Guidance on External Fire Spread Standards

Introduction

Local Authority Building Control (LABC) represents all local authority Building Control teams in England and Wales. Our network of 3,000 professional surveyors provide fast, impartial advice and services on a 'not-for-profit' basis to home and property owners, architects, plan drawers, developers, building contractors and other professionals to ensure buildings are safe, healthy and efficient to meet the standards set by the building regulations. We also offer CPD, training events and free guidance to professionals and homeowners.

Scope

In response to the catastrophic fire at Grenfell Tower LABC has created this consolidated guide to the application of Approved Document B (Volume 2) [ADB-v2] with particular reference to sections 12 – 14 inclusive. Experienced Building Control practitioners may find some of the explanations and additional information somewhat basic, however, this guide has been developed to give surveyors at all levels of experience a comprehensive overview of the regulations and available guidance associated with external fire spread. A basic commentary to the Building Control process has also been included to assist with the understanding for non-Building Control local authority disciplines that may be involved with existing housing stock particularly high rise.

Whilst the principles of external fire precautions apply equally to low-rise dwelling houses, as guided by the use of Approved Document B (Volume 1) [ADB-v1], such provisions are not considered within this document.

This guidance note should be read in conjunction with the Approved Documents and is not a substitute for the detailed guidance contained within the Approved Documents. You might also find the guidance authored by Watch Manager Merlyn Forrer MEng FIFireE GradEI, of GM Fire and Rescue Service, on the subject of External Thermally Insulating Cladding Systems (ETICS) included as appendix A, to be of some assistance. Similarly, decision trees on the application of non-fire rated and non-combustible/limited combustibility rain-screen cladding, previously issued by LABC and subsequently amended in consultation with the LGA, are included at Appendix B.

Building Control

The Building Act 1984 permits detailed regulations (building regulations) to be made by the Secretary of State. Building Regulations are administered by the Department for Communities and Local Government (DCLG) within the Building Regulation and Energy Performance Division who via the appropriate Secretary of State are responsible for the building regulations in England, in Wales this is undertaken by the Building Regulations Division of the Welsh Government.

The principles of the Building Act are achieved through the issue of Statutory Instruments which are a form of legislation which allow the provision of an Act of Parliament to be brought into force. These are referred to as secondary, delegated or subordinate legislation. The Building

Regulations are statutory instruments with the latest/current version being the Building Regulations 2010 (as amended). The regulations cover areas such as structure, fire safety, resistance to moisture, drainage, energy conservation and accessibility etc. with the intention of 'ensuring the health and safety of persons in or about buildings.'

The Building Act requires local authorities to enforce the building regulations, unless an initial notice is in force or a final certificate has been issued for the work covered by an initial notice. An initial notice would be applicable where an Approved Inspector has been appointed as the Building Control body, Approved Inspectors are private sector 'for profit' providers of Building Control that operate in direct competition with local authority Building Control teams. Local Authorities can only recover the cost of delivering the fee earning part of the Building Control Service, all costs associated with the enforcement of the building regulations and wider non fee earning parts of the service must be borne by the individual local authority.

The regulations apply to most new buildings and many alterations and extensions to existing buildings and the responsibility to demonstrate that the requirements of the building regulations have been satisfied rests with the person carrying out the work in conjunction with their chosen Building Control Body (local authority or Approved Inspector). Where building work is being undertaken within existing buildings the person carrying out the work has a responsibility to demonstrate that both the building work complies with the requirements of the building regulations and that these works do not make any other parts of the existing building any worse in terms of compliance.

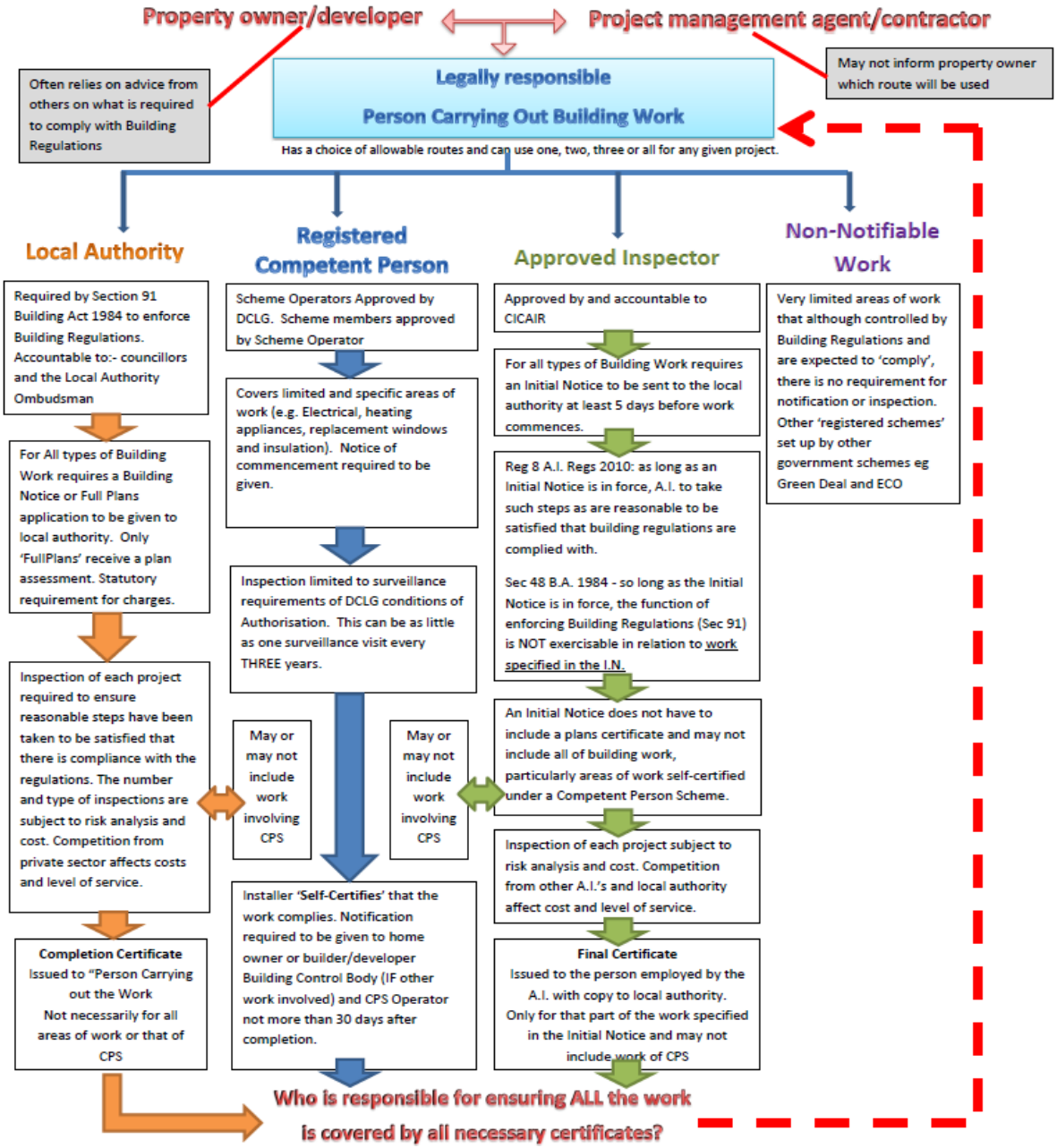
Approved Documents

All Building Control bodies use the same regulations and associated guidance documents (Approved Documents) in the delivery of Building Control services and operate to good practice guidelines created by the Building Control Alliance, an industry body representing all Building Control bodies, together with their own standards and individual codes of conduct. Each Building Control body also returns performance indicators or benchmark type information relating to Building Control performance standards back to the Building Control Performance Standards Advisory Group a standing subcommittee of the Building Regulations Advisory Committee for England and the Building Regulations Advisory Committee for Wales.

Approved Documents are one way and perhaps the most common way for the person carrying out building works to demonstrate to the Building Control body that the requirements of the building regulations have been met. There are a suite of Approved Documents, Approved Document A through to Approved Document R. Fire safety, for example, is covered by Approved Document B which is now split into two volumes, volume 1 for dwelling houses and volume 2 for buildings other than dwellings where the current edition is the 2006 edition incorporating the 2007, 2010 and 2013 amendments. Other than Approved Document A (Structure) and Approved Document C (Site Preparation and Resistance to Contaminants and Moisture) the Fire Safety Approved Document appears to be the oldest document not to have been the subject of a substantive review. Traditionally DCLG have tended to keep all approved documents under review to respond to innovations within the construction industry or where revisions to one

approved document have an impact on another, one example of this could be in the drive to improve thermal efficiency using more innovative insulation products may or perhaps should have given rise to a review of the fire safety guidance. Other Government priorities may, however, have taken precedence, for example, the one regulation in – two out initiative or reducing the burden of red tape.

The flow chart below demonstrates the procedure associated with a Building Control submission which as described can be via various routes and in some cases, especially with more significant building works, will involve the submission of plan details to, and inspection of work on site by the Building Control body.



Where the Regulatory Reform (Fire Safety) Order 2005 applies article 45 introduces a duty to consult the enforcing authority before passing plans where:

- It is proposed to erect a building
- Make any extension
- Make a structural alteration
- Change the use of the building

As such full plans in respect of a local authority Building Control submission will be required and either the local authority or Approved Inspector must consult with the enforcing authority (Fire and Rescue Service) and take regard of their comments before passing or proceeding with the application.

Building Control site inspections for each project are completed by the Building Control body to ensure that, as far as can be reasonably ascertained, the requirements of the regulations have been achieved on site. The number and type of inspections are subject to a risk analysis and cost. Competition between Building Control bodies inevitably requires costs to be reduced which may give rise to a reduced number of inspections. Building Control site inspections should not be confused with the role of a Clerk of Works who typically would have a far wider role on site acting on behalf of the client.

External Fire Spread

Fire spread via the external wall medium is exacerbated by the use of combustible materials and extensive cavities. The speed by which flame rises vertically up the external face of a building leads to potentially rapid fire spread from lower floors to higher ones. Within the confines of a cavity, the flame will also elongate up to ten times its length as it searches for oxygen. Hence the need for robust cavity barriers, fire stops, restricted combustibility of key components and the use of materials with a low spread of flame rating is necessary, particularly given the delamination and spalling nature of some components when heated.

Statutory guidance addresses these issues for the initial stages of a fire, after which time it is assumed that the fire brigade have arrived to deal with the incident. However, even with the fire brigade's arrival, a fire which cannot be reached within 18m of the street level is unlikely to be easily tackled using current fire brigade apparatus and so additional safeguards are necessary for taller buildings.

The guidance in sections 12 – 14 inclusive of ADB-v2 is intended to satisfy requirements B4 (1) and (2) of Schedule 1 of the Building Regulations 2010 (as amended).

These particular requirements are possibly some of the oldest building regulations we have in the UK and their lineage can be traced back, in part, to the very first Building Bye Laws. So we should be mindful that they have been developed in the aftermath of historic tragedies and developed over more recent years to accommodate the advancement of fire science and the technological changes of materials. The most recent edition of the ADB-v2 is the 2006 edition incorporating the 2007, 2010 and 2013 amendments a document that came into effect in April

2007 and does not appear to have changed the guidance significantly relative to B4 – External Fire Spread since the previous 2000 edition incorporating the 2000 and 2002 amendments.

What is the guidance on external fire spread?

In essence external fire spread guidance can be found in three distinct parts within ADB-v2, namely:

Section 12 – Construction of external walls; and
Section 13 – Space separation; and
Section 14 – Roof coverings

It should be noted that the guidance on external wall construction and space separation are inter-related and that other parts of the Approved Document will also need to be referred to – such as the guidance on fire resistance, compartmentation, cavity barriers and the tables in the appendices.

Again this guide is not a definitive substitute for the Approved Documents and all LABC members are advised to read the guidance in both ADB-v1 and 2 carefully, to ensure that it is being applied to a project correctly by the designer/contractor.

Construction of External Walls (Section 12)

External walls can, if the manner in which they are constructed and/or the materials used within them, be a medium for fire to spread around and potentially back into the building - the Grenfell Tower fire may be a tragic and graphic example of this.

Moreover, the spread of fire can degrade wall features, leading to falling (flaming) debris that can cause secondary fires – leading to either vertical or horizontal conflagration – as well as causing an obstacle to occupants escaping and fire fighters/emergency services entering the building.

Image 1 – Grenfell Tower – BBC June 2017

To this end the guidance in Approved Document B can be simplified as follows – (guidance on portal frames has been included for completeness):

1. Portal Frame Buildings:

Where a single storey portal frame is constructed it is likely that the frame will also support the external wall(s). Where this occurs close to a boundary then any collapse or deformation of the frame, in a fire condition, could compromise any fire resistance for space separation, which might allow fire to then spread outside the building, if the steel frame collapses.

As a result, where the façade is required to be fire resisting because of its proximity to a boundary portal frames should be fully fire protected, including the portal rafters – UNLESS – the frame has been fully designed to resist collapse in the event of a fire.

Refer to para 12.4 – of ADB-v2 to assess the approach required.

2. External Wall Construction

As buildings get taller the risks associated with fire spread become greater, particularly if the height of a building extends beyond the effective height of normal external firefighting systems and techniques.

The intention, therefore, is for the external façade to resist both the spread of fire across the external surface(s) and (if there's a cavity) internal surface(s) – see Figures 1 & 2 of Annex B.

Table 1 is the guidance taken from ADB-v2, Diagram 40 and includes some of the additional notes contained in section 12, as they apply to buildings of varying heights.

External surfaces of walls should meet the provisions in Diagram 40 and in a building with a storey 18m or more above ground level any insulation product, filler material etc. used in the external wall construction should be of limited combustibility.

Alternative Testing for Insulating Materials etc. for Buildings with a Storey >18m high

External walls of a building with a storey over 18m high can, as an alternative to the above be tested to BR135 (large scale tests under BS8414-1 or 8414-2 test conditions) and must show as having passed/be compliant. In such cases only the materials and construction build-up as shown in the test should be used. The test report will be in two parts, these being:

Part 1. BR135 Classification report; and
Part 2. BS 8414-1, or BS 8414-2 test results report

The tests should always be carried out by an independent UKAS accredited testing body. The British Standard 8414 tests do not give a pass/fail result because the data obtained is used by different bodies with different minimum requirements. Hence, for building regulation purposes

any test using this method needs to be supported by the classification report for the proposed specification confirming that the specification criteria of BR 135 has been met.

Such tests would normally be commissioned by insulation manufacturers directly from individual test houses.

Any departures from the full test build-up must be supported by an assessment from a qualified, competent and experienced fire engineer or testing body. This includes variations to fixings, cladding type, insulation type and thickness, void sizes, fire and cavity barriers type and backing boards. To a certain extent such an approach (BR 135) may lead to uncertainty as to how to precisely follow such an assessment on site without any variation, products are rarely helpfully marked and once installed could be difficult to accurately assess or inspect to ensure that the original intention of the report has been installed. This could particularly be the case where product substitution or value engineering takes place after the initial design specification potentially leading to different materials being delivered on site and installed.

With regulations potentially not keeping pace with product innovation or indeed associated regulations, part L for example, Building Control bodies have found it difficult to provide guidance to the person with responsibility to demonstrate compliance. The Building Control Alliance (BCA), an industry group made up of representative from clients, stakeholders and all the organisations directly involved in Building Control in England and Wales attempt to provide further clarity with the publication of technical guidance notes. BCA guidance notes are for the benefit of its members and the construction industry, to provide information, promote good practice and encourage consistency of interpretation for the benefit of clients. They are advisory in nature, and in all cases the responsibility for determining compliance with the Building Regulations remains with the Building Control body concerned. BCA Guidance Note 18 focusses on the use of combustible cladding materials on buildings exceeding 18m in height and in summary provides four options to demonstrate compliance:

1. The use of materials of limited combustibility
2. BR 135 (above)
3. A desk top study from a suitably qualified fire specialist, stating whether in their opinion, the BR 135 criteria would be met supported by data from independent UKAS accredited testing bodies.
4. Holistic fire engineered approach

Representatives of relevant departments of Government often attend BCA meetings and receive copies of all minutes and technical publications, together with speaking at industry conferences on this very subject.

LABC, as members of the BCA support the guidance note but have not sought to extend this advice by publishing our own interpretations of previous build ups leaving to each such assessments of systems to be considered upon their own merits by the fire specialist.

Perhaps with the benefit of hindsight, it does seem somewhat incredulous that where the requirement in respect of external fire spread states ***B4(1) – The external walls of the building shall adequately resist the spread of fire over the wall and from one building to another, having regard to the height, use and position of the building*** that combustible materials are acceptable in any form.

Notwithstanding any of the above, the total amount of combustible material facing a boundary might need to be limited to allow distances to boundaries to be accommodated.

What is meant by 'Material of Limited Combustibility'?

ADB-v1 and 2 both give guidance on this in the tables to Appendix A of each document. As a result, materials must have been subjected to fire testing to either British Standards 476-4 or 11, or European Standard (EN – also BS EN) 13501-1.

Reference should be made to the tables in Appendix A. Tables 6 and 7.

A material that has been tested and classed as non-combustible is better than a material that is classed as being of limited combustibility. In very simple terms it means it will not combust (burn), e.g. bricks, blocks, steel, concrete, plaster and other inert/inorganic materials are likely to be non-combustible.

British Standards tests 476-4 and 11 define a non-combustible product for UK standards. The European Norm 13501-1 classifies materials that are non-combustible with a rating of A1 (see table 2).

LABC Local Authority Building Control

TABLE 1	APPROVED DOCUMENT B (VOLUME 2) Diagram 40 REFERENCE						
EXTERNAL WALL CONDITIONS	(a)	(b)	(c)		(d)	(e)	
Purpose Group (See Appendix D – Table D1)	ANY	ANY (other than 5)	5 (and being more than 1-storey)		ANY	ANY	
Building height (See Appendix C – Diag C5 & C6)	<18m	<18m	<10m*	≥10m & <18m	≥18m	<18m	≥18m
Relevant boundary distance (See Section 13 – Space separation)	<1m	≥1m	≥1m	≥1m	<1m	≥1m	≥1m
Flame Spread Rate BS 476-6 & 7 – Class 0 Index (I) ≤12 + sub-index (i1) ≤6	✓	-	✓	-	✓	✓	✓
Combustibility Rate EU class B-s3, d2, or better	✓	-	✓	-	✓	✓	✓
Profiled or steel sheet ≥0.5mm thk + organic coating ≤0.2mm	✓	-	✓	-	✓	✓	✓
Flame Spread Rate BS 476-7 – Class 1 Index (I) ≤20	X	-	✓	-	X	✓	X
Combustibility Rate EU class C-s3, d2, or better	X	-	✓	-	X	✓	X
Timber cladding ≥9mm	X	-	✓	-	X	✓	X
Combustible insulating materials & fillers etc (excluding walls as shown in diag 34)	✓[1]	✓[1]	✓[1]	✓[1]	X[2]	X[2]	X[2]
Cavity barriers (other than those for walls as shown in diag 34)	✓	✓	✓	✓	✓	✓	✓

* Above ground floor or any roof or podium that the public have access to

\- No provision – no restrictions on the flammability of the wall surface

✓ Permitted

x Not permitted

1. Permitted only in buildings with a storey below 18m above the lowest ground level.
2. Only materials of limited combustibility permitted unless a full BR135 (BS 8414-1 or 8414-2) test report with compliant classification is provided in support

Any product not meeting the BS 476-4 test can still have its combustibility determined by reference to BS 476-11 alone and this test would enable classification for a material of limited combustibility.
For external wall purposes a material of limited combustibility, having been tested to EN 13501-1, is only acceptable in buildings with a storey over 18m high if it has the rating A2-s3, d2 (s = smoke production and d = flaming droplet production. The rating of 's' and 'd' is an improvement in performance the closer it gets to '0') – see table 2.

TABLE 2	CLASSIFICATION OF COMBUSTIBILTY/FLAME SPREAD	
British Standard	United Kingdom (National)	EU (European) Equivalent
476-4 & 11	Non-Combustible	A1 (provision for non testing)
476-11	Limited Combustibility	A2-s3,d2 or better
476-6 & 7	Class 0 Flame spread	B-s3,d3 or better
476-7	Class 1 Flame spread	C-s3,d2 or better
476-7	Class 3 Flame spread	D-s3,d0 or better

Living (Green) walls

With the advent of sustainable environments and a push for introducing living walls, concern has previously been expressed about the introduction of living walls and their impact upon the external fire spread performance of building facades. As a result DCLG undertook a study in 2012 and in August 2013 they published the technical document – *Fire Performance of Green Roofs and Walls*. From the research it was highlighted that whilst the vegetation itself did not increase the risk of fire spread, some of the systems supporting the living walls and their growing media might. As such members are advised to carefully read this report when considering living wall façade systems.

Space separation (Section 13)

The guidance is intended to enable buildings to be designed so as to prevent fires from one building spreading to another, via large areas of openings/poor flame spread ratings of external wall finishes (unprotected areas).

The guidance indicates distances between buildings and relevant/notional boundaries and its intention is to reduce the amount of radiated heat that a side of a building might be exposed to – subject to the nature of the building use and the distance of separation.

Some openings and small areas of unprotection are permitted but are restricted in area and in distance between panels on the same elevation. Similarly there is guidance on how canopies facing a boundary can impact upon space separation.

Buildings closer to a boundary than 1m will have higher restrictions placed upon them than buildings that are more than 1m away from a boundary.

Buildings that have a life safety sprinkler system installed can benefit from either:

1. The distance to the boundary being halved; or
2. The amount of unprotected area being doubled.

Buildings that contain atria require special consideration. This is because any compartment floor(s) that might be breached by the atria could result in a very large area of façade being exposed to a boundary, thereby requiring detailed consideration.

The basis for establishing limits on unprotected areas can be found in the FRS Tech Note 5 and there is also detailed guidance given in the BRE report BR187.
The type of methods for calculating unprotected area are:

Method 1 – Small **residential** building/compartment:

- Only for dwellings and flats (not institutional uses); and
- Buildings less than 3-storeys high; and
- Buildings less than 24m long; and
- Unprotected areas all meet with the guidance in diagram 46

Method 2 – Small non-residential buildings

- Buildings to be less than 10m high, except for open-sided car parks in Purpose Group 7(b)

Method 3 – By the application of the guidance given in BR187 and adopting either the:

- Enclosing rectangle approach; or
- Aggregate Notional Area approach

Roof coverings (Section 14)

This section is similar to section 12 in that it outlines the flame spread performance of types of roofing materials and relates these to their proximity to boundaries and adjoining buildings.

The particular purpose of this guide is to prevent fires from one building spreading to another(s) by way of burning brands floating on convection (heated) air currents and then landing onto roofs near and far, causing secondary fires and the potential for conflagration.

The closer to the boundary the building is, then the greater the risk of fire spread via roofs there is likely to be and, as such, the higher the flame spread resistance the roof should have. Conversely the further away the roof is from a boundary the less well performing the roof material can be in terms of flame spread e.g. thatch and wood shingle roofs are permitted in such cases.

Section 14 gives the appropriate guidance, refer to table 16 in ADB-v2.

Particular attention should be given to plastic and thermoplastic materials such as roof lights and their location, distribution and overall area as these can spread fire quickly.

Roofs are designated by reference to them being either pitched or flat and again Appendix A, table A5 gives additional guidance on the performance and suitability of some generic materials.

Table 16 of ADB-v2 should be used to determine the suitability of roofing materials in relation to proximity to boundaries.

For UK purposes roof materials are classed, by reference to BS 476-3 tests, as either being of an A, B, C, or D rating, or a European classification of $B_{roof}(t4)$ – $F_{roof}(t4)$ – t4 referring to test 4 of EN 1187.

The best performing roof would be one with a roofing material designated as AA or $B_{roof}(t4)$ and these can be sited within 6m of a boundary. The worst performing roof material would be one with a designation of DD or $F_{roof}(t4)$, which would need to be sited more than 20m away from a boundary.

There are additional exemptions to the above categories where certain materials' have been tested to give a Class 1 flame spread rating or have achieved an EN 13501-1 rating of C-s3, d2.

Green roofs

Similar to the section dealing with living walls and the advent of sustainable environments, with a push for introducing green roofs, concern has been previously expressed about the impact of these roof types on the fire spread performance of buildings, especially if, in periods of excessive dry weather, the vegetation and growing media became very dry.

In 2012 DCLG undertook a study into the issue of living walls and green roofs and in August 2013 they published the technical document – *Fire Performance of Green Roofs and Walls*. From this research it was highlighted that, unlike living walls, green roofs create a relatively low risk of roof fire spread. However, members are advised to carefully read this report when considering any green roof system.

Suggested Immediate Action

Following the Grenfell fire there will undoubtedly be a review of both the overall provision of Building Control, the regulations and associated guidance. In the interim LABC members are advised to continue to consider the following when assessing any scheme on the basis of the guidance with ADBv2.

- ✓ Carefully consider the composition of the envelope and its impact on fire spread across, around, within and over the building and across boundaries.
- ✓ Obtain documentation to support designer's details that the envelope system(s) achieve the appropriate fire test performance.
- ✓ Do not accept materials/systems that do not meet with the guidance in the ADs or cannot be supported by test data.
- ✓ Question the type of test data and whether it's from a recognised and reputable source
- ✓ Only insulation and filler materials of limited combustibility must be used in the external walls of any building with a storey ≥18m high – throughout its height – unless the façade system has been tested to BR135.
- ✓ Ensure that the guidance in section 9 – Concealed spaces (cavity barriers) – is carefully considered, especially where exemptions to Table 13 are given in paragraph 9.10 inclusive.
- ✓ Cavity barriers within the façade system must be supported by appropriate test validation and the use of 'open state' cavity barriers – developed for ventilated cavities in rain-screen systems – should be treated with caution and their use challenged.
- ✓ Ensure consultation occurs with the fire service and discuss any concerns they might have with them and the design team.
- ✓ As with all plan and inspection checks, records of observations and agreements/concerns must be properly documented for posterity.
- ✓ All tall buildings ≥18m high and/or of non-traditional wall construction will be treated as requiring a necessary inspection notification before wall treatments, cavity barrier installations and fire stopping is covered over.
- ✓ Where there is any doubt over a system then advice must be obtained from a senior team member, manager or LABC directly.
- ✓ Where there is a lack of confidence in the proposals then the matter should be considered for referral to the Secretary of State for determination or appeal.
- ✓

- ✓ Challenge the specification of materials employed on site and, if necessary, seek to have sight of delivery tickets or order documents.

The Assessment of Existing Buildings

Following the fire at Grenfell Tower LABC members are being increasingly ask to assist with the assessment of existing buildings and particularly their cladding systems, directly supporting Housing and Social Landlord colleagues.

All matters relating to the Grenfell Fire are usefully captured together on the DCLG website at https://www.gov.uk/government/collections/grenfell-tower these include:

- Safety Checks Following the Grenfell Tower Fire – Letter to Local Authorities 22 June 2017 reproduced in Appendix B

- Government Building Safety Programme – Explanatory Note – 30 June 2017 reproduced in Appendix C

Together with the recommendations of the expert panel regarding further tests on cladding and insulation 6th July 2017, which our Chief Executive Paul Everall assisted with that can be found at https://www.gov.uk/government/news/expert-panel-recommends-further-tests-on-cladding-and-insulation

With what appears to be a move towards complete system tests LABC members are advised to closely monitor the DCLG website for further information and guidance.

With non-fire resistant ACM rainscreens continuing to be the focus for attention, the summary guidance in Annex B shows what LABC, BRE and the BCA recommend to assist with product identification and define a procedure to follow.

Further guidance relating to Externally Thermally Insulating Cladding Systems **(ETICS)** produced by Watch Manager Merlyn Forrer – GM FIRE & RESCUE SERVICE has been included as appendix A

Further Information

Product Certification

Regardless of the route chosen to demonstrate compliance, extreme care is required to ensure that the precise products specified are actually supplied to site and installed correctly to allow the building to perform as intended. One minor change in say, colour or version may not be supported by the product certificate and may require re-testing and certifying.

Typically a designer initially and subsequently the Building Control Body will review test data, manufacturers literature and product certificates to establish the basis of the specification and

that the requirements of the regulations can be satisfied. Many product certificates will extend into numerous pages but only 'certify' products in respect of a restricted area of the regulations or indeed only part of one individual requirement. Taking rainscreen cladding and external fire spread as an example, product certificates will often confirm that a product will meet or contribute to meeting the relevant requirements of the regulations (B4(1)) but this does not necessarily mean that all of that individual requirements would be satisfied. This could, for example, certify that the product will meet a particular surface spread of flame rating but not include any details relating to the combustibility of the product. Without additional measures or more holistic routes to compliance this could render the product completely unsuitable for use in a building with a storey 18m or more above ground level albeit that certificates and product literature often include pictures of the product insitu on buildings much higher. It is only by carefully reading through the certificate and interpolating between numerous reference sources that it can be appreciated that further tests may be required.

Introducing a product certification system that certifies that a product meets rather than contributes to meeting the regulatory requirement may help to reduce such ambiguity.

LABC Registered Details

LABC Registered Details provide an assured route to compliance subject to being considered within the context of each individual project proposal. They rely on a detailed registration assessment which includes detailed testing by a UKAS or equivalent test body.

There are a number of insulation systems registered for use in rainscreen systems and these can be found at www.labc.co.uk/registration-schemes/registereddetails

Each registration includes a Registered Detail certificate, product specification and fact sheet and where such a system is considered suitable for use above 18m the specific details for such an application are clearly set out and this will typically be where the system has been tested to comply with BR 135:2013 and will require that **an appropriate report and/or supplementary report MUST evidence the suitability of the proposed make up.**

All relevant RD certificates have been reviewed following the Grenfell fire and will remain under review as further information and guidance becomes available.

We understand that Celotex have suspended the supply of RS5000, accordingly, the registered detail for Celotex RS5000 was taken down from the LABC website.

Whilst the registration for Celotex RS5000 includes a very specific new build system build up including an eternit board and the product has been tested by BRE in accordance with BR 135 it was considered appropriate to suspend this registration to avoid adding to any speculation surrounding the product.

Regulation 38 – Fire Safety Information

(1) This regulation applies where building work— (a) consists of or includes the erection or extension of a relevant building; or (b) is carried out in connection with a relevant change of use of a building, and Part B of Schedule 1 imposes a requirement in relation to the work.

(2) The person carrying out the work shall give fire safety information to the responsible person not later than the date of completion of the work, or the date of occupation of the building or extension, whichever is the earlier.

(3) In this regulation— (a) "fire safety information" means information relating to the design and construction of the building or extension, and the services, fittings and equipment provided in or in connection with the building or extension which will assist the responsible person to operate and maintain the building or extension with reasonable safety;
(b) a "relevant building" is a building to which the Regulatory Reform (Fire Safety) Order 2005 applies, or will apply after the completion of building work; (c) a "relevant change of use" is a material change of use where, after the change of use takes place, the Regulatory Reform (Fire Safety) Order 2005 will apply, or continue to apply, to the building; and (d) "responsible person" has the meaning given by article 3 of the Regulatory Reform (Fire Safety) Order 2005.

Guidance on the application of regulation 38 can be found in Appendix G of ADB – v2, particular attention should be paid to section 3 of the guidance relating to complex buildings. Especially ensuring that details relating to all passive fire safety measures including compartmentation, cavity barriers, fire doors and other devices are passed to the responsible person at completion/occupation.

The Regulatory Reform (Fire Safety) Order 2005 & Fire Risk Assessments

In the UK since 2006, under the Regulatory Reform (Fire Safety) Order 2005 ("FSO"), building owners, employers and occupiers have been legally obliged to evaluate fire risk in all buildings other than private dwelling houses. The Fire Safety Order (FSO) is applicable to apartment blocks with common entries, staircases and landings.

The main duty holder in relation to the premises is the "Responsible Person", defined in Article 3 of the FSO: the employer, or occupier, or owner, who has duties imposed in relation to fire safety on the premises. There is a general duty to ensure, so far as is reasonably practicable, the safety of employees; a general duty, in relation to non-employees to take such fire precautions as may reasonably be required in the circumstances to ensure that premises are safe; and a duty to carry out fire risk assessments. The duties are ongoing: an obligation to regularly review, maintain and manage the fire safety strategy of the building.

The risk assessment must be reviewed on a regular basis to keep it up to date and particularly if:

- there is reason to suspect that it is no longer valid; or
- there has been a significant change to the building or its operation.

Article 18 of the FSO requires the Responsible Person to appoint one or more competent persons to assist them in undertaking the fire prevention and fire protection measures, unless he/she or an employee has sufficient training and experience or knowledge. Whilst the Responsible Person would be expected to prove due diligence in their selection of Fire Risk Assessor, unfortunately to date there is no actual requirement for a Fire Risk Assessor to have any formal qualification or experience.

LABC works with FRACS (the Fire Risk Assessment Certification Scheme) which is the only third party UKAS accredited certification scheme in the country that proves an individual fire risk assessors technical competence. Using a national model of assessment; it provides a powerful demonstration that a Responsible Person / Duty Holder has satisfied due diligence when appointing a fire risk assessor.

LABC Consult is the largest FRACS accredited fire risk assessment team in the UK and we have extensive experience of fire safety management in a whole range of building types.

Fire Risk Assessments in High Rise Apartment Blocks

Not all Fire risk assessors are the same and not all fire risk assessments are the same either. There are generally four different types of fire risk assessments for residential / flat developments. These are known as Types 1-4.

A Type 1 fire risk assessment is the basic fire risk assessment required for the purpose of satisfying the Fire Safety Order. Unless there is reason to expect serious deficiencies in structural fire protection, a Type 1 inspection will normally be sufficient for most purpose-built blocks of flats. The inspection of the building is non-destructive, but even this basic fire risk assessment will include examination of at least a sample of flat entrance doors, since these are critical to protection of the common parts. Where there are demountable false ceilings in the common parts, it may be appropriate to lift a sample of readily accessible false ceiling tiles.

A Type 2 fire risk assessment is similar to a Type 1 fire risk assessment, in that it relates to the protection of the common parts, but the Type 2 inspection involves a degree of destructive exposure, usually necessitating the presence of a contractor to open up construction and make good after the inspection. The destructive inspection might include work within vacant flats to check the integrity of the separating construction that protects the common parts. This type of inspection would be carried out only if there is good reason to suspect serious structural deficiencies that could lead to spread of fire beyond the flat of fire origin.

A Type 3 fire risk assessment includes the work involved in a Type 1 fire risk assessment, and is also non-destructive, but goes beyond the scope of the Fire Safety Order by considering the fire precautions, such as means of escape and fire detection, within at least a sample of flats.

Finally, a Type 4 fire risk assessment has the same scope of work as a Type 3 fire risk assessment, except that there is a degree of destructive inspection in both the common parts and the flats, carried out on a sampling basis. This is the most comprehensive fire risk assessment possible, but is appropriate when the history of work carried out is unknown and there is reason to suspect serious risk to residents.

It's essential that the responsible person and others having control of blocks of flats are able to specify their requirements, thereby ensuring their property is assessed appropriately and enabling 'like-for-like' tenders from fire risk assessment companies.

A useful guide to choosing a competent fire risk assessor produced by the Fire Risk Assessment Competency Council can be found at http://www.london-fire.gov.uk/Documents/guidance-choosing-a-competent-fire-risk-assessor.pdf

Further Reading

Fire Risk Assessment Competency Council – A guide to choosing a competent fire risk assessor version 2 published 9th October 2014 http://www.london-fire.gov.uk/Documents/guidance-choosing-a-competent-fire-risk-assessor.pdf

Grenfell Tower Fire Response and Tackling Fire Risk in High Rise Blocks https://www.housingnet.co.uk/pdf/Grenfell_Tower_fire_June17.pdf

Building Regulations and Approved Documents: https://www.gov.uk/topic/planning-development/building-regulations

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(Colwell & Baker, 2013) –
BRE Report BR 135 Fire performance of external thermal insulation for walls of multi-storey buildings. Second edition, IHS BRE Press, 2003. Since superseded by Third Edition, 2013.

Appendix A

Externally Thermally Insulating Cladding Systems (ETICS)

Produced by Watch Manager Merlyn Forrer – Greater Manchester Fire & Rescue Service

External Thermally Insulated Cladding System (ETICS) have been extensively used throughout the UK, Europe and the world to improve energy performance, comfort and appeal of many of our solid wall buildings including many high-rise premises.

The use of combustible materials within the cladding systems does not necessarily pose an increase in fire risk to the building (it can also reduce the risk with the correct use of products). The risks occur when the external envelope of a building supports or provides a medium for fire spread where it can affect life safety. This can occur when either the incorrect materials are chosen or incorrect installation transpires.

Main Initiating Events

The external facade fire can be ignited by

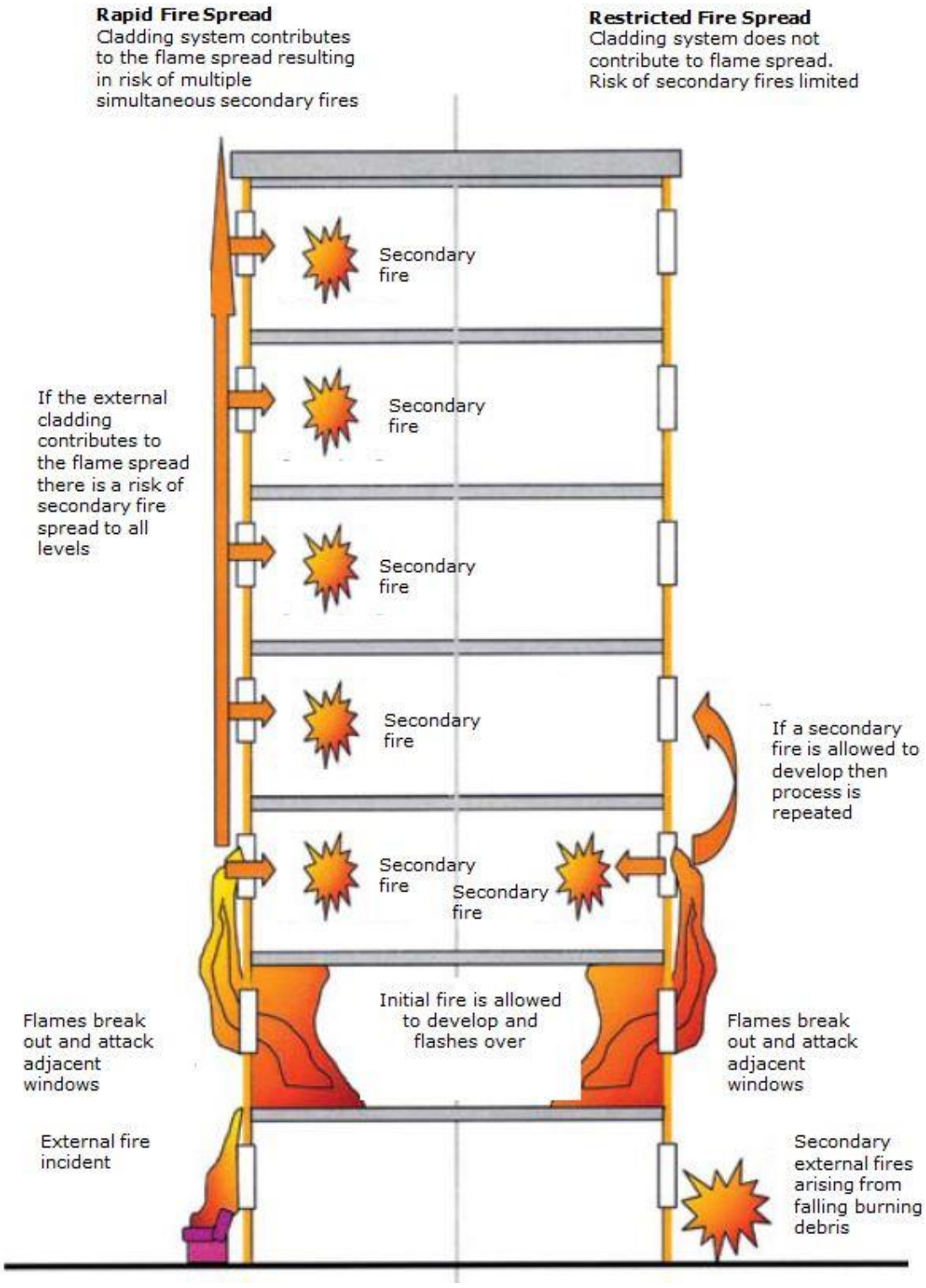
- An internal fire spreading to the façade via an opening including windows, cavities and concealed spaces or
- External to the building - radiated heat from another building fire or direct heat impingement (Figure 1) (Forrer, 2016)

Main Mechanism of External Fire Spread for ETICS

If an internal fire develops to flashover, there is a possibility that the fire will break out of the room of origin, typically through a window where the flame front can extend beyond 2m above the opening. (Colwell & Baker, 2013)

When the flames start to impinge on the external façade from either an internal or external source, the ETICS can become involved. The materials used in the façade will influence how the fire will spread. In the UK Approved Document (B) – Volume 2 - Fire Safety (ADB) section 12 gives guidance on acceptable use of combustible materials within the ETICS. (Forrer, 2016)

Figure 1 - Mechanism of external fire spread for ETICS



(Colwell & Baker, 2013)

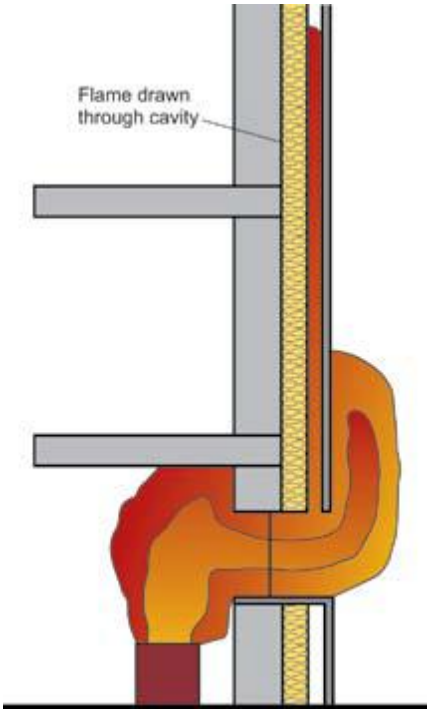
If a building is less than 18m, there is no restriction on the combustibility of the components (cavity barriers should be installed) whereas if the building exceeds 18m then the external wall construction should be of limited combustibility (paragraph 12.7 ADB 2013) or be tested to BS8414 parts 1 or 2.

Unprotected areas provide a potential route for an external fire to bypass compartmentation floors leading to further fire spread (Figure 2)

Cavities

A cavity may be incorporated as part of the ETICS or it can be formed during a fire. A fire can spread rapidly within a cavity as the flame elongates (which can be between five to ten times original length (Colwell & Baker, 2013)), hence the requirement for cavity barriers (Figure 2).

Figure 2 - Fire spread through cavities



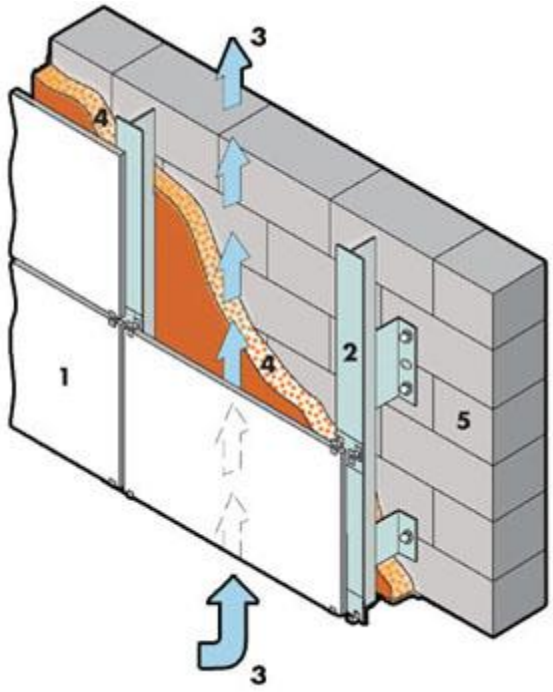
(Colwell & Baker, 2013)

Aluminium/Metal Composite Panels and Rain Screen Cladding

Rain screen cladding (also known as a ventilated façade, figure 3) is typically constructed of a:

- Substrate of either concrete/masonry or a lightweight framed cement/gypsum board with a water proof membrane.
- Insulation is mechanically fixed to the substrate, typically using mineral wool, phenolic foam or polyisocyanurate (PIR) foam as the insulation material.
- Incorporating a ventilated façade with supporting aluminium frame (the air gap is typically 25mm) for the external panel.
- Rain screen cladding panel using a range of finishing products including aluminium/metal composite panels, metal sheeting, timber products, ceramic tiles and cement based boards.

Figure 3 - Rain screen cladding/ventilated facade



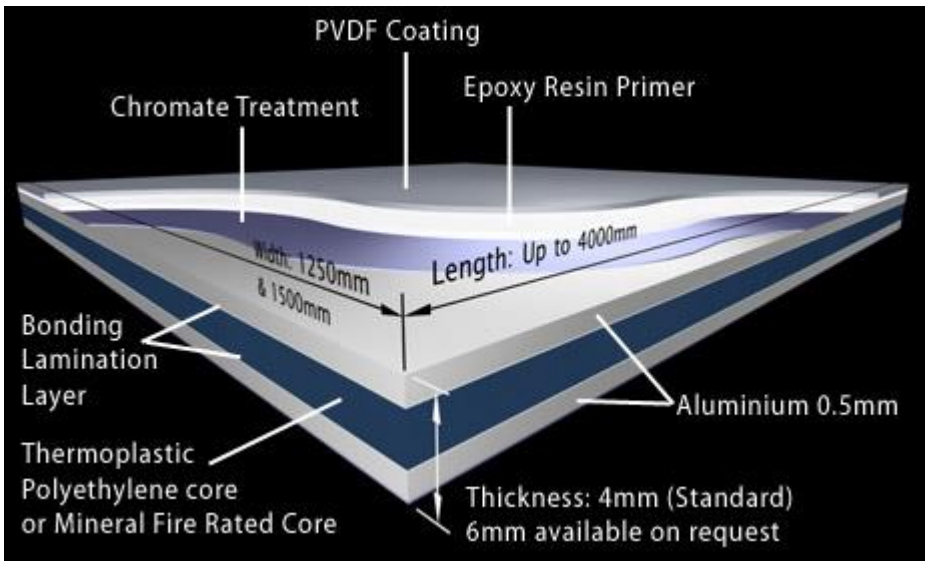
1. External panel
2. Aluminium/metal load-bearing structure
3. Ventilated air gap
4. Insulation layer
5. Substrate wall

(Granitech.com, 2017)

The system will usually incorporate significant gaps at the edges of the panels, ventilation and drainage gaps at the base and head of the wall to promote good air circulation and reduce thermal bridging. The type, spacings and fixing details of fire and cavity barriers should be included as standard for any cladding build up.

The aluminium/metal (Figure 4) composite panels are typically constructed of two sheets of aluminium of 0.5mm thick sandwiching a polyethylene or mineral wool core with an overall panel thickness of 2-5mm. These panels can come in a range of surface colours to meet the client's needs. These types of panels are less expensive than solid aluminium/metal panels at a required thickness to meet the structural stiffness requirements (White & Delichatsios, 2014)

Figure 4 - Aluminium Composite Panel Structure



(Kencana Panelindo, 2017)

Appendix B

Safety Checks Following the Grenfell Tower Fire – Letter to Local Authorities 22 June 2017

Department for Communities and Local Government

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To Local Authority Chief Executives and
Housing Association Chief Executives
By Email

22 June 2017

Safety checks following Grenfell Tower fire

Thank you all for your continued work following the appalling tragedy in North Kensington. Our priority must continue to be checking on the safety of buildings and listening to and being open with residents, and reassuring them as much as possible.

My letter of 18 June asked that local authorities and other registered providers of social housing identify whether any panels used in new build or refurbishment are of a particular type of cladding made of Aluminium Composite Material (ACM).

The testing process for samples of cladding is underway and the attached note sets out the action that an independent panel of experts advise must immediately be taken if it is determined that the insulation within Aluminium Composite Material (ACM) is unlikely to be compliant with the requirements of the current Building Regulations. This advice has been endorsed by the National Fire Chiefs Council who will be circulating it separately to their members.

These interim mitigating measures must immediately be implemented to ensure the safety of residents, pending replacement of the cladding.

If you have any questions about the testing process for the cladding please email housingchecks@communities.gsi.gov.uk

If you have questions about the advice on action which needs to be taken please contact safetychecks@communities.gsi.gov.uk.

Yours sincerely

MELANIE DAWES

Annex A: EMERGENCY FIRE SAFETY REVIEW

If it is determined that the insulation within Aluminium Composite Material (ACM)[1] is unlikely to be compliant with the requirements of the current Building Regulations guidance, it is essential that you **immediately** implement the following interim mitigating measures to ensure the safety of residents, pending replacement of the cladding.

Interim measures recommended by independent panel of experts

Notify Fire and Rescue Service.

Inform your local fire and rescue service fire safety/protection department. Failure to do so may put fire-fighters as well as residents at risk. The fire and rescue service will carry out an urgent inspection with the 'responsible person' to ensure that they are identifying and introducing appropriate interim measures, as set out below. The fire service will carry out a further inspection once the interim measures have been completed:

- Check that the fire risk assessment has been carried out within the previous 12 months and that the recommendations within the action plan of the assessment have been completed; also, confirm that there have been no material changes (to the building, the fire safety measures or the occupancy) that could, potentially, undermine the validity of the fire risk assessment. If no fire risk assessment has been carried out, you must immediately arrange for a fire risk assessment to be carried out by a competent person (eg by a person who is listed on a register of fire risk assessors operated by a professional body or certification body, or, preferably, by a company that is certificated by a third party certification body, that is, itself, accredited by the United Kingdom Accreditation Service to operate the certification scheme). Guidance on choosing a competent assessor is here http://www.cfoa.org.uk/19532

- Engage with residents to ensure they fully understand the emergency fire procedures in the building, particularly the meaning of "stay put". Ensure that fire procedure notices are accurate.

- Check that, at ground level, or on any balconies, there are no combustible materials (eg storage of refuse) in the vicinity of the cladding. Ensure that there are measures to prevent combustible materials in such locations (eg by temporary barriers or instructions to residents). Instruct residents that they must not have any barbeques on any balcony.

- Check that all flat entrance doors, and doors that open onto escape corridors and stairways, are fire-resisting and effectively self-closing against any resistance of a latch (or, for example, in the case of plant rooms or cupboards, are kept locked shut.) For guidance on these doors, consult the Local Government Association guidance on fire

[1] For the avoidance of doubt; the core (filler) within an Aluminium Composite Material (ACM) is an "insulation material/product", "insulation product", and/or "filler material" as referred to in Paragraph 12.7 ("Insulation Materials/Products") in Section 12 "Construction of external walls" of Approved Document B (Fire safety) Volume 2 Buildings other than dwelling houses. (The important point to note is that Paragraph 12.7 does not just apply to thermal insulation within the wall construction, but applies to any element of the cladding system, including, therefore, the core of the ACM).

safety in purpose-built blocks of flats - https://www.local.gov.uk/fire-safety-purpose-built-flats - but, in general, doors that were deemed to be fire-resisting at the time of construction of the block will be satisfactory. Replace any non-fire-resisting doors (such as non-fire-resisting upvc doors) immediately with doorsets (i.e. doors and frames) that are third party certificated as providing at least 30 minutes fire resistance.

- Check all walls that separate flats, plant and store rooms, etc from escape routes to ensure there are no obvious routes for fire or smoke spread (eg, holes where services, such as pipes and cables, pass through walls).

- Check that any smoke control systems, including associated fire detection systems, are operating correctly.

- Check all facilities provided for fire-fighters, including fire-fighting lifts and dry or wet rising mains. If you have **ANY** concerns you should contact your local fire and rescue service, who will, if they have not already done so, carry out an inspection to ensure functionality.

- Ensure that there is sufficient roadway access and hardstanding for firefighting vehicles attending incidents and to be set up to fight any fire externally.

- Check that insulation or other materials that form the façade meet all relevant standards.

If the building is protected by an automatic sprinkler system (or equivalent fire suppression system) you might not need to take any further interim measures before replacement of the cladding.

If the building is not protected by a suitable suppression system you must consider the need for interim measures. The measures adopted need to be based on an assessment of the risk by a competent person, but the following must, at least, be considered:

- Residents to be advised to ensure all smoke alarms are present and working in their flat; to report concerns about fire safety measures in the building (eg presence of combustible materials in escape routes) to their landlord and, understand the purpose of any interim measures begin taken.

- Closure of car parks in which a vehicle fire could impinge on cladding.

- Provision of a temporary communal fire alarm system, comprising smoke detectors in circulation areas and plant rooms, and fire detectors (possibly heat detectors, rather than smoke detectors) in conjunction with fire alarm sounders in each flat. This will enable the entire block to be evacuated simultaneously in the event of fire. This option is unlikely to be suitable for tall blocks, in which a large number of people would need to use escape routes at the same time. The system may comprise a wireless system, using radio to link devices.

- Provision of a fire watch by appropriately trained patrolling security officers/wardens.

- In the case of the most serious risk, consideration must be given to moving all residents out of the block until satisfactory remedial work has been done.

Appendix C
Building Safety Programme – Explanatory Note – 30 June 2017 Government

GOVERNMENT BUILDING SAFETY PROGRAMME – EXPLANATORY NOTE

Summary

- Government is acting to support owners and residents of high rise buildings to ensure fire safety in the light of the Grenfell Tower tragedy.
- Landlords are engaging in a checking and testing process for Aluminium Composite Material cladding.
- The testing process is identifying whether the filler material in Aluminium Composite Material submitted for testing is of a type that would meet the limited combustibility requirements of current Building Regulations guidance.
- Landlords have been given advice on the immediate steps they should take and we encourage them to follow that advice.
- We have set up an expert panel to advise us on other urgent steps we should take to improve fire safety and will be issuing more advice imminently to clarify further steps landlords could take to inform their decisions on the cladding systems they have in place, and on checking insulation and other components of typical wall construction.
- We are engaging landlords and industry to examine what more can be done to support necessary remedial work.

Introduction

1. Immediately after the tragic fire at Grenfell Tower on 14 June, it was clear that the façade of that building had created risks to fire safety.

2. It was also clear that many local authorities and other landlords responsible for tower blocks were acting to check the fire safety of their buildings and reassure their tenants. The Government took immediate steps to conduct an audit of high-rise social housing tower blocks across the country, to ensure that any other similar risks were immediately identified and acted upon.

3. This note explains the checking and testing programme that has been set up and is now underway, and the wider steps that are being taken to ensure safety in all relevant buildings, in the light of the early test results. It explains:

i) The checking and testing process the Government has put in place to help landlords ensure the safety of residents and other occupants in high rise buildings and the actions landlords have been asked to follow.

ii) The immediate action that the Government has recommended to landlords and fire and rescue services in response to a test result.

iii) The further action that is underway to support landlords and councils including working with suppliers to replace cladding and other materials where that is necessary.

4. The Government has been in close contact with local government, housing associations, other public and private sector landlords, fire and rescue services and a number of fire and building safety experts to work through the implications arising from the Grenfell Tower fire for other high rise buildings. It is also engaging wider industry bodies and organisations on next steps and would welcome comments or suggestions on the elements contained in this note. These should be directed to housingchecks@communities.gsi.gov.uk.

i) Checking and testing Aluminium Composite Material (ACM) cladding

5. On Saturday 17th June, the Department for Communities and Local Government convened a group of technical experts to provide advice on the best immediate steps Government could take to help local authorities and other landlords address the fire safety concerns that tenants living in tower blocks similar to Grenfell Tower would undoubtedly have.

6. While it was too early for the full and exact reasons for the speed of the spread of the Grenfell Tower fire to be known, the experts agreed that, from the information available, additional tests should be undertaken urgently on Aluminium Composite Material cladding. On the advice of the experts, the Department wrote to local authority and housing association landlords on 18 June, asking them to

- identify all their residential tower blocks (properties over 18 metres in height[1]),
- identify those with aluminium type external cladding and inspect those to establish whether the panels were made of an Aluminium Composite Material, so that they could be submitted for testing through a process being established by the Department,
- provide a wider range of information about their tower blocks, and
- continue checking that they have robust fire assessments for their stock, drawing attention to the Local Government Association's comprehensive guidance, *Fire Safety in purpose-built blocks of flats*.

7. The Department wrote again to all social landlords on 19 June setting out the process they should follow to submit samples of ACM cladding to the Building Research Establishment for testing and the first samples were received and tested on Wednesday 22 June.

[1] The height at which relevant and additional fire safety requirements are triggered in paragraph 12.7 of Building Regulations Fire Safety Approved Document B guidance.

8. The Department has also extended this checking and testing approach to residential tower blocks owned by private landlords and to tall buildings in the public sector, including hospitals and schools.

9. We are aware that there has been some uncertainty about and criticism of the tests being applied to ACM panels at the Building Research Establishment. By the end of Thursday 29 June, 100% of the panels that had been tested did not have the limited combustibility required to meet building regulations guidance. With such a high failure rate, Government, landlords, residents and others naturally want to be sure that the tests are right and accurate.

10. The test was designed and put in place on the advice of the expert group to provide a quick and reliable way to help landlords identify the type of ACM cladding present on their buildings in order to take appropriate action. Annex A to this note sets out in more detail the testing process and how it relates to fire safety and the Building Regulations.

11. In summary, the Building Regulations guidance sets a requirement for external walls on all buildings not to allow fire spread. And it identifies the use of combustible materials in a cladding system – insulation product, filler materials, etc - as a risk to fire spread in tall buildings. The Department's view, supported by expert and legal advice, is that external walls in a tower block can meet the Building Regulations requirement for resisting fire spread in two ways, set out in more detail in Annex A.

- The first is for each individual component of the wall (insulation, filler, etc) to be of limited combustibility, and to each meet set standards for this.
- The second is to ensure that all the combined elements of a wall, when tested as whole system, have sufficient fire spread resistance to meet a set standard.

12. The tests being conducted at BRE are testing only whether the core or filler of ACM panel samples being submitted are of a type that would fail the limited combustibility test for an individual element of a wall in a tall building (the first of the requirements summarised above). It is possible, therefore, that ACM panels that have a core material that is not of limited combustibility, might be safe if installed as part of a whole wall system that meets the second test described above. We are not aware of any such systems having passed the necessary tests but have asked a newly established expert advisory panel to look into this further.

13. We are also aware that some ACM panels are accredited as having a 'Class 0' rating for the surface. But that, in the Department's view, supported by expert advice, is a rating for the surface only and does not cover the limited combustibility requirement for the core or filler material within an ACM panel.

ii) Action landlords should take

14. On 22 June, the Department wrote to all local authorities and housing associations with advice, drawn up by the group of experts we convened on 17 June, on the immediate steps they should take if it is assessed that they have buildings with ACM cladding of the type that would not meet limited combustibility requirements.

15. It includes engaging residents, seeking the support of the Local Fire and Rescue Service and undertaking urgent fire risk assessments, as well as checking physical fire safety measures (such as fire doors, smoke control systems and fire fighting facilities) and building construction components such as the integrity of walls that act to prevent fire spread and the safety of insulation and other materials in the façade of the building.

16. In particular, this advice also reflects emerging findings from the Grenfell Tower fire investigation in relation to the importance of fire doors and smoke extraction, accessibility to the base of tower blocks for fire fighting appliances, and checking insulation materials in the exterior facade.

17. We encourage all landlords with tower blocks with ACM cladding to act on this advice, repeated at Annex B of this note, to ensure the safety of residents.

iii) Further action underway

18. Understandably, local authorities and other landlords want greater clarity on whether ACM panels on their tower blocks could be part of a wider, safe wall system despite having been identified as likely to fail the limited combustibility test for individual wall components, That is a matter which landlords should consider carefully, consulting the original specifications and designs for the cladding, the designers, engineers and contractors who carried out the work, and the building inspectors who certified it.

19. We want to support landlords in this position. So we have drawn together a panel of experts to advise us on further steps which could be taken to improve the safety of tower blocks in advance of further findings emerging from the Grenfell Tower fire investigation and the public inquiry. This panel of experts met for the first time on Thursday 29th June and agreed to consider urgently what further advice or testing could be provided to help landlords conclude whether cladding systems that included ACM panels could be regarded as sufficiently safe. We expect that further advice to be available next week to help landlords consider what further steps they should take.

20. Following its initial meeting on 29th June, the panel concluded that:

"The tests that are currently being conducted are a screening test to identify which ACM panels are of concern. It tests the filler – the core of the panel – to check if it is of limited combustibility (category 1) or not (category 2 or 3). This is in line with the requirement of the Building Regulations guidance. The filler is one element of the overall cladding system.

If the panel core fails the test we would expect the landlord to take the recommended interim fire safety measures issued on 22nd June.

Early next week the Expert Panel will consider whether these panels can be used safely as part of a wider building external wall system, and therefore could remain on a building under certain approved circumstances. If, in the meantime, a landlord chooses to take down and replace cladding, care should be taken to consider the impact that removal may have on the other wall elements, especially insulation, and therefore on the overall fire integrity of the building as well as other Building Regulation requirements."

21. The expert panel have also been asked to consider whether there is any further practical advice or support that could be offered to landlords to help them check the fire safety of insulation and other materials in the façade of tower blocks.

22. In addition to the work of the expert panel, the Department is engaging further with landlords and industry to examine what further steps can be taken to facilitate remedial action necessary to improve the fire safety of tower blocks.

23. We will report progress with this work on a regular basis.

Annex A

ALUMINIUM COMPOSITE MATERIAL CLADDING SCREENING TEST METHODOLOGY

1. This note describes the methodology employed for the tests of Aluminium Composite Material (ACM) cladding panels currently being undertaken by the Building Research Establishment on behalf of the Department for Communities and Local Government.

2. The Department received advice from a group of experts that three types of ACM panels were on the market (each with a different core material), and likely to have been used in recent works, and that the core of only one of these would satisfy the definition for a material of limited combustibility[2], as would be necessary to satisfy the guidance for high-rise buildings (over 18m in height) in Approved Document B (Fire Safety) guidance (ADB).

3. Limited combustibility is a term used in the UK and defined in table A7 of ADB against both national and European standards. ADB notes that, for the purpose of ADB, a material that is classified as A2 in the relevant European test standard, EN 13501-1 (or the national standards also set out in table A7), would also be acceptable as a material of limited combustibility. While the surface of a panel may be classified as Class 0, this does not address whether the filler material in the core of the panel meets the definition of limited combustibility.

4. The Building Research Establishment (BRE) was asked to develop a screening test to determine which type of Aluminium Composite Material had been used in the cladding. The screening test is not stricter than those set out in the Approved document. It will show whether the core of the sample provided has flame retardant properties and this provides a high degree of certainty as to the type of panel that has been screened.

5. The equipment and procedures used in the screening tests are based on the BS EN ISO 1716:2010[3] test standard. As the purpose of this testing was to quickly and reliably screen the core material within the panel, the full procedures set out in the BS EN ISO 1716:2010 test standard have not been followed as they are unnecessary to determine which type of panel has been submitted for the screening test. These screening tests should not be confused with a formal classification test against this standard.

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[2] Material of limited combustibility is defined in table A7 of Approved Document B. This allows for products to be tested using the procedures given in BS 476-11:1982 or classified A2 using the procedures given in BS EN 13501-1:2007.

[3] The BS EN ISO 1716:2010 test standard is one of the suite of standards set out in BS EN 13501-1:2007 used to classify the reaction to fire performance of construction products.

6. The result of the screening test indicates the performance achieved for the core material in terms of three categories which relate to the three types of ACM panel available:

- **Category 1** means that the result is in line with the definitions of materials of limited combustibility (defined in paragraph 3 above).

- **Category 2** means that the result does not achieve the definitions of category 1 but does have some limited flame retardant properties.

- **Category 3** means that the result does not achieve the definitions of materials of limited combustibility and has no flame retardant properties. Commonly, the core in this case comprises polyethylene without the addition of the flame retardants that enable achievement of the Category 2 result.

7. These categories were defined by calibrating the results of the screening test against samples of ACM filler with a known performance.

8. A specific report is being provided for the landlord for each sample tested, accompanied by advice on steps that may need to be taken. For material found to be in Categories 2 or 3, landlords have been requested to take action as set out in the advice note which the Department issued on 22 June, attached as Annex B to this document.

9. We are aware that some landlords have questioned whether an ACM panel's failure to meet the definitions for limited combustibility means in all cases that it is not compliant with the building regulations.

10. To ensure building regulations requirements have been met as regards external fire spread, Schedule 1 Section B4(1) of the Building Regulations 2010 requires that: "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 the height, use and position of the building". Approved Document B (ADB) provides guidance on how to meet that requirement. For external wall construction, there are two ways under ADB to achieve this:

Option 1: Ensuring that each individual component of the wall meets the criteria for limited combustibility set out in the ADB paragraphs 12.5 to 12.9; or

Option 2: Ensuring the facade system has met the acceptance criteria in BR 135, in accordance with BS 8414.

11. To date we have not been provided with any evidence that the ACM panels in category 2 or 3 of the screening test have been shown to meet the BR135 Criteria. However, it may be possible for individual materials that do not meet the limited combustibility definitions to be used where they form part of a system that meets the requirements set out in Option 2 above. In order to determine if a specific cladding assembly meets the expected performance, building owners will need to seek

specialist advice from a competent professional who specialises in the fire performance of cladding assemblies.

Annex B

EMERGENCY FIRE SAFETY REVIEW

If it is determined that the insulation within Aluminium Composite Material (ACM)[4] is unlikely to be compliant with the requirements of the current Building Regulations guidance, it is essential that you **immediately** implement the following interim mitigating measures to ensure the safety of residents, pending replacement of the cladding.

Interim measures recommended by independent panel of experts

Notify Fire and Rescue Service.

Inform your local fire and rescue service fire safety/protection department. Failure to do so may put fire-fighters as well as residents at risk. The fire and rescue service will carry out an urgent inspection with the 'responsible person' to ensure that they are identifying and introducing appropriate interim measures, as set out below. The fire service will carry out a further inspection once the interim measures have been completed:

- Check that the fire risk assessment has been carried out within the previous 12 months and that the recommendations within the action plan of the assessment have been completed; also, confirm that there have been no material changes (to the building, the fire safety measures or the occupancy) that could, potentially, undermine the validity of the fire risk assessment. If no fire risk assessment has been carried out, you must immediately arrange for a fire risk assessment to be carried out by a competent person (eg by a person who is listed on a register of fire risk assessors operated by a professional body or certification body, or, preferably, by a company that is certificated by a third party certification body, that is, itself, accredited by the United Kingdom Accreditation Service to operate the certification scheme). Guidance on choosing a competent assessor is here http://www.cfoa.org.uk/19532

- Engage with residents to ensure they fully understand the emergency fire procedures in the building, particularly the meaning of "stay put". Ensure that fire procedure notices are accurate.

- Check that, at ground level, or on any balconies, there are no combustible materials (eg storage of refuse) in the vicinity of the cladding. Ensure that there are measures to prevent combustible materials in such locations (eg by

[4] For the avoidance of doubt; the core (filler) within an Aluminium Composite Material (ACM) is an "insulation material/product", "insulation product", and/or "filler material" as referred to in Paragraph 12.7 ("Insulation Materials/Products") in Section 12 "Construction of external walls" of Approved Document B (Fire safety) Volume 2 Buildings other than dwelling houses. (The important point to note is that Paragraph 12.7 does not just apply to thermal insulation within the wall construction, but applies to any element of the cladding system, including, therefore, the core of the ACM).

temporary barriers or instructions to residents). Instruct residents that they must not have any barbeques on any balcony.

- Check that all flat entrance doors, and doors that open onto escape corridors and stairways, are fire-resisting and effectively self-closing against any resistance of a latch (or, for example, in the case of plant rooms or cupboards, are kept locked shut.) For guidance on these doors, consult the Local Government Association guidance on fire safety in purpose-built blocks of flats - https://www.local.gov.uk/fire-safety-purpose-built-flats - but, in general, doors that were deemed to be fire-resisting at the time of construction of the block will be satisfactory. Replace any non-fire-resisting doors (such as non-fire-resisting upvc doors) immediately with doorsets (i.e. doors and frames) that are third party certificated as providing at least 30 minutes fire resistance.

- Check all walls that separate flats, plant and store rooms, etc from escape routes to ensure there are no obvious routes for fire or smoke spread (eg, holes where services, such as pipes and cables, pass through walls).

- Check that any smoke control systems, including associated fire detection systems, are operating correctly.

- Check all facilities provided for fire-fighters, including fire-fighting lifts and dry or wet rising mains. If you have **ANY** concerns you should contact your local fire and rescue service, who will, if they have not already done so, carry out an inspection to ensure functionality.

- Ensure that there is sufficient roadway access and hardstanding for firefighting vehicles attending incidents and to be set up to fight any fire externally.

- Check that insulation or other materials that form the façade meet all relevant standards.

If the building is protected by an automatic sprinkler system (or equivalent fire suppression system) you might not need to take any further interim measures before replacement of the cladding.

If the building is not protected by a suitable suppression system you must consider the need for interim measures. The measures adopted need to be based on an assessment of the risk by a competent person, but the following must, at least, be considered:

- Residents to be advised to ensure all smoke alarms are present and working in their flat; to report concerns about fire safety measures in the building (eg

presence of combustible materials in escape routes) to their landlord and, understand the purpose of any interim measures begin taken.

- Closure of car parks in which a vehicle fire could impinge on cladding.

- Provision of a temporary communal fire alarm system, comprising smoke detectors in circulation areas and plant rooms, and fire detectors (possibly heat detectors, rather than smoke detectors) in conjunction with fire alarm sounders in each flat. This will enable the entire block to be evacuated simultaneously in the event of fire. This option is unlikely to be suitable for tall blocks, in which a large number of people would need to use escape routes at the same time. The system may comprise a wireless system, using radio to link devices.

- Provision of a fire watch by appropriately trained patrolling security officers/wardens.

- In the case of the most serious risk, consideration must be given to moving all residents out of the block until satisfactory remedial work has been done.

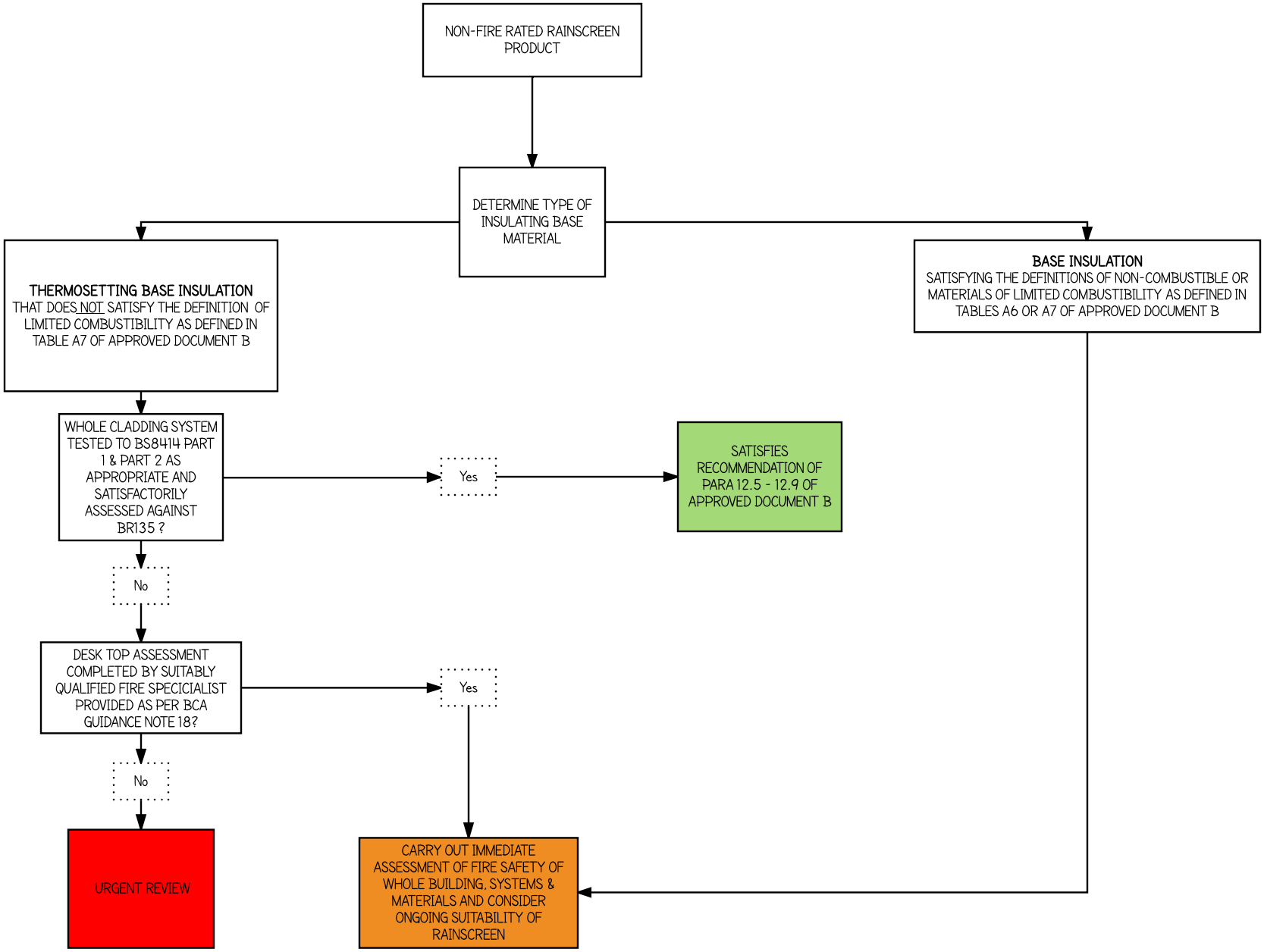
APPENDIX D

LABC PROCEDURE FOR NON –FIRE RATED RAINSCREEN – STOREYS ≥18M HIGH

&

PROCEDURE FOR NON-COMBUSTIBLE OR LIMITED COMUSTIBILITY RAINSCREEN STOREYS ≥18M HI

CLADDING MATERIALS ON BUILDINGS EXCEEDING 18M IN HEIGHT



CLADDING MATERIALS ON BUILDINGS EXCEEDING 18M IN HEIGHT