be an opportunity, but it remains largely a scheme for health and safety on site. Wider steps to include specific fire safety skills have not been taken.

Enforcement and Sanctions

Q5. Is the current checking and inspection regime adequately backed up through enforcement and sanctions?

- **Where does the regime already adequately drive compliance or ensure remedial action is always taken in a timely manner where needed?**
- **Where does the system fail to do so? Are changes required to address this and what would be the benefits of doing so?**

Q5. Overall response

- We have no particular reason to question the enforcement carried out by the Local Authority, as Building Control or Approved Inspectors for compliance with regulations. Nor do we raise concerns over enforcement of the provisions of the Fire Safety Order concerning fire safety precautions by the Fire and Rescue Service. We believe the regime is largely adequate in those respects, but we can't say if remedial action is always taken in a timely manner when needed. We are aware that the demand can be high, and that enforcement in both these respects is said to be subject to pressures from financial budgets and limitations on resource availability.
- The concerns that we do have relate to enforcement regarding non-compliant products and suspect performance claims which do not fit declared test information. That is where we believe main flaws, failings and omissions arise in the application of the regulatory system.

Q5. Key Recommendation

1. Third-party certification of products, product systems, fabrication and installation should be obligatory through the provisions of regulatory guidance.

As well as providing much higher levels of assurance on performance, the knowledge available and accessible through third party certification would also more effectively back the checking, inspection and product scrutiny regime, including Building Control and Trading Standards, by allowing them to tap into the existing expertise and resource available from the specialist fire safety sectors. (See ASDMA key requirement No.2, and response to Q7.)

Q5. Commentary

- Our concerns regarding non-compliant products include products that do not measure up against standards and criteria established in the market, misrepresentation and dubious claims that do not match presented evidence of performance (even on occasion maybe what amounts to fraud).
- We are aware of an extreme case of fraudulent selling and misrepresentation of a completely unsuitable glass type under the names of two legitimate fire-resistant glass types, which has been the subject of a police investigation and brought to court. But in the main we are not aware of very many of what could be called routine cases of non-compliant products and product claims being challenged by enforcement authorities. The checking and inspection regime seems to be weak and under-resourced, not as rigorous as it needs to be for a specialist area such as fire safety, lacking strong enough sanctions for effective deterrence. Consumer products in practice seem to receive more attention than fire safety industrial products
- A significant failure to address non-compliant products adequately enough undermines the whole process of establishing fire safety standards – in effect, leading to distortion of the market and a repeat cycle that works to degrade quality even further, driven by cost reductions as a prime procurement motive rather than quality of performance.
- A separate Trading Standards department as a centre of expertise is needed for attention on industrial products and fire safety, separate from a department for consumer goods, separately resourced, with contacts to responsible sector organisations (such as the Fire Sector Federation).

Tenant's and resident's voice in the current system

Q6. Is there an effective means for tenants and other residents to raise concerns about the fire safety of their buildings and to receive feedback? Where might changes be required to ensure tenants/residents voices on fire safety can be heard in the future?

As a manufacturing organisation we don't have the first-hand experience to answer directly. However, we suspect that the system does not listen well enough to tenants and residents, and that feedback is lacking. We are aware that fire safety struggles to receive enough attention on the public agenda. That awareness comes from the sustained efforts we need to make in raising interest and awareness concerning fire safety; and we are not surprised should residents and tenants feel frustrated and discontented because of the scant attention they receive.

Q6. Recommendations

1. For refurbishments, extensions, significant modifications and repairs in occupied buildings there should be requirements for the building owner to be kept informed. And the owner in turn should be obliged to communicate main actions affecting fire safety to residents/tenants, and to report residents' feedback to those responsible for the design and construction work.
2. For new build, the building owner or developer should equally be involved, and made responsible for producing a summary document on fire safety, under applicable legislation, in cooperation with the main responsible contractor as part of the fire safety manual for the building.

Quality assurance and testing of materials

Q7. Does the way building components are safety checked, certified and marketed in relation to building regulations requirements need to change?

- **Where is the system sufficiently robust and reliable in maximising fire safety?**
- **And if appropriate, where specifically do you think there are weaknesses/gaps? What changes would be necessary to address these and what would be the benefits of doing so?**

Q7. Response

- There are significant gaps and weaknesses in the provisions under regulations. Changes are needed, especially on assurance processes for ensuring adequate levels of confidence in performances and characteristics that can impact upon fire safety.

There are no obligatory regulated requirements for the checking, assuring and certification of product and product systems for claimed fire safety performances and core related product properties. There are also no effective official checks on the accuracy of marketing, the correct description of product claims and their relation to appropriate and relevant test evidence.

- The processes that do exist concerning quality assurance and product performance validation are initiated and driven in the main by manufacturers and component suppliers supported by responsible test organisations. Those processes are centred on third-party certification – which is well established and well supported by parts of the passive fire safety industry, in particular. But there is no obligation under the regulations that ensures third-party certification processes are habitually followed by all, for all important fire safety properties and applications.
- Although level of performance is defined in regulatory guidance according to a standard test, there are no stipulations under the regulations on what measures are expected to be taken particularly regarding reliability and dependability of performance, or to confirm the appropriateness of levels of performance for the application where products are to be used.
- Importantly, there is no system to check and validate the potential impact of innovations and new developments in architectural design and construction on the fundamental resilience and robustness of buildings against fire. For example: concerning materials, methods of building, new products and product systems, design paradigms, trends in architectural styles, and practices concerning building modification and improvements introduced for purposes other than fire safety, but nevertheless with a potential impact on levels of fire safety.
- There are major issues to be resolved concerning combustibility. That includes the use by regulatory guidance of the elastic term “limited combustibility”; the validity of small scale laboratory ignition and flame spread tests; better tests to adequately evaluate the ability of materials in bulk, on a large scale, to burn, sustain and spread developed fire; and some reservations over the BS 8414 test for facades, which needs review and refinement in some respects.

Q7. Recommendations

1. **Mandatory third-party certification (TPC) for those products and product systems that are central to the fire safety requirements of a building.** See ASDMA's key recommendation 1.
2. Obligatory third-party certification for fabricators and installers of products and product systems (since assembly and installation can be critical in determining details of performance).
3. Recommendations that those who carry out maintenance and repair of fire safety measures, or minor building work to an existing structure, should also be certificated to carry out that type of work, with demonstration as a core competency of awareness of fire safety sensitivities.
4. Government to encourage the adoption of third-party certificated products in Government building projects and for building types where public safety is considered a key requirement, where Government has influence over fire safety or has a key obligation on behalf of public safety (e.g. high rise residential, schools, national health establishments, care homes).
5. Introduction of a regulatory requirement for a safety (risk-assessed) check on both the original design specification concerning fire safety and the final specification confirmed on installation.

The risk assessment of the original and final specification should be required to be a formal document to be included in the fire safety manual held by the Responsible Person for the building. Such a provision should be included in a revision and update of Regulation 38.

6. Complete technical review of combustibility, to include:
 - a) the use of the term "limited combustibility" by building regulations, with better clarity of where non-combustible behaviour is essential, without any ambiguity;
 - b) more appropriate test methods to better reflect ability to sustain fire;
 - c) review of criteria used for evaluation under BS 8414 testing;
 - d) an investigation of methods for better correlation between larger scale tests (such as BS 8414) and small-scale characterisation laboratory tests;
 - e) development of methods of evaluation to give a more realistic evaluation of the ability of materials, products and product systems to sustain fire over large areas and in bulk, to include approval criteria concerning deterioration and collapse.

Concerning third-party certification, ASDMA suggests the following new words in regulatory guidance.

"All products and product systems intended to carry out a fire safety function shall be certified to an appropriate performance-based standard under an UKAS-accredited independent certification scheme, including product auditing as a key requirement of that scheme. Installers, fabricators and those who carry out repair and maintenance of fire safety products, systems and services shall be third party certified under an appropriate UKAS-accredited scheme to install the specific product, system or service they provide. Schemes should include definition of applicable competency criteria suitable for those activities."

Q7. Commentary

- Third-party product certification is well established, and is extensively advocated and supported by the specialist passive fire safety industry. The purpose is to provide assurance of performance, building trust and confidence in products and key fire safety properties.

Schemes are audited by UKAS and are separately monitored for impartiality under applicable process and procedural standards to provide increased confidence and trust in products and product systems.

Reference: *BS EN ISO/IEC 17065:2012 Conformity Assessment – Requirements for bodies certifying products, processes and services; EN ISO/IEC 17024:2012 Conformity assessment – General requirements for bodies operating certification of persons*

- It is important to note that fire resistance testing backed by technical assessments carried out by suitably accredited individuals in UKAS-audited organisations, and related to relevant and applicable test evidence, works well and has done so for several decades. Technical assessments related to valid test evidence are essential and must be maintained.
- It should be noted that routine production quality control processes are for manufacturing consistency, to control the product at a constant output and at a certain level designed for the product, based on suitable process variables. Those quality control processes are not the same as assurance of fire safety performance through product certification schemes for safety in use, backed by functional fire performance testing (such as fire resistance).
- The large-scale BS 8414 test is an important development. It is the best test available for evaluating cladding and insulation systems, but some refinement and improvement of the test is appropriate.

For example: windows and other penetrations through walls are not included in a BS 8414 test, and the physical causes and mechanisms of deterioration are excluded from an evaluation of performance (except to be considered as “risks”).

Premature failure of cladding in the tests can also cause shut down of the test before the full system can be adequately evaluated as a whole, including importantly fixings, cavity performance and behaviour of insulation layers in the extent they support flame and fire development.

The system tests cannot yet be correlated with smaller scale convenient tests, and it isn't clear if that may or may not be possible. And the test is costly to run, which can limit testing and the opportunities for wider systems evaluations and developments.

Concerning differentiation in the current Regulatory System

Q8. What would be the advantages/disadvantages of creating a greater degree of differentiation in the regulatory system between high-rise multi-occupancy residential buildings and other less complex types of residential/non-residential buildings?

- **Where specifically do you think further differentiation might assist in ensuring adequate fire safety and what would be the benefits of such changes?**

Q8. Response

- Differentiation would be particularly beneficial in the fire safety design guidance for new build and other major building work including refurbishment, covering design considerations such as routes for escape, and both the extent and level of fire safety protection, according to the risks that apply, to prevent fire and smoke development, growth and spread.
- But that should not be just limited to high-rise multi-occupancy residential buildings, though that is a priority category. The focus should be on risk. Other buildings with particular risk profiles should also be considered for specific guidance – i.e. fire safety solutions tailored to a building's main risk characteristics, by building type and function.
- The basis for determining the risk profile of the building should not be limited to height or residential occupancy.

Other risk profiles are also important to consider – e.g. based on occupancy characteristic, building use, building type and complexity, the extent of fire safety management, even the type of construction system being used (e.g. high-rise structural timber, as now being proposed by some building designers; and heavily insulated structures).

- There are other buildings that should be reviewed for special design and construction guidance. For example: residential care homes; warehouses; factories and waste processing plant in residential locations; and other high and low rise multi-storey residential buildings including hotels, hostels and student accommodation.
- Differentiated guidance would also help to make clear roles and responsibilities during design, construction and occupation phases where those roles and responsibilities need to be particularly understood in view of the risks that apply.

Q8. Recommendation

Develop new risk-based differentiation guidance, starting with residential high-risk multi-occupancy residential building types, but not forgetting other higher risk building types.

Q8. Commentary

- For the building control and fire safety authorities the current regulatory system does provide adequate differentiation of roles and activities through the planning, design and construction phases and under the Fire Safety Order during the occupation phase as well.

DCLG's Procedural Guidance, for example, defines the checking, inspecting, approving and consultation roles that apply, with some latitude for what is described as "goodwill advice".

- But guidance does not, well enough, spell out the duties, roles and responsibilities for those in the construction and supply chain who either knowingly - but more often inadvertently and unknowingly - take working decisions that can fundamentally affect fire safety.
- For guidance, however, there is scope for much greater differentiation according to risk. And there is already a precedent established for this approach.

For example, separate building guidance applies for schools (BB100) and NHS Estate buildings. And individual guidance for different building types covering fire precautions and means of escape has been published to help compliance on risk assessments under the Regulatory Reform (Fire Safety) Order 2005. The risk-based approach to fire safety design and management of buildings is also demonstrated by BS 9999:2017 2017 *Fire safety in the design, management and use of buildings – Code of Practice*.

- Separate guidance would provide better specific guidance for the Responsible and Competent Persons for higher risk buildings, and allow uncertainties in roles and responsibilities, to be more clearly explained and defined (and better aligned with the risks that apply).

Test methods and requirements would stay the same, but levels of performance and the extent of use of fire protection measures would change to match the levels of risk.

- Disadvantages could potentially be a proliferation of guidance documents, and inconsistencies between different documents if sufficient care is not taken. The benefits in providing better range of guidance, and a better focus on fire safety, would outweigh those disadvantages.

International comparisons and other sectors

Q9. What examples exist from outside England of good practice in regulatory systems that aim to ensure fire safety in similar buildings? What aspects should be considered? Why?

USA International Fire Code (IFC) 2009 (203.1.3)

With particular reference to NFPA 80 for fire door assemblies

- a) Door inspections are required by regulation, typically on a 12-month basis
- b) Functional testing of the doors must be carried out by individuals with appropriate knowledge and understanding.
- c) There are limitations on the type of operational and maintenance work that can be done in the field (Chapter 4 NFPA 101)

Note: Under USA regulations the design, specification, construction, installation is carried out subject to the International Building Code (IBC). Satisfactory completion leads to a Certificate of Occupancy. Occupancy is then regulated under the requirements of a separate code, the International Fire Code (IFC).

Hong Kong Code of Practice for Fire Safety in Buildings 2011 (HK Architectural Services Dept)

Particularly because of experiences for tall buildings, especially residential high rise. (Guidance derived from a base on UK regulations). Especially concerning:

- a) Limitations on use of one staircase only (B6.1)
- b) Design of staircases to reduce smoke logging, and use of protected lobbies with fire-resistance and smoke control doors (B10.4, B13.7, C16.5, D15.5)
- c) Use of refuge floors, to allow temporary recovery as an obligatory provision.
- d) Unambiguous definition of limited combustibility (E11.1, including specific reference to determination of gross calorific value, as used for cladding screening by Expert Panel).
- e) Requirements for facades, testing requirements for fire resistance (E11.1)
- f) Regulation 43 for curtain walls ("Every curtain wall shall be constructed of non-combustible materials").

Ireland Code of Practice for Inspecting and Certifying Buildings and Works.

As an example of additional controls following failings in fitness-for-purpose of major building projects in Ireland.

Control Amendment Regulations 2014

A model for a tighter control regime and chain of responsibility that could be adopted in England. Introduced in response to recognised building scandals arising in Ireland during the economic downturn. Especially as examples of the following:

- a) Definition of key responsibilities and roles
- b) Nomination of a competent "Assigned Certifier" to inspect and certify works, with undertaking by the Assigned Certifying – who must be a registered architect, surveyor or engineer.
- c) Assignment of a competent builder to carry out the work, with a declared undertaking.
- d) Submission of certificates of compliance on completion.
- e) Certificate of Compliance (Design).
- f) Fire Safety Certificates and Statutory Declarations.

Australian Building Codes (BCA)

Especially for non-combustibility requirements and discussions for materials, and provisions for external cladding and insulation of tall buildings.

Also for the provisions on fire doors under regulation AS 1905.1 which requires obligatory inspections of fire doors every 6 to 12 months and permanent tagging to identify fire doors as fire-resistant doors (not a voluntary option).

Also:

Vocational training and development processes in Germany, especially development programme for apprentices as in-work experience combined with offsite formal learning on a day release basis.

Q10. What examples of good practice from regulatory regimes in other industries/sectors that are dependent on high quality safety environments are there that we could learn from? What key lessons are there for advancing fire safety?

Q10. Recommendations

- For example

We understand the nuclear industry ensures a chain of responsibility from the purchase of a new product or installation, which should be third-party certified, recorded as an asset and subsequently tracked through maintenance procedures. Installation by third-party installers applies, with maintenance by third-party certificated operators, for the life time of the product. The procedures provide necessary levels of product assurance, and makes subsequent fire risk assessment easier and able to be formally registered.

Q 10. Commentary

- There may well be benefits in looking at other industry/sectors for lessons to learn for better fire safety disciplines. But any potential developments need to be evaluated and adopted circumspectly, checked that they will translate across to the culture of the construction market, in line with the established customs and practices that apply.

Culture is likely to be a barrier, and we wouldn't expect there to be any "quick fixes." Whatever good practice is imported, successful progress will still depend on commitment and the strength of enforcement and compliance processes.

Please note the summary CONCLUSIONS from this Q&A (separate attachment)

Comment:

The submission deadline of only a month from publication of the review document on 12 Sept has caused difficulties in bringing this response together. Time has been tight; the task challenging, at least to reply conscientiously. Parts are longer than we really prefer, with some repetition since questions do overlap. But we feel that the broad questions do demand an in-depth response; and answers are not necessarily straightforward since the mix of technical, commercial and regulatory factors influencing fire safety is complex. With that in mind we look forward hopefully to follow-up: for feedback, discussion, clarification and explanation as appropriate.