

The Deanery, Block 1 - External Façade Report

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October 2020

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Report Number – JL/191020

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Current Legislation Relating to Combustibility

Following the post-Grenfell enquiry, the government has reviewed the regulations concerning acceptable materials used in the construction of facades. These new regulations apply to new build properties but in the way of interest of safety we always recommend they are adhered to in existing properties.

This table illustrates the different classes of building materials and whether they meet the current building regulations. As of 21st December 2018, A1 and A2 s1 d0 materials only will meet the new regulations for façade and external wall construction on certain buildings including residential dwellings.

Euroclass Rating	Definition	Example Materials
A1	Non-Combustible	Mineral Wool, Terracotta, Concrete, Plain Aluminium
A2	Limited Combustibility	Powder Coated Aluminium
B-s3, d2 (or better)	Combustible	Phenolic foams, ACM
C-s3, d2 (or better)	Combustible	Phenolic foams, PIR, HPL (High Pressure Laminate), ACM
D-s3, d2 (or better)	Combustible	PIR (Polyisocyanurate), ACM, HPL
E-s3, d2 (or better)	Combustible	Flame Retardant EPS (Expanded Polystyrene) Render, PUR
F-s3, d2 (or better)	Combustible	Standard EPS Render, PUR (Polyurethane)

The relevant statute law is the Building Act 1984. Under this Act Building Regulations are made.

The Building Regulation relevant to cladding is B4(1).

This provides a mandatory obligation at B4(1) which has required (from at least 2000) that:

“the external walls of a building shall adequately resist the spread of the fire over the walls and from one building to another having regard to the height, use and position of the building.”

It is this standard that the cladding is to be judged against.

The Approved Document regime, the ADB, is guidance.

Section 7 of the Building Act 1984 states that:

“A failure on the part of a person to comply with an approved document does not of itself render him liable to any civil or criminal proceedings; but if, in any proceedings whether civil or criminal, it is alleged that a person has at any time contravened a provision of building regulations-

(a) a failure to comply with a document that at that time was approved for the purposes of that provision may be relied upon as tending to establish liability; and,

(b) proof of compliance with such a document may be relied on as tending to negative liability.”

We understand from legal advisers that this means that following an approved document does not mean compliance is assured but gives rise to a presumption only.

The ADB is therefore guidance. Non-compliance with that guidance is, on the face of it, evidence of non-compliance with the Building Regulations.

We also understand from legal advisers that the mandatory requirement of B4(1) makes no reference to the height of a building. The references to 18m are contained in the guidance and therefore appear to constitute additional guidance for buildings of that height.

There are four principle ways of seeking to achieve compliance with B4(1): -

Approved Document B ("ADB") to the Building Regulations: paragraphs 12.5-12.9 of that guidance.

A Full engineered Fire solution report

A Desktop study.

A British Standards test commissions by the Building Research Establishment (BRE): BS 8414-2 test

These are set out both in the ADB and in the BCA (Building Control Alliance) guidance as Technical options.

ADB Route:

The ADB guidance on how compliance can be achieved is set out in Approved Document B at Paragraphs 12.5-12.9.

Paragraph 12.3 of ADB states that external walls of buildings other than those described in regulation 7(4) of the Building Regulations should achieve either of the following:

“a. Follow the provisions given in paragraphs 12.5 to 12.8, which provide guidance on all of the following.

i. External surfaces.

ii. Materials and products.

iii. Cavities and cavity barriers.

b. Meet the performance criteria given in BRE report BR 135 for external walls using full-scale test data from BS 8414-1 or BS 8414-2.

The latter is a reference to the BS 8414 test, discussed in more detail below.

ADB 12.1 sets the scene:

“The external wall of a building should not provide a medium for fire spread if that is likely to be a risk to health and safety. Combustible materials and cavities in external walls and attachments to them can present such a risk, particularly in tall buildings.”

ADB 12.5 concerns fire surface spread. ADB 12.5 also refers to Table 12.1 Reaction to fire performance of external surface of walls. It is this table which notes the issue of 18m tall buildings and states the European Class requirement in respect of materials as follows:

Buildings Less than 1000mm from the relevant boundary are to contain materials of Class B-s3, d2(2) or better

Buildings 1000mm or more from the relevant boundary are to contain materials of

From ground level to 18m: class C-s3, d2(3) or better

From 18m in height and above: class B-s3, d2(2) or better

ADB 12.6 concerns combustibility. ADB 12.6 says

In a building with a storey 18m or more...any insulation product, filler material (such as the core materials of metal composite panels, sandwich panels and window spandrel panels but not including gaskets, sealants and similar) etc. used in the construction of an external wall should be class A2-s3, d2 or better ...”

Whether a product is of limited combustibility is determined by reference to British and European standards measuring its combustibility.

For Buildings over 18m with a combustible insulation or filler product, the ADB route cannot therefore have been validly used.

Paragraph 12.8 provides that Cavity barriers should be provided in accordance with Section 5 in welling houses and Section 8 in flats.

Desktop Reports:

These are now not widely available. Their use has been subject to a lot of criticism since the Grenfell tower tragedy. Whilst they were used extensively prior to this, they often over-relied on test results of other systems and did not properly assess the risks of changes or differences between systems and how those changes may affect the outcome of a test or the fire safety of the system overall.

Fire Engineered Solutions:

These are rarely used as a route to compliance and are expensive. They are normally reserved for difficult buildings where a detailed overall strategy is arrived at to overcome what would otherwise be compliance issues. They are therefore normally discussed in detail with Building Control officers.

BS 8414 test:

This is a test carried out by BRE on an 8-metre-tall mock-up of the cladding/façade system. A fire is lit at the base of the mock-up and its resistance to fire is established by a series of metrics set out in the document BR 135.

This test has been widely adopted as the most certain way of showing compliance or non-compliance with B4(1). The test should run for thirty minutes to allow the evaluation criteria of BR 135 to be applied. The test generates heat or temperature results which can then be measured and assessed.

Site Information



Building Location	Southampton
Building Type	Multiple Occupancy with undercroft parking
Overall building height	21.5m
Height of top occupied floor slab	>18m

Building Summary

The Buildings at the Deanery are constructed with a blockwork tier to the ground floor, and timber frame build up from there. The frame is insulated with a mineral wool insulation and faced with a timber OSB sheathing board and breather membrane. The external finishes are constructed from render on blockwork or a fibrous board lapped cladding. The glazing system appears to be a PVC plastic window system.

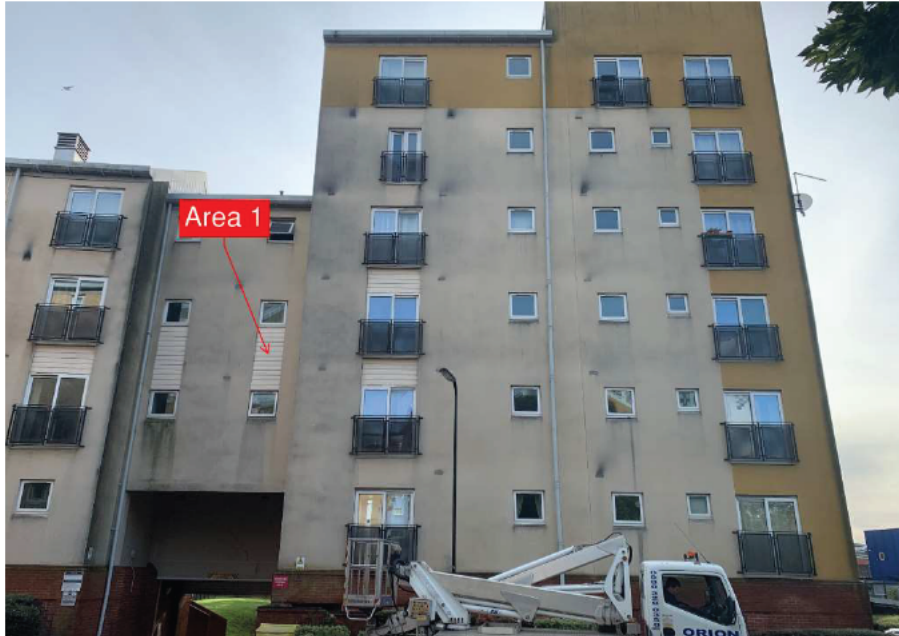
We have not observed any fire breaks or cavity stops within the cavity of the building.

The condition of the render to the buildings at The Deanery is in a poor state. It is clear the maintenance requirements have not been met for the installation of the render as there is a large amount of staining, as well as mould and mildew clearly visible at multiple locations.

Inspections

Area 1

Inspection Location



Inspection Observations

Area one was an intrusive investigation into the lapped cladding between two windows on the west elevation. The lapped cladding appears to be formed from a profiled fibrous board lapped to each other horizontally and are fastened using self-drilling screws. The cladding is installed to an internal timber frame constructed using horizontal and timber battens. There is a 95mm un-insulated cavity. There is a 12mm timber OSB board used as a sheathing board with a breather membrane to the face. Behind the sheathing board is a 100mm cavity filled with a mineral wool insulation. We did observe any cavity barriers or fire breaks in this location.

Inspection Summary

Materials/systems viewed:	Cladding
Type	Horizontal lapped fibre board
Manufacturer (Product)	Unknown
Does the panel have a core material	No
Does the panel have a tested fire rating	Unknown – Combustible
Materials/systems viewed:	Support Framework
Material	Timber
Type	Battens to form framework
Materials/systems viewed:	Insulation
Type	-
Manufacturer	None

Materials/systems viewed:	Fire barriers
Are the following fire barriers installed?	
Vertical at compartment walls	None observed at this location
Horizontal at floor slabs	
If yes, are horizontal fitted between or behind vertical rails	
Materials/systems viewed:	Breather membrane
Manufacturer	Unknown
Type	Breather membrane to face OSB board

Inspection Recommendations

Inspection recommendations to follow on receipt of fire engineers' findings and completed EWS1 form.

Inspection Images



View of inspection location



View of timber frame behind fibre board plank system



View of edge of fibre board plank system

Area 2

Inspection Location



Inspection Observations

Area two was a visual inspection of the Juliet balconies on the west elevation. The balconies are constructed entirely from powder coated steel. The steel frames have been fixed back to the masonry using concrete anchor bolts. The balcony viewed in this location was in poor condition, with a considerable amount of oxidisation to the steel frame.

Inspection Summary

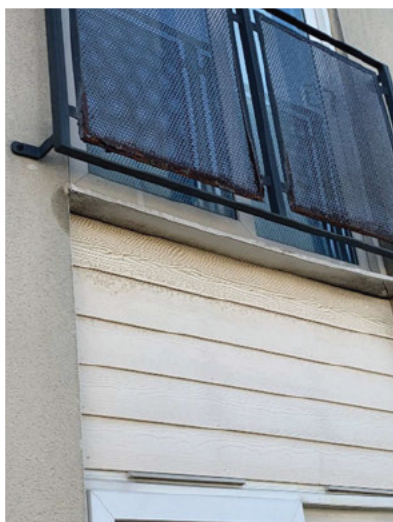
Materials/systems viewed:	Balcony
Type	Juliet Balcony
Manufacturer (Product)	Unknown
Does the panel have a core material	No
Does the panel have a tested fire rating	Unknown – Non-combustible
Materials/systems viewed:	Support Framework
Material	Steel
Type	Powder coated steel
Materials/systems viewed:	Insulation
Type	-
Manufacturer	None

Materials/systems viewed:	Fire barriers
Are the following fire barriers installed?	
Vertical at compartment walls	None observed at this location
Horizontal at floor slabs	
If yes, are horizontal fitted between or behind vertical rails	
Materials/systems viewed:	Breather membrane
Manufacturer	-
Type	None

Inspection Recommendations

Inspection recommendations to follow on receipt of fire engineers' findings and completed EWS1 form.

Inspection Images



Area 3

Inspection Location



Inspection Observations

Area three was a drill test to the render façade on the west elevation adjacent to a window. A 10mm hole was drilled in the face of the render cladding and an endoscope used to view the internal build up. The render is applied directly to a blockwork outer wall. There is a timber frame and OSB board behind the external blockwork with a breather membrane and mineral wool insulation behind the OSB board. We did not witness any cavity barriers or fire breaks in this location.

Inspection Summary

Materials/systems viewed:	Render
Type	Single skin render system
Manufacturer (Product)	Unknown
Does the panel have a core material	No
Does the panel have a tested fire rating	Unknown – Non-combustible
Materials/systems viewed:	Support Framework
Material	Concrete blockwork
Type	-
Materials/systems viewed:	Insulation
Type	Mineral wool insulation
Manufacturer	Unknown

Materials/systems viewed:	Fire barriers
Are the following fire barriers installed?	
Vertical at compartment walls	None observed at this location
Horizontal at floor slabs	
If yes, are horizontal fitted between or behind vertical rails	
Materials/systems viewed:	Breather membrane
Manufacturer	Unknown
Type	Breather membrane to face OSB board

Inspection Recommendations

Inspection recommendations to follow on receipt of fire engineers' findings and completed EWS1 form.

Inspection Images



View of inspection location



Endoscope view of cavity behind blockwork with breather membrane to OSB board

Area 4

Inspection Location



Inspection Observations

Area four was a drill test to the darker render on the west elevation below a window. A 10mm hole was drilled in the face of the render and an endoscope was used to view the internal build up. The render is applied directly to a blockwork outer wall. There is a timber frame and OSB board behind the external blockwork with a breather membrane and mineral wool insulation behind the OSB board. We did not witness any cavity barriers or fire breaks in this location.

Inspection Summary

Materials/systems viewed:	Render
Type	Single skin render system
Manufacturer (Product)	Unknown
Does the panel have a core material	No
Does the panel have a tested fire rating	Unknown – Non-combustible
Materials/systems viewed:	Support Framework
Material	Concrete blockwork
Type	-
Materials/systems viewed:	Insulation
Type	Mineral wool insulation
Manufacturer	Unknown

Materials/systems viewed:	Fire barriers
Are the following fire barriers installed?	
Vertical at compartment walls	None observed at this location
Horizontal at floor slabs	
If yes, are horizontal fitted between or behind vertical rails	
Materials/systems viewed:	Breather membrane
Manufacturer	Unknown
Type	Breather membrane to face OSB board

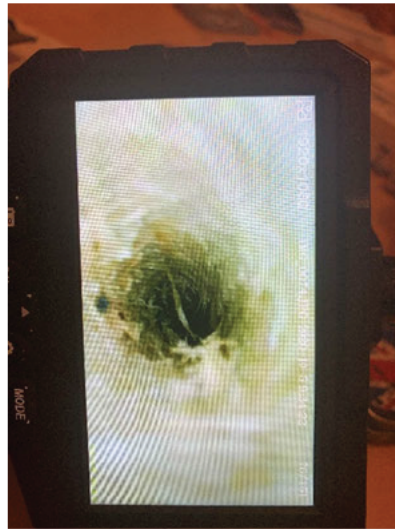
Inspection Recommendations

Inspection recommendations to follow on receipt of fire engineers' findings and completed EWS1 form.

Inspection Images



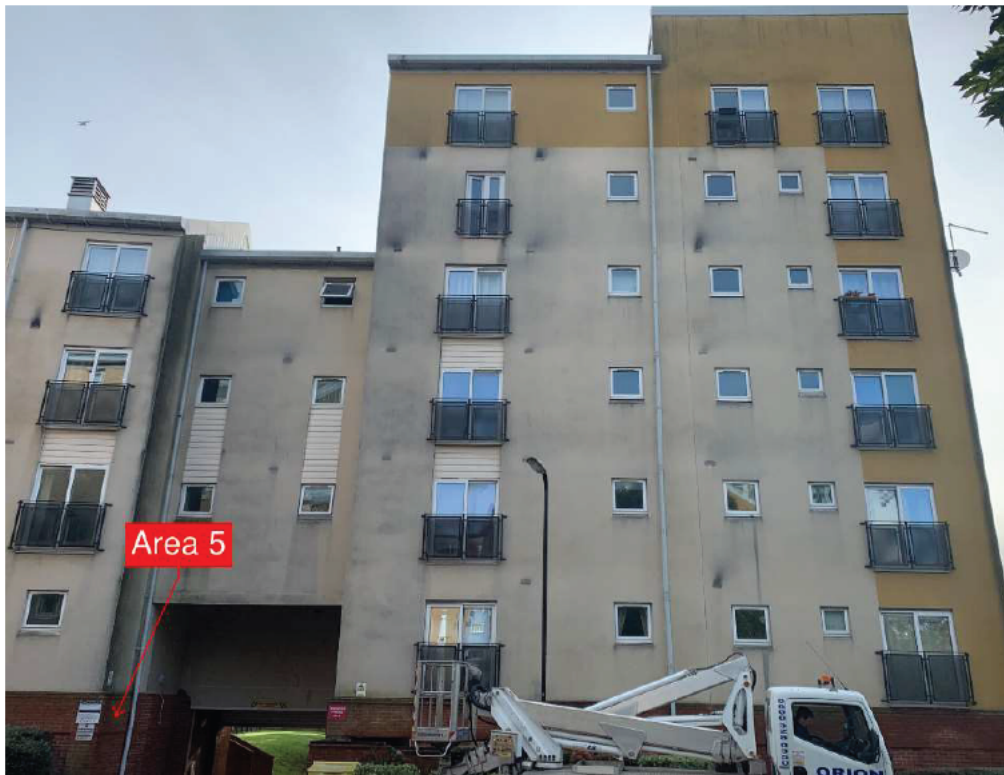
View of inspection location



Endoscope view of mineral wool insulation

Area 5

Inspection Location



Inspection Observations

Area five was a drill test to the brickwork on the ground floor, west elevation. A 10mm hole was drilled in the face of the brickwork and an endoscope was used to view the internal build up. The outer wall is constructed from 100mm thick traditional red brick. There is a 70mm un-insulated cavity behind the brick and an inner wall formed from concrete blockwork. We did not observe any cavity barriers or fire breaks in this location.

Inspection Summary

Materials/systems viewed:	Brickwork
Type	Traditional brick and mortar
Manufacturer (Product)	Unknown
Does the panel have a core material	No
Does the panel have a tested fire rating	Untested – Non-combustible
Materials/systems viewed:	Support Framework
Material	Concrete blockwork
Type	-
Materials/systems viewed:	Insulation
Type	-
Manufacturer	None

Materials/systems viewed:	Fire barriers
Are the following fire barriers installed?	
Vertical at compartment walls	None observed at this location
Horizontal at floor slabs	
If yes, are horizontal fitted between or behind vertical rails	
Materials/systems viewed:	Breather membrane
Manufacturer	-
Type	None

Inspection Recommendations

Inspection recommendations to follow on receipt of fire engineers' findings and completed EWS1 form.

Inspection Images



View of inspection location



View of drill to location

Next Steps

We would be delighted to continue to assist and support you beyond the completion of this external façade report. A full list of our services is available on our website <https://buildtechuk.co.uk/buildtech-services-hampshire/>. You may choose to have a holistic survey carried out by a fire engineer, have an EWS1 form completed or plan remedial construction works. We can offer all services to help you achieve the next steps required. Please feel free to respond to this report and we can help form an action plan for the next phase of your building in which we can:

- ◆ Produce a full remedial specification for the replacement of façade elements including but not limited to, insulation, cavity barriers, fire stops, cladding, substructure and appropriate interfaced. All to comply with current legislation and test data.
- ◆ Prepare relevant scope documentation detailing all elements of the remedial phase including but not limited to removal plans, site planning, logistics, wastage plan, design and project time scales, procurement, and construction.
- ◆ Provide prelim specification documents advising on road/pavement closures, access equipment requirements, site safety guidance, hours of work, etc...
- ◆ Assist in sourcing and vetting potential remedial contractors suitably experience in the relevant disciplines required to achieve a compliant building.
- ◆ Liaise with tenants, outlining proposed works, attend resident meetings and answer/discuss any concerns raised.
- ◆ Attend pre-contract meetings with the chosen contract. Preparation of the full contract documentation including programs, JCT contracts, design and liabilities.
- ◆ Manage the project and oversee works in progress. Ensuring the contractor is working to the agreed scope. Checking throughout the installation that materials used are in line with approved drawings and appropriate test documentation. Documenting the life span of the construction including photographic evidence of installed works.
- ◆ Carry out handover inspections of completed works and produce snagging lists for the contractor. Signing off the completion of the façade for the contractors works. Ensuring all O&M documentation is received from the contractor for completed works.

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