

# **Grenfell Tower** Inquiry

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REPORT of the PUBLIC INQUIRY into the  
FIRE at GRENFELL TOWER  
on 14 JUNE 2017

### **The Panel:**

Chairman: The Rt Hon Sir Martin Moore-Bick  
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**September 2024**

Volume 2

Part 3 – The testing and marketing of key products



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Part 3

# The testing and marketing of products



# Chapter 15

## Introduction to Part 3

- 15.1** Safety in the built environment depends in a large measure on designers being able to assess with confidence how particular materials and products will behave when incorporated into a building. Safety from fire, therefore, depends in part on knowing how materials and products react to fire. It is therefore essential that they be tested in accordance with appropriate methods and that if manufacturers make claims about their performance they are supported by reliable information about the results of those tests.
- 15.2** In his Phase 1 report the chairman found that the principal reason why the flames spread so rapidly up, down and around Grenfell Tower was the presence of aluminium composite material (ACM) rainscreen panels with polyethylene cores that acted as a source of fuel. He also found that the presence of polyisocyanurate and phenolic foam insulation boards behind the ACM panels, and perhaps components of the window surrounds, contributed to the rate and extent of vertical flame spread.
- 15.3** One might legitimately ask how products which had such a propensity to support fire were chosen for use in the refurbishment of Grenfell Tower, whether they had been subjected to appropriate testing and, if so, whether the results of the tests had been made available to those who specified their use. In this Part of our report, therefore, we examine the way in which the products principally involved in the fire were manufactured, tested and presented to the market. We have concentrated our attention on the two products that were most heavily involved in the fire, the Reynobond rainscreen panels and the Celotex RS5000 insulation. We have also examined closely the role of Kingspan K15 insulation. Although it was not used on the building in any quantity, the way in which it was tested and marketed created conditions that encouraged unethical practices in the supply of insulation for use on high-rise buildings.
- 15.4** Two aspects of the way in which products are typically presented to the market have attracted our particular attention. One is the distribution of marketing literature of the kind produced by most manufacturers, in which the product and the uses for which it is suitable are described. Marketing material of that kind was produced by the manufacturers of both insulation products and we pay particular attention to what it contained and the effect it is likely to have had on potential purchasers.
- 15.5** The other is the use of certificates of conformity certifying that the product complies with particular standards or the requirements of legislation or statutory guidance. Such certificates are issued by commercial bodies and are used by manufacturers to provide potential customers with a form of independent assurance that their products meet appropriate standards. As such, by the time of the Grenfell Tower refurbishment they had become a powerful marketing tool. We have examined certificates of compliance issued by the British Board of Agrément in respect of Reynobond 55 PE and Kingspan K15 and by Local Authority Building Control in respect of Celotex RS5000 and Kingspan K15.
- 15.6** For completeness we have included a short chapter in which we examine the testing and marketing of the cavity barriers used in the refurbishment and a further chapter in which we examine the part played by the United Kingdom Accreditation Service in monitoring the activities of the conformity assessment bodies with which we are concerned.

**15.7** Finally, we express our conclusions on the extent to which these interlocking parts of the system designed to ensure the safety of buildings, in this case from fire, failed to achieve the outcome reasonably to be expected of them.



## Chapter 16

### Arconic - evidential matters

- 16.1** As the chairman found in the Phase 1 report,<sup>1</sup> the rainscreen panels used on the external walls of Grenfell Tower were aluminium composite material (ACM) with a polyethylene (PE) core. They acted as a source of fuel and were the principal reason why the fire spread so rapidly up, down and around the building.<sup>2</sup> The material, which consisted of a 3mm sheet of polyethylene bonded between two 0.5mm sheets of aluminium,<sup>3</sup> was manufactured in France and sold in the UK by Arconic Architectural Products SAS (“Arconic”)<sup>4</sup> under the product name Reynobond 55 PE.
- 16.2** Arconic sold Reynobond in the form of flat panels with a view to their being cut to size and fixed to buildings in one of two ways. Riveted fixing, as the name suggests, involved fixing a flat panel of an appropriate size and shape to an underlying frame with rivets. Cassette fixing involved scoring and folding the material into an appropriate shape and hanging it on concealed rails. In either case any necessary cutting, drilling or folding was carried out by a specialist fabricator. In this case Arconic sold the material to CEP Architectural Facades Ltd (CEP), a specialist fabricator, which made it into cassettes and sold it to Harley for installation as a protective rainscreen for the facade of Grenfell Tower. The colour was described as Smoke Silver Metallic Gloss 5000.
- 16.3** Reynobond 55 PE ACM panels were marketed in this country from early 2008 until after the Grenfell Tower fire with the support of certificate number 08/4510 issued by the British Board of Agrément (BBA) on 14 January 2008.<sup>5</sup> Arconic provided a copy of the certificate to Harley on 23 April 2014 specifically to support the use of Reynobond panels on the exterior of Grenfell Tower and Harley in turn passed it on to Rydon and Studio E.<sup>6</sup> Although Arconic did not itself cut or shape the panels for either of the fixing systems, the panels were subjected to fire performance tests only in their fabricated form and the BBA certificate applied to the panels in a fabricated form. We have seen no evidence of any fire performance testing to British or European standards of Reynobond 55 PE in the form in which it left Arconic’s factory and we are not aware of the existence of any BBA (or other) certification of Reynobond 55 PE in its unfabricated form.
- 16.4** As the chairman concluded in the Phase 1 report, the external walls of Grenfell Tower did not comply with functional requirement B4(1) of the Building Regulations in that they did not adequately resist the spread of fire over the walls.<sup>7</sup> In this Part of the report we examine the history of Arconic’s fire safety tests on Reynobond 55 PE, what Arconic knew about the results and how that product came to be sold in this country at the time it was specified and supplied for use on Grenfell Tower. However, before we turn to the principal events in the later chapters in this Part it is necessary to say something about the process by which we obtained evidence from Arconic. That is because that evidence was materially incomplete.

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<sup>1</sup> Phase 1 Report Volume I, paragraphs 6.11 to 6.16.

<sup>2</sup> Phase 1 Report Volume I, paragraph 2.13(a).

<sup>3</sup> Phase 1 Report Volume I, paragraph 6.12.

<sup>4</sup> Previously called Alcoa Architectural Products.

<sup>5</sup> {BBA00000047}.

<sup>6</sup> {RYD00003932}.

<sup>7</sup> Phase 1 Report Volume I, paragraph 26.6.

## The French Blocking Statute

**16.5** In January 2018, DLA Piper, Arconic’s solicitors, wrote to the Inquiry to raise the issue of Article 1 bis of French Law No. 68-678 of 26 July 1968 (as modified in 1980), which is more commonly referred to as the French Blocking Statute (“the FBS”). That is a French law which provides:

“Subject to international treaties or agreements and applicable laws and regulations, any individual is prohibited from requesting, seeking or disclosing, in writing, orally or in any other form, documents or information of an economic, commercial, industrial, financial or technical nature, with a view to establishing evidence in foreign judicial or administrative proceedings or in relation thereto.”

**16.6** Article 3 imposes criminal sanctions for breach of the statute, which is punishable by a maximum of six months’ imprisonment or a fine or both. It extends to both natural and legal persons.

## The gathering of documents and witness statements

**16.7** Arconic asserted that the statute prevented it from disclosing a large number of relevant documents to the Inquiry. It suggested that the Inquiry should try to reach an agreement with the French government to waive the prohibition imposed by the statute. Without conceding that the statute had the effect for which Arconic contended, in April 2018 the Solicitor to the Inquiry confirmed that there was no objection to Arconic’s representatives contacting the competent French authorities with a view to facilitating a discussion between the Inquiry and representatives of the French Ministry of Justice.

**16.8** Arconic was also content that the Inquiry should work with the Metropolitan Police Service to see whether a mechanism could be found to obtain relevant documents through the concurrent criminal investigation in a way that allowed them to be shared with the Inquiry. The Inquiry team thereafter worked closely with the police to assist them in obtaining witness statements and a significant volume of relevant documents.

**16.9** In 2017 and 2019, the police obtained two European Investigation Orders, which enabled them to obtain relevant documents held by Arconic at its offices at Merxheim, France and to obtain witness statements from its employees. The documents and witness statements were then disclosed to the Inquiry by the police. Arconic’s solicitors appear to have co-operated with the police in the preparation of witness statements and the police assisted the Inquiry’s investigations by putting to witnesses questions proposed by the Inquiry and by obtaining further witness statements and documents and disclosing them to the Inquiry.

## Obtaining evidence from Arconic’s employees

**16.10** On 25 November 2019 the Inquiry indicated that it proposed to call six current or former employees of Arconic to give evidence, three of whom were resident in France (Claude Wehrle, Claude Schmidt and Gwenaëlle Derrendinger), one of whom was resident in Germany (Peter Froehlich) and two of whom were resident in the United Kingdom (Deborah French and Vince Meakins).

**16.11** In May 2020, Arconic told the Inquiry that it would reconsider the applicability of the French Blocking Statute to the oral evidence of those witnesses in light of the decision by the Attorney-General to extend to legal as well as natural persons her undertaking that those who gave evidence to the Inquiry would not have their evidence used against them in any future prosecution in this country.

- 16.12** In early June 2020, however, Arconic’s solicitors again asserted that the evidence of the witnesses whom the Inquiry wished to call would engage the French Blocking Statute. Those witnesses included Deborah French, Vince Meakins and Peter Froehlich, even though they were not resident in France. They suggested that the Inquiry should seek the help of Her Majesty’s Government to reach an agreement with the French Government in order to overcome the constraints of French law. As a consequence, the Inquiry sought the assistance from the Foreign, Commonwealth and Development Office to explore the possibility of an agreement between Her Majesty’s Government and the French Government that would permit the witnesses to attend to give oral evidence to the Inquiry without risk of prosecution in France.
- 16.13** Those discussions took a number of months and resulted in a *note verbale* of 7 December 2020 from the French Embassy to the Foreign, Commonwealth and Development Office, a copy of which was received by the Inquiry on 8 December 2020, which stated that it was the opinion of the French government that the proceedings of the Inquiry did not appear to fall within the scope of Article 1 bis of the French Blocking Statute and that consequently the French authorities did not consider that it constituted an obstacle to the examination of Arconic’s employees before the Inquiry. However, the *note verbale* also said that the statute did not confer any power on the French administration to remove a prohibition thereunder, and that the French courts alone had authority to interpret the criminal law. The *note verbale* did not go so far as to confer immunity from prosecution under the statute on Arconic’s witnesses because the French government said it had no power to provide that. Accordingly, although Arconic’s witnesses would have the protection of the Attorney General’s undertaking in relation to the use against them of their evidence in a prosecution in England, they would not have the benefit of any protection in respect of a prosecution in France under the French Blocking Statute, which might be infringed by the giving of *any* information, whether it incriminated the witness or not.
- 16.14** Arconic disputed the position taken by the French Government in the *note verbale* and relied on an opinion it had obtained from an eminent French lawyer and a senior member of the Paris Bar, Maitre Noelle Lenoir.<sup>8</sup>
- 16.15** It was not possible for the chairman to decide at that stage whether witnesses who gave evidence to the Inquiry might expose themselves to a real risk of prosecution under the French Blocking Statute. He therefore decided that in the first instance orders for their attendance to give evidence should be made. Notices under section 21 of the Inquiries Act 2005 were duly served on Deborah French and Vince Meakins within the jurisdiction. They instructed solicitors, accepted service of the notices and duly attended to give evidence without challenge.
- 16.16** Mr Wehrle, Mr Schmidt and Ms Derrendinger all live in France. Mr Froehlich lives in Germany. The position in relation to them was rather different because, having taken legal advice, the chairman was satisfied that no legal mechanism existed to compel their attendance in this country. They were all asked to attend to give evidence voluntarily, or to give evidence by video-link from abroad, but with the exception of Mr Schmidt, who gave evidence by video-link from Merxheim on behalf of Arconic rather than in a personal capacity, none of them was willing to do so, relying on the advice of their lawyers and the existence of the French Blocking Statute. It is regrettable that in the face of a disaster in which so many people died they were willing to put the debatable requirements of French law above the interests of the survivors in discovering the true

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<sup>8</sup> {ARC00000793}.

cause of their terrible experience. As a result, we were deprived of the opportunity to hear from Mr Wehrle, Mr Froehlich and Ms Derrendinger but we had their witness statements, the contemporaneous documents and the oral evidence of the other Arconic witnesses. Mr Schmidt initially demanded that he be allowed to give evidence only on certain conditions relating to its use, but he eventually dropped that demand and gave oral evidence in French by video-link through interpreters.

**16.17** The most important by far of the absent witnesses was Claude Wehrle. As will become clear, there are many questions on which his assistance would have been of very great help to us in understanding the documents or the things he said (or chose not to say) in his witness statement, but we are satisfied that even without the benefit of hearing from him the contemporaneous documents enable us to reach clear conclusions with a high degree of confidence.

## Chapter 17

### Arconic's testing of ACM panels 1997 to 2006

- 17.1** The fire testing carried out by Arconic on various forms of ACM panels between 1997 and 2006 forms an important part of the background to its application for a BBA certificate. It is also relevant to the way in which it promoted Reynobond 55 PE in the years that followed.

#### January 1997: Reynobond 160 PE

- 17.2** Before the early 2000s, Arconic did not produce ACM panels with polyethylene cores. It manufactured coated aluminium sheets at its factory at Merxheim, in France, which it then sent to a sister company in the United States, Arconic Architectural Products LLC, previously Reynolds Metals Company, which bonded them to a polyethylene core made in the United States to form sheets of composite material. The finished sheets were then transported back to Arconic for storage at Merxheim.<sup>9</sup> We understand that the product, which was sold by Arconic from Merxheim, was known as Reynobond 160 PE. It was 4mm thick and comprised a 3mm core of low-density polyethylene sandwiched between two 0.5mm aluminium sheets.
- 17.3** In January 1997, Reynobond 160 PE was tested by Warrington Fire Research Centre in accordance with BS 476 Parts 6 and 7 and achieved results which enable it to be rated Class 0.<sup>10</sup>
- 17.4** In about 2000, Arconic began producing sheets of ACM material with a polyethylene core at its Merxheim factory.<sup>11</sup> It was sold by Arconic under the name Reynobond 55 PE.<sup>12</sup> The reasons for changing the name of the product are not clear. There is evidence that Reynobond 55 PE was not in all respects the same as Reynobond 160 PE, or at least that the two were not directly comparable.<sup>13</sup> In particular, the core of the product manufactured in the United States was linear low density polyethylene (LLDP), whereas the core of the material produced by Arconic in France was low density polyethylene (LDP).<sup>14</sup> Mr Schmidt's evidence initially was that he believed that the two products were the same but ultimately accepted that the chemical compositions of Reynobond 160 and Reynobond 55 PE were different.<sup>15</sup>

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<sup>9</sup> Schmidt {Day91/35:7-13}.

<sup>10</sup> {ARC00000355}; {ARC00000356}; {ARC00000357}.

<sup>11</sup> Schmidt {Day91/13:7-15}.

<sup>12</sup> Schmidt {Day91/38:17}-{Day91/39:6}. "Reynobond 55 PE" was used when the aluminium sheets were 0.5mm. Other variants, such as Reynobond 33 PE, refer to a signage product with 0.3mm aluminium sheets.

<sup>13</sup> Lane, Supplemental Phase 1 Report {BLAS0000011/33} paragraph 11.9.18; Lane, Phase 1 Report, Appendix O {BLAS0000036/103} paragraph O19.1.5.

<sup>14</sup> Declaration of Kevin Juedeman {INQ00014554} (declaration from the civil proceedings against Arconic in the Eastern District of Pennsylvania, Case No 219-cv-02664-MMB) paragraphs 6, 8, 11.

<sup>15</sup> Schmidt {Day91/12:22}-{Day91/13:15}; {Day93/10:3}-{Day93/11:10}; See also declaration of Kevin Juedeman {INQ00014554} (declaration from the civil proceedings against Arconic in the Eastern District of Pennsylvania, Case No 219-cv-02664-MMB) paragraphs 6, 8, 11.

- 17.5** There were differences between the coatings of Reynobond 160 PE and Reynobond 55 PE<sup>16</sup> and as a result the test data relating to Reynobond 160 PE did not apply to Reynobond 55 PE.<sup>17</sup>
- 17.6** Mr Wehrle claimed that he had no reason to suppose that there was any material difference between the fire performance of Reynobond 160 PE and that of Reynobond 55 PE,<sup>18</sup> but we doubt that that can be correct. There is reason to believe that both the cores and the coatings of the two products were different and we do not think that it was reasonable for him to have assumed that the reaction to fire of the product installed on Grenfell Tower was the same as that of Reynobond 160 PE, which had been tested about 20 years earlier.
- 17.7** In any event, it was not appropriate for Arconic to rely on test data obtained in relation to a different product when assessing the performance of Reynobond 55 PE. That much is clear from BS 476-10<sup>19</sup> and from the wording of Warrington Fire’s report, which expressly provided that its results were applicable only to the specimens tested.<sup>20</sup>

## July 2006: Colin Southgate’s warnings

- 17.8** On 26 July 2006, Colin Southgate, then the UK sales representative for Reynobond,<sup>21</sup> sent an email to Guy Scheidecker (a senior executive), Gérard Sonntag, Claude Wehrle and others at Arconic about the position in relation to the fire certification of Reynobond.<sup>22</sup> In it he pointed out that Reynobond 160 PE had been certified in 1997 and that the certificate was due to expire in 2007 at the latest. He also pointed out that the certificate did not apply to Reynobond 55 PE with either a PVdF or Duragloss coating. He then admitted that Arconic had provided certificates that did not apply to the products being sold to see if that would keep customers happy and expressed concern that it was misleading the market in certain respects.
- 17.9** The document shows quite clearly that by July 2006 at the latest personnel at Arconic, including senior executives, were aware that it had no valid certification of the fire performance of Reynobond 55 PE with a Duragloss 5000 finish and that its marketing materials were apt to mislead customers into thinking that some Reynobond PE products (including those with a Duragloss 5000 coating) possessed certifications that they did not have. The following day, 27 July 2006, Mr Sonntag wrote to Mr Southgate,<sup>23</sup> explaining that Arconic had asked Warrington Fire to carry out tests on Reynobond 33 PE and Reynobond 55 FR. No steps appear to have been taken to organise tests on Reynobond 55 PE, although Arconic was aware that the UK construction industry almost invariably purchased panels with PE cores.<sup>24</sup>

<sup>16</sup> Lane, Supplemental Phase 1 Report {BLAS0000011/30} paragraphs 11.9.1-11.9.18; Lane, Phase 1 Report, Appendix O {BLAS0000036/103} paragraph O19.1.5.

<sup>17</sup> Lane, Supplemental Phase 1 Report {BLAS0000011/30} paragraphs 11.9.1-11.9.18; Lane, Phase 1 Report, Appendix O {BLAS0000036/103} paragraph O19.1.5.

<sup>18</sup> Wehrle {MET00053190/14} page 14, paragraph 47.

<sup>19</sup> That addresses ‘Fire tests on building materials and structures’ and consists of a ‘Guide to the principles, selection, role and application of fire testing and their outputs’ {BSI00001757/20}.

<sup>20</sup> {ARC00000355/3}; {ARC00000355/5}.

<sup>21</sup> French {MET00053162/2} page 2, paragraph 7.

<sup>22</sup> {MET00064988/19}.

<sup>23</sup> {MET00064988/20}.

<sup>24</sup> Derrendinger {MET00053191/4} page 4, paragraph 17; French {Day87/67:19-24}; {Day88/195:15-16}.

- 17.10** In his statement, Mr Wehrle said that the results of the tests carried out on Reynobond 33 PE in 2006 had satisfied the requirements for Class 0.<sup>25</sup> That gave him confidence that Reynobond 55 PE would achieve the same classification, because it had thicker aluminium skins and a proportionally lower polyethylene content.<sup>26</sup> However, no one at Arconic explained what, if any, steps had been taken at that time to analyse the results of the tests on Reynobond 33 PE and apply them to Reynobond 55 PE. It seems unlikely that any such steps were taken but in any event the two products were different and test results on one could not be applied to the other. As Mr Schmidt accepted, the test reports relating to Reynobond 33 PE were simply irrelevant to Reynobond 55 PE.<sup>27</sup>
- 17.11** On 30 June 2017, in the wake of the Grenfell Tower fire, Claude Wehrle sent an email to Diana Perriah,<sup>28</sup> the President of Arconic Building and Construction Systems in the USA, attaching what he described as a list of all relevant certifications possessed by Arconic.<sup>29</sup> The list did not contain any reference to a test carried out on Reynobond 160 PE in 1997 or to a test carried out on Reynobond 33 PE in 2006, which suggests that Mr Wehrle did not think that either was relevant to products being sold by Arconic (including Reynobond 55 PE) at that time. In our view, his assertion that historic test data relating to Reynobond 160 PE was relevant to Reynobond 55 PE was simply an attempt to justify the sale of that product.
- 17.12** Indeed, the results of the separate European tests that Arconic had carried out on Reynobond 55 PE in late 2004 made it clear how that product would react to fire. Arconic knew very well that the earlier tests on other products to which we have referred above could not be relied on to market Reynobond 55 PE. We now turn to examine those tests.

## European testing: 2004 to 2006

### December 2004: Tests 5A and 5B

- 17.13** In December 2004, on the instruction of Arconic, the French national testing organisation for the construction industry, the Centre Scientifique et Technique du Bâtiment (“CSTB”), conducted tests on Reynobond 55 PE in accordance with the European testing regime. The European single burning item test (EN 13823) required the product to be tested in its fabricated form, that is, in riveted or cassette form, and each test to be conducted on at least three specimens.<sup>30</sup> The classification was derived from the mean of the results of the three samples. However, if the mean of those three results did not meet the required standard, two further specimens could be tested, in which case the highest and lowest results were excluded from consideration and the remaining three results used to determine the classification.<sup>31</sup> On 2 December 2004 CSTB conducted two EN 13823 tests on Reynobond 55 PE, one on a panel which had been fabricated for riveted fixing (Test 5A), the other on a panel which had been fabricated for cassette fixing (Test 5B). It is important to note that from the outset in 2004 Reynobond PE 55 was always tested by Arconic in one of the two ways in which it was intended to be used, riveted fixing or cassette fixing, and never as a simple sheet of material in the condition in which it left the factory. That was

<sup>25</sup> Wehrle {MET00053190/9} page 9, paragraph 34.

<sup>26</sup> Arconic Module 2 Closing Submissions {ARC00000770/22} paragraph 103; Overarching Closing Submissions {ARC00000797/37} paragraph 141.

<sup>27</sup> Schmidt {Day91/44:20}-{Day91/45:1}.

<sup>28</sup> {META00001104}.

<sup>29</sup> {META00001106}.

<sup>30</sup> {BSI00000620}. See also Part 2, Chapter 5.

<sup>31</sup> {BSI00000620/15} Section 7.

necessary because the single burning item test is a test on a product in the form in which it is designed to be used. If Arconic had wished to test the product in the condition in which it left the factory it could have done so in accordance with BS 476-6 and 476-7, but it did not choose to do so. That is a matter of some significance in the light of the way in which Arconic described Reynobond 55 PE to the BBA and its closing statement in the Inquiry.

### Test 5A

- 17.14** In Test 5A the riveted specimen achieved results that were, or appeared to be, consistent with European classification B-s2, d0.<sup>32</sup> However, in April 2013, Mr Wehrle wrote in an internal email that the tests had not been “really reflective of the riveted system in general”.<sup>33</sup> In June 2016, he wrote in another internal email that Arconic had achieved Euroclass B for Reynobond 55 PE in rivet form by manipulating the test (in his words, ““arranging” the system to pass”).<sup>34</sup> We do not know what form the manipulation of the test took, but it seems clear that, by 2013 at the very latest, Mr Wehrle did not think that a B classification was truly representative of how the product in riveted form would typically behave.
- 17.15** Mr Schmidt accepted that it appeared that Mr Wehrle had known or suspected that the Euroclass B classification had not been honestly achieved.<sup>35</sup> There is further support for the view that the test had been manipulated in the fact that the end use condition was a minimum air gap of 50mm,<sup>36</sup> whereas in later tests it was reduced to 20mm, which was more realistic.<sup>37</sup> Mr Wehrle’s emails to his colleagues had become very frank by 2013 and we consider that we are justified in placing a good deal of weight on what he said. We think it more likely than not that the original Test 5A for riveted panels, which was said to justify a European Class B classification, was in some respects not representative of how the product would be used in practice. The results were therefore unreliable, as Arconic was aware.

### Test 5B

- 17.16** Test 5B, in which the specimen was fixed in cassette form, was stopped after 850 seconds because the heat release rate had exceeded 400 kW.<sup>38</sup> The test report recorded that the results could not be used but gave an idea of the way in which the product would behave in a fire.<sup>39</sup> In his witness statement Mr Wehrle said that he understood that those words meant that Arconic could not use the result to get a classification because it “did not reflect the product’s real fire performance”<sup>40</sup> That strikes us as an odd way to read the report. It plainly meant that the results could not be used to obtain a B classification, but that the record of what had happened during the test provided an insight into the product’s actual fire performance.

<sup>32</sup> {ARC00000535}; {ARC00000358}.

<sup>33</sup> {MET00064988/121}.

<sup>34</sup> {MET00064988/129}.

<sup>35</sup> Schmidt {Day91/76:5-9}.

<sup>36</sup> Test 5A classification report dated 7 January 2005 {ARC00000358/4} paragraph 4.3.

<sup>37</sup> Wehrle {MET00053190/19} page 19, paragraph 64; Email chain between Mr Wehrle and Maxine Bauer of CSTB of 1 July 2011 {MET00053158/184}.

<sup>38</sup> {ARC00000536}.

<sup>39</sup> {ARC00000536/7}.

<sup>40</sup> Wehrle {MET00053190/15} page 15, paragraph 52.



- 17.17** Neither Mr Wehrle nor anyone else at Arconic attempted to discuss the result with CSTB or carry out any further tests on the product in cassette form.<sup>41</sup> Mr Wehrle said that everyone at Arconic was puzzled by the result but justified the decision not to carry out further tests by treating it as a rogue result and therefore unrepresentative. That conclusion was based mainly on the expectation that the product in cassette form would perform better than in the riveted form product because it had fewer exposed edges. Mr Wehrle said that no one else in the industry had obtained similar results, although he admitted that his understanding was based only on information in the public domain and what he had picked up in conversation.<sup>42</sup> The outcome was that Arconic's marketing, technical and management teams decided that it was permissible to claim that Reynobond 55 PE was Class B, whether in rivetted or cassette form, and no further testing in cassette form was considered at that time.
- 17.18** In our view, Arconic had no reasonable excuse for failing to confirm by further testing that the result of the only test it had carried out on the product in cassette form was indeed unrepresentative. If it had genuinely thought that to be the case, there was every reason to carry out further tests to establish that. Moreover, the expectation that cassette-fixed panels would perform better because they had fewer exposed edges ignored the fact that the aluminium skin had to be routed in order to enable them to be bent into shape, thereby increasing the total area of the exposed core. It also took no account of other factors that had the potential to affect the product's reaction to fire in cassette form, including its tendency to trap molten polyethylene and its greater propensity to deform and expose the core to the flame front because the skins are not mechanically fixed in place.
- 17.19** Mr Schmidt accepted that Reynobond 55 PE in cassette form never achieved a Class B classification.<sup>43</sup> In any event, Arconic knew from early 2005 that the only available test evidence indicated that Reynobond 55 PE in cassette form had the potential to react to fire in an extremely dangerous way and had failed to obtain any classification under the European standards. Despite that, Arconic persisted in telling the market that Reynobond 55 PE had been classed B-s2, d0 regardless of the form in which it was used.
- 17.20** In the period leading up to the Grenfell Tower fire Arconic carried out reaction to fire tests on various forms of its Reynobond product. In none of them did the product satisfy the requirements of Class B and the results as a whole demonstrated clearly that Test 5B had been anything but "rogue". Even if, contrary to our conclusion, Arconic had believed in early 2005 that the result of Test 5B was unrepresentative, by 2011 it knew very well that it was not.
- 17.21** Arconic did not disclose the results of Test 5B to any testing organisation, certification body or end user in the UK at any time before the Grenfell Tower fire. Mr Schmidt accepted that if the fire had not taken place it was likely that they would have remained secret.<sup>44</sup>

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<sup>41</sup> Wehrle {MET00053190/15} page 15, paragraph 52.

<sup>42</sup> Wehrle {MET00053190/15} page 15, paragraphs 51, 53.

<sup>43</sup> Schmidt {Day91/3:12}-{Day91/4:3}.

<sup>44</sup> Schmidt {Day91/103:9-15}.

## 2003 and 2006 tests on Reynobond 55 FR (Riveted form)

- 17.22** In June 2003, Arconic arranged for Reynobond 55 with a fire-resistant core to be tested by Warrington Fire under BS 476-6 and BS 476-7. Taken together, the results of those tests were capable of supporting a national Class 0 classification for that product.<sup>45</sup> Reynobond with an unmodified polyethylene core was not tested at that time.
- 17.23** In October 2006, Reynobond 55 FR in rivet form with a gold-coloured coating was tested by CSTB in accordance with the EN 13823 single burning item method and achieved a classification of B-s1, d0.<sup>46</sup> Unsurprisingly, that was better than its PE equivalent. There is no evidence that Reynobond 55 FR was tested in cassette form at that time.

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<sup>45</sup> Warrington Fire Research Test Report 132317 (BS 476-6 test) {BBA00000053} and Warrington Fire Test Report 132316 (BS 476-7 test) {BBA00000050}.

<sup>46</sup> CSTB – Reaction to Fire Classification Report RA06-0372 {BBA00008288}.

## Chapter 18

# Obtaining a BBA certificate for Reynobond 55 PE

### The application to the BBA: March to August 2006

- 18.1** By the mid-2000s, it had become commercially essential for Arconic to obtain a BBA certificate to enable it to sell Reynobond in this country. Arconic's relationship with the BBA had begun in 1987, when the BBA issued a certificate for Reynolux, a solid aluminium cladding panel manufactured by the company under its former name of Alcoa Architectural Products S.A.S.<sup>47</sup> In March 2004 Arconic approached the BBA to certify its Reynobond product,<sup>48</sup> but it did not pursue the process for reasons of cost.<sup>49</sup>
- 18.2** At a meeting in Luton on 21 March 2006, Colin Southgate discussed the UK marketing strategy for various products, including Reynobond, with Didier Scheidecker, Sales Manager for Reynobond. In his report of the meeting<sup>50</sup> Mr Scheidecker noted that an increasing number of enquiries related to public and private housing developments which he thought could represent 50% of the UK market in 2006.<sup>51</sup> A BBA certificate was always required for such projects. He therefore asked whether Arconic could obtain BBA certification based on the approval by CSTB of its cassette version. (Since the test by CSTB of Reynobond 55 PE in cassette form had been a complete failure, that may have been a mistake for the riveted form.)
- 18.3** It seems clear, therefore, that Arconic had recognised that there was a significant potential market for Reynobond 55 PE in the UK and was intending to exploit it. It is also clear that its senior management appreciated that a BBA certificate was required in order to do so.
- 18.4** Arconic did not pursue its application to the BBA until 2 August 2006 when Mr Wehrle wrote again. He used the same form as on the previous occasion (wrongly dated 9 March 2004) and provided very similar information.<sup>52</sup> The form invited Arconic to provide any available test data relating to the product and pointed out that such information could result in a reduction in the cost of the certificate and the "duration" of the contract (probably meaning the time required to produce it).<sup>53</sup>
- 18.5** When he completed the form, Mr Wehrle said that Reynobond was available with two cores, PE (unmodified polyethylene) and FR (fire retardant).<sup>54</sup> He also referred to the tests carried out under BS 476 Parts 6 and 7 and referred to the Warrington Fire Centre reports.<sup>55</sup> He attached to the application two test reports,<sup>56</sup> each of which related to the fire retardant version of the product.<sup>57</sup> Mr Wehrle also cited two CSTB

<sup>47</sup> Initially issued in 1987, reissued in 2009 {BBA00008143}; Wehrle {MET00053190/42} page 42, paragraph 146.

<sup>48</sup> BBA project number S3/35071 {MET00053158\_P13/137-138}; {MET00053158\_P13/139-140}; {MET00053158\_P13/141-144}.

<sup>49</sup> {MET00053158\_P13/155}.

<sup>50</sup> {MET00053158\_P13/162-165}.

<sup>51</sup> {MET00053158\_P13/164} Item 5 under "BBA Approval".

<sup>52</sup> {MET00053158\_P13/166}.

<sup>53</sup> {MET00053158\_P13/173}.

<sup>54</sup> {MET00053158\_P13/171} Section 2.1.

<sup>55</sup> {MET00053158\_P13/169} Section 1.3.

<sup>56</sup> {MET00053158\_P13/173} Section 3.1.

<sup>57</sup> Warrington Fire Test Reports 132316 and 132317 {MET00053158\_P13/173} Section 3.1.

Technical Assessments on Reynobond 55 PE, one in cassette form and the other in rivet form. They supported structural and system performance but were not relevant to any fire performance criteria recognised in the UK.

- 18.6** Mr Wehrle completed the application to the BBA about a week after he received Colin Southgate’s note of 26 July 2006<sup>58</sup> and his meeting with Gérard Sonntag the following day.<sup>59</sup> He must therefore have known that Arconic did not have sufficient data to make claims about the reaction to fire of all variants and forms of Reynobond 55 and that the information he was providing to the BBA was incomplete and misleading insofar as it suggested that it applied equally to the product in its cassette form.

### Negotiations between Arconic and the BBA

- 18.7** On 23 August 2006 the BBA formally offered to assess Reynobond 55,<sup>60</sup> but despite its view that that a BBA certificate was increasingly important for UK sales,<sup>61</sup> Arconic did not immediately accept the offer. Following negotiations, the BBA agreed to reduce the cost of the certificate and to accept the Technical Assessments issued by CSTB as the basis for it. (The BBA and CSTB were both members of the European Union for Technical Approval in Construction (‘UEAtc’), a group of certification bodies whose assessments were generally carried out to a consistent set of standards, so that data produced by one member was acceptable to all others.)<sup>62</sup> However, because the fire performance analyses in the Technical Assessments issued by CSTB were directed to the French national testing system rather than the British Standards applicable under the UK testing regime, the BBA also required test reports from Warrington Fire Research on the product’s fire performance. In his note of the meeting in November 2006 Mr Southgate recorded that the BBA would need certificates from Warrington Fire relating to the “PE Cores”. It therefore appears that the BBA had asked for fire test data relating to Reynobond with both unmodified polyethylene and fire-resistant cores.<sup>63</sup>
- 18.8** At a meeting between Arconic and the BBA at the latter’s premises on 2 November 2006, Colin Southgate of Arconic suggested that it might be better for the certificate to apply to Reynobond as a material rather than the rainscreen system as a whole, since (in the words of his note) that would enable a “cross connection to be put together”.<sup>64</sup> The meaning of that part of his note is not entirely clear, but he seems to have been suggesting that the BBA should be asked to certify Reynobond 55 PE generally, without regard to the differences in fire performance between the rivet and cassette forms. By “cross-connection” we think that Mr Southgate had in mind that Arconic could use a certificate that did not refer to the method of fixing in relation to both the riveted and cassette forms without distinction, and in the event, the BBA eventually agreed to provide a certificate for Reynobond without linking it to any particular fixing system. It was envisaged that different fixing systems would simply be mentioned in the certificate.<sup>65</sup> It is fair to point out that at that stage the BBA had yet to embark on an assessment of the product.

<sup>58</sup> {MET00064988/19}.

<sup>59</sup> {MET00064988/20}.

<sup>60</sup> BBA project number S3/41014 {MET00053158\_P14/100-101}; {MET00053158\_P14/102-103}; {MET00053158\_P14/104-105}.

<sup>61</sup> {MET00053158\_P14/115}; {MET00053158\_P14/131}.

<sup>62</sup> Gregorian {BBA00011096/2} page 2, paragraphs 8-9; Gregorian {Day105/27:6}-{Day105/28:3}.

<sup>63</sup> {MET00053158\_P14/115}.

<sup>64</sup> {MET00053158\_P14/115}.

<sup>65</sup> {MET00053158\_P14/131}.

- 18.9** Warrington Fire Research had not tested Reynobond 55 PE panels in accordance with BS 476 Parts 6 or 7. It had tested only Reynobond FR in accordance with those methods, and those were the only British standard tests to which Arconic had referred in its application form.<sup>66</sup> Arconic possessed no relevant European standard test data in relation to Reynobond 55 PE in cassette form, apart from Test 5B carried out in December 2004, in which the product performed so disastrously that the test had to be stopped.<sup>67</sup>
- 18.10** There is no indication that Arconic disclosed to the BBA that Reynobond 55 PE in cassette form had performed so badly or that it had reason to believe that the fire performance of the product in cassette form was significantly worse than in riveted form. On the contrary, Arconic succeeded in persuading the BBA that the certificate could properly relate to Reynobond as a generic product without distinguishing between the different fixing systems. In doing so, it deliberately and dishonestly concealed from the BBA the fact that, as Test 5B had shown, its reaction to fire was significantly affected by the fixing system adopted.
- 18.11** At that time, some of those at the BBA knew that altering the shape of a product could materially affect its fire performance. John Albon, then Section Head of a different department at the BBA, understood that particularly well,<sup>68</sup> although he did not become responsible for the technical content of certificates until 2009.<sup>69</sup> However, at the time of the negotiations with Arconic in 2006 the BBA agreed to assess Reynobond as a generic product in the form in which it left the factory, even though it knew that it would have to undergo fabrication to some extent before it could be used for the purpose for which it had been manufactured.<sup>70</sup> At that stage no thought appears to have been given by the BBA to the fact that it might perform in different ways depending on the nature of the fabrication and the system of fixing adopted, even though separate test evidence was provided on the structural integrity of the cassette and rivet versions.<sup>71</sup> Nor does anyone appear to have attached any importance to the fact that it was not possible to test the product's reaction to fire in an unfabricated form in accordance with EN 13823, which would be necessary to obtain a European standard classification.
- 18.12** Mr Albon said that it was for the client to determine precisely what would be assessed as part of the certification process and that the BBA would not resist that unless it had good reason to do so.<sup>72</sup> Hamo Gregorian, a Project Manager in the BBA's engineering systems department who managed the initial assessment of Reynobond 55 and attended the meetings with Arconic in November 2006 and February 2007, told us that the BBA's policy was generally to approve a product, such as a cladding panel, rather than a system, because the BBA could exercise more control over the quality of a product than a system.<sup>73</sup> Mr Gregorian's evidence, which we accept, was that assessment of fire performance for certification was not his area of expertise and that all such matters were checked by a fire expert or agreed in consultation with the BBA's Technical Manager, Brian Haynes, who had

<sup>66</sup> {MET00053158\_P13/173}. See penultimate row in table of test data.

<sup>67</sup> {ARC00000536}.

<sup>68</sup> Albon {Day109/143:18}-{Day109/144:9}.

<sup>69</sup> In 2006 John Albon was Section Head of the Materials department, but he came to be Technical Manager responsible for the technical content and correctness of all BBA certificates in 2009 and later Head of Approvals for Construction Products, Albon {BBA00010723/3} page 3, paragraphs 11-12.

<sup>70</sup> Gregorian {Day105/58:3-20}.

<sup>71</sup> {MET00053158\_P13/173}; Gregorian {Day105/59:3-20}.

<sup>72</sup> Albon {Day109/127:25}-{Day109/128:10}; {Day109/128:24}-{Day109/129:2}; See also assessment flowchart which includes a step of "Suitability of product and use considered" {BBA00008042/17}.

<sup>73</sup> Gregorian {Day105/48:5-18}; {Day105/57:16-23}.

relevant experience and knowledge.<sup>74</sup> At all events, the potential effect of the different configurations on the fire performance of the product was overlooked by the BBA at that early stage in the certification process.

### Arconic's contract with the BBA: March 2007

- 18.13** On 26 February 2007 Arconic submitted a fresh application to the BBA for certification of Reynobond 55 that was largely based on the form used in August 2006.<sup>75</sup> In section 3 of the form Arconic was expected to set out all data relevant to the product and its use produced during the previous three years. In relation to fire performance it referred, as it had on the previous occasion, only to the results of the tests carried out by Warrington Fire in accordance with BS 476-6 and 476-7 on Reynobond 55 with a fire-resistant core.<sup>76</sup> It made no mention of the results of any test on Reynobond with an unmodified polyethylene core. Nor did it refer to the results of any fire test which showed that there might be a difference in performance between the cassette and riveted forms of the product. However, the tests on Reynobond with a polyethylene core, in both riveted and cassette forms, that had been carried out in December 2004 fell within the three-year period contemplated by the form, with reports issued by CSTB in January 2005.<sup>77</sup> Those omissions can only have been deliberate.
- 18.14** On 23 March 2007 the BBA entered into a contract with Arconic to provide certification for the product.<sup>78</sup> In the final version of the contract handwritten amendments were made to the name of the product substituting "Reynobond Architecture" for the original reference to "Reynobond 55". The description of the product was also changed from the original "Aluminium/polyethylene composite wall cladding *system*" to "Aluminium/polyethylene composite wall cladding *panels*" (our emphasis). That amendment reflected the agreement with Arconic that the certificate would refer to the product without identifying the system of fixing to be used.<sup>79</sup>
- 18.15** Under the BBA's standard terms and conditions Arconic was obliged to disclose to the BBA full particulars of the product, including particulars of any test data already available and the test procedures used to obtain them.<sup>80</sup> Arconic was also obliged to notify the BBA immediately of any change in the particulars supplied to it and any new or additional information it obtained concerning the product or its suitability for use.<sup>81</sup>
- 18.16** Under its standard terms the BBA had the power to withdraw or suspend any certificate if Arconic breached the contract terms, if there were any change in the technical specification of Reynobond, if any information became available that was not at the disposal of the BBA at the time the certificate was issued or if there were any change in its description, including its physical or chemical composition.<sup>82</sup>

<sup>74</sup> Gregorian {BBA00011096/3} page 3, paragraph 10; {Day105/12:20-25}; {Day105/23:9-19}; {Day105/69:4-16}.

<sup>75</sup> {BBA00008042/13-35}.

<sup>76</sup> Tests numbered 132316 and 132317 {BBA00008042/29}.

<sup>77</sup> {ARC00000535}; {ARC00000358}; {ARC00000536}.

<sup>78</sup> BBA project number S3/41014 {BBA00008042/2-5}.

<sup>79</sup> Gregorian {Day105/64:2-21}.

<sup>80</sup> {BBA00008042/3} clause 7(a).

<sup>81</sup> {BBA00008042/3} clause 7(g).

<sup>82</sup> BBA Standard terms clause 13 (a)-(c) {BBA00008042/4}.

## Arconic's further provision of test data to the BBA: May to November 2007

- 18.17** On 15 May 2007 Hamo Gregorian asked Claude Wehrle to provide reaction to fire data for the standard PE panel, by which he meant the version with an unmodified polyethylene core, and warned him that a French national classification (as used in the CSTB Technical Assessments) was not recognised in the UK.<sup>83</sup> Mr Gregorian said that if such evidence was not available Arconic would need to arrange for further testing to be carried out. Mr Gregorian noted that fire test reports for the product with a fire-resistant core had been submitted with the application.<sup>84</sup> However, Mr Gregorian did not ask for separate test evidence relating to the cassette form of the standard product and appears to have been content to accept the results of tests on the riveted form as applicable generally, without making it clear that they had been obtained only from tests on that particular form of the product. That was despite the fact that the classification report issued by CSTB stated that the European classification B-s2, d0 applied only to the riveted form.<sup>85</sup>
- 18.18** Mr Gregorian told us that he regarded the manner of fixing as irrelevant because the BBA was assessing only the product, by which he meant the product as it emerged from the factory.<sup>86</sup> However, that was a fundamentally unsound approach, and not consistent with what the certificate stated. The BBA should have appreciated not only that the fire performance of the product could be tested only in one or other of the fixing configurations and might differ depending on which was adopted, but also that the proposed certificate would be making statements about fire performance which covered both fixing systems. In our view the BBA should not have been willing to give a certificate for the product in its unfabricated form because, as it was aware, that did not represent the condition in which it was designed to be used. As a result, a certificate that did not take into account the method of fixing was likely to be misleading in some, if not all, cases. The BBA should have been aware when it entered into the contract that the fire performance of the product might be affected by the method of fixing adopted, but if it did not, it should have become aware of that by the time it issued the certificate.
- 18.19** On 25 May 2007 Mr Wehrle sent Mr Gregorian a copy of the results of Test 5A.<sup>87</sup> He did not provide the BBA with any test data relating to Reynobond 55 PE in cassette form, let alone the results of Test 5B.
- 18.20** Mr Wehrle sought to justify the decision not to provide the BBA with test data relating to Reynobond 55 PE in cassette form on the grounds that Test 5B related to a single sample and was not a valid classification report.<sup>88</sup> However, Arconic's contract with the BBA required it to disclose particulars of *any* test data available.<sup>89</sup> Mr Wehrle also suggested that Arconic relied on the BBA to ask for any additional information it required,<sup>90</sup> but that is no justification for ignoring the terms of the contract. In any event, we regard Mr Wehrle's suggestion as disingenuous. First, in his email of 15 May 2007 Mr Gregorian had actually asked for reaction to fire data for the standard PE panel, without distinction between

<sup>83</sup> Gregorian {Day105/95:5-10}.

<sup>84</sup> Mr Gregorian's reference to FR product tests in this correspondence is likely to be to Warrington's BS 476-6 and BS476-7 testing reports from September 2003, numbers 132316 {BBA00008042/163-175} and 132317 {BBA00008042/177-191} which were cited in each of Arconic's applications to the BBA and probably appended to them.

<sup>85</sup> {ARC00000358/4}.

<sup>86</sup> Gregorian {Day105/98:20}-{Day105/99:2}.

<sup>87</sup> {MET00053158\_P15/90}.

<sup>88</sup> Wehrle {MET00053190/48} page 48, paragraph 177.

<sup>89</sup> BBA Standard terms clause 7(a) {BBA00008042/3}.

<sup>90</sup> Wehrle {MET00053190/17} page 17, paragraph 59.

riveted and cassette forms. Secondly, Arconic had not told the BBA that Arconic had tested Reynobond 55 PE in cassette form and it follows that the BBA was not aware that any such data existed. Mr Wehrle could not have understood Mr Gregorian's request as limited to test data for the riveted form. Thirdly, Mr Wehrle described the results of Test 5A that he attached to the email he sent Mr Gregorian on 25 May 2007 as "the fire reaction certificate for our product Reynobond PE", implying that there was only one test result. That was deliberately misleading. The reality is that Mr Wehrle withheld Test 5B from the BBA, despite its obvious importance both to the BBA and to the UK market, because it showed that the fire performance of the product when used in cassette form was very significantly worse than when used in the riveted form covered by Test 5A.

- 18.21** If Mr Wehrle had given evidence in person he would have had an opportunity to respond to the suggestion that he deliberately and dishonestly misled the BBA into thinking that Arconic held no results of any test of the product in cassette form. As it is, we have not had the benefit of hearing his response. Nonetheless, the evidence we have seen, which includes his statement, leaves us in no doubt that that is what he did. Our conclusion is reinforced by the fact that in none of its lengthy written or oral statements to the Inquiry did Arconic seek to suggest otherwise.
- 18.22** On 29 November 2007, Mr Gregorian asked Mr Wehrle to provide test data in respect of the fire performance of the back face of Reynobond 55 PE panels.<sup>91</sup> In response, Mr Wehrle sent Mr Gregorian a report from CSTB classifying Reynolux (an aluminium sheet coated with a polyester finishing coat) under EN 13501 as Class A1.<sup>92</sup> He justified that on the basis that similar coatings were applied to the front and back skins of Reynobond 55 PE.<sup>93</sup> It is not clear why Mr Wehrle sought to support an application for a BBA certificate concerning Reynobond 55 PE, an ACM panel product, with test data relating to an entirely different product which was not ACM. It is possible that Arconic thought that, because BS 476-6 is the method for testing the fire propagation index of the surface of a product, there was a useful analogy between the test on Duragloss-coated aluminium and Reynobond 55 PE, or that it simply left it to the BBA to ask for further information. It is equally possible that that was another step in the deliberate concealment from the BBA of relevant fire performance test data with a view to obtaining a useful certificate from the BBA for Reynobond PE 55. We cannot reach a firm conclusion on that point, given the possibility of an innocent explanation, but it is another matter on which Mr Wehrle's assistance would have been helpful if he had chosen to give evidence.

### **Drafting and issue of the BBA certificate: October 2007 to January 2008**

- 18.23** By September 2007, Arconic, and Mr Wehrle himself, were well aware that many in the construction industry were seriously concerned about the fire safety of ACM with an unmodified polyethylene core. That knowledge ought to have led Arconic to ensure that the text of the BBA certificate was clear, accurate and complete.
- 18.24** Several drafts of the certificate were produced before it was issued. On 22 October 2007, Mr Gregorian provided Mr Wehrle with what was described as a "working draft" and invited Arconic to comment on its contents.<sup>94</sup> He specifically asked Arconic to provide any information that was missing but would be helpful to the user and any proposed

<sup>91</sup> {MET00053158\_P16/134}.

<sup>92</sup> {BBA00008042/139}.

<sup>93</sup> {MET00053158\_P16/136}.

<sup>94</sup> {MET00053158\_P15/188}.



amendments to information that Arconic considered to be inaccurate. Claude Wehrle reviewed the certificate at least three times and asked Hamo Gregorian to include some specific wording.<sup>95</sup> On each occasion, Mr Gregorian accepted Mr Wehrle’s proposed text.<sup>96</sup>

**18.25** On 7 January 2008, shortly before the certificate was issued, Mr Wehrle also circulated a draft to Colin Southgate and Deborah French, Arconic’s UK sales representatives for Reynobond at the time.<sup>97</sup> Mr Southgate proposed further text which was also incorporated into the certificate.<sup>98</sup>

**18.26** The BBA certificate was issued on 14 January 2008. We consider its contents in detail in Chapter 19. For present purposes it is enough to note two features: first, that it declared that “the panels may be regarded as having a Class 0 surface in England and Wales”,<sup>99</sup> secondly, that it expressly covered the product when used in both forms, riveted and cassette, without distinction or qualification.<sup>100</sup>

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<sup>95</sup> Claude Wehrle reviewed drafts of the certificate in October 2007 {BBA00008042/535}; November 2007 {BBA00008042/515-517} and December 2007 {BBA00008042/465}.

<sup>96</sup> Hamo Gregorian accepted Arconic’s comments in November 2007 {BBA00008042/529} and {BBA00008042/511} and in December 2007 {BBA00008042/459-61}, {MET00053158\_P16/149}.

<sup>97</sup> {MET00053158\_P16/167}; {MET00053158\_P16/165}.

<sup>98</sup> {MET00053158\_P16/167}; {BBA00008042/463}.

<sup>99</sup> {BBA00000047/3}.

<sup>100</sup> {BBA00000047/2} Figure 1.



## Chapter 19

# The BBA certificate for Reynobond 55 PE

### The product

- 19.1** BBA certificate 08/4510 related to “Reynobond Architecture Wall Cladding Panels.”<sup>101</sup>  
They were described as

“ . . . two 0.5 mm thick aluminium alloy sheets . . . bonded to either side of a core of low-density polyethylene (LDPE).”

The description continued as follows:

“The panels are available either plain-edged (riveted system) or flanged (cassette system), to suit architectural requirements (see Figure 1). A Duragloss or PVDF coating available in various colours protects the exposed face. A polyester primer protects the unexposed face. The products are also available in a fire-retardant grade (FR).”

- 19.2** Figure 1 showed what were said to be typical fixing systems and depicted the riveted and cassette versions. Otherwise, however, the certificate referred to the panels without any distinction between the two forms of fixing. Any reader of the certificate would therefore naturally understand that the performance of the panels, whether FR or PE, was not affected by the fixing system adopted.
- 19.3** As will become clear, at the request of Arconic the product was described in the form in which it left the factory. That blurred the distinction between the fire performance of the panels once fabricated into either riveted or cassette forms. It was wrong to say that the panels were “available” plain-edged or flanged, which suggested that Arconic supplied them in both forms. That increased the potential for confusion.
- 19.4** It is clear from the discussions that took place in 2007 that that had been Arconic’s intention. What the BBA did not know, but Arconic did, was that the choice of fixing method made a significant difference to the fire performance of the product in use, as revealed by Tests 5A and 5B.
- 19.5** Arconic had chosen to withhold the results of Test 5B from the BBA and did not disclose that a separate test of the product in cassette form had taken place. Arconic was legally obliged under the terms of its contract with the BBA to provide it with the results of Test 5B. As a result of its decision not to do so, the BBA certificate was thoroughly misleading, because it failed to draw a distinction between the two fixing systems in relation to fire performance. Mr Schmidt was constrained to accept that the failure to make clear in the certificate that the B classification was obtained only in rivet form rendered the certificate wrong and such as to lead the reader into error.<sup>102</sup>

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<sup>101</sup> {BBA00000047}.

<sup>102</sup> Schmidt {Day92/73:9}-{Day92/74:14}; {Day94/59:1}-{Day94/60:1}; {Day94/63:23}-{Day94/64:17}.

**19.6** In both its evidence and its statements to the Inquiry, Arconic asserted that it was the responsibility of the designer in each case to ensure that Reynobond 55 PE was suitable for the use to which it was to be put and complied with any applicable regulations.<sup>103</sup> That is obviously correct up to a point but it assumes that the information required to make the decision is available to the designer. The primary purpose of a BBA certificate is to provide the designer with confirmation that the information it contains provides a suitable basis for making that decision. In the present case Arconic’s argument ignores the fact that it withheld important information from the BBA and thereby caused the certificate to misrepresent the true position. Arconic knew that a BBA certificate was required to enable it to sell Reynobond 55 PE in this country precisely because designers considered it to contain reliable information about the characteristics of the product. It also knew that a designer reading the certificate would understand from the way it was worded that Reynobond 55 PE had been classed B-s2, d0 in European fire tests regardless of the fixing system adopted.

## Behaviour in relation to fire

### Section 6.1

**19.7** The second sentence of section 6.1 of the certificate read as follows:

“A fire retardant sample of the product, with a gold-coloured Duragloss finish, when tested for reaction to fire, achieved a classification B-s1, d0 in accordance with EN 13501 : 2002.”<sup>104</sup>

**19.8** The statement was supported by CSTB classification report No. RA06-0372 issued on 19 October 2006 for Reynobond FR tested in riveted form.<sup>105</sup> Claude Wehrle suggested that the BBA should specifically refer to this result in the certificate and the BBA agreed.<sup>106</sup> However, like the classification report for Test 5A, the report stated in terms that the classification was applicable only to Reynobond FR in a riveted form. It is plain that it could never have been used to support a certificate for Reynobond PE, whether in riveted or cassette form.

### Sections 6.2 and 6.3: Class 0

**19.9** Section 6.2 of the certificate provided as follows:

“A fire retardant sample of the product, with a metallic grey PVDF finish, when tested in accordance with BS 476-6: 1989, achieved a fire propagation index (I) of 0 and, when tested in accordance with BS 476-7 : 1997, achieved a Class 1 surface spread of flame.”<sup>107</sup>

**19.10** Warrington Fire’s test reports on Reynobond FR panels supported that statement.<sup>108</sup> Taken together, they established that the FR version of the panels had achieved Class 0. However, Arconic had never provided the BBA with any reports which showed that Reynobond PE had achieved or could achieve Class 0. During the assessment process, Arconic sent the BBA product literature which claimed that both Reynobond FR and

<sup>103</sup> Schmidt {MET00053187/29} page 29, paragraph 90-93; Wehrle {MET00053190/11} page 11, paragraphs 40-41; Froehlich {MET00053197/9} page 9, paragraph 33; Derrendinger {MET00053191/16} page 16, paragraph 41; {ARCO0000770}.

<sup>104</sup> {BBA00000047/5}.

<sup>105</sup> Report RA06-0372 {BBA00008042/155-162}.

<sup>106</sup> {MET00055859}; {BBA00008042/515}.

<sup>107</sup> {BBA00000047/5}.

<sup>108</sup> Numbered 132316 {BBA00008042/163-175}; numbered 132317 {BBA00008042/177-191}.

Reynobond PE had achieved Class 0<sup>109</sup> but Arconic had no evidence to support the claim made about the PE product. Arconic’s marketing brochure dated November 2005 headed ‘Discover New Perspectives’ also claimed that Reynobond PE had achieved Class 0 because of tests carried out by Warrington Fire Research in 1997,<sup>110</sup> but reports of those tests were never provided to the BBA and, in any event, they had been carried out on a different product, Reynobond 160 PE.

**19.11** At section 6.3 the certificate provided:

“As a consequence of sections 6.1 and 6.2, the products may be regarded as having a Class 0 surface in relation to the Approved Document B of The Building Regulations 2000 (as amended) (England and Wales) ...”<sup>111</sup>

**19.12** Similar wording was contained on the front of the certificate. Under the heading ‘Key Factors Assessed’ the certificate stated as follows:

“**Behaviour in relation to fire** – in relation to the Building Regulations for reaction to fire, the panels may be regarded as having a Class 0 surface in England and Wales... (see section 6).”<sup>112</sup>

**19.13** This important part of the BBA certificate requires detailed consideration taking into account the evidence of the BBA, the statements of Mr Wehrle and the submissions of Arconic.

### The BBA’s evidence

**19.14** John Albon said that the words “may be regarded as having a class 0 surface” were not intended to mean that the panels actually achieved that standard; they simply reflected the position in Diagram 40 of Approved Document B in which both Euroclass B and Class 0 materials were permitted for use on external walls of buildings over 18 metres in height. He also told us that by using those words the BBA was not intending to suggest that Euroclass B was equivalent to Class 0. It was known within the BBA that the concepts were different and could not be used interchangeably.<sup>113</sup> Brian Haynes, who had been involved in testing and technical assessment at the BBA since 1973 and who by 2008 was the very senior head of a technical group with a broad portfolio, said something similar in his evidence.<sup>114</sup>

**19.15** John Albon also told us, and the BBA argued,<sup>115</sup> that the certificate had to be read in full, and that a reader who considered sections 6.1 and 6.2 carefully would understand that the BBA had no evidence that Reynobond PE panels had achieved Class 0 through BS 476-6 and 476-7 testing. However, he did accept that the wording was “poor”.<sup>116</sup> We think that the wording was not merely poor but misleading and (on Arconic’s part) deliberately so for the reasons we have examined in earlier chapters.

<sup>109</sup> Product Information brochure dated January 2005 {BBA00008042/39-81}; fire classifications {BBA00008042/43}; Discover New Perspectives marketing brochure dated November 2005 {BBA00008042/83-104}; fire classifications {BBA00008042/101}.

<sup>110</sup> These were tests 70707 and 70708 {BBA00008042/83-104}; fire classifications {BBA00008042/101}.

<sup>111</sup> {BBA00000047/5}.

<sup>112</sup> {BBA00000047/1}.

<sup>113</sup> Albon {BBA00010723/18-19} pages 18-19, paragraphs 66-77; Albon {Day110/6:6-17}; {Day110/7:3-6}.

<sup>114</sup> Haynes {BBA00010784/6} page 6, paragraphs 26-28.

<sup>115</sup> Albon {Day110/7:20}-{Day110/8:6}; BBA closing statement {BBA00011297/17} paragraph 52.

<sup>116</sup> Albon {Day110/7:8-11}.

- 19.16** In the section headed “Regulations” the certificate stated that in the opinion of the BBA, the panels, if used in accordance with the provisions of the certificate, would meet or contribute to meeting functional requirement B4(1) of the Building Regulations because they were judged to meet the Class 0 requirements. Someone reading that statement and the statement on the first page of the certificate that the panels might be regarded as having a Class 0 surface might well have been led to understand that the BBA itself had considered the relevant data and had come to the opinion that Reynobond PE did achieve Class 0.
- 19.17** The expression “may be regarded as Class 0” appears in BBA certificates relating to other cladding panels. John Albon told us that the BBA had tried to ensure some consistency of expression between certificates for products with similar properties,<sup>117</sup> but it is clear that the expression was not used in the same way in all cases. In some cases the phrase “may be regarded as ... Class 0” was used when the BBA had evidence of testing in accordance with BS 476 Parts 6 and 7 which satisfied the definition of Class 0 in Approved Document B.<sup>118</sup> In other cases the expression was used when test evidence satisfying the definition was not available for a panel of one particular colour but was available for the same panel in another colour.<sup>119</sup> In yet other cases the expression was used where there was evidence of classification as Euroclass B, apparently because of the equivalence implied by Diagram 40 of Approved Document B (although that was not stated in terms).<sup>120</sup>
- 19.18** In our view the BBA ought to have made a greater effort to avoid giving the impression that Diagram 40 indicated an equivalence between national Class 0 and Euroclass B. We note that the certificate issued in August 2017, shortly after the Grenfell fire, did not use the expression.<sup>121</sup>

### Mr Wehrle’s statements

- 19.19** Mr Wehrle said that he could not remember whether he had read through the BBA certificate but that he had not been aware of its contents in any detail until after the fire.<sup>122</sup> However, the evidence shows unequivocally that he was intimately involved in the negotiations with the BBA leading to its production and must have been aware of its contents in so far as they concerned matters such as fire performance.<sup>123</sup>
- 19.20** However, despite his close involvement, Mr Wehrle did not comment at the time on the statement that Reynobond 55 PE might be regarded as having a Class 0 surface.<sup>124</sup> He said that he had no specific knowledge of the UK Building Regulations, including Diagram 40 in Approved Document B,<sup>125</sup> although he was prepared to say that the BBA and others regarded Diagram 40 as allowing European Class B to be treated as equivalent to national Class 0.<sup>126</sup> However, there is no evidence that Mr Wehrle raised the question with the BBA.

<sup>117</sup> Albon {Day109/111:13-22}.

<sup>118</sup> For example, certificate 10/4746 for Alupanel XT cladding panels {BBA00000113}.

<sup>119</sup> For example, certificate 13/5022 for Stacbond PE and Stacbond FR Cladding Systems {BBA00000067}; Albon {BBA00010723/28} page 28, paragraph 111; Albon {Day110/13:4-15}; {Day110/14:10-14}.

<sup>120</sup> For example, certificate 06/4367 for Bauclad External Cladding Panels {CEP00050243/5}; certificate 08/4551 for Larson and Larson FR Wall Cladding Panels {BBA00000144}; certificate 12/4901 for Vitrabond Aluminium Composite Rainscreen Cladding Panels {BBA00000074}.

<sup>121</sup> {BBA00000046}.

<sup>122</sup> Wehrle {MET00053190/16} page 16, paragraph 55.

<sup>123</sup> Claude Wehrle reviewed drafts of the certificate in October 2007 {BBA00008042/535}; November 2007 {BBA00008042/515-517}; December 2007 {BBA00008042/465}.

<sup>124</sup> {BBA00000047/1} section 6.3.

<sup>125</sup> Wehrle {MET00053190/16} page 16, paragraph 55.

<sup>126</sup> Wehrle {MET00053190/16} page 16, paragraphs 55 and 56.

- 19.21** Mr Wehrle also drew attention to the results of tests on another Arconic product, Reynobond 33 PE.<sup>127</sup> Arconic submitted that they were relevant because they supported the conclusion that Reynobond PE could achieve Class 0.<sup>128</sup> However, Reynobond 33 PE had different physical properties which makes comparison inappropriate, as is borne out by the fact that no one drew those tests to the attention of the BBA. As with most such reports, the reports of the tests on Reynobond 33 contained an explicit warning that they could not be applied to any other product.<sup>129</sup>
- 19.22** Arconic also submitted that it could not be blamed for the BBA’s decision in the absence of applicable test data to treat European Class B as equivalent to national Class 0 and to state that Reynobond 55 PE could be regarded as having a Class 0 surface.<sup>130</sup> Like Mr Wehrle, Arconic suggested that Diagram 40 of ADB permitted one to extrapolate national Class 0 from the existence of European Class B,<sup>131</sup> but that is not possible because the nature of the tests and the standards they apply are quite different.<sup>132</sup> The note to Diagram 40 states (admittedly less clearly than it might) that Class B and Class 0 are not equivalent. In any event, Arconic knew very well that there was no relevant test data under either classification system to support such a statement in relation to Reynobond 55 PE in cassette form.
- 19.23** In our view the expression “may be regarded as having a Class 0 surface” should not have been used. In the absence of test data satisfying the Class 0 requirements for the PE version of the panels the BBA ought not to have proposed it and Arconic should not have allowed it to be included in the certificate. It was not appropriate for the BBA to treat Diagram 40 in Approved Document B as permitting it to treat European Class B as equivalent to Class 0, but if that was the basis of the statement, it ought to have been clearly explained. Although we consider that any reasonably competent construction professional relying on the certificate ought to have read it in full and should not have relied on the statements about Class 0 in isolation,<sup>133</sup> the BBA and Arconic must both bear responsibility for the inclusion in the certificate of that misleading statement.

### Section 6.3: the unexposed face of the product

- 19.24** The final sentence of Section 6.3 stated:

“The unexposed side of the products may also be regarded as having a class 0 surface”.<sup>134</sup>

- 19.25** That wording reflected a question which had arisen towards the latter stages of the assessment process and posed a significant problem for Arconic. The BBA considered that it needed reaction to fire test data for the back of the product as well as the face.<sup>135</sup> In the event, the BBA accepted test results from Arconic’s Reynolux product as evidence that the coating on the back of Reynobond panels would perform at least as well as that on the front.<sup>136</sup> Consequently the BBA agreed to state in the certificate that the unexposed face of Reynobond panels might “also be regarded as having a class 0 surface”.<sup>137</sup>

<sup>127</sup> Wehrle {MET00053190/9} page 9, paragraph 34; Wehrle {MET00053190/14} page 14, paragraph 46.

<sup>128</sup> Written closing submissions on behalf of Arconic {ARC00000770/22} paragraph 103.

<sup>129</sup> For example {ARC00000366/7}; {EXO00001960/7}.

<sup>130</sup> Written closing submissions on behalf of Arconic {ARC00000770/16} paragraph 76.

<sup>131</sup> Written closing submissions on behalf of Arconic {ARC00000770/6} paragraph 29(2).

<sup>132</sup> See Part 2, Chapter 5.

<sup>133</sup> Hyett {Day64/149:2}-{Day64/150:7}; {Day64/151:8-15}; {Day64/160:1-6}.

<sup>134</sup> {BBA00000047/5}.

<sup>135</sup> {BBA00010701/5}; {BBA00010701/1}.

<sup>136</sup> {MET00053158\_P16/136-137}; {BBA00008042/525-527}; classification report RA07-0182 {BBA00008042/139-145}.

<sup>137</sup> {BBA00000047/5}.

- 19.26** In coming to that conclusion, the BBA initially sought advice from Dr Sarah Colwell of BRE,<sup>138</sup> but before it could be provided Mr Gregorian indicated that, following the receipt of further information from Arconic, the BBA no longer required its assistance.<sup>139</sup> In circumstances where the BBA was dealing with claims about Reynobond’s fire performance and recognised that its own expertise was limited, it should have taken advice from a body such as BRE which had expert knowledge of testing and fire performance. We consider that it was remiss of the BBA not to seek that advice when the Reynobond certificate was first drafted.
- 19.27** BS 476 Part 7 requires testing to be carried out on the complete product because the performance of the surface may be affected by the underlying material. It was wrong, therefore, for the BBA to accept results obtained from testing Reynolux, which is a solid aluminium panel, as representative of Reynobond, which is a composite panel.

#### Section 6.4: colour

- 19.28** Section 6.4 of the certificate drew attention to the fact that the fire performance of the products described in sections 6.1 and 6.2 might not be achieved by other colours.<sup>140</sup> Hamo Gregorian added what had become a standard warning to the certificate on the advice of John Albon.<sup>141</sup> It was the BBA’s policy that reaction to fire testing was colour-specific, and so a BBA certificate would cover only the colours that had actually been tested.<sup>142</sup> John Albon said that was because he had been advised that colour might make a difference to a product’s fire performance.<sup>143</sup> However, there is no evidence that anyone at the BBA considered whether that might be so in the case of Reynobond 55. Accordingly, the BBA considered that the certificate applied only to Reynobond with a grey/green Duragloss 5000 coating, a gold-coloured Duragloss finish, and a metallic grey PVDF finish and no others.<sup>144</sup> All other variants of the product would need a separate test or assessment. The BBA ought to have alerted Arconic to that narrow approach during the assessment process. However, the wording is sufficiently clear to have told Arconic that the certificate only covered, or might only cover, the colours and finishes specified, and that it was not able to support the sale of the product in any other colour or finish.
- 19.29** For its part, Arconic did not treat the BBA certificate as applicable only to the three colours and finishes to which it referred. In the case of Grenfell Tower, for example, Ms French on behalf of the company used it to support the sale of a wide range of colours,<sup>145</sup> including those ultimately chosen, namely, “Smoke Silver” and “Pure White”, neither of which was covered by the certificate.<sup>146</sup> Arconic used the certificate to support the sale of all its Reynobond 55 panels in the UK without qualification as to colour. Ms French said that she had not been aware that only specific colours and finishes received the classifications stated in the BBA certificate, having never discussed the matter with Arconic.<sup>147</sup> If that is true, then Arconic must be blamed for not ensuring that its sales representative was properly informed about the narrow scope of application of the BBA certificate. If, on the other hand, she was aware of those limitations when she provided the certificate to

<sup>138</sup> {BBA00008042/505-507}.

<sup>139</sup> {BRE00047592}; Colwell {Day233/67:12}-{Day233/68:3}.

<sup>140</sup> {BBA00000047/5}.

<sup>141</sup> {BBA00010693}.

<sup>142</sup> Albon {BBA00010723/27} page 27, paragraphs 104-109; Albon {Day110/22:15-25}; {Day110/26:2-13}.

<sup>143</sup> Albon {Day110/25:11-22}; {Day110/26:2-13}; {BBA00010693}.

<sup>144</sup> BBA Closing Submissions {BBA00011297/25} paragraph 77; BBA Module 2 Closing Submissions {BBA00011296/9-10} paragraph 27-28.

<sup>145</sup> Email from Deborah French to Mark Harris of Harley dated 23 April 2014 {RYD00003932}.

<sup>146</sup> {ARC00000552}; {ARC00000553}.

<sup>147</sup> French {MET00053162/4} page 4 paragraph 18; French {MET00053162/16} page 16, paragraphs 56 and 57.



Harley on 23 April 2014 before the colour of the panels had been chosen, she would, or at any rate should, have warned Harley that the certificate did not cover other colours, including those that she knew were being considered, such as smoke silver and white.<sup>148</sup> She did not do so.

### Section 6.5: resistance to fire

- 19.30** Section 6.5 of the certificate warned that with regard to resistance to fire, the performance of a wall incorporating the product could be determined only by tests carried out by a suitably accredited laboratory.<sup>149</sup> The wording, which can be found in other BBA certificates relating to cladding products,<sup>150</sup> also appears to have been standard.
- 19.31** Arconic submitted that the effect of section 6.5 was that readers of the certificate were given no assurance about the product's resistance to fire when incorporated into an external wall, the performance of which would have to be assessed by full-scale testing in accordance with BS 8414.<sup>151</sup> By stating that the product had achieved European Class B-s2, d0 the BBA was merely identifying the standard to which Reynobond PE was capable of performing.<sup>152</sup>
- 19.32** We were not impressed by that argument. Resistance to fire and reaction to fire are fundamentally different concepts and therefore testing resistance to fire (as addressed by testing to BS 476-20 to 476-24) necessarily involves methods different from those used to test reaction to fire.<sup>153</sup> Reaction to fire tests are designed to measure the ease with which a material can be ignited, surface spread of flame, the rate of heat release and the production of smoke, whereas 'resistance to fire' tests are designed to measure the ability of an element of construction to contain fire, including its ability to protect a frame from collapse and to restrict the spread of smoke.<sup>154</sup> BS 8414 is an entirely different kind of test, being designed to test the reaction of an entire wall system to fire.<sup>155</sup>
- 19.33** Section 6.5 therefore did not qualify the statements about reaction to fire made elsewhere in the certificate, including in sections 6.1 to 6.3, and there is no support for Arconic's submission that all construction professionals should have known that a separate large-scale test was necessary before the product could be used in an external wall.

<sup>148</sup> {RYD00003932}.

<sup>149</sup> {BBA00000047/5}.

<sup>150</sup> For example, certificate 06/4367 for Bauclad External Cladding Panel {CEP00050243/5}; certificate 08/4551 for Larson and Larson FR Wall Cladding Panels {BBA00000144/5}; {BBA00000143/6}; certificate 10/4746 for Multipanel's Alupanel XT Cladding panels {BBA00000113/5}; certificate 13/5022 for Stacbond PE and Stacbond Cladding Systems {BBA00000067/9}; certificate 15/5245 for Ash & Lacy Building systems Alucobond façade cladding systems {BBA00000120/10}.

<sup>151</sup> Module 6 closing statement {ARC00000794/16} paragraph 51; Overarching closing statement {ARC00000797/19} paragraph 68.

<sup>152</sup> {ARC00000797/27-28} paragraphs 99-104.

<sup>153</sup> Namely those listed in BS 476 Part 10, Guide to Principles, Selection, Role and Application of Fire Testing and their Outputs, being BS 476 Parts 20-24 {BSI00001757/5}.

<sup>154</sup> BS 476 Part 10, section 4 {BSI00001757/13-14}.

<sup>155</sup> BS 476 Part 10 separates full scale tests from "resistance to fire tests" see Foreword at (b) for fire resistance tests and "Miscellaneous" for full scale testing {BSI00001757/5}; Appendix B of ADB also distinguishes between resistance to fire and reaction to fire tests; Resistance to fire is assessed by tests such as BS-476-20 and EN 13501 parts 2 to 4) {CLG00000224/119}; Reaction to fire is assessed by those tests which for example combine to make up the EN 13501-1 classification {CLG00000224/121}.

**19.34** In any event, even if section 6.5 should be understood to mean that the fire resistance of a wall incorporating the product was outside the scope of the certificate, that was of no interest to a potential buyer of the panel who simply wanted to know whether Reynobond, as a *product*, complied with the guidance in Approved Document B in relation to buildings over 18 metres in height. The BBA certificate was a product certificate, and section 12.6 and Diagram 40 of Approved Document B are directed to products, not systems.

## Chapter 20

# Subsequent testing and marketing of Reynobond 55 PE

### The Fred-Roderick Pohl presentation: September 2007

- 20.1** In September 2007, while Arconic was in the process of obtaining a BBA Certificate for Reynobond 55 PE, Gérard Sonntag, Arconic's Marketing Manager, and Didier Felder, its Area Sales Manager, attended a number of presentations organised by a metal and plastic distributor in Oslo. They included a presentation by Fred-Roderick Pohl, who had been invited by a manufacturing company, Otefal GmbH, for which he acted as a consultant.
- 20.2** In his report of the trip, Mr Sonntag recorded that Mr Pohl had explained the extreme danger presented by the use of ACM PE on residential buildings, comparing the combustibility of 5,000m<sup>2</sup> of ACM PE to that of a truck containing 19,000 litres of oil, and drawing attention to the fact that even greater danger was posed by the toxic smoke emitted by burning polyethylene, which could kill in two or three minutes.<sup>156</sup> It is quite possible that Mr Pohl was not entirely independent and was seeking to advance the benefits of pure aluminium by decrying the fire safety of ACM, but even making allowances for that, his presentation was graphic and, more importantly, was taken seriously by Mr Sonntag. Mr Sonntag had been particularly concerned by Mr Pohl's hypothetical question of what would happen if "one building made out [of] PE core is in [a] fire and will kill 60 to 70 persons, what is the responsibility of the ACM supplier?".<sup>157</sup> Mr Sonntag's own recommendation in the light of that presentation was that Arconic ought to assess the financial consequences of selling only Reynobond with an FR core and in that case introduce a program of cost reduction to enable the FR version to be manufactured at the same cost as the PE version.
- 20.3** We have seen the slides from the presentation given by Mr Pohl,<sup>158</sup> which do indeed draw attention specifically to the combustibility of ACM PE<sup>159</sup> and the toxicity of the fumes emitted by burning polyethylene.<sup>160</sup> They also illustrate past fires in buildings covered in ACM cladding around the world, and refer specifically to the UK testing regime under BS 476.<sup>161</sup> Mr Sonntag also mentioned that Mr Wehrle had shown him a copy of a similar presentation made by Mr Pohl some two months previously. We have been unable to identify that document but have no reason to doubt what he said.
- 20.4** Despite those clear warnings and Mr Sonntag's reaction and recommendation, there is no evidence that anyone at Arconic took steps to examine the safety of Reynobond 55 PE or to ascertain the financial consequences of selling only panels with a fire-resistant core. However, shortly after Mr Sonntag made his report Arconic launched a project to reduce

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<sup>156</sup> {META00001953/2}.

<sup>157</sup> {META00001953/3}.

<sup>158</sup> {MET00081029}.

<sup>159</sup> {MET00081029/4}.

<sup>160</sup> {MET00081029/14}.

<sup>161</sup> {MET00081029/16}.

the cost of Reynobond FR to that of Reynobond PE in response to increasing demand for a fire-resistant product.<sup>162</sup> Despite various efforts over the ensuing years, however, the price of the fire-resistant version was never brought down to that of the unmodified version.<sup>163</sup>

**20.5** In the light of Mr Sonntag’s report, we think it is clear that by late 2007 Arconic had become aware that there was serious concern within the industry about the safety in fire of ACM panels with an unmodified polyethylene core (ACM PE) and had itself recognised the danger they posed. However, there is no evidence that Arconic took any steps to withdraw the sale of that product in the UK in the months and years that followed. On the contrary, not only did it continue to manufacture and sell ACM PE, it also sought to exploit what it perceived to be a weak regulatory regime in the UK while withholding from the market relevant information about the product’s fire performance. That contrasts with the position in other countries, such as France, where, in 2016, Arconic insisted that its sales team specify only Reynobond 55 FR.

### Internal and external communications: 2009 – 2010

**20.6** On 17 July 2009, Mr Wehrle wrote to Claude Schmidt, Guy Scheidecker and Robert Quattrocchi (Arconic’s plant manager) attaching some photographs of a building in Romania clad in ACM PE panels that had suffered a serious fire.<sup>164</sup> Mr Wehrle wrote that the photographs demonstrated how dangerous ACM PE could be when it came to architecture.<sup>165</sup>

**20.7** On 16 March 2010, a sales executive, Isabel Moyses, wrote to Mr Scheidecker and Mr Wehrle, amongst others, telling them that a competitor had had to recommend fire-resistant panels for use in Spain because its standard ACM PE product did not have the classification of B-s3, d2 required under Spanish law.<sup>166</sup> She said, however, that Reynobond PE panels could still be used because they had achieved a classification of B-s2, d0. When he responded the following day, Mr Wehrle surmised that the competitor had based its view on tests of the product carried out in cassette form, which he acknowledged produced results much less favourable than those carried out on products in riveted form. He pointed out that in cassette form Reynobond PE did not meet European Class B, a matter, he said, that “we have to keep as “VERY CONFIDENTIAL!!!!”.

**20.8** Mr Scheidecker’s response later the same day was much shorter: “[t]his shouldn’t even have been mentioned”.<sup>167</sup>

**20.9** None of those emails were exhibited to Mr Wehrle’s statement and he did not refer to them in any way. Since he did not give evidence, we have not had the benefit of any explanation of their contents he might have been able to give, so we are left to interpret them at face value. In our view they demonstrate clearly that by March 2010 Arconic was aware that the fire performance of ACM PE panels in cassette form was generally considerably worse than in riveted form and that test data relating to panels in riveted form did not apply to panels in cassette form. They also support the conclusion that the results of Test 5B had not been “rogue” results and that Arconic knew that any suggestion that Reynobond PE 55 in cassette form had achieved, or could achieve, Euroclass B was false. Finally, we think they show that Arconic was deliberately and dishonestly concealing from

<sup>162</sup> Schmidt {MET00053187/14} page 14, paragraph 40.

<sup>163</sup> Schmidt {MET00053187/14-15} pages 14-15, paragraph 44.

<sup>164</sup> {MET00053158\_P10/125}.

<sup>165</sup> {MET00053158\_P10/122}.

<sup>166</sup> {MET00064988/125}.

<sup>167</sup> {MET00064988/125}.

the market the true position in relation to Reynobond PE in cassette form. We were unable to invite Mr Wehrle to respond to those inferences, but Mr Schmidt was asked to do so and agreed that that had been the case.<sup>168</sup>

- 20.10** In July 2010 a customer asked Ms Moyses for certification of the fire performance of Reynobond 55 PE in cassette form.<sup>169</sup> She told him that Arconic had fire certification only for the riveted form, but that “soon” the cassette system would be better. Her message (written in English) is not entirely easy to understand, but when reporting to Mr Wehrle she said that she had told the customer that since the riveted form was the most unfavourable system, the certificate was acceptable for the cassette system. It seems, therefore, that her message had been intended to give the customer the impression that the cassette version performed better in fire than the riveted system. If so, that directly contradicted the results of Test 5B and the position as understood by Mr Wehrle. When the customer insisted on a certificate relating to the cassette form,<sup>170</sup> Ms Moyses asked Mr Wehrle to “take care of it”.<sup>171</sup> Mr Wehrle told her that it was hard to commit anything to writing on the subject because, as he put it, Arconic was “not clean”.
- 20.11** Mr Wehrle did not say in his witness statement what he had meant by the expression “not clean”, but we think he must have been referring to the fact that Arconic had no certificate for Reynobond PE in cassette form and that its use of the certificate relating to riveted panels to support the use of cassette-fixed panels was not straightforward. Mr Wehrle’s frankness with his own colleagues suggests that they knew as much as he did and that he had nothing to hide from them.
- 20.12** On 5 July 2010, Mr Wehrle wrote to the customer attaching what he described as “the document concerning the system we choose for the Reynobond PE fire certification”.<sup>172</sup> It was a letter written by Mr Wehrle himself, in which he said:
- “Reynobond PE, is classified B-s2, d0 in accordance with the European standard EN 13501. This test was done on the riveted system, which expose the core of the material to the flame contrary to the cassette system where the core is protected by the returns. Alcoa decided to check the behaviour of its composite panels in this worst case of system (exposed fasteners on flat panels) and to use it for all the other systems.”<sup>173</sup>
- 20.13** The assertion that Reynobond PE in cassette form would behave better in a fire than in the riveted form tested was not only false but was known by Mr Wehrle to be false. It demonstrates his willingness to resort to deliberate dishonesty in order to support the sale of the product for use in cassette form. Mr Schmidt, who was the only person who could be asked about it, accepted that Mr Wehrle had lied to the customer.<sup>174</sup>

<sup>168</sup> Schmidt {Day93/51:8}-{Day93/55:21}.

<sup>169</sup> {MET00053158\_P04/3}.

<sup>170</sup> {MET00053158\_P04/2}.

<sup>171</sup> {MET00053158\_P04/2}.

<sup>172</sup> {MET00053158\_P04/4}.

<sup>173</sup> {MET00053158\_P04/5}.

<sup>174</sup> Schmidt {Day93/66:1-3}.

## Further testing and review

### CSTB Testing: June 2010

- 20.14** CSTB performed further tests of Reynobond 55 PE in riveted form in June 2010 and reported the results in February 2011. The grey riveted specimens tested achieved a classification of B-s1, d0, which was better than the results of Test 5A in 2005.<sup>175</sup> However, it appears that the result was unlikely to be representative of the end use of Reynobond 55 PE, because, among other things, the sample tested included a backing board of calcium silicate to simulate a 50mm air gap behind the panel.<sup>176</sup> (Test 5A had also had an air gap of 50mm.)
- 20.15** In subsequent correspondence with CSTB, Mr Wehrle agreed that the panel should be tested with a 20mm air gap between it and the insulation to reflect the way it was used in practice<sup>177</sup> and in his statement he acknowledged that variations in testing methods, such as the use of different insulation products and air gaps, were likely to influence the results.<sup>178</sup> We do not know who was responsible for determining the test method or how the width of the air gap might have affected the outcome. However, when Reynobond 55 PE in rivet form was tested again in later years, it failed to achieve Class B.

### CSTB testing of Reynobond 55 PE in cassette form: 2011

- 20.16** In late March 2011 Mr Wehrle decided to find out what was the best classification that Reynobond 55 PE in cassette form could obtain on the basis of Test 5B. On 29 March 2011 he wrote to the CSTB enclosing Test 5B and asked whether the cassette fixing variant could be classified as European Class D.
- 20.17** In May 2011 Mr Wehrle arranged for CSTB to test Reynobond 55 PE in cassette form and classify it under EN13501. On 29 June 2011 CSTB wrote to Arconic and said that, as had happened in 2004, the single burning item test had been stopped early because the heat emitted by the sample had been too great.<sup>179</sup> In response to his request for an F classification, he was told by CSTB that if the product were tested under the ISO 11925 single flame source test<sup>180</sup> it might be granted an E classification. Arconic duly instructed CSTB to conduct a further test of the product pursuant to ISO 11925 (on a small flat sample of the panel), which, when the specimen performed adequately, necessarily led to a classification of the product as Class E.<sup>181</sup>
- 20.18** Mr Wehrle said that the tests enabled him to understand that cassette-fixed panels were not safer than riveted panels because molten polyethylene from the core could collect in the internal ledges of the cassette and cause a ‘flash-over’.<sup>182</sup> He claimed to have wanted a classification report for the product in cassette form because he had a potentially different understanding of the behaviour of the cassette variant.<sup>183</sup> As we have said, however, we think that Mr Wehrle was aware well before 2011 that the product performed worse in cassette form than in riveted form. On any view he certainly knew that by June 2011 at the very latest.

<sup>175</sup> RA11-0032 classification report of 9 February 2011 {ARC00000383}; Test report of 9 February 2011 {ARC00000537}.

<sup>176</sup> {ARC00000537/6}.

<sup>177</sup> {MET00053158/184}.

<sup>178</sup> Wehrle {MET00053190/19} page 19, paragraph 64.

<sup>179</sup> {MET00053158/172}.

<sup>180</sup> See Chapter 5.

<sup>181</sup> {ARC00000538}; {ARC00000386}.

<sup>182</sup> Wehrle {MET00053190/18} page 18, paragraph 63.

<sup>183</sup> Wehrle {MET00053190/18} page 18, paragraph 63.

## The first BBA review: February – July 2011

- 20.19** The BBA certificate was due to be reviewed at three-yearly intervals and, having been issued in 2008, its first review was therefore due in 2011. The BBA opened a review project in August 2010 under a new contract with Arconic which incorporated the original terms and conditions, including one which required Arconic immediately to notify the BBA of any new or additional information concerning Reynobond or its suitability for use.<sup>184</sup> It was signed by Mr Schmidt for Arconic in December 2010.<sup>185</sup>
- 20.20** Between February and June 2011, the BBA asked Arconic for documents relevant to the review and, on 11 April 2011, Arconic provided it with a pack of documents<sup>186</sup> precisely as requested.<sup>187</sup> However, none of the documents that Arconic sent concerned the fire performance of Reynobond 55 PE in cassette form and no one at Arconic informed the BBA of the results of Test 5B. That was a striking omission in light of the contract terms, given that only two weeks earlier Mr Wehrle had sent the report of Test 5B to CSTB asking it to classify the product in cassette form as European Class D.
- 20.21** On 24 June 2011, the BBA confirmed that the certificate remained valid until 2014.<sup>188</sup> The report was sent to Mr Wehrle on 1 July 2011,<sup>189</sup> only two days after he had been informed that CSTB's most recent test of Reynobond 55 PE in cassette form had been stopped early and could not produce a classification.<sup>190</sup>
- 20.22** Nonetheless, there is no evidence that Mr Wehrle or anyone else at Arconic took any steps to inform the BBA of those results or gave any thought to whether the reliability and accuracy of the BBA certificate might be affected by the latest information about the fire performance of Reynobond 55 PE in cassette form. Mr Wehrle sought to explain that omission by saying that it simply did not occur to him that it might be necessary to provide the BBA with that recent test data.<sup>191</sup> That explanation is not plausible, however, given Mr Wehrle's keenness to re-test the product in cassette form only a few days earlier in the knowledge that it could achieve at best a European Class E. We also reject his assertion that the product would have achieved Class 0 if it had been tested again under BS 476.<sup>192</sup> In fact, the standard version of the panel had never been tested under BS 476 Parts 6 and 7 and had never achieved a national Class 0 classification. The chances of a product which could achieve no better than European Class E obtaining a Class 0 classification were slim.<sup>193</sup> On any view, the results of CSTB's latest tests were plainly relevant to the BBA's review of the certificate and Mr Wehrle should have provided them to it or alerted others at Arconic of the urgent need to do so. Arconic's failure to provide the BBA with information relating to the recent testing of the product in cassette form was entirely consistent with its deliberate failure to provide the BBA with information about Test 5B when it was preparing the

<sup>184</sup> {BBA00008042/3} clause 7(g).

<sup>185</sup> {BBA00008044/11}. It appears to have been signed by Claude Schmidt.

<sup>186</sup> {BBA00008044/33}.

<sup>187</sup> {BBA00008044/79}.

<sup>188</sup> {MET00053158\_P16/174}.

<sup>189</sup> {MET00053158\_P16/179}.

<sup>190</sup> {MET00053158/172}.

<sup>191</sup> Wehrle {MET00053190/17} page 17, paragraph 59.

<sup>192</sup> Wehrle {MET00053190/17} page 17, paragraph 59.

<sup>193</sup> As is explained in Part 2 Chapter 7, the UK Government's RADAR 2 report of 26 May 2000 {CLG00000951}, which was commissioned to find the appropriate transposition point between Euro classes and UK national classes, settled on Class B. Only one product achieved both Class E and Class 0 {CLG00000951/4}. That report was not in the public domain and not available to Claude Wehrle.

original certificate. It was all part of a strategy on the part of Arconic to conceal from the BBA the fact that Reynobond 55 PE in cassette form had never achieved Class B but had in fact performed significantly worse.

- 20.23** Some months later, in November 2011, Mr Wehrle did tell a Spanish customer that Reynobond 55 PE cassettes were certified as Class E, which the customer described as being “close to spontaneous combustion”.<sup>194</sup> If Mr Wehrle was willing to disclose to his Spanish customer the true classification of Reynobond 55 PE in cassette form, the only reason he can have had for concealing that information from the BBA was a desire to withhold it from the UK market, a conclusion that is supported by the events described below.

### Concentrating on the UK market: July 2011

- 20.24** On 5 July 2011, a week after the disastrous test by CSTB and five days after receiving confirmation that the BBA certificate remained valid, Mr Wehrle attended a meeting in Freiburg, Germany, with Peter Froehlich of Arconic and Frank Ritter of Alucobond, one of Arconic’s competitors.<sup>195</sup> In his report Mr Wehrle set out the results of the tests carried out on Reynobond 55 in riveted and cassette form (which in the case of Reynobond 55 PE in cassette form was Class E) and noted that Class B was the minimum requirement for a facade in Europe. He continued:

“For the moment, even if we know that PE material in cassette has a bad behaviour exposed to fire, we can still work with national regulations who are not as restrictive. ... Some countries (Spain ...) are already working with EN 13501 standards, and the PE in cassettes is no more usable there.”<sup>196</sup>

- 20.25** He also acknowledged that it would be very difficult for Reynobond 55 PE in cassette form to pass a test under BS 8414.<sup>197</sup>
- 20.26** It is plain that by the summer of 2011 Arconic was well aware that Reynobond 55 PE when fabricated in cassette form performed much worse in a fire than in riveted form and was considerably more dangerous. Nonetheless, it was determined to exploit what it saw as weak regulatory regimes in certain countries (including the UK) to sell Reynobond 55 PE in cassette form, including for use on residential buildings.
- 20.27** In May 2012, Claude Wehrle attempted to discuss the European classification of Reynobond 55 PE with Claude Schmidt and Peter Froehlich with a view to deciding what information to give to the market.<sup>198</sup> We have seen no reference to any such discussion in the documents, although in his statement Mr Wehrle said that it had been agreed that reference to Class B should be removed from marketing material as it no longer accurately reflected the position.<sup>199</sup> He said that the sales team in each jurisdiction was to be told that Reynobond 55 PE in cassette form was Euroclass E, but there is no evidence that anyone in the UK was told that at the time.

<sup>194</sup> {MET00053158\_P04/54}.

<sup>195</sup> {MET00053158\_P04/26}.

<sup>196</sup> {MET00053158\_P04/35}.

<sup>197</sup> {MET00053158\_P04/36}.

<sup>198</sup> {MET00053157/287}; {MET00053157/290}.

<sup>199</sup> Wehrle {MET00053190/28} page 28, paragraph 96.



- 20.28** As far as we can see, the only step that Arconic took at that time in recognition of the true fire performance of Reynobond 55 PE in cassette form was to remove from its marketing literature the claim that Reynobond 55 PE<sup>200</sup> was Class B.<sup>201</sup> We think that that almost imperceptible change was designed to ensure that Arconic no longer made any positive claim for the fire performance of Reynobond 55 PE while not alerting the market to its dangers or to the fact that earlier claims that it was Class B could no longer be relied on.
- 20.29** Arconic claimed that CSTB openly published all test results on its website,<sup>202</sup> but the evidence of that was limited, particularly about the time of any publication. CSTB did publish summaries of results (but not the test or rating reports which were confidential to the customer) and would always ask the manufacturer in advance of publication.<sup>203</sup> The earliest evidence we have been able to find is that on 22 July 2013, Claude Wehrle told a colleague that she could find the technical opinion relating to Reynobond on the CSTB website.<sup>204</sup> Having regard to that description and the link that Mr Wehrle provided, that appears to have referred to an opinion relevant to the French national classification system. The first date on which a reference to the European classifications for Reynobond PE 55 appeared on the CSTB website was 5 December 2014.<sup>205</sup> That is consistent with Mr Wehrle's own evidence that, in late December 2014, Arconic did not refuse CSTB's proposal to publish the results.<sup>206</sup> Accordingly, the earliest that European classifications were likely to have been available on the CSTB's website was late 2014. However, that does not assist Arconic. It is entirely unclear how a UK entity would know that it should consult data published by a French testing house in order to obtain current results of reaction to fire tests. In any event, none of that explains why Arconic did not provide the information to the BBA, why it did not explicitly refer to the classifications in its marketing materials, or why it did not routinely disclose the classifications of Reynobond 55 PE to all UK purchasers.

### The Tamweel Tower fire: November 2012

- 20.30** On 18 November 2012, a fire occurred at the Tamweel Tower in Dubai, which was clad in ACM PE rainscreen panels. Senior representatives of Arconic discussed the fire in an exchange of emails on 28 November 2012. An Arconic product had not been used in that case, but Mr Wehrle pointed out that all polyethylene composites react in the same way.<sup>207</sup> Mr Schmidt accepted that he had seen the emails at the time and that it was known within Arconic that all ACM PE products burned in the same way.<sup>208</sup> Nonetheless, as Mr Schmidt accepted, Arconic took no action in response.<sup>209</sup>

### The Al Hafet fire and the monitoring of projects

- 20.31** On 22 April 2013, there was a fire at the Al Hafet tower in Dubai, which was clad with ACM PE rainscreen panels. In response to that fire, on 9 May 2013 Alucobond, one of Arconic's competitors, sought to allay its customers' concerns by confirming that it offered

<sup>200</sup> {ARC00000388/5}.

<sup>201</sup> {ARC00000378/3}.

<sup>202</sup> Arconic Module 2 closing submissions {ARC00000770/1} page 1, paragraph 5; Arconic Module 2 closing submissions {ARC00000770/15} page 15, paragraph 65; Arconic Module 2 closing submissions {ARC00000770/24} page 24, paragraph 119.

<sup>203</sup> Bonhomme {METCSTB00000105/12-13} pages 12-13.

<sup>204</sup> {MET00053158\_P04/130}.

<sup>205</sup> {MET00053158\_P02/62}.

<sup>206</sup> Wehrle {MET00053190/21} page 21, paragraph 70.

<sup>207</sup> {MET00053157/28}.

<sup>208</sup> Schmidt {Day94/14:13-16}.

<sup>209</sup> Schmidt {Day94/15:4-18}.

ACM with a fire-resistant core as standard.<sup>210</sup> The message was sent by Richard Geater, Alucobond's sales agent for UK and Ireland,<sup>211</sup> and quoted a colleague's description of the extreme flammability of ACM panels with unmodified PE cores that were then widely used in Dubai in the interest of saving cost.

**20.32** The message was sent to Deborah French, Arconic's UK sales representative, a few minutes later. On 10 May 2013 she passed it on to Mr Froehlich, Mr Wehrle, Mr Flacon, and Mr Schmidt and asked for their comments so that she could communicate with their customers.<sup>212</sup> The fact that she chose to include Mr Schmidt, Arconic's president, shows how important she regarded it. Ms French said that she had discussed with Arconic's managers whether it should make the same offer to its customers but was told that it would not do so, at least in part for commercial reasons.<sup>213</sup> We understand that to mean that Arconic would have had to charge more for the fire-resistant panels or would have made a smaller profit if it had sold them at the price it charged for the unmodified version. Mr Schmidt did not accept that version of events<sup>214</sup> but he offered no other explanation and we accept Ms French's account. Arconic did not consider phasing out ACM PE in favour of the fire-resistant version then, or indeed later, because, according to Mr Schmidt, it needed time to think about it.<sup>215</sup> Although Mr Wehrle continued to warn about the risks associated with unmodified ACM panels, Arconic's senior management does not appear ever to have seriously considered withdrawing the product from the UK market at any time before the Grenfell Tower fire.

**20.33** Indeed, Arconic decided to adopt a different course. A few days later, on 13 May 2013, Ms French wrote to a number of fabricators, including CEP.<sup>216</sup> She referred to the recent fire at the Al Hafeet tower and offered them the following assurance:

“Regarding the supply of Reynobond in the UK, as you know we supply both PE and FR core and can control and understand what core is being used in all projects due to the controlled supply route we have. By only supplying Reynobond to a very small group of Approved Fabricators and working very closely with them on all projects we are able to follow what type of project is being designed/developed and then offer the right Reynobond specification including the core.

At this stage we will continue to offer both PE & FR core and continue the close working relationship we have with our Approved Fabricators to make sure the right technical support, Reynobond Specification and Materials are being used and installed on Reynobond Projects.”

**20.34** In her witness statement, Deborah French said that the way in which the finished product was assembled and whether it complied with the relevant regulations were matters for the customer or designer.<sup>217</sup> However, that was clearly not consistent with what she had said in her email of 13 May 2013, as she realistically accepted.<sup>218</sup> Although she said that that email did not correctly reflect Arconic's position and had been badly drafted and that we should accept what she had said in her statement,<sup>219</sup> we think that the truth is more

<sup>210</sup> {MET00053157/48}.

<sup>211</sup> Richard Geater was employed by 3A Composites GmbH, the sales agent for Alucobond.

<sup>212</sup> {MET00053157/47}.

<sup>213</sup> French {Day89/49:22}-{Day89/53:12}.

<sup>214</sup> Schmidt {Day94/21:19-22}.

<sup>215</sup> Schmidt {Day94/21:17-18}.

<sup>216</sup> {CEP00049717}. In 2014 CEP fabricated and supplied the Reynobond 55 PE cassette panels to Harley for installation on Grenfell Tower.

<sup>217</sup> French {MET00053162/12} page 12, paragraph 44.

<sup>218</sup> French {Day88/103:3-5}.

<sup>219</sup> French {Day88/98:3-12}; {Day88/100:25}-{Day88/101:7}.

complicated. Ms French's email, which may have reflected advice from Arconic personnel in Merxheim,<sup>220</sup> contained clear statements that Arconic knew the details of every project on which its products were used within its controlled supply routes and would ensure that the products supplied for use on those projects were suitable for their intended purpose. It was true that Arconic often did know for which projects its Reynobond products were destined and in many cases what form they would take, since those facts were sometimes recorded on Arconic's customer database (as the sale of Reynobond 55 PE to Harley for use on Grenfell Tower shows).<sup>221</sup> Accordingly, Arconic was often in a good position to judge whether a particular product was suitable for a given project. Certainly, in the case of Grenfell Tower, Arconic did have a certain amount of relevant knowledge. However, it was not true that it intended to advise the fabricator, designer or customer whether the products were safe or suitable for use on any project. On the contrary, it expected the customer and designer to look after themselves. The purpose of Ms French's message was to persuade customers to continue to buy Reynobond PE in the expectation that it would tell them if it was unsuitable for the use to which they intended to put it, although in fact it had no intention of doing so.

### Supply by Arconic for use at Grenfell Tower

- 20.35** In Part 6, Chapter 55 we have described how Reynobond 55 PE cassettes came to be supplied for the refurbishment of Grenfell Tower. The story confirms that Arconic often knew for which UK projects its products were bound, knew how they were likely to perform and whether they were safe for the intended use, but did not offer any relevant advice or warning to the designer or customer. So far as concerns Grenfell Tower, Arconic made no attempt to ensure that Harley knew about the performance of the product it supplied for the refurbishment.
- 20.36** Ms French was aware that Grenfell Tower was a high-rise building<sup>222</sup> because on 24 January 2013, she was sent several drawings relating to the project that showed that it involved a tall building.<sup>223</sup> Moreover, during the course of the project she arranged for the supply of several samples of Reynobond 55 PE panels to Grenfell Tower, including a mock-up for the RBKC planning department.<sup>224</sup> It was also clear to her by August 2014 at the latest that ACM PE panels in cassette form were going to be used.<sup>225</sup> She said that she did not think about the height of any building for which Arconic supplied its products,<sup>226</sup> but in the light of her email of 13 May 2013, that seems unlikely. For her, however, it was enough that the product had a BBA certificate.<sup>227</sup> Given that, by her own admission, that is all Ms French cared about, it was essential for Arconic, for whom she was selling Reynobond 55 PE, to ensure that the statements in the BBA certificate about fire performance and regulatory compliance were correct. That was all the more so if what she had said in her email of 13 May 2013 was to be taken at face value.

<sup>220</sup> Froehlich {MET00053197/20} page 20, paragraph 57.1.2; French {Day88/88:23-25}; {Day88/90:14-19}.

<sup>221</sup> See Part 6, Chapter 55; Record of customer database for Grenfell Tower, indicating the form was to be cassette: {MET00019920/31}.

<sup>222</sup> French {Day88/66:21-23}.

<sup>223</sup> {CEP00048962}, attaching {CEP00048966}.

<sup>224</sup> {MET00019919}; {SEA00014518}; {SEA00014456}; {MET00053159/161}.

<sup>225</sup> French {Day88/66:18-24}; {Day88/184:6-12}.

<sup>226</sup> French {Day88/66:18}-{Day88/69:3}.

<sup>227</sup> French {Day88/68:20}-{Day88/69:3}.

- 20.37** Ms French accepted that in the case of the Grenfell Tower refurbishment she had worked closely with the fabricator and the installer. It was therefore exactly the kind of project that she had described in her email.<sup>228</sup> Despite that she said that she did not have sufficient knowledge to give advice about the risks of using the product in cassette form and did not make any recommendation about it.<sup>229</sup> She did not seek advice about it from anyone else at Arconic because she assumed that others involved in the project would consider them.<sup>230</sup>
- 20.38** Arconic itself must take responsibility for the use of Reynobond 55 PE on Grenfell Tower because it knew that the sale of the product had been obtained on the basis of the BBA certificate which it was well aware gave a misleading impression of the way in which the product in cassette form reacted to fire.

### Further testing and classification: 2013 to 2014

- 20.39** By February 2013, Mr Wehrle was aware that there was potential for confusion in the market about the different fire performance classifications of Reynobond PE in cassette and riveted forms, since the former was Class E and the latter Class B.<sup>231</sup> The FR product was also Class B. He therefore sought to obtain a lower classification for Reynobond 55 PE in riveted form in order to differentiate more clearly between the PE and FR products to assist marketing the FR product. He asked CSTB whether the PE product in both cassette and riveted form could be given a single classification.<sup>232</sup> When testing progressed in July 2013, Claude Wehrle told CSTB that Arconic wanted both forms of Reynobond 55 PE to be classed D.<sup>233</sup> It is not clear whether he discussed that strategy with anyone in the senior management team at Arconic.
- 20.40** CSTB duly tested Reynobond 55 PE again in July 2013 in both riveted and cassette forms. On that occasion, the riveted specimen achieved only Class C-s2, d0. As on both previous occasions, the test of the product in cassette form had to be stopped early because of what CSTB described as “widespread ignition”.<sup>234</sup> Again, CSTB advised Arconic that the cassette form could be certified as achieving only Class E. The Class C result for the riveted form was not recorded in a classification report at the time.
- 20.41** Shortly afterwards, Arconic decided that all its Reynobond 55 PE products would be certified as Class E only and that revised classification for both cassette and riveted forms of the product was reflected in a report of CSTB dated 31 January 2014.<sup>235</sup> That was almost exactly the time at which potential contractors were producing their final bids for the refurbishment at Grenfell Tower based on the NBS Specification which included Reynobond 55 PE as a possible rainscreen panel. All forms of Reynobond PE panel were now Class E and accordingly it was unlikely that any external wall on which they were used would comply with functional requirement B4(1) of the Building Regulations.

<sup>228</sup> French {Day88/183:11-23}.

<sup>229</sup> French {Day88/184:13-18}.

<sup>230</sup> French {Day89/4:2-8}.

<sup>231</sup> Wehrle {MET00053190/19} page 19, paragraph 65.

<sup>232</sup> Wehrle {MET00053190/19} page 19, paragraph 65; {MET00053158/189}.

<sup>233</sup> {MET00053158\_P02/10}.

<sup>234</sup> {MET00053158\_P02/38-39}.

<sup>235</sup> {MET00053158\_P04/135}.

## Claude Wehrle's message of 3 February 2014

- 20.42** On 3 February 2014, all of Arconic's sales staff (including Ms French) were told by Mr Wehrle that all Reynobond 55 PE products had been classified Class E, that the historic Class B classification for the riveted form could no longer be used and that all previous classification reports were immediately cancelled.<sup>236</sup>
- 20.43** Ms French received the email and read it,<sup>237</sup> but did not discuss it with anyone and did not pass the information on to any of her customers.<sup>238</sup> She plainly should have done so, as she herself accepted,<sup>239</sup> and she was unable to explain why she had failed to do so.<sup>240</sup> She was aware that others in the sales team at Arconic had done so,<sup>241</sup> and she understood that the effect of Mr Wehrle's message was that Reynobond 55 PE was not as safe as had previously been thought.<sup>242</sup> Ms French was clearly willing and able to consider the fire performance of Arconic's products and to discuss it with her clients or to refer any questions to Mr Wehrle's technical sales support team. Curiously, she accepted that her failure to pass on the information had not been due to an oversight, although she insisted that it had not been deliberate.<sup>243</sup> She said that she had not appreciated its importance because she understood that the relevant classification in the UK was Class 0 and she did not understand the relevance of European classifications to the UK market.<sup>244</sup> Her assertion was at odds, however, with the fact that the BBA certificate contained positive statements about the product's European classification which were plainly wrong in light of Mr Wehrle's email. Moreover, even if the details of the different testing regimes had eluded Ms French, she must at least have understood that any information about the fire performance of Reynobond 55 PE was likely to be of interest to customers in the UK and that they ought to be given it.
- 20.44** We think that Deborah French took the view that the change in the European classification of Reynobond PE did not matter as far as the UK market was concerned because Class 0 was all that was required in the UK for regulatory purposes. We also think that the existence of the BBA certificate was sufficient in her eyes and that she did not consider it her responsibility to worry about whether a change in the product's European classification might affect it.
- 20.45** The BBA certificate, however, remained unchanged. Arconic did not tell the BBA about the revised classification or invite it to reconsider the certificate in so far as it related to Reynobond 55 PE. Mr Schmidt sought to explain that as an oversight,<sup>245</sup> but we think that unlikely. It must have been clear to some within Arconic, not least Mr Wehrle, that the change in classification was important information that undermined the existing certificate, which, as a result, would be likely to mislead anyone thinking of using Reynobond 55 PE in either form. Given the importance of the BBA certificate to sales in the UK and the close involvement of Mr Wehrle in its original production, we cannot accept that the failure to inform the BBA was the result of a simple oversight.

<sup>236</sup> {MET00053158\_P04/134}.

<sup>237</sup> French {Day88/138:2-3}.

<sup>238</sup> French {Day88/140:7-9}.

<sup>239</sup> French {Day88/155:14-16}.

<sup>240</sup> French {Day88/148:8-15}.

<sup>241</sup> {MET00053159/282}.

<sup>242</sup> French {Day88/149:5-9}.

<sup>243</sup> French {Day88/155:18-19}.

<sup>244</sup> French {MET00053162/13} page 13, paragraph 48.2; French {Day88/141:9}-{Day88/142:24}.

<sup>245</sup> Schmidt {Day94/43:11-15}.

- 20.46** It remains an open question why Mr Wehrle went to the trouble of telling his sales force in different countries about the change of classification and instructed them not to represent Reynobond PE 55 as being Class B, and yet took no steps to contact the BBA to ask it to qualify or amend the certificate to reflect that fact. Whatever the explanation, however, the fact is that it was risky for Arconic to leave the BBA certificate in circulation in the UK market unamended, since designers would be very likely to continue to rely on it; and Mr Wehrle must have appreciated that risk.
- 20.47** Although she had been in close communication with Harley about the supply of Reynobond panels for the Grenfell Tower project since 2013, Ms French did not tell it about the revised European classification of Reynobond 55 PE or suggest that it might use the fire-resistant version instead. On the contrary, on 23 April 2014, some two months after having received Mr Wehrle’s instruction on 3 February 2014, she sent Harley a copy of the BBA certificate without comment.<sup>246</sup> That amounted to a clear invitation to accept everything it said at face value.
- 20.48** Ms French told us that she had not thought that the BBA certificate might be unreliable because she had not made a connection between it and Mr Wehrle’s email.<sup>247</sup> We do not accept that. In our view, she must, or certainly should, have recognised that a significant reduction in the European classification of Reynobond 55 PE might affect the statements made in the BBA certificate. By sending Harley a copy of the BBA certificate without any qualification she led it to think that Reynobond 55 PE was classified as European Class B and might therefore be regarded as achieving national Class O, when that was not the case.<sup>248</sup>
- 20.49** Deborah French was clearly at fault in failing to pass on the substance of Mr Wehrle’s message to her customers in the UK and in using the BBA certificate without qualification to support the sale of Reynobond 55 PE. On receipt of that message, she should have told potential customers of the change of classification and should have drawn their attention to the availability of the fire-retardant version and the benefits of using it. Claude Wehrle, who was aware how dangerous the product could be in cassette form, was at greater fault in failing to ensure that the BBA was informed of the change in classification, as required by the contract, and in failing to instruct Arconic’s sales representatives in the UK not to promote Reynobond 55 PE without drawing that change of classification to the attention of customers.
- 20.50** Arconic had initially been reluctant to recognise that Reynobond 55 PE reacted far worse to fire in cassette form than in riveted form, and was therefore much more dangerous, and had induced the BBA to issue a certificate that masked the difference in performance. As regulatory requirements in European countries became more restrictive, it sought to take advantage of jurisdictions in which regulatory requirements were less stringent to continue selling the product with an unmodified polyethylene core for use in both cassette and riveted form without distinction relying, in the case of the UK, on the support of the BBA certificate. Its commercial strategy strongly suggests that neither the failure of Ms French to pass on important information to her customers nor the failure of Mr Wehrle to give that information to the BBA was the result of an oversight. We are satisfied that they reflected a sustained and deliberate strategy by Arconic to continue selling Reynobond

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<sup>246</sup> {CEP00000281}.

<sup>247</sup> French {Day88/162:2-21}.

<sup>248</sup> French {Day88/165:4-23}.

55 PE in the UK based on a statement about its fire performance that it knew to be false. Deborah French's failure to pass on important information to her customers, wittingly or unwittingly, supported Arconic's strategy.

### The Lacrosse Fire: November 2014

- 20.51** In the evening of 24 November 2014 there was a fire at the Lacrosse Building in Melbourne, Australia. A report of the fire circulated among several employees of Arconic, including Alain Flacon, Claude Wehrle and Gwenaelle Derrendinger, between April and June 2015.<sup>249</sup> It is clear that Mr Wehrle read the report because, on 18 June 2015, he sent it to CSTB, describing it as "very interesting".<sup>250</sup>
- 20.52** The report expressed a number of concerns about the use of ACM PE in high-rise buildings. It stated that the fire was directly attributable to the facade of the building and noted the "speed and intensity of the fire spread".<sup>251</sup> It also included descriptions of other cladding fires around the world, including those at the Mermoz Tower in France in 2012, the three other fires in the UAE in that year, and the Torch Tower fire in Dubai on 21 February 2015,<sup>252</sup> all of which had been attributed to the use of ACM PE in the facade.
- 20.53** The report contained a further clear warning to Arconic of the dangers of using ACM PE in high-rise residential buildings, but although Arconic was aware that ACM with an unmodified polyethylene core was flammable, it took no action in response.<sup>253</sup>

### The BBA review: 2013 – 2015

- 20.54** Another review of the BBA certificate began in October 2013. By January 2015 the BBA had made at least twelve attempts to contact Arconic in writing to establish whether it had any new information that might be relevant.<sup>254</sup> On 18 July 2014 Mr Wehrle was asked to provide, amongst other things, written confirmation that there was no new information that would invalidate the certificate.<sup>255</sup> We deal with that in more detail in Chapter 21.
- 20.55** As we have explained, Arconic was aware in July 2014 that Reynobond 55 PE was not classified as Class B in any form and that the BBA certificate was therefore no longer correct. However, Arconic failed to respond to the BBA's requests for information and allowed the existing certificate to remain in circulation. Although the classification had been extended for five years and Reynobond 55 PE in rivet form had achieved Class B in 2010, Arconic knew by early 2014 that that test could not be relied on to sell Reynobond 55 PE for use in either form, hence Mr Wehrle's message of 3 February 2014. We return to that point in more detail in Chapter 21.

<sup>249</sup> {MET00053159/404}; {MET00053158\_P10/183}.

<sup>250</sup> {MET00053158\_P11/113}.

<sup>251</sup> {MET00053158\_P11/139}.

<sup>252</sup> {MET00053158\_P12/144}.

<sup>253</sup> Schmidt {Day93/33:1-7}; {Day94/14:13-16}; {Day94/15:19}-{Day94/16:1}; {Day94/16:11-19}.

<sup>254</sup> {MET00053158\_P17/182-186}.

<sup>255</sup> {MET00053158\_P17/182}.

## Further testing by CSTB: October to December 2014

- 20.56** Further tests were carried out on Reynobond 55 PE in late 2014. On 4 December 2014 CSTB issued a report classifying the panels in riveted form as Class C<sup>256</sup> and on the same date, at the request of Arconic, it reissued a report classifying the panels in cassette form as Class E.<sup>257</sup> However, Arconic did not report those test results to the BBA or ask for its certificate to be revised or withdrawn.

## Testing of Reynobond 55 PE with a black core: 2015

- 20.57** In 2015, Arconic changed the colour of the core of Reynobond 55 PE from translucent to black. It then instructed CSTB to undertake a single new test of the product in riveted and cassette forms. The riveted form retained its C classification<sup>258</sup> and the cassette form retained its E classification.<sup>259</sup> The results of those tests were not provided to the BBA.

## Arconic's involvement in the supply of Reynobond 55 PE for use at Grenfell Tower: 2015

- 20.58** Earlier in this chapter and elsewhere in the report<sup>260</sup> we have covered the events by which Deborah French dealt with CEP and Harley in selling Reynobond 55 PE for use on Grenfell Tower. Ms French left Arconic at the end of 2014 and was replaced by Vince Meakins in May 2015.<sup>261</sup> In the interim, Arconic's sales to the UK were managed by Peter Froehlich assisted by Gwenaëlle Derrendinger, an administrative sales assistant.<sup>262</sup>
- 20.59** On 3 March 2015, Ms Derrendinger sent a formal quotation to CEP for the supply of Reynobond 55 PE for use on Grenfell Tower.<sup>263</sup> The order was confirmed on 18 March 2015.<sup>264</sup> Ms Derrendinger said that, although she could not recall whether she had discussed the type of core with CEP, unless she had been asked to quote for the FR version she would have quoted for the PE version, since it was a UK project.<sup>265</sup> Even as late as March 2015, therefore, Arconic's marketing strategy in the UK was to sell ACM with a PE core unless an FR core was specifically requested.
- 20.60** At that time the panels in cassette form had a European Class E reaction to fire classification. There can be no doubt that Arconic understood that the panels it supplied for use at Grenfell Tower would be used in cassette form: Deborah French was herself aware of that fact and, in any event,<sup>266</sup> Arconic's client database had included that information from at least April 2014.<sup>267</sup> Nobody at Arconic made any attempt to tell CEP, Harley or anyone else working on the Grenfell Tower project that the panels in cassette form were Class E.

<sup>256</sup> {ARC00000397}; {MET00053158\_P05/155}.

<sup>257</sup> {MET00053158\_P02/119}; {ARC00000395}.

<sup>258</sup> {ARC00000402}.

<sup>259</sup> {ARC00000405}.

<sup>260</sup> See Part 6, Chapter 55.

<sup>261</sup> French {MET00053162/3} page 3, paragraph 12; Meakins {MET00053164/2} page 2, paragraph 5.

<sup>262</sup> Froehlich {MET00053197/11} page 11, paragraph 39.

<sup>263</sup> {MET00053161/27}.

<sup>264</sup> {ARC00000010}; {MET00053161/28}; {MET00053161/40}; {ARC00000149}.

<sup>265</sup> Derrendinger {MET00053191/36} page 36, paragraph 104. See also Derrendinger {MET00053191/35} page 35, paragraph 100, in connection with orders placed by Booth Murie that also resulted in quotations for panels with PE cores.

<sup>266</sup> French {Day88/173:5-15}; {CEP000000443}.

<sup>267</sup> {MET00053159/86}; {MET00019920/31}.



- 20.61** Mr Froehlich attended meetings with Harley and CEP in 2014<sup>268</sup> at which the Grenfell Tower project was discussed and was sent several emails relating to the project, including those relating to orders for Reynobond 55 PE that were placed between March and October 2015.<sup>269</sup> Mr Froehlich acknowledged that he had been aware that the product supplied to Grenfell Tower was Reynobond 55 PE.<sup>270</sup>
- 20.62** Mr Meakins candidly accepted in his oral evidence that he had been aware for a year before the fire at Grenfell Tower that ACM PE should not have been used on tall buildings because it was dangerous.<sup>271</sup> Arconic had been well aware of that from the outset, particularly in relation to panels in cassette form, but failed to disclose that information to anyone working on the refurbishment. Mr Meakins himself did not play a part in the supply of ACM PE panels for the Grenfell Tower refurbishment project.

## Arconic's reaction to cladding fires overseas: 2015 and 2016

### Fire at the King Fahd Medical Centre in Riyadh: October 2015

- 20.63** On 10 October 2015, a fire occurred at the King Fahd Medical Centre in Riyadh, a high-rise building that was clad in Alucobond FR rainscreen panels. Mr Wehrle was told about the fire on 16 October 2015, when he was sent three photographs showing the damage to the building.<sup>272</sup> In response he expressed the view that the panels had performed very well and that the fire would have spread over the entire height of the tower if the panels had had an unmodified polyethylene core.
- 20.64** Mr Wehrle clearly understood that ACM PE panels were likely to contribute to the spread of flame when used on high-rise buildings and were much more dangerous than the fire-resistant version. Indeed, his comment reflects the opinion he had voiced in an internal email on 29 June 2015 that ACM PE was dangerous and that Arconic should move to selling only the FR product as a matter of urgency.<sup>273</sup> That warning appears to have fallen on deaf ears among Arconic's senior management.

### The Address, Dubai: 31 December 2015

- 20.65** On New Year's Eve 2015, there was a fire at The Address, a hotel in Dubai. A news article and photograph were passed between Claude Wehrle, Guy Scheidecker and others in early January 2016.<sup>274</sup>
- 20.66** On 4 January 2016 Robert Campbell, the UK sales representative for Reynolux, wrote to Mr Wehrle and others at Arconic telling them that The Address had been clad in Alucobond ACM PE and suggested that architects were wondering whether ACM PE was safe to use.<sup>275</sup> Mr Wehrle said that he hoped ACM PE would be removed from the facade cladding market because it was reflecting badly on other ACM products.<sup>276</sup> Guy Scheidecker, a senior executive, expressed the view that ACM PE was not the only component responsible for

<sup>268</sup> Froehlich {MET00053197/9-14} page 9 and 14, paragraphs 37 and 41.

<sup>269</sup> {MET00053161/28}.

<sup>270</sup> Froehlich {MET00053197/15} page 15, paragraph 45.

<sup>271</sup> Meakins {Day88/130:6-11}.

<sup>272</sup> {MET00053158\_P10/168}.

<sup>273</sup> {MET00053158\_P05/14}.

<sup>274</sup> {MET00053158\_P10/174}.

<sup>275</sup> {MET00053158\_P10/172}.

<sup>276</sup> {MET00053158\_P10/172}.

such a fire.<sup>277</sup> That may have been so, but there is no evidence that Arconic then undertook any further investigation of that possibility. Rather, the Arconic management were pleased that on this occasion, a competitor's product was involved, not their own.

#### **Place de Hageneau: January 2016**

- 20.67** In January 2016, a fire broke out at the Place de Hageneau in Strasbourg, France. The building that caught fire did not feature any ACM, but another building about 10 metres away was clad in Reynobond 55 PE. On 19 January 2016, Mr Wehrle wrote to Alain Flacon and Lionel Marconnet at Arconic expressing the view that Arconic had been very lucky that the wind had not changed.<sup>278</sup> He went on to say that it was time for Arconic to stop offering ACM PE for construction purposes. It was aware of the danger and should take steps to withdraw it.
- 20.68** However, yet again Mr Wehrle's warnings went unheeded internally at Arconic, and nothing appears to have been done to withdraw ACM PE from the UK market or to warn customers in the UK of the dangers of which Arconic was aware. Arconic's French sales representatives were instructed to offer only Reynobond 55 FR, regardless of the height of the building, but no similar direction was given in respect of the UK.
- 20.69** There is, therefore, clear evidence that senior managers at Arconic had been aware for many years before the Grenfell Tower fire that the statements the company was making about the fire performance of Reynobond 55 PE were inaccurate and, in particular, that the fire performance of cassette-fixed panels was significantly worse than that of riveted panels. It is equally clear that, despite what they knew, they decided not to ask the BBA to withdraw or amend its certificate and did not withdraw Reynobond 55 PE from the UK market. Arconic thus promoted and sold a product knowing that it presented a significant danger to those who might use any buildings on which it was used.

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<sup>277</sup> {MET00053158\_P10/176}.

<sup>278</sup> {MET00053158\_P10/179}.

# Chapter 21

## The review of the Reynobond certificate

### The BBA's review processes: an overview

- 21.1** Once the BBA certificate of 14 January 2008 relating to Reynobond had been issued, it became subject to the scrutiny processes in the contract between Arconic and the BBA designed to ensure its continued validity.<sup>279</sup>
- 21.2** Although its processes changed over time, the BBA consistently monitored certificates by means of desk-based reviews carried out by Project Managers and factory inspections carried out by Technical Assessors. A desk-based review, which was carried out at least once every three years,<sup>280</sup> involved checking that statements in the certificate continued to be valid, ensuring that the product being sold by the manufacturer continued to be the one assessed and reviewing the certificate holder's public statements about BBA certification, including how it used the BBA logo.<sup>281</sup> Factory inspections involved inspecting and assessing factory production against a quality plan agreed with the manufacturer which set out what should be assessed in continuing surveillance,<sup>282</sup> usually at six month intervals.<sup>283</sup>
- 21.3** Typically a quality plan would require the Technical Assessor to examine the manufacturing process, including checking that the raw products, suppliers and methods of production were as had been originally described by the manufacturer and examining how it maintained quality in production.<sup>284</sup> The process was co-ordinated with the desk-based reviews conducted by Project Managers, who agreed the quality plans with the certificate holders in advance of the inspections and considered the Technical Assessors' reports against them.<sup>285</sup> However, the desk-based review and factory inspection were separate and distinct activities on the BBA's part, aimed at reviewing different aspects of certification. In particular, it was no part of a Technical Assessor's role to review fire performance testing data or certification, which was the responsibility of the Project Manager. In turn, it was for the certificate-holder to provide any new technical performance information to the Project Manager in accordance with the contract.<sup>286</sup> A Technical Assessor could not review the history of a product's fire performance testing in the limited time available for an inspection and in any event could not reasonably be expected to have the skill or experience required for that task.

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<sup>279</sup> {BBA00008042/3} clause 6.

<sup>280</sup> Albon {BBA00000158/8} page 8, paragraph 29.

<sup>281</sup> Amoroso {BBA00010797/3} page 3, paragraphs 14-15; Amoroso {Day106/25:15}-{Day106/26:10}; Nkomo {BBA00010783/5} page 5, paragraph 12.

<sup>282</sup> O'Neill {BBA00010789/3-4} pages 3-4 paragraphs 8-13; Albon {BBA00000158/8} page 8, paragraph 27; Amoroso {BBA00010797/11} page 11, paragraph 57.

<sup>283</sup> Haynes {BBA00010784/7} page 7, paragraph 29.

<sup>284</sup> {BBA00010870}.

<sup>285</sup> O'Neill {BBA00010789/4-5} pages 4-5, paragraphs 17, 20 and 22.

<sup>286</sup> {BBA00010790}; Amoroso {Day106/37:1-6}.

**21.4** From time to time Arconic entered into contracts with the BBA for the review and extension of the certificate. In each case it was a term of the contract that Arconic would provide the BBA with any test data available in relation to the product and would notify it of any new information relating to Reynobond and its performance that came into its possession.<sup>287</sup>

### The Agreement with CSTB

**21.5** The initial assessment of Reynobond panels was based on data obtained from CSTB and the BBA therefore felt able to dispense with a quality plan and an initial factory inspection and to rely on CSTB's continuing monitoring of Arconic's quality standards. On 17 May 2007, Hamo Gregorian asked CSTB to confirm that it had been inspecting Arconic and, if so, whether it was satisfied that appropriate quality control had been maintained.<sup>288</sup> He also asked CSTB to inform the BBA if it identified any major failures to comply with production processes affecting quality, or if it discontinued its visits. On 21 May 2007, Laurent Plagnol of CSTB agreed that it would identify any major failures to comply with processes affecting quality non-compliances for the BBA, although he did not directly answer Mr Gregorian's question whether quality control had previously been satisfactorily maintained.<sup>289</sup> Mr Gregorian recorded that agreement on 21 April 2008.<sup>290</sup> CSTB was not asked to provide the BBA with any testing information it held relating to the Reynobond product.

### Review project 2011

**21.6** At the end of 2010, the BBA and Arconic agreed a contract for the triennial review of the Reynobond certificate,<sup>291</sup> which was conducted over the next few months by Project Manager Alpheo Mlotha.<sup>292</sup>

**21.7** On 11 February 2011, Mr Mlotha wrote to Arconic seeking information for the purposes of the review,<sup>293</sup> including a list of customers, current technical literature and a letter from CSTB either confirming that there were no changes in the raw materials, manufacturing process or quality control procedure, or, if there had been, stating what those changes were.

**21.8** Arconic's Quality Manager, Brigitte Gross responded on 11 April 2011 with the information requested (and no more),<sup>294</sup> including a certificate from CSTB confirming that the technical properties of Reynobond 55 complied with the CSTB certification.<sup>295</sup> Mr Mlotha was apparently satisfied that there had been no changes in the method of production, since he required only a few minor changes to be made to the text of the certificate at the next issue. Accordingly, the review project was closed on 24 June 2011 with the next review scheduled to commence by 15 January 2014.<sup>296</sup>

<sup>287</sup> The 2010 review contract referred to the 2007 terms {BBA00008044/11}; the 2014 reissue contract did not alter the original terms {BBA00010889}; the 2016 technical reissue contract provided for materially the same obligations of disclosure on Arconic {MET00053158\_P18/141-151} clause 10.

<sup>288</sup> {BBA00008042/123}.

<sup>289</sup> {BBA00008042/123}.

<sup>290</sup> {BBA00008042/121}.

<sup>291</sup> {BBA00008044/11}.

<sup>292</sup> Project number S146895; Technical File: {BBA00008044}; Signed off by Review Report on 24 June 2011 {BBA00010810}.

<sup>293</sup> {BBA00008044/35}.

<sup>294</sup> {BBA00008044/33}.

<sup>295</sup> {BBA00008044/79-91}.

<sup>296</sup> {BBA00010810}.

## Arconic Reynobond PE testing in 2011

- 21.9** On 9 February 2011, at almost exactly the same time as Mr Mlotha made his request for documents, CSTB issued a new EN 13501 classification report for grey Reynobond PE in rivet form based on the test which had been carried out in the previous June (Test RA11-0032).<sup>297</sup> CSTB certified the fire performance as being Bs1, d0, which was better than that reported in the BBA certificate. Arconic did not give that information to the BBA, even though it was apparently an improvement, despite the fact that it was contractually obliged to do so.
- 21.10** Shortly after Mr Mlotha had completed his review in 2011, CSTB conducted further testing on Reynobond PE 55 in cassette form in accordance with European methods.<sup>298</sup> On 12 October 2011, it issued certificate RA11-0244 classifying Reynobond in cassette form as Euroclass E.<sup>299</sup> However, Arconic did not disclose the certificate or the information it contained to the BBA. At that point, Arconic could have been in no doubt that Reynobond 55 PE in cassette form performed very badly in a fire and that the BBA certificate made no reference to that important information. Even if Arconic did not think that it was bound to disclose that information to the BBA immediately (as it was), it could have been in no doubt that it would have to disclose it at the next review in 2013.

## Review project: 2013-2015

- 21.11** After the 2011 review, the BBA decided that it would no longer rely on foreign bodies (like CSTB) to conduct inspections but would use its own Technical Assessors to carry out that task. From that time until September 2017, Technical Assessor Shaun O’Neill carried out the inspection of Arconic’s factory at Merxheim.<sup>300</sup>

## Maria Barbeito’s attempts to review the certificate – October 2013-September 2014

- 21.12** In October 2013, BBA Project Manager Maria Barbeito began the second triennial review of the BBA certificate for Reynobond.<sup>301</sup> On 8 October 2013 she wrote to Claude Schmidt at Arconic attaching a draft quality plan for Arconic’s agreement. That was the first quality plan proposed for the new certificate. In that letter she asked for documents relating to her review and asked Arconic for written confirmation that there had been no changes in the design, specification, context of use or other details that would invalidate the existing certificate, or if there had, to specify any changes.<sup>302</sup> At the time it was customary for the BBA to use that form of words when making requests of that kind.<sup>303</sup>
- 21.13** Between 21 October 2013 and 7 May 2014 Ms Barbeito sent emails to Arconic on six occasions<sup>304</sup> seeking a response; she also attempted to telephone Arconic at least twice, but without success.<sup>305</sup> In an email to a colleague in July 2014, she described her frustration

<sup>297</sup> {ARC00000537}; {ARC00000383}; See Chapter 20.

<sup>298</sup> {ARC00000538}.

<sup>299</sup> {ARC00000538}; {ARC00000386}; See Chapter 20.

<sup>300</sup> O’Neill {BBA00010789/7} page 7, paragraph 29.

<sup>301</sup> {BBA00010741}.

<sup>302</sup> See her email dated 9 October 2013 {BBA00008089} attaching the letter {BBA00008090} and the draft quality plan {BBA00008091}.

<sup>303</sup> Amoroso {Day106/65:11-22}; Albon {Day110/35:1-8}.

<sup>304</sup> {BBA00008085} attaching {BBA00008086} and {BBA00008087}; forwarded to Claude Wehrle {BBA00008092/1-2}; {BBA00008075} attaching {BBA00008076} and {BBA00008077}; {BBA00008095} attaching {BBA00008096} and {BBA00008097}; {BBA00008971}.

<sup>305</sup> {BBA00008075}; {BBA00008663}.

at Arconic's lack of response, saying that Claude Wehrle was very nice on the telephone but never sent any information.<sup>306</sup> The BBA received no substantial response whatever from anyone at Arconic during that period.

- 21.14** On 18 July 2014, Ms Barbeito managed to speak to Claude Wehrle on the telephone and then sent him an email in which she repeated her request for documents, including written confirmation that there had been no material changes that would invalidate the certificate.<sup>307</sup> She and Mr Wehrle also discussed arranging a visit to Arconic's factory at Merxheim. Shaun O'Neill carried out the BBA's first inspection of the Merxheim factory on 10 September 2014. In his report he recorded that Claude Wehrle had told him that he had tried to communicate with the BBA several times to discuss the review but that his messages had gone unanswered and that he would like the Project Manager to contact him as soon as possible.<sup>308</sup> However, the documentary record and recollections of other witnesses does not support Mr Wehrle's assertion.
- 21.15** In the period when Ms Barbeito was attempting to obtain a satisfactory response from Arconic, several changes in the classification of Reynobond 55 PE occurred, as we have described in Chapter 20. From 31 January 2014 the product in both cassette and riveted form had been classified E,<sup>309</sup> but by 4 December 2014, the two forms were again classified differently, with the cassette form retaining an E classification,<sup>310</sup> and the riveted form classified as C-s2, d0.<sup>311</sup>
- 21.16** Each one of those changes was important to the BBA's work on renewing the validity of the Reynobond certificate, but Arconic did not tell the BBA about them or attempt to discuss with it the amendment or withdrawal of the certificate.

### Valentina Amoroso's review: September 2014-January 2015

- 21.17** Maria Barbeito then left the BBA, and at the end of September 2014 Valentina Amoroso joined the organisation.<sup>312</sup> Ms Amoroso had a degree in materials engineering<sup>313</sup> but no experience or knowledge of cladding materials or of building regulations relating to fire.<sup>314</sup> She started working on projects relating to cladding when she was transferred to the engineering department in November 2014 and was initially assigned to the review of existing certificates, which was thought to be simpler than a full technical assessment and more suitable for a newcomer.<sup>315</sup> One of the first projects she undertook was the resumption of work on the triennial review of Arconic's Reynobond 55 certificate.
- 21.18** Ms Amoroso's training in the skills required to assess cladding products and to understand fire performance was largely, if not completely, informal and self-directed. She read the applicable standards, asked questions of her seniors in the BBA, including those with greater expertise in fire performance, and attended some conferences and full-scale fire tests of facades.<sup>316</sup> At one external event, she met Stephen Howard of BRE and thereafter she occasionally asked for his opinion on matters she did not understand.<sup>317</sup> Ms Amoroso

<sup>306</sup> {BBA00008663}.

<sup>307</sup> {BBA00008954} attaching {BBA00008955}.

<sup>308</sup> {BBA00010873/2}.

<sup>309</sup> {MET00053158\_P02/59}; {MET00053158\_P04/135-138}.

<sup>310</sup> {MET00053158\_P02/119-124}; {ARC00000395}; See Chapter 20.

<sup>311</sup> {MET00053158\_P05/155-163}; {ARC00000397}; See Chapter 20.

<sup>312</sup> Amoroso {BBA00010797/2} page 2, paragraph 6.

<sup>313</sup> Amoroso {BBA00010797/2} page 2, paragraph 5.

<sup>314</sup> Amoroso {Day106/10:15}-{Day106/11:2}.

<sup>315</sup> Amoroso {BBA00010797/2} page 2, paragraph 7.

<sup>316</sup> Amoroso {Day106/10:6-11}; {Day106/13:3}-{Day106/14:4}; {Day106/14:22-25}.

<sup>317</sup> Amoroso {Day106/17:19}-{Day106/18:8}.

may have taken the initiative in learning about a new area of activity, but the BBA should not have asked her to conduct even a certificate review without any training in the knowledge and skills required for understanding cladding technology or fire performance.

- 21.19** One of the people to whom Ms Amoroso directed questions internally was Prayer Nkomo.<sup>318</sup> He was a civil engineer<sup>319</sup> who had worked at the BBA since November 2010 as a Project Manager. By the time of the 2013-2015 review he had developed some expertise in cladding technology but not in fire performance,<sup>320</sup> and it was only on the former that he assisted Ms Amoroso. In early January 2015, shortly after Ms Amoroso had begun working on cladding products, Mr Nkomo was promoted to the role of Team Manager and Ms Amoroso reported to him.<sup>321</sup>
- 21.20** Between the time of the first assessment of Reynobond PE and the date of the Grenfell Tower fire no one at the BBA had expertise in the reaction of materials to fire.<sup>322</sup> If a question about fire performance arose, Mr Nkomo might approach Jon Denyer or John Albon,<sup>323</sup> who by 2012 had developed some experience in the field but who were not trained experts.<sup>324</sup> Mr Nkomo was aware that if he needed external assistance, he could ask for the matter to be referred to Exova,<sup>325</sup> with which the BBA had made formal arrangements for advice.<sup>326</sup> However, Mr Nkomo did not routinely seek assistance and would only ask for help if he was unsure of a point relating to fire performance.<sup>327</sup>
- 21.21** At Ms Amoroso's request<sup>328</sup> Mr Nkomo contacted Claude Wehrle on 2 December 2014. Mr Nkomo was very clear in his subsequent email to Mr Wehrle that information provided to the Technical Assessor in the course of a factory visit was no substitute for responding to the Project Manager's request.<sup>329</sup> Shortly after, Ms Amoroso again asked Arconic to provide written confirmation that there were no changes that would invalidate the certificate.<sup>330</sup> Mr Nkomo's and Ms Amoroso's emails to Mr Wehrle arrived two days before CSTB issued new classification certificates for Reynobond 55 PE, in which the riveted form was classified C, and the cassette form E. Mr Wehrle must have been aware of those classifications at the time when Mr Nkomo and Ms Amoroso were pressing him for information.
- 21.22** Valentina Amoroso also noticed that the Reynobond certificate files contained no regular surveillance reports from CSTB about factory visits nor any arrangements for continued monitoring,<sup>331</sup> although it did contain a report prepared by Shaun O'Neill after his review visit in September 2014. The BBA decided that it should make arrangements for continued monitoring.
- 21.23** At that point the BBA had received no information about the production of Reynobond since 2007 save for a report in 2011 and Mr O'Neill's report in September 2014. That seven-year gap in the BBA's information was significant.<sup>332</sup> In addition, no quality

<sup>318</sup> Amoroso {Day106/17:4-11}.

<sup>319</sup> Nkomo {BBA00010783/2} page 2, paragraphs 4-5.

<sup>320</sup> Nkomo {Day107/12:15-19}; {Day107/72:5-22}; Amoroso {Day106/17:4-11}.

<sup>321</sup> Nkomo {BBA00010783/2} page 2, paragraph 6.

<sup>322</sup> Albon {Day109/88:22}-{Day109/89:8}; {BBA00010486} paragraph 3.

<sup>323</sup> Nkomo {Day107/19:14-18}; {Day107/102:8-19}.

<sup>324</sup> Albon {Day109/88:17-22}.

<sup>325</sup> Nkomo {Day107/18:6-10}; {Day107/18:23}-{Day107/19:2}.

<sup>326</sup> Albon {Day109/91:7-20}; {Day109/106:17}-{Day109/107:12}; {BBA00010762/4}.

<sup>327</sup> Nkomo {Day107/20:6-10}; {Day107/20:15}-{Day107/21:14}.

<sup>328</sup> {BBA00010550/3}.

<sup>329</sup> {MET00053158\_P18/4}.

<sup>330</sup> {BBA00008098}.

<sup>331</sup> Amoroso {BBA00010797/10} page 10, paragraph 51; {BBA00008112}.

<sup>332</sup> Amoroso {Day106/67:1-7}.

plan had been agreed at the time of the initial assessment, so the BBA did not have a yardstick by which to measure whether production had changed or the product was the same as that initially assessed. Nonetheless, it was content to proceed with renewing the certificate, provided a quality plan and continuing monitoring could be agreed with Arconic.

- 21.24** On 18 December 2014, Valentina Amoroso sent a request for information to Arconic’s quality representative, Lilia Koscuk.<sup>333</sup> In early January 2015 Ms Koscuk replied, saying that she agreed the proposed quality plan, but failed to provide the information that the BBA had requested for the purposes of the review.<sup>334</sup> Ms Amoroso repeated her request on 7 January 2015 and again on 12 January 2015, when she imposed a deadline of 20 January 2015 for a response.<sup>335</sup> Ms Koscuk responded by referring Ms Amoroso to various people at Arconic whom the BBA already knew, including Mr Wehrle.<sup>336</sup> Her approach was entirely unhelpful, bordering on the obstructive.
- 21.25** On 22 January 2015 the BBA decided at a senior level<sup>337</sup> to complete the review with the information Ms Amoroso already had.<sup>338</sup> The decision is inexplicable. The BBA had said that the information it was seeking from Arconic was essential to complete the review, as indeed it was. The BBA had received no confirmation of the performance of the Reynobond product from Arconic in the previous seven years and Arconic’s failure to provide such information when asked was exceptional and extreme.<sup>339</sup> The BBA should have realised that it was a case requiring particular attention rather than summary completion.
- 21.26** The BBA could and should have threatened to suspend Arconic’s BBA certificate given its lack of response<sup>340</sup> and should have done so if the information it required was not provided.<sup>341</sup> However, it does not appear that such a step was ever considered, despite Arconic’s wholesale lack of co-operation. Indeed, we were told that it was not the BBA’s practice at the time to suspend certificates for a failure to respond to requests for information.<sup>342</sup> We consider that to be an unsafe and unsatisfactory position, but as a result the BBA completed the review using only publicly available information, such as the information available on Arconic’s website, published technical datasheets and marketing brochures.<sup>343</sup>
- 21.27** There is evidence that summaries of results were available in the CSTB’s web database<sup>344</sup> and Ms Amoroso said that in January 2015 she would have referred to the certification available on the CSTB’s website.<sup>345</sup> Had she looked at those summaries she would, or at least should, have noticed the Cs-2, d0 and E classifications and questioned the contents of the BBA certificate. However, for whatever reason, that did not happen. In any event, according to Mr Nkomo, BBA did not consider it part of its responsibility on a review to look for fire testing data on laboratories’ websites because the customer was obliged to provide

<sup>333</sup> {BBA00008079/3-4}.

<sup>334</sup> {BBA00008079/3}.

<sup>335</sup> {BBA00008079/2-3}.

<sup>336</sup> {BBA00008079/1-2}.

<sup>337</sup> Nkomo {Day107/48:1-10}; Albon {Day110:39:1-7}.

<sup>338</sup> {BBA00008079/1}.

<sup>339</sup> Amoroso {Day106/60:2-9}; {Day106/74:8-10}; Nkomo {Day107/43:23}-{Day107/44:3}; Albon {Day110/35:25}-{Day110/36:20}.

<sup>340</sup> See clause 13(a) of the BBA’s standard terms {BBA00008042/3} clause 13(a).

<sup>341</sup> Albon {Day110/56:23}-{Day110/57:4}.

<sup>342</sup> Albon {Day110/56:23}-{Day110/57:4}.

<sup>343</sup> Amoroso {Day106/76:14-24}.

<sup>344</sup> {MET00053158\_P02/62}; Wehrle {MET00053190/21} page 21, paragraph 70.

<sup>345</sup> Amoroso {Day160/77:14-18}.



information of that kind.<sup>346</sup> That was not an unreasonable stance to take, but it should have been supported by a refusal to renew the certificate if the customer failed to provide information that was available to it.

- 21.28** The decision to close the review was made by Mr Nkomo to whom the matter was referred Ms Amoroso and probably also in discussion with their senior manager, the Head of Approvals.<sup>347</sup> Mr Nkomo told us that it was common for reviews to be closed despite a failure by the certificate holder to provide information, although that was not BBA policy nor encapsulated in any formal instruction.<sup>348</sup>
- 21.29** We have seen no record of why this particular review was closed. Both Mr Nkomo and Ms Amoroso thought that it had probably been because it had become delayed,<sup>349</sup> and Mr Nkomo agreed there had been a backlog of reviews at the time.<sup>350</sup> A further reason appears to have been that the BBA was concentrating on agreeing a quality plan and continuing monitoring. Once that had been achieved, the BBA expected any changes in the product to be reported.<sup>351</sup> However, neither of those was a good reason for closing the review.
- 21.30** The BBA was under the impression that a product's fire performance classification would not change as long as the product itself or the manufacturing process did not change. For that reason, it thought there was no reason to check for new testing reports, but that ignored the fact that the European classification certificates said on their face that they expired five years from the date of issue. No one at the BBA working on the review of the certificate had regard to the fact that Arconic would need to have the product tested again and would or should have new fire performance information available. That would have been plain if anyone had considered the fire test data on which the initial assessment had been based.<sup>352</sup> Ms Amoroso did not consider that data because the process did not require her to do so.<sup>353</sup> That was an obvious flaw in the BBA's review process.

### Arconic's submissions on the review

- 21.31** In an attempt to avoid criticism of its failure to provide information to the BBA Arconic argued that there had been no need for it to provide the BBA with any further information after it had disclosed Test 5A because, among other things, the certificate stated only that Reynobond PE panels were *capable* of achieving Euroclass B, depending on the configuration of the system in which they were tested.<sup>354</sup> It said that the potential variations in the European testing regime made it possible for a single product to have more than one classification.<sup>355</sup> Arconic also maintained that it never claimed that the panels would achieve Euroclass B in all circumstances.<sup>356</sup>

<sup>346</sup> Nkomo {Day107/51:7}-{Day107/52:4}.

<sup>347</sup> Nkomo {Day107/47:13}-{Day107/48:25}; {Day107/49:12-19}; Amoroso {BBA00010797/12} page 12, paragraph 63; Amoroso {Day106/78:13}-{Day106/79:6}; Albon {Day110/39:1-7}.

<sup>348</sup> Nkomo {Day107/54:23}-{Day107/55:14}; Albon {Day110/45:5-25}; Moore {Day108/7:14-21}.

<sup>349</sup> Nkomo {Day107/57:14-17}; Amoroso {Day106/86:14-16}.

<sup>350</sup> Nkomo {Day107/57:21}-{Day107/58:9}; {BBA00008073}.

<sup>351</sup> Amoroso {BBA00010797/12} page 12, paragraph 64; Amoroso {Day106/78:14-21}; {Day106/79:17-21}; {Day106/83:19}-{Day106/84:16}.

<sup>352</sup> Amoroso {Day106/99:5-8}; {Day106/99:21-25}; {Day106/100:10-18}.

<sup>353</sup> Nkomo {Day107/66:4-5}; Albon {BBA00000158/16} page 16, paragraph 66; Albon {Day109/151:24}-{Day109/152:19}.

<sup>354</sup> Arconic Module 2 closing submissions {ARC00000770/30} page 30, paragraph 143.

<sup>355</sup> Arconic Module 2 closing submissions {ARC00000770/14} page 14, paragraphs 60-62; Arconic Module 6 closing submissions {ARC00000794/28} page 28, paragraph 83.

<sup>356</sup> Arconic Module 6 closing submissions {ARC00000794/29} page 29, paragraph 88.

- 21.32** In our view Arconic’s arguments were wholly unrealistic. They ignored the terms of its contract with the BBA, which required it to provide *any* test data already available<sup>357</sup> and immediately to notify the BBA of any change in the particulars supplied and of any new or additional information concerning the product or its suitability for use.<sup>358</sup> The performance of Reynobond PE in cassette form was information available to Arconic which was highly relevant to its use, as it must have realised. If the BBA had been informed of it at any time before the completion of the review in January 2015 there can be little doubt that it would have amended the certificate to reflect such important information.<sup>359</sup> Nor was it appropriate for Arconic to rely on CSTB giving the data to the BBA.<sup>360</sup> Arconic’s obligation was clear.
- 21.33** Furthermore, Arconic’s submissions demonstrate a fundamental misunderstanding of the function of a BBA certificate. It was not, as Arconic appeared to suggest, to record the best performance that a product was capable of achieving. Its purpose was and is to provide construction professionals with independent and objective information about the nature and performance of products which can be relied on as complete and trustworthy. Those who relied on BBA certificates were entitled to expect that the description of the product concerned was complete and accurate, including any variation in performance when used in different circumstances.
- 21.34** Arconic also said that the Euroclass B classification was still valid at the time of the sale of Reynobond 55 PE for use on the Grenfell Tower refurbishment in March 2015<sup>361</sup> and that therefore the BBA certificate was not incorrect.<sup>362</sup> It argued that when at the end of 2014 Reynobond PE 55 in riveted and cassette forms returned to being separately classified (C-s2, d0 and E respectively), they ceased to be classified E.<sup>363</sup> Arconic argued that, in effect, the classification in 2011 of Reynobond 55 PE in rivet form as Bs-1, d0 became effective once again and, being valid for 5 years, remained effective until February 2016. The effect of that argument is that there were two classifications for Reynobond 55 PE in rivet form in effect at the same time, one Euroclass B and one Euroclass C. That is unlikely, to say the least, and there is no evidence that that was its intention.
- 21.35** The obvious flaw in the argument is that there is no proper basis on which to read certificate RA13-0333 issue 2 dated 4 December 2014 as reinstating the result of the test carried out in 2011. The only sensible way of interpreting what occurred is that Arconic decided for a time not to rely on the Euroclass B classification and to consider all Reynobond 55 PE (whether in riveted or cassette form) to be Class E. It then decided to classify them separately again, but with the riveted form being Class C rather than B. That accords with the recollection of Mr Wehrle.<sup>364</sup>
- 21.36** In any event, Arconic’s argument applies only to Reynobond 55 PE in its riveted form. It is therefore completely irrelevant to the material supplied for use on Grenfell Tower in cassette form.

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<sup>357</sup> {BBA00008042/3} clause 7(a).

<sup>358</sup> {BBA00008042/3} clause 7(g).

<sup>359</sup> Amoroso {Day106/109:6-15}; Albon {BBA00000158/8} page 8, paragraph 27.

<sup>360</sup> Arconic Module 2 closing submissions {ARC00000770/30} page 30, paragraph 142.

<sup>361</sup> Derrendinger {MET00053191/37} page 37, paragraph 107.

<sup>362</sup> Arconic Module 6 closing submissions {ARC00000794/29-30} page 29-30, paragraphs 83-87.

<sup>363</sup> {MET00053158\_P02/119-124}; {ARC00000395}; See Chapter 20.

<sup>364</sup> Wehrle {MET00053190/20-21} pages 20-21, paragraphs 68-70.

**21.37** In any event, on 23 April 2014, when it sent the BBA certificate to those involved in the refurbishment to support the sale of Reynobond 55 PE for use on Grenfell Tower,<sup>365</sup> Arconic itself considered the correct classification of the product in either form to be Class E. On any view, the BBA certificate was at that time inaccurate. The reality is that Arconic knew that Reynobond 55 PE in cassette form was Class E and that it had been consistently classified as such since 2011. However, it did not tell the BBA, nor anyone involved in the Grenfell Tower refurbishment and it appears that only one UK supplier was ever told about the true position.<sup>366</sup>

### Reissue contract 2015

**21.38** The BBA's closing report for the 2013-2015 review was issued on 10 April 2015. It stated that the certificate had to be reissued so that the text could be revised.<sup>367</sup> The report also recommended that Arconic should check that there was no contradiction between the technical information that it published and that contained in the certificate.<sup>368</sup> The BBA offered Arconic a contract for this work,<sup>369</sup> which Arconic accepted,<sup>370</sup> but for reasons which are unrecorded the BBA did not reissue the certificate.

**21.39** None of the documentation closing out the review or generated when the contract for the reissue was offered referred to the fact that there had been any difficulty obtaining current information from Arconic and that a decision had been taken to rely solely on publicly available information. By the end of 2015, the BBA had introduced new documentary procedures under which information of that kind was recorded for the benefit of future reviewers. However, those procedures came too late to affect the 2015 review relating to Reynobond 55 PE.<sup>371</sup>

### Review project 2016

**21.40** The next triennial review of the BBA certificate for Reynobond began on 12 October 2016 and was again carried out by Valentina Amoroso.<sup>372</sup> That was after the certificate of practical completion had been issued for Grenfell Tower and therefore too late to make any difference to that building. It is nonetheless relevant to how Arconic and the BBA continued to communicate and conduct themselves. This time, Ms Amoroso specifically asked for confirmation that no changes had been made to raw materials, manufacturing processes or quality control procedures.<sup>373</sup> That was the standard form of request used by BBA Project Managers at the time<sup>374</sup> and Ms Amoroso did not think it necessary to ask for a broader range of information.<sup>375</sup>

<sup>365</sup> {CEP000000281}.

<sup>366</sup> Gwenaelle Derrendinger provided certificates showing that Reynobond 55 PE cassettes had achieved European Class E to Taylor Maxwell, a UK supplier, on 3 February 2014 {MET00053173/91} and 9 March 2015 {MET00053173/135}. On the latter occasion the certificate was sent following a request from Deborah French who by that time had left Arconic and joined Taylor Maxwell.

<sup>367</sup> {BBA00008135}.

<sup>368</sup> {BBA00008135/6}.

<sup>369</sup> {BBA00010889}; {MET00053158\_P18/31}.

<sup>370</sup> {MET00053158\_P18/41}; {MET00053158\_P18/38}.

<sup>371</sup> Nkomo {Day107/67:9}-{Day107/68:3}.

<sup>372</sup> {BBA00010742}.

<sup>373</sup> {BBA00011051/5-6}.

<sup>374</sup> Amoroso {Day106/134:10-12}.

<sup>375</sup> Amoroso {Day106/137:5-24}.

- 21.41** Ms Amoroso corresponded with Nicholas Remy, Claude Wehrle’s junior colleague in Arconic’s Technical Sales Support team, who asked for clarification of precisely what documents the BBA wanted.<sup>376</sup> On 24 October 2016, he provided the documents Ms Amoroso had asked for, namely, technical datasheets, commercial brochures, installation manuals and EU marking data.<sup>377</sup> Before doing so, however, he wrote to Mr Wehrle on 18 October 2016 passing on part of Ms Amoroso’s request.<sup>378</sup> He said he felt as though he was dealing with something that was not clear cut and that what the BBA was coming to review had been “completely modified without them knowing anything about it”. In response Mr Wehrle assured Mr Remy that they would talk about it to alleviate any bad impression that Mr Remy had.<sup>379</sup> We do not know what exactly worried Mr Remy, but as far as we can tell, Arconic did not make any further information available to the BBA beyond complying strictly with Ms Amoroso’s request.
- 21.42** During this review, Ms Amoroso came to the firm conclusion that references to the product in cassette form should not be included in the certificate because Arconic did not manufacture cassettes or control their fabrication by others.<sup>380</sup> However, she did not see any difficulty in retaining references to the product in riveted form, although that too required a further process of cutting to size and shape and drilling to be undertaken after the product had left the factory. She did not consider the wider implications of her conclusion so far as fire performance was concerned.
- 21.43** By late 2016, some at the BBA had become aware of cladding fires that had occurred abroad.<sup>381</sup> As a result, the BBA’s newly formed Technical Excellence team decided that statements about height restrictions should be added to certificates for cladding products, particularly ACM panels.<sup>382</sup> There was also a view at the BBA at that time that the use of the word “filler” in clause 12.7 of Approved Document B was ambiguous and that the word “etc.” potentially broadened the ambit of that clause so that the core of an ACM product needed to be of limited combustibility to fall within it.<sup>383</sup> The BBA decided that holders of certificates for ACM products should either show that the core of the product was of limited combustibility, or that the panels achieved Euroclass A1 or A2, or that the cladding system when tested as a whole in accordance with BS 8414 could be shown to comply with the criteria in BR 135. The BBA decided that unless those statements could be included certificates for such products should state that they should not be used on buildings over 18 metres in height.<sup>384</sup> Those statements were to be added at the next re-issue of each certificate relating to an ACM product.<sup>385</sup>
- 21.44** We are surprised that if the BBA had decided to add a statement to all certificates relating to cladding products for safety reasons, it did not take more urgent steps to revise those already in existence. Since the BBA did not publicise the change, a person relying on a certificate would not have known about the change in policy.<sup>386</sup>

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<sup>376</sup> {BBA00011051/1-5}.

<sup>377</sup> {BBA00011051/1}.

<sup>378</sup> {MET00053158\_P18/61}.

<sup>379</sup> {MET00053158\_P18/61}.

<sup>380</sup> Amoroso {Day106/150:15-19}; {Day106/151:12-15}; {Day106/153:16-20}; {BBA00011057}.

<sup>381</sup> Nkomo {Day107/97:18-22}.

<sup>382</sup> Nkomo {Day107/96:10-15}.

<sup>383</sup> Albon {BBA00010723/36-37} pages 36-37, paragraphs 149-152. This is a subject examined in detail in Part 2 of this report.

<sup>384</sup> Amoroso {BBA00010797/16-17} pages 16-17, paragraphs 88-90; Amoroso {Day106/167:4-23}.

<sup>385</sup> Amoroso {BBA00010797/17} page 17, paragraph 91.

<sup>386</sup> Amoroso {BBA00010797/16} page 16, paragraph 86; Amoroso {Day106/172:2-11}.

**21.45** In February 2015, the BBA began using review checklists as part of the process leading to the completion of reviews.<sup>387</sup> The review checklist relating to the 2016 review of the Reynobond certificate indicated that it needed to be reissued for technical reasons, that references to the cassette form of the product should be removed, that statements should be added restricting the height at which it was suitable for use and that the wording should be refreshed generally.<sup>388</sup>

### Technical Reissue: 2016-2017

**21.46** Valentina Amoroso began work on the technical reissue of the certificate in November 2016.<sup>389</sup> The work was in progress at the time of the Grenfell Tower fire.<sup>390</sup>

**21.47** Almost immediately after the fire the BBA wrote to Arconic about its Reynobond certification.<sup>391</sup> It briefly suspended the certificate due to Arconic's failure to respond,<sup>392</sup> but Arconic wrote on 17 July 2017 advising that it had stopped selling Reynobond 55 PE for use on high-rise buildings and asking for the certificate to be maintained.<sup>393</sup> The BBA was satisfied that it could continue to certify the product.<sup>394</sup>

**21.48** On 21 July 2017, the BBA sent Arconic a draft of a revised certificate which stated that the panels were available in two grades, denoted "ST" and "FR". ("ST" was formerly denoted "PE" and contained an unmodified polyethylene core.)<sup>395</sup> It also stated in clause 1.4 that the flat panels could be formed into cassettes, but that the manufacturing and use and fixing of cassettes were not covered by the certificate. Fire performance information was presented in a table which recorded that the FR version was classed B-s1, d0 and the ST version (i.e., the version with an unmodified polyethylene core) was classed B-s2, d0.<sup>396</sup> The latter statement was undoubtedly wrong and was particularly dangerous in view of the failure to include in clause 1.4 any indication that the fire performance of the product in cassette form was markedly worse than in riveted form. The draft also made clear that only Reynobond FR achieved national Class 0 and all statements in the previous certificate to the effect that the product could be "regarded as" Class 0 were removed. The draft included restrictions on the use of the product on buildings over 18 metres in height.<sup>397</sup>

**21.49** Although the draft certificate was intended only for Arconic's information,<sup>398</sup> on 25 July 2017 Claude Wehrle commented on it, demonstrating that he had read it.<sup>399</sup> He did not correct the errors in the European fire performance classification of the "ST" version, even though there was no basis on which at that stage Reynobond 55 PE could be described as Class B. Given that the certificate was being drafted by the BBA immediately after a serious fire in which many people had died involving the very product being certified, it is astonishing that it did not check that the fire performance information was correct

<sup>387</sup> Nkomo {Day107/68:13-20}; Nkomo {BBA00010783/5} page 5, paragraph 12e.

<sup>388</sup> {BBA00011085}.

<sup>389</sup> {MET00053158\_P18/144-151}.

<sup>390</sup> {MET00053158\_P18/157-164}.

<sup>391</sup> {BBA00010769/6}; {MET00053158\_P18/174-180}; {MET00053158\_P18/181-182}.

<sup>392</sup> {BBA00010428}; {BBA00010429}.

<sup>393</sup> {MET00053158\_P18/193-194}.

<sup>394</sup> Moore {BBA00000159/4} page 4, paragraph 8.

<sup>395</sup> {BBA00008221/3} clause 1.2

<sup>396</sup> {BBA00008221/7}.

<sup>397</sup> {BBA00008220}; {BBA00008221}.

<sup>398</sup> {BBA00008220}.

<sup>399</sup> {MET00053158\_P19/23}.

but merely repeated old claims.<sup>400</sup> Against that background it is even more astonishing that Arconic failed to say anything when presented with a draft certificate that contained materially and obviously incorrect information.

- 21.50** The BBA formally reissued the certificate on 4 August 2017.<sup>401</sup> It stated, wrongly, that the standard PE panel with a grey/green Duragloss coating was classed B-s2, d0.

### Re-issue September 2017

- 21.51** On 8 September 2017 Claude Wehrle informed Shaun O’Neill that Arconic was no longer selling Reynobond 55 PE at all in the UK.<sup>402</sup> On 22 September 2017 the certificate was amended and reissued, removing the references to Reynobond 55 PE.<sup>403</sup> From that time the BBA certified Arconic’s Reynobond FR product only.

### The BBA’s discovery of the Reynobond PE and FR test reports

- 21.52** On 29 January 2018, BBC journalist Tom Symonds met Brian Moore, then Operations Director of the BBA. Mr Symonds said that he had information that Arconic had changed the core of Reynobond 55 PE from translucent to black<sup>404</sup> and provided some details in writing shortly thereafter.<sup>405</sup> On 19 February 2018 Mr Symonds sent the BBA a bundle of test reports on Reynobond 55 PE between 2013 and 2015 which showed that Reynobond 55 PE had Euroclass C and E classifications.<sup>406</sup>
- 21.53** Between February and April 2018 Brian Moore made extensive inquiries of Arconic and its legal representatives about the fire performance information in its possession that it had not disclosed to the BBA.<sup>407</sup> On 27 April 2018 Arconic disclosed to the BBA six test and classification reports on Reynobond 55 FR dating from 2012 to 2016<sup>408</sup> on the basis that the current certificate covered that product.<sup>409</sup> Had the BBA received those reports when they were created, no doubt it would have re-evaluated the product and reissued the certificate with more accurate and complete information. Arconic refused to provide test information about Reynobond 55 PE on the basis that the certificate no longer covered that product. By that time Arconic had become a core participant in the Inquiry.<sup>410</sup>
- 21.54** Despite the non-disclosures and the highly material matters they revealed, the BBA did not immediately suspend or withdraw the Reynobond certificate. Mr Moore said that that was because the test reports on Reynobond PE obtained from the BBC had not come from CSTB directly and the BBA wanted to know what Arconic said about them.<sup>411</sup> He also pointed out that at that time the certificate did not extend to Reynobond 55 PE.<sup>412</sup>

<sup>400</sup> Amoroso {Day106/189:3-10}; {Day106/189:23}-{Day106/190:2}.

<sup>401</sup> {BBA00000046}.

<sup>402</sup> {BBA00010769/16}.

<sup>403</sup> {BBA00000049}.

<sup>404</sup> Moore {BBA00000159/4} page 4, paragraph 11.

<sup>405</sup> {BBA00008363}.

<sup>406</sup> {BBA00009147/2} attaching reports: RA13-0333 (Classification Report for Reynobond PE, cassette, issued 4 December 2014, Class E); RA14-0339 (Classification report for Reynobond 55 PE, riveted system, issued 4 December 2014, classification Cs2, d0); RA15-0200 (Classification Report for Reynobond 55 PE, riveted system, issued 22 September 2015, Cs2, d0); RA15-0201 (Classification Report for Reynobond 55 PE, cassette system, issued 22 September 2015, Classification E).

<sup>407</sup> Moore {BBA00000159/5-13} pages 5-13, paragraphs 13-44; {BBA00010769}.

<sup>408</sup> {BBA00010769/69}.

<sup>409</sup> Albon {BBA00000158/14} page 14, paragraph 55.

<sup>410</sup> {BBA00010769/69}.

<sup>411</sup> Moore {Day108/83:4-16}; {Day108/84:8-15}.

<sup>412</sup> Moore {Day108/84:22}-{Day108/85:3}.

**21.55** It was only on reading Dr Lane’s report to the Inquiry in November 2018<sup>413</sup> that the BBA became aware of the existence of Test 5B on Reynobond PE in cassette form and believed that it had the basis for taking action against Arconic.<sup>414</sup> On 17 November 2018 it suspended the certificate for material non-disclosure in breach of contract<sup>415</sup> and on 1 March 2019, it withdrew the certificate for Reynobond 55 in all forms.<sup>416</sup>

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<sup>413</sup> Albon {BBA00000158/11} page 11, paragraphs 38-39; {BLAS0000036}.

<sup>414</sup> Moore {Day108/99:12-15}.

<sup>415</sup> {MET00053158\_P19/41-45}.

<sup>416</sup> {MET00053158\_P19/47}.





# Chapter 22

## Kingspan K15 insulation

### The use of K15 insulation on Grenfell Tower

- 22.1** Most of the insulation used on Grenfell Tower during the refurbishment was Celotex RS5000. A small amount, probably about 5% of the total, was K15 Kooltherm manufactured by Kingspan Insulation Limited and marketed for use in rainscreen cladding systems.<sup>417</sup>
- 22.2** K15 was a rigid phenolic foam board with a foil facer bonded to both faces. Phenolic foam is combustible, with a short time to ignition.<sup>418</sup> How K15 came to be supplied in May<sup>419</sup> and September<sup>420</sup> 2015 for use in the refurbishment of the tower has been described in Chapter 56 of the report. Kingspan was not aware until after the fire that K15 had been used on the tower.<sup>421</sup>

### K15 – the product

- 22.3** K15 was first manufactured at Kingspan’s Pembridge site in Herefordshire in November 2002.<sup>422</sup> At that time, the foam was produced with a pentane blowing agent.<sup>423</sup> The foil facers of the product were unperforated, with a thickness of 7.6 microns.<sup>424</sup>
- 22.4** Following its acquisition of a Dutch company in 2003,<sup>425</sup> Kingspan began to introduce a number of changes to its phenolic foam range. They included physical changes to the structure of the foam and the introduction of different chemical ingredients and manufacturing processes to achieve better thermal performance and rates of productivity.<sup>426</sup> In particular, Kingspan introduced the use of a mixture of pentane and isopropyl chloride as a blowing agent<sup>427</sup> and perforations were introduced to the aluminium foil facers.<sup>428</sup> The new version of K15 came to be known within Kingspan as “new technology” or “Kesteren technology”<sup>429</sup> K15 and the previous version as “old technology” K15.<sup>430</sup> Dr Rochefort said that by September 2006 the K15 available to the market was the “new technology” version of the product.<sup>431</sup> Ivor Meredith, who had been a Project Leader

<sup>417</sup> Marketing literature 2001 {KIN00020720}; 2002 {KIN00009173} and {KIN00008018}; 2003 {KIN00002579}; 2006 {KIN00005071}; 2007 {KIN00002580}; 2008 {KIN00009703}; 2011{KIN00003545}; 2015 {KIN00000086}; 2016 {KIN00000070}.

<sup>418</sup> See Phase 1 Report Volume I, paragraph 6.20 for a description of the fire properties of phenolic foam.

<sup>419</sup> {SIG00000012}.

<sup>420</sup> {CCF00000019}.

<sup>421</sup> Burnley {KIN00000554/5} page 5, paragraph 4.2.

<sup>422</sup> {KIN00022307} Tab 2, Row 2, Column C.

<sup>423</sup> Rochefort {KIN00008838/7} page 7, paragraph 3.10; Rochefort {Day80/50:21-22}; {KIN00022307} Tab 2, Row 2, Column C.

<sup>424</sup> Meredith {Day75/35:16-18}; Heath {Day79/13:8-10}; Rochefort {Day80/54:11}; {KIN00022307} Tab 2, Row 2, Column C.

<sup>425</sup> Rochefort {Day80/46:15}; Rochefort {KIN00008838/6} page 6, paragraph 3.6; Heath {Day79/11:13}; Heath {KIN00020709/9} page 9, paragraph 3.4.

<sup>426</sup> Rochefort {KIN00008838/6-7} pages 6-7, paragraphs 3.6 and paragraph 3.8.

<sup>427</sup> Rochefort {Day80/50:25}.

<sup>428</sup> Heath {Day79/13:4-7}; Meredith {Day75/35:16-18}; Rochefort {Day80/54:6-8}.

<sup>429</sup> Kesteren is the name of the location in the Netherlands where Marec manufactured phenolic foam.

<sup>430</sup> Rochefort {KIN00008838/6} page 6, paragraph 3.6.

<sup>431</sup> Rochefort {Day80/34:23-24}; {Day80/48:22-23}; Rochefort {KIN00008838/9} page 9, paragraph 3.17.

in the Technical Projects team,<sup>432</sup> and his line manager, Philip Heath, Technical Manager until 2010,<sup>433</sup> both agreed, although they thought that production of “old technology” K15 had ceased in about August 2007.<sup>434</sup>

- 22.5** Phenolic foam is an organic polymer, so whatever blowing agents or methods are used to produce it, it is not a material of limited combustibility as defined in Approved Document B.<sup>435</sup> With the exception of Dr Rochefort, who professed not to have been aware at the time of the fire performance of K15 or the existence of a definition of limited combustibility in Approved Document B,<sup>436</sup> all the Kingspan witnesses from whom we heard confirmed that they had been aware throughout their employment at Kingspan that K15 was not, and never could be, a material of limited combustibility.<sup>437</sup>

## Early marketing

- 22.6** From a very early stage, even before the first test in accordance with BS 8414 in 2005, Kingspan knew that, applying the guidance in Approved Document B, K15 was not suitable for use on buildings over 18 metres in height.<sup>438</sup> However, it chose to disregard that fact when selling K15 and advising on its use. Kingspan’s principal marketing literature from 2001 onwards described K15 as suitable for use in rainscreen cladding systems generally<sup>439</sup> and brochures published between 2002 and 2006 described it as a product designed for use behind rainscreen cladding systems without any qualification.<sup>440</sup> None of those documents referred to the warning in Approved Document B about the use of combustible materials in tall buildings or of the guidance that insulation used on buildings over 18 metres in height should be of “limited combustibility”. That was the case even in those sections of the documents that depicted typical design details, where no distinction was drawn between use of the product on buildings of over and under 18 metres in height.<sup>441</sup>
- 22.7** In 2004 Ivor Meredith was a Technical Advisor in Kingspan’s Technical Projects Team; from 2005 he was a Project Leader.<sup>442</sup> On 19 March 2004 he wrote to contacts at Tower Hamlets Borough Council and LABC inviting comments. His email was headed “Insulation above 18m”. In it he acknowledged that K15 did not meet the criteria for limited combustibility, but he expressed confidence in its fire performance and said that it had been accepted regularly for use on buildings over 18 metres in height in ventilated facade systems. He also said that K15 had been “pigeonholed” with combustible insulation, even though the char that he said would form when it was exposed to flame limited the combustibility of the product.<sup>443</sup>

<sup>432</sup> Meredith {KIN00022312/1} page 1, paragraph 1.

<sup>433</sup> Heath {KIN00020709/4-6} pages 4 and 6, paragraphs 2.8 and 2.18.

<sup>434</sup> Heath {KIN00020709/13} page 13, paragraph 3.18; Meredith {Day75/124:24}–{Day75/125:3}.

<sup>435</sup> See Chapter 5; Table A7 in all relevant editions – 2000 {INQ00014107/120}; 2002 {CLG10000740/124}; 2006 {CLG10000007/132}; 2010 {CLG00000173/132}; 2013 {CLG00000224/132}.

<sup>436</sup> Rochefort {KIN00008838/23} page 23, paragraph 5.8; Rochefort {Day80/27:12-15}; {Day80/28:25}–{Day80/29:4}.

<sup>437</sup> Meredith {Day75/25:17-21}; Millichap {Day81/25:4-10}; Pack {Day86/22:1-5}; Burnley {Day85/134:1-3}; Pargeter {KIN00000494/6} page 6, paragraph 3.4; Heath {Day78/181:7-12}; Mills {Day77/15:3-6}.

<sup>438</sup> Heath {Day78/198:2}; {KIN00005054/1} where on 26 January 2004 Mr Meredith reported to Mr Heath on the work then being carried out to try to develop a K15 product “that will achieve acceptability for above 18m in facade construction by Building Regulations”.

<sup>439</sup> {KIN00020720/1}.

<sup>440</sup> January 2002 {KIN00009173}; November 2002 {KIN00008018}; March 2003 {KIN00002579}; June 2006 {KIN00005371}.

<sup>441</sup> See for example {KIN00005371/2}.

<sup>442</sup> Meredith {KIN00022312/1} page 1, paragraph 1.

<sup>443</sup> {KIN00003685}.

**22.8** The language of that email was liable to mislead, because as Mr Meredith well understood,<sup>444</sup> insulation used on buildings of 18 metres or more in height had to be of limited combustibility if it was intended to follow what was known as the “linear route to compliance” in Approved Document B and K15 did not satisfy that requirement. He said that he had borrowed the language from a set of written standard answers, possibly produced by the European Phenolic Foam Association, then in circulation within Kingspan.<sup>445</sup> Whether that is right or not, however, the message provides some insight into the methods that Kingspan was using to sell K15 at the time and how it might have come about that, as Mr Meredith told us, K15 was being accepted for use on buildings over 18 metres in height in the period before any large-scale system test in accordance with BS 8414 had been carried out.<sup>446</sup>

### Large scale testing: May 2005

**22.9** Before the publication of the BS 8414-1 test standard in December 2002<sup>447</sup> Kingspan had begun to explore the possibility that it could use successful testing to BS 8414 to promote and sell K15 for use on buildings over 18 metres in height.<sup>448</sup> On the publication of the 2006 edition of Approved Document B in April 2007<sup>449</sup> it encouraged and celebrated the adoption of the BS 8414 test,<sup>450</sup> which it viewed as an opportunity to create a new category of insulation products for use on buildings over 18 metres in height, namely, products that were not materials of limited combustibility but were nonetheless suitable for use above that height.

**22.10** That was the foundation of the fundamental falsehood at the heart of Kingspan’s marketing strategy in the years that followed. There was no such thing as an insulation product that was combustible and yet could be used generally on buildings above 18 metres in height while following the guidance in Approved Document B. The use of a combustible product on such a building in accordance with Approved Document B was possible only if it were incorporated in a system which had been tested in accordance with BS 8414 and had met the performance criteria in BR 135 (2003). There was therefore no “over 18 metre market” for combustible insulation products as such. Insulation materials that were not of limited combustibility could be used on buildings over 18 metres in height in accordance with the guidance in Approved Document B only on the basis of a test of the particular system it was intended to install. Nonetheless, once BS 8414 and BR 135 had become available, Kingspan treated them as a generally applicable “route to compliance” for K15 as a product, even though it could constitute only part of any such system.<sup>451</sup>

**22.11** Following preliminary testing,<sup>452</sup> in 2004 Kingspan began preparing for its first full test in accordance with BS 8414-1 of a system incorporating K15. The test was arranged by Ivor Meredith,<sup>453</sup> under the supervision of Philip Heath.<sup>454</sup> Mr Meredith was responsible

<sup>444</sup> Meredith {Day75/26:14-19}.

<sup>445</sup> Meredith {Day75/27:13-21}.

<sup>446</sup> Meredith {Day75/28:13}-{Day75/29:3}.

<sup>447</sup> {CEL00001205}.

<sup>448</sup> K5, an identical phenolic foam to K15 with different foil facers, was tested to a draft version of BS 8414-1 as early as March 2002: Meredith {Day75/32:8-20}; {KIN00003685}.

<sup>449</sup> Reference to the use of BS 8414 test data classified in accordance with the criteria in BR 135 as an alternative to the use of insulation material of limited combustibility on buildings over 18 metres in height was first included in the 2006 edition of Approved Document B published on 6 April 2007 {CLG10000007/95}.

<sup>450</sup> Kingspan’s AD B consultation response {CLG00002607/24}; {KIN00005292/9} second paragraph.

<sup>451</sup> Meredith {Day75/29:21-22}.

<sup>452</sup> March 2002 test on K5 and Permarock {KIN00003685}; November or December 2004 “naked” test without cladding {KIN00022357} Row 1. See also for example {KIN00005048}; {BRE00003278}.

<sup>453</sup> Heath {Day78/173:8-19}; Meredith {Day75/4:19}-{Day75/5:15}.

<sup>454</sup> Technical Manager from 2001 to 2010. See Heath {KIN00020709/4-6} pages 4 and 6, paragraphs 2.8 and 2.18.

within Kingspan for the planning and design of the test rig and for the sourcing, purchase and delivery of the necessary materials, as well as for liaising with BRE during preparations for the test and in connection with its design.<sup>455</sup> Both he and Philip Heath told us that the decision to test in accordance with BS 8414-1 at that time had been taken by a wider group of managers and directors at Kingspan, as had been the choice of the components of the cladding system to be tested.<sup>456</sup> They also agreed that the purpose of the test had been to use a successful result to promote K15 as a product for use on buildings over 18 metres in height.<sup>457</sup>

**22.12** The test was carried out in May 2005. Kingspan decided to test a system using “old technology” K15<sup>458</sup> with a non-combustible cement particle or fibre cement board as the rainscreen. There was some disagreement between the witnesses about the precise nature of the rainscreen used. Philip Heath was unable to remember what it had been,<sup>459</sup> whereas Ivor Meredith said that it had been a 6mm non-combustible cement particle board manufactured by a company called UAC,<sup>460</sup> which is the information recorded in the test report issued by BRE in December 2005.<sup>461</sup> Mr Meredith went on to tell us that the rainscreen had been a fibre cement board marketed in the UK as ‘Supalux’.<sup>462</sup> Other Kingspan witnesses, notably Adrian Pargeter, the Head of Technical and Marketing,<sup>463</sup> Adrian Brazier<sup>464</sup> and Adam Heath,<sup>465</sup> said they thought that the rainscreen had in fact been a non-combustible fibre cement board.<sup>466</sup> None of the latter group had had any involvement in the test.<sup>467</sup> Their belief that fibre cement boards had been used, which was expressed with varying degrees of confidence, was based solely on investigations carried out by Kingspan in 2016 and 2019.<sup>468</sup> No BRE witness was able to recall the precise nature of the board beyond the description given in the test report.<sup>469</sup>

<sup>455</sup> Meredith {Day75/42:21}-{Day75/43:16}.

<sup>456</sup> Heath {Day78/201:14-17}; {Day78/204:19-22}; Meredith {Day75/58:9-16}.

<sup>457</sup> Heath {Day78/202:14-15}; Meredith {Day75/58:19-20}.

<sup>458</sup> {KIN00024104/2} paragraph 4; Meredith {Day75/88:19-24}; Pargeter {KIN00022610/52} page 52, paragraph 7.1.

<sup>459</sup> Heath {KIN00020709/79} page 79, footnote 48.

<sup>460</sup> Meredith {Day75/67:21}-{Day75/68:12}.

<sup>461</sup> BRE Report (Test 220876) {BRE00002511/6} third paragraph.

<sup>462</sup> Meredith {Day76/207:18-24}.

<sup>463</sup> Pargeter Kingspan’s Head of Marketing from November 2014 and Head of Marketing and Technical from June 2015 {KIN0000494/4-5} pages 4-5, paragraphs 2.7 and 2.8.

<sup>464</sup> Adrian Brazier replaced Ivor Meredith as Technical Projects Manager in September 2015, Brazier {KIN00008828/4} page 4, paragraph 2.7.

<sup>465</sup> Adam Heath was Kingspan’s Technical Projects Leader from May 2014, with responsibility from August 2015 for large-scale fire testing. In April 2019, he moved to the role of Regulatory Affairs Manager, Heath {KIN00008834/3-5} pages 3-5, paragraphs 2.4, 2.6 and 2.9.

<sup>466</sup> Pargeter {KIN00020824/100} page 100, paragraph 10.57; Pargeter {Day 83/175:11-19}; Heath {KIN00008834/96} page 96, paragraph 11.53; Brazier {KIN00008828/59} page 59, paragraph 11.37.

<sup>467</sup> Pargeter {KIN00020824/100} page 100, paragraph 10.55; Heath {KIN00008834/96} page 96, paragraph 11.52; Brazier {KIN00008828/58} page 58, paragraph 11.31.

<sup>468</sup> In 2016, while working on the development testing of a lower lambda insulation product called K115, Kingspan began preparations to replicate the test in accordance with BS 8414 carried out in May 2005, leading it in 2016 and again in 2019 to try to ascertain the precise nature of the board used as external cladding in that test. Heath {KIN00008834/96} page 96, paragraph 11.53; Pargeter {KIN00020824/100} page 100, paragraphs 10.55-10.57.

<sup>469</sup> Clark {Day96/121:19-24}; Colwell {Day232/205:16-17}; Baker {Day100/50:6-11}.

- 22.13** Mr Heath and Mr Meredith both told us that the components used in the 2005 test rig had been chosen in discussion with and on the advice of BRE.<sup>470</sup> Ivor Meredith identified Dr Sarah Colwell,<sup>471</sup> David Hoare<sup>472</sup> and Philip Clark<sup>473</sup> as the BRE staff who were involved in discussions with Kingspan both before and after the test.<sup>474</sup> Philip Heath described the test as a “pilot test”, with the particular assembly suggested by BRE.<sup>475</sup> It seems clear that the test had been intended to be the first in a series of large-scale tests.<sup>476</sup>
- 22.14** Mr Heath and Mr Meredith also told us that BRE had suggested that if Kingspan tested a system with a non-combustible rainscreen which met the criteria in BR 135, it could use the results to produce a report indicating that K15 could be used in other systems incorporating non-combustible rainscreens.<sup>477</sup> Ivor Meredith described that as a “scope of application”<sup>478</sup> or “expanded scope of application”<sup>479</sup> report. He said that obtaining a report of that kind from BRE was the main purpose of carrying out the test. He understood that a report of that kind based on just one test might render K15 acceptable for use on buildings over 18 metres in height with *all* non-combustible rainscreen materials.<sup>480</sup> In an internal activity report written on 31 May 2005, the day of the test, Mr Meredith told his managers that a successful result that afternoon would remove any limitations on selling K15 into the high-rise market.<sup>481</sup>
- 22.15** It was for that reason, as Ivor Meredith and Philip Heath agreed, that the boards chosen as the rainscreen for the system tested in May 2005 were not of a kind that would ever be installed in practice, either then or now. They were intended to represent a non-combustible rainscreen of any kind.<sup>482</sup> Dr Colwell confirmed that Kingspan had given her to understand that its aim had been to test K15 with a generic rainscreen.<sup>483</sup> We are satisfied that Kingspan’s intention in choosing cement particle or fibre cement boards for the test was simply to represent as wide a range of non-combustible rainscreen panels as possible. Since the witnesses agreed that in either case the boards used had been non-combustible, it is not necessary for us to reach a decision on precisely which kind was used in the test.
- 22.16** The test took place at BRE’s burn hall on 31 May 2005 and was successful in that BRE expressed the view that the system appeared to have met the criteria in BR 135.<sup>484</sup> The test report, written by Philip Clark and approved by David Hoare, was issued on 9 December 2005.<sup>485</sup> A separate report classifying the system in accordance with BR 135 was issued more than ten years later, on 28 September 2015.<sup>486</sup>

<sup>470</sup> Heath {Day78/204:17-22}; {Day78/207:9-12}; {Day78/208:18}-{Day78/209:7}; Meredith {Day75/130:23-25}.

<sup>471</sup> In 2005, Dr Sarah Colwell was the joint Business Group Manager for the BRE’s Passive Fire Team, Colwell {BRE00047571/3} page 3, paragraph 12.

<sup>472</sup> From 2005 to September 2015, David Hoare was the BRE’s Business Group Manager in relation to cables. He also had some involvement in the testing of composite panel systems and in the approval of fire test reports, Hoare {BRE00005622/2} page 2, paragraph 5.

<sup>473</sup> Philip Clark was the Burn Hall Manager at BRE between 2004 and 2017. Mr Clark was involved in BS 8414 testing at BRE from 1999 onwards and was part of the team that developed Parts 1 and 2 of BS 8414, Clark {BRE00005768/3-5} pages 3 and 5, paragraphs 13 and 22.

<sup>474</sup> Meredith {Day75/59:8}; Colwell {Day75/20:24}; Clark {Day75/63:8-20}; David Hoare, the Senior Consultant who approved BRE’s test report). See BRE Report {BRE00002511/2}.

<sup>475</sup> Heath {Day78/191:14-17}.

<sup>476</sup> Meredith {Day75/59:21-25}; Heath {Day78/202:23}-{Day78/203:4}.

<sup>477</sup> Heath {Day78/191:18-24}; {Day78/209:1-7}; Meredith {Day75/58:21}-{Day75/59:6}.

<sup>478</sup> See for example, Meredith {Day75/92:24}-{Day75/93:2}.

<sup>479</sup> Meredith {Day75/99:19-21}.

<sup>480</sup> Meredith {Day75/59:3-6}.

<sup>481</sup> {KIN00021738} first paragraph.

<sup>482</sup> Meredith {Day75/69:20}-{Day75/70:24}; Heath {Day78/207:9-15}.

<sup>483</sup> Colwell {BRE00047571/48} page 48, paragraph 299; Colwell {Day232/214:3-5}.

<sup>484</sup> Heath {Day79/8:6-13}.

<sup>485</sup> {BRE00002511}.

<sup>486</sup> Report P101812-1000 {KIN00000134}.

- 22.17** In the event, no “scope of application” report was produced by BRE on the basis of the test. Mr Meredith’s evidence, which was consistent with Mr Heath’s understanding of what had happened, was that after the test had taken place, BRE had changed its position by retracting its previous suggestion that it could produce a report providing support for the use of K15 with other types of non-combustible rainscreen materials.<sup>487</sup> In his evidence, Mr Meredith described a heated meeting with Dr Sarah Colwell and an unidentified director of Kingspan Off-Site Ltd<sup>488</sup> at some stage after the test during which she had made it clear to him that no wider report could or would be produced by BRE.<sup>489</sup> He recorded those events in the background section of an internal summary to his managers on 7 January 2008, describing both BRE’s initial advice and its later retraction.<sup>490</sup>
- 22.18** Dr Colwell denied that she had been aware of any discussions with Kingspan of the kind described by Mr Meredith either before or after the test in May 2005.<sup>491</sup> She said she had not given any advice to Kingspan on the assembly it should use in the test<sup>492</sup> or on how to satisfy the criteria in BR 135.<sup>493</sup> Dr Colwell was shown an internal Kingspan document in which Mr Meredith had reported to his managers that, following a Single Burning Item test on K15 in March 2004, she had told him that K15 had a good chance of passing the BS 8414 test if the right detailing was adopted.<sup>494</sup> In the same document Mr Meredith had recorded that in October 2004 Dr Colwell had suggested that Kingspan should carry out a preliminary “naked” test (i.e. with no rainscreen) to help it pass when it was tested in accordance with BS 8414-2.<sup>495</sup> Dr Colwell told us that Mr Meredith was mistaken when recording those comments<sup>496</sup> and that she thought he was putting a particular slant on their discussions.<sup>497</sup>
- 22.19** On 14 December 2004 Mr Meredith sent Dr Colwell an email in which he said that Kingspan had decided to follow her guidance and therefore wanted to perform a full test on K15 in accordance with BS 8414-1.<sup>498</sup> When asked about it, she said that she could not understand what he might have meant.<sup>499</sup> She said that her discussions with Kingspan at that time about testing K15 in accordance with BS 8414 had been of a general nature,<sup>500</sup> and had concerned the programme of tests it was planning to carry out. They had not extended beyond exploring how BRE could meet Kingspan’s required programme.<sup>501</sup>
- 22.20** We did not find Dr Colwell’s evidence on these matters very convincing and have been left with the clear impression that she and other employees of BRE were doing much more to assist Kingspan than she was willing to admit. Moreover, although she initially denied that she had known anything about discussions between BRE and Kingspan during or after the May 2005 test,<sup>502</sup> Dr Colwell was constrained to accept that, as reflected in an email

<sup>487</sup> Meredith {KIN00022312/5} page 5, second paragraph; Meredith {Day75/130:21}-{Day75/131:4}; Heath {Day78/192:20}-{Day78/193:1}; {Day78/209:16}-{Day78/210:3}.

<sup>488</sup> Kingspan Off-Site Ltd, previously known as Kingspan Metl-Con Ltd, was part of the Kingspan group. At the time it manufactured and sold pre-fabricated building and facade systems: Stevens {MET00080972/3} page 3, second paragraph.

<sup>489</sup> Meredith {KIN00022312/5} page 5, first, second and third paragraphs; Meredith {Day75/130:10}-{Day75/133:24}.

<sup>490</sup> {KIN00008847/5} page 5, first and second paragraphs.

<sup>491</sup> Colwell {Day232/214:16}-{Day232/217:4}.

<sup>492</sup> Colwell {Day232/205:18-21}.

<sup>493</sup> Colwell {Day232/196:24}-{Day232/198:16}; {Day232/200:23}-{Day232/201:7}.

<sup>494</sup> {KIN00021657} ninth paragraph.

<sup>495</sup> {KIN00021657} twelfth paragraph.

<sup>496</sup> Colwell {Day232/197:9-12}.

<sup>497</sup> Colwell {Day232/198:12-16}.

<sup>498</sup> {BRE00047572/1}.

<sup>499</sup> Colwell {Day232/200:10-18}.

<sup>500</sup> Colwell {Day232/198:18-22}.

<sup>501</sup> Colwell {Day232/201:2-7}.

<sup>502</sup> Colwell {BRE00047571/47} page 47, paragraph 295.

exchange between BRE and Mr Meredith in March 2006,<sup>503</sup> she had attended a meeting in February 2006 with him and an employee of Kingspan Off-Site, as he had described, during which they had discussed the test in May 2005. She said she could not recall any details of that discussion.<sup>504</sup>

- 22.21** Dr Colwell’s recollection of events during the period was poor and fragmented and tended to shift in response to the documents. In contrast, Mr Meredith’s account was detailed, clear and essentially unchanging. His recollection was also supported by a number of documents, including contemporaneous correspondence.<sup>505</sup> We are satisfied that in the period leading up to the test in May 2005, he thought that a successful test could lead to some kind of generic approval for the use of K15 on buildings over 18 metres in height, even if limited to other systems incorporating non-combustible rainscreens. It is more likely than not that his belief was influenced to a substantial degree, if not founded upon, advice received from Dr Colwell or others at BRE.
- 22.22** It is not clear exactly when BRE decided that it would not produce a report on K15 that would support its use in conjunction with any non-combustible rainscreen. Philip Heath could not recall<sup>506</sup> and Ivor Meredith could only say that it had occurred shortly after the test.<sup>507</sup> Dr Colwell denied that any retraction had occurred. In April 2006, Kingspan was still chasing Dr Colwell for an assessment<sup>508</sup> and was clearly still expecting it to be one that would confirm the suitability of K15 for use on buildings over 18 metres in height generally and could be sent to all its customers.<sup>509</sup> Although we do not consider that the precise date of BRE’s change of heart is of particular importance, it is of note that by the date of his report on 7 January 2008 at the very latest (and probably considerably earlier),<sup>510</sup> Mr Meredith had understood and had made his managers aware that any claims Kingspan made about success in the test carried out in May 2005 could apply only to external walls constructed using the same components in the same configuration.<sup>511</sup> In his report, he informed his managers that the “BRE are adamant that approval only applies to what is tested”.<sup>512</sup>

### Kingspan’s presentation of the 2005 test: 2005 and 2006

- 22.23** Ivor Meredith knew that a test in accordance with BS 8414 could not produce a result that would cover all possible uses of K15.<sup>513</sup> With the exception, again, of Dr Rochefort,<sup>514</sup> every Kingspan witness from whom we heard confirmed their understanding that BS 8414 was a system test that had no generic application, still less any application for one particular

<sup>503</sup> {KIN00005165/2} “Further to our meeting last month”.

<sup>504</sup> Colwell {Day232/210:16-25}.

<sup>505</sup> See, for example, the report of January 2006 {KIN00020718/2} first bullet point under “Projects”; {KIN00004795}; {KIN00005165/1}.

<sup>506</sup> Heath {Day78/212:20}–{Day78/213:3}.

<sup>507</sup> Meredith {Day75/130:14}.

<sup>508</sup> {KIN00005163}.

<sup>509</sup> {KIN00004795}.

<sup>510</sup> Ivor Meredith’s report of 7 January 2008 {KIN00008847/5} contained an explanation of the circumstances in which Kingspan had begun a programme of BS 8414-2 testing, the key driver being BRE’s refusal to issue a report supporting a broad scope of application. The first test in the programme had taken place on 20 December 2007 but planning for it had begun early in 2006. On 7 April 2006, Dr Malcolm Rochefort noted in his diary, “K15 – do we need another 8414 test?” {KIN00024441}.

<sup>511</sup> {KIN00008847/5} second paragraph.

<sup>512</sup> {KIN00008847/5} third paragraph.

<sup>513</sup> Meredith {Day75/71:20-23}.

<sup>514</sup> Rochefort {Day80/20:22}–{Day80/21:23}; {Day80/25:3-13}; {Day80/35:16}–{Day80/36:12}; {Day80/82:13}–{Day80/83:19}; where Dr Rochefort cited the fact that BS 8414 is a system test as the basis for his lack of action following a later unsuccessful BS 8414-2 test.

component of the system tested.<sup>515</sup> Nonetheless, following the test in May 2005 Kingspan proceeded to claim precisely that in all its marketing and sales literature relating to K15, as well as in its correspondence with customers.

- 22.24** By October 2005, in emails advising customers about the use of K15 on buildings over 18 metres in height, Kingspan was using variations of standard wording produced by Ivor Meredith which he acknowledged to colleagues at the time was possibly “a bit heavy in some areas”.<sup>516</sup> Kingspan always told customers that K15 had passed a test in accordance with BS 8414 and sometimes told them that any material claiming to be fire safe should have passed that test.<sup>517</sup> The text produced by Mr Meredith included a statement that “To fall within the requirements of Approved Document B Kooltherm K15 can continue above 18 metres”<sup>518</sup> and statements were also made to customers that K15 met “the criterion [sic] of BR 135 and thus the 18m rule”.<sup>519</sup> Both claims were false.
- 22.25** In January 2006 Kingspan began sending out to customers<sup>520</sup> a promotional document entitled “What’s lurking behind your façade?”<sup>521</sup> which came to be referred to within Kingspan as the K15 or BS 8414 “flyer”.<sup>522</sup> In it Kingspan stated that K15 had been tested and “awarded certification to BS 8414-1” and had been “assessed and approved in accordance with BR 135”. Both statements were false. BS 8414 is a test method which does not provide the basis for certification of any kind, much less the certification of a particular product, and a single component of a system tested in accordance with BS 8414 could not be assessed or approved in accordance with BR 135 because the performance criteria in BR 135 were applicable only to the system as a whole.
- 22.26** Kingspan withdrew the flyer after it came to the attention of BRE,<sup>523</sup> who at some stage before 8 June 2006<sup>524</sup> complained to Kingspan about the inaccuracy of its contents.<sup>525</sup> It does not appear that there was any further complaint from BRE about Kingspan’s broader misrepresentation of BS 8414 as a product test. Although the words “certified” and “approved” were eventually removed from the flyer, avowedly to “steer clear of the BRE’s wrath”,<sup>526</sup> the misleading assertion that K15 as a product had been tested and was acceptable for use above 18 metres “when assessed in accordance with BR 135” persisted in the revised text that Mr Meredith told Kingspan’s technical advisors to use thereafter.<sup>527</sup>

<sup>515</sup> Pack {Day86/64:11-19}; {Day86/140:5-17}; Meredith {Day75/85:1-19}; Heath {Day78/196:14}-{Day78/197:2}; Mills {Day77/25:11-24}; Millichap {Day81/32:25}-{Day81/33:24}; Pargeter {Day83/113:21-25}-{Day83/114:1-3}; Burnley {KIN00022662/3} page 3, paragraph 1.10.

<sup>516</sup> {KIN00003687} third paragraph.

<sup>517</sup> {KIN00002575/2} third paragraph.

<sup>518</sup> {KIN00003687} sixth paragraph.

<sup>519</sup> {KIN00002577/2} While we note that Mr Meredith does refer in this email to a system, he included in that system only K15 and the particular cavity barrier product used in the May 2005 test, manufactured by Promat. He represented that those two products together met the criteria in BR 135, as part of an ultimately unsuccessful attempt to encourage Promat to make representations to the market about the compatibility of the two products. See also {KIN00005172/10} first paragraph for the claim that K15 “easily meets” the criteria in BR 135.

<sup>520</sup> {KIN00005133}.

<sup>521</sup> {KIN00005350}.

<sup>522</sup> For example, see {KIN00003688}; {KIN00005179}.

<sup>523</sup> No BRE witness was able to assist us with any details of the complaint. Despite an email copied to Dr Colwell in June 2006 in which Ivor Meredith referred to discussing the complaint with her {KIN00005180}, it was her evidence that she had no recollection of it: Colwell {Day232/223:4-15}, or indeed of ever discussing any Kingspan marketing literature with BRE colleagues {Day232/218:3-8}.

<sup>524</sup> The date of Ivor Meredith’s internal email informing technical teams that the flyer had been withdrawn {KIN00005179}.

<sup>525</sup> {KIN00005179}; {KIN00005180}; Meredith {Day75/121:10-12}.

<sup>526</sup> {KIN00005206}.

<sup>527</sup> {KIN00005179}; See draft amended text at {KIN00005194}.



- 22.27** Meanwhile, in 2007 Kingspan began to write what Mr Meredith called “letters of suitability” for the use of K15 on high-rise projects.<sup>528</sup> In emails and letters to customers Kingspan recommended K15 as a suitable product for use on buildings over 18 metres in height. That was done either by asserting that K15 was suitable for use in the particular system proposed by the customer or by representing that K15 was suitable for use in all systems on buildings over 18 metres in height, or both.<sup>529</sup>
- 22.28** Occasionally, Kingspan represented to customers not only that the use of K15 was allowed in any cladding system on a building over 18 metres in height in accordance with Approved Document B, but also that the existence of the data from the BS 8414-1 test in May 2005 constituted an alternative route to compliance for K15 *as a product*.<sup>530</sup> It was also said that choosing a product that had “passed” a test under BS 8414 might in fact be a more onerous (and, by implication, safer) “route” than choosing a product that was non-combustible or of limited combustibility.<sup>531</sup> In other instances, Kingspan asserted that although K15 was not a non-combustible material, it had “been proved to perform the same as a non-combustible material” by testing in accordance with BS 8414.<sup>532</sup> Again, none of those statements were true.
- 22.29** The text drafted by Ivor Meredith and used by Kingspan’s teams in that correspondence was checked by Philip Heath, who admitted not only that he had provided supervision and guidance but also that he had had the final say on the wording.<sup>533</sup> False claims about K15 were therefore not being made in error or by rogue junior employees but with the knowing approval of a senior manager.
- 22.30** Indeed, Philip Heath told us that at that time Kingspan often found itself in the position of having to explain to customers Approved Document B’s alternative route to compliance through the BS 8414 test.<sup>534</sup> Kingspan was keenly aware that there was a lack of detailed knowledge about BS 8414 and BR 135 among its customers, many of whom were unfamiliar with both. It relied on the fact that an unsuspecting market was itself highly likely to rely on it for advice and to accept its claims about K15’s suitability for use as reliable. Kingspan was reluctant to send out its one BS 8414 test report<sup>535</sup> to any of its customers (it had nothing else to send), but was lucky in that they sometimes accepted its word.<sup>536</sup>
- 22.31** Kingspan’s strategy was to go after every job.<sup>537</sup> Mr Meredith’s detailed report to senior managers in January 2008<sup>538</sup> contained an important summary of the strategy at the time, namely, that Kingspan promoted the fact that K15 had “the ability to pass” (referring to the successful May 2005 test). A similar claim appeared in various Kingspan articles for industry

<sup>528</sup> Meredith {Day76/81:15-23}; {KIN00005308}; In February 2006 Joel Clarke circulated the original BS 8414 flyer to technical staff, commenting that it would be better to send the flyer out than “write tedious letters”. He recommended that the flyer should be attached to any correspondence that was being sent to sizeable architects and designers “just in case they’ve been fooled by the lies Celotex have been spreading about how it doesn’t comply”: {KIN00005179}.

<sup>529</sup> {KIN00008954/2}; {KIN00005203/2}; {KIN00002576}; {KIN00005216/1}; {KIN00005240}.

<sup>530</sup> {KIN00002577/1}.

<sup>531</sup> {KIN00002577/1}.

<sup>532</sup> {KIN00002583/1}.

<sup>533</sup> Heath {Day79/109:5-19}; Meredith {Day76/82:6-8}.

<sup>534</sup> Heath {KIN00020709/31-32} pages 31-32, paragraph 4.50; Heath {Day78/182:9-11}.

<sup>535</sup> BRE Report {BRE00002511}.

<sup>536</sup> {KIN00005380/2}; Meredith {Day76/82:11}-{Day76/83:4}.

<sup>537</sup> Meredith {Day76/83:3-4}.

<sup>538</sup> {KIN00008847/5} third paragraph.

journals<sup>539</sup> and in the BS 8414 flyer,<sup>540</sup> in all of which Kingspan warned readers to question the use of any external cladding products that “do not have the ability” to pass the BS 8414 test. That was linguistic sleight of hand. It was a cynical misrepresentation of the nature and purpose of BS 8414 and BR 135 and of the provisions of Approved Document B relating to them.

- 22.32** Mr Meredith told us that the strategy had been agreed between him and his senior managers as offering Kingspan’s only opportunity of moving forward once it had become clear that BRE was not prepared to provide a generic report on the suitability of K15 based on the BS 8414 test in May 2005.<sup>541</sup> The other obvious option, namely to behave honestly and with integrity by avoiding false statements, does not appear to have been considered by anyone at a senior level.

## Fire Performance claims for new technology K15

- 22.33** In the period between 2005 and 14 June 2017, two important claims were made by Kingspan in relation to the fire performance of K15. The first was that K15 had achieved a classification of Class 0 through testing to Parts 6 and 7 of BS 476. The second was that K15 had been tested to BS 8414 and had met the criteria in BR 135. Kingspan gave both claims prominence, both in its marketing literature for K15<sup>542</sup> and in its correspondence with customers. They also appeared in the certificates relating to K15 published by the British Board of Agrément (BBA)<sup>543</sup> and Local Authority Building Control (LABC).<sup>544</sup>
- 22.34** As explained above, the transition to new technology K15 involved various changes to the chemical composition and manufacturing process, as well as the introduction of perforated foil facers.<sup>545</sup> As a result, new technology K15 had different physical properties as well as a different chemical composition. The K15 product that Kingspan sold after September 2006, although still a phenolic foam, was without question a different product from that which it had previously been selling.
- 22.35** Following the introduction of new technology K15 in 2006, Kingspan continued to make the two principal claims about the product’s fire performance without any reference to the changes that had been made to the product, which were not disclosed to the market. In relation to new technology K15 those claims were entirely false. The true position was that no test in accordance with BS 8414 had been carried out on a system incorporating new technology K15 or was carried out until 23 March 2015 and no classification in accordance with the criteria in BR 135 had been made or was made until June 2015.<sup>546</sup> Moreover, new technology K15 did not achieve results when tested in accordance with BS 476 parts

<sup>539</sup> See for example {KIN00005198/3} third paragraph; {KIN00005219/3} second paragraph; {KIN00005262/3} second paragraph. It is not known if these articles came to be published.

<sup>540</sup> {KIN00005350} first paragraph.

<sup>541</sup> Meredith {Day75/117:17}-{Day75/118:24}.

<sup>542</sup> A classification to Class 0 for K15 was claimed in all K15 product literature from 2001 onwards; reference to BS 8414 was first made in K15 product literature in May 2007 and continued thereafter. March 2001 {KIN00020720}; January 2002 {KIN00009173/1}; November 2002 {KIN00008018/1}; March 2003 {KIN00002579/1}; November 2005 {KIN00022668/1}; June 2006 {KIN00005371/1}; September 2006 amended “What’s lurking behind your façade?” {KIN00000055}; May 2007 {KIN00002580/6}; November 2008 {KIN00009703/6}; March 2011 {KIN00003545/1}; July 2016 {KIN00000070/7}.

<sup>543</sup> {BBA00000038/5}; {BBA00000037/5}; {BBA00000036/6}; {BBA00000040/5}.

<sup>544</sup> {KIN00005705/4}; {KIN00009547/2}; {NHB00000798/1} (Class 0 claim absent from this certificate), {LABC0000997/3}; {LABC0001842/2}; {KIN00016968}; {KIN00000076}.

<sup>545</sup> {KIN00022307} Major Changes, Row 7; Rochefort {KIN00008838/6} page 6, paragraphs 3.7-3.10; Rochefort {Day80/50:6}-{Day80/55:1}.

<sup>546</sup> 23 March 2015 BS 8414-2 test. Test report 302995 dated 14 May 2015 {BRE00002494}; BR 135 Classification Report P100769-1000 dated 8 June 2015 {BRE00002495}.

6 and 7 (which was a product test but, under Approved Document B, largely irrelevant to insulation) such as to justify a rating of Class 0 at any stage before the Grenfell Tower fire.<sup>547</sup> That came to light only as a result of our investigations. At no time did Kingspan inform the market that the particular fire tests on which it purported to rely had in fact been carried out on a product that was no longer available and had not been sold since 2007 at the latest.

- 22.36** For many years Kingspan marketed and sold K15 relying heavily on tests which had been carried out on a different product. That was not the result of a mistake, as Dr Rochefort claimed,<sup>548</sup> or misunderstanding; it was done deliberately. The relevant test and classification reports were not withdrawn until October 2020, following the Inquiry’s investigations.

## Class 0

- 22.37** As has been noted, a classification of national Class 0 was claimed for K15 in all promotional literature from 2001 onwards. Some of Kingspan’s marketing brochures claimed that both the K15 product and, separately, its core, were “Class 0 fire rated”.<sup>549</sup> That was a nonsensical assertion when considered alongside the test standards used to achieve it. Although none of its literature ever disclosed the fact, in order to substantiate its claim, Kingspan had carried out tests in accordance with BS 476 Parts 6 and 7 at various times between 2004 and 2016 not on K15 boards as supplied to the market but on the foil facer of the product alone.<sup>550</sup> That was done by attaching the foil to a calcium silicate or other non-combustible substrate for the tests.<sup>551</sup> Kingspan sought to justify its actions by reference to the wording of Approved Document B, which stated that Class 0 was achieved if a material or, in the case of a composite product, the surface of the product met certain criteria when tested in accordance with BS 476 Parts 6 and 7.<sup>552</sup>
- 22.38** Both Adrian Pargeter and Dr Rochefort told us, and Kingspan in its closing statement submitted, that that was a legitimate practice on the basis of the wording of Approved Document B.<sup>553</sup> Mr Pargeter defended it as a technical but common-sense interpretation of the wording in Approved Document B.<sup>554</sup> We disagree. In our view such an interpretation of Approved Document B is over-literal, artificial and has at least the potential to lead to absurd results. Kingspan’s Arron Chalmers, who was a candid, if at times lurid, internal commentator on Kingspan’s style of doing business, described it as “a bit of a cheat”.<sup>555</sup> Neither Dr Rochefort nor Mr Pargeter had checked the test standards to ensure that it was legitimate for Kingspan to claim that K15 had achieved Class 0 by testing in that way.<sup>556</sup> Had they done so, they would have discovered that the practice was at odds with both the purpose of BS 476-6 and its wording, both of which make clear that it is designed as a test of a product, not part of a product.<sup>557</sup> Kingspan had sought the advice of Frans Paap at Exova on the subject. He apparently told it that the provision

<sup>547</sup> Pargeter {Day84/72:13-16}.

<sup>548</sup> Rochefort {Day80/68:9-16}.

<sup>549</sup> See for example March 2011 {KIN00003545/6}.

<sup>550</sup> {KIN00022205}.

<sup>551</sup> See for example {KIN00000256/5}.

<sup>552</sup> {CLG10000007/122} Appendix A, paragraph 13.

<sup>553</sup> Pargeter {KIN00020824/8-10} pages 8-10, paragraphs 3.11-3.18; Pargeter {Day84/69:16-19}; Rochefort {Day80/89:7}-{Day80/90:1}; Kingspan Module 2 closing submissions {KIN00025944/32} page 32, paragraphs 84-87.

<sup>554</sup> Pargeter {Day84/82:23-25}.

<sup>555</sup> {KIN00004168}.

<sup>556</sup> Pargeter {Day84/84:12-15}; Rochefort {Day80/89:17-21}.

<sup>557</sup> {BRE00005557/18}.

could be interpreted in that way<sup>558</sup> but said that it should test the complete product before making any claim about Class 0 because the foam behind it was likely to affect the performance of the facer.<sup>559</sup> Adrian Pargeter accepted that the interpretation was neither conservative nor ideal but said that Kingspan was prepared to adopt a literal interpretation of Approved Document B that might be less safe but would facilitate sales of K15.<sup>560</sup>

**22.39** To the extent that the tests relied on to support the claim that K15 was rated Class 0 had been carried out on the foil facer alone, that claim was false. Understandably, there was evidence of some disquiet about it even within Kingspan’s own ranks.<sup>561</sup> Other than for one specific and limited purpose relating to the spacing of cavity barriers,<sup>562</sup> Class 0 was not relevant to the suitability of insulation for use on buildings over 18 metres in height, as Kingspan knew. No Kingspan witness claimed otherwise. Nonetheless, in much of its correspondence Kingspan either treated Class 0 as evidence of the suitability of K15 for use on buildings over 18 metres in height or treated it as the equivalent of limited combustibility. For example, it sometimes told customers in very general terms that Class 0 was the “highest possible product fire performance classification”, using language which effectively elided the two concepts. It also made recommendations that K15 be used for projects involving buildings over 18 metres in height, immediately followed by a statement that K15 had achieved Class 0, as though the two were related.<sup>563</sup>

## The fire performance of new technology K15

**22.40** At the time of the change from old to new technology K15 in 2006, and for some time after, Philip Heath and Dr Rochefort considered the properties of the two products to be very similar.<sup>564</sup> Dr Rochefort explained that the similarity between them on a chemical level was such that he had not expected their fire performance to differ significantly.<sup>565</sup> He did not regard the introduction of perforations to the foil facers as significant,<sup>566</sup> because the composition was the same<sup>567</sup> and the perforations represented less than 0.5% of the surface area of the board.<sup>568</sup> However, in an email to Philip Heath on 7 July 2005 Lamtec, the manufacturers of the foil facers, had alerted Kingspan in the clearest terms to the fact that the fire performance of the foam would be significantly different once the facers were perforated because the perforations would potentially allow gases produced by combustion to reach the atmosphere and burn.<sup>569</sup> The warning appears to have been ignored.

<sup>558</sup> {KIN00004168/1}.

<sup>559</sup> {KIN00004168/2}.

<sup>560</sup> Pargeter {Day84/118:10}-{Day84/119:6}.

<sup>561</sup> Meredith {Day76/181:4}-{Day76/182:8}; {KIN00004168/1}.

<sup>562</sup> Lane, Phase 1 Report Section 11 {BLAR00000006/41} paragraph 11.11.18; Millichap {Day81/42:13-16}.

<sup>563</sup> See examples at {KIN00005363/8}; {KIN00005218/2}; {KIN00009014/1}; {KIN00002583/2}; {KIN00002882/1}.

<sup>564</sup> Heath {KIN00020709/9} page 9, paragraph 3.4, “...basically the same chemistry but different production technology...”; Heath {Day78/227:2-4}; Heath {Day79/11:20-25}; Rochefort {KIN00008838/7} page 7, paragraph 3.10; Rochefort {Day80/54:23}-{Day80/55:1}.

<sup>565</sup> Rochefort {KIN00008838/7} page 7, paragraph 3.10; Rochefort {KIN00008838/50} page 50, paragraph 11.22; Rochefort {Day80/67:19-22}.

<sup>566</sup> Rochefort {KIN00008838/7} page 7, paragraph 3.10; Rochefort {Day80/54:18-25}.

<sup>567</sup> Rochefort {Day80/53:13-17}.

<sup>568</sup> Rochefort {Day80/54:1-5}.

<sup>569</sup> {MET00081264}.

- 22.41** Despite the apparent similarities between the old and the new products, Kingspan’s Product and Process Development System was engaged in order to assess any differences between various aspects of their performance.<sup>570</sup> Following its completion new technology K15 was able to enter the market.<sup>571</sup>
- 22.42** Dr Rochefort had revised the Product and Process Development System at an earlier stage to ensure that the programme for the change to new technology would include fire testing.<sup>572</sup> Responsibility for fire testing and certification fell to Philip Heath,<sup>573</sup> who did not sign the section off as complete<sup>574</sup> until 21 February 2008.<sup>575</sup> He and Ivor Meredith explained that the “sign off” of any particular section of the Product and Process Development System did not in fact indicate completion but rather that something was “in hand” and confirmed that fire testing had continued for many years after the new technology had become available to the market in 2006 and the process had been signed off by Mr Heath in February 2008.<sup>576</sup> In those circumstances, it is difficult to see what real purpose Kingspan’s Product Process and Development System served in this case.
- 22.43** Philip Heath was not able to explain why Kingspan had started to sell the new form of K15 years before fire testing on it had been completed.<sup>577</sup> Dr Rochefort told us that it was difficult in practice to have everything signed off before a new product was sold and that as long as testing was still being carried out without any obvious problems that had been considered good enough.<sup>578</sup> He assumed at the time that new technology K15 had achieved European Class C for the purposes of CE marking,<sup>579</sup> which he had understood (wrongly) to equate to national Class 0.<sup>580</sup> Mr Meredith thought that testing to European standards had been undertaken before new technology K15 had been made available to the market and that a Class C had been achieved,<sup>581</sup> but he could not recollect any other testing.<sup>582</sup>

### Testing in accordance with BS 476 parts 6 and 7

- 22.44** Neither Mr Meredith nor Dr Rochefort nor Mr Heath could recall the results of tests carried out in accordance with BS 476-6 or BS 476-7 on the new K15 product that was actually produced by Kingspan at Pembrige.<sup>583</sup> Indeed, neither Dr Rochefort nor Mr Heath could tell us clearly what fire tests had been carried out on new technology K15 or whether any difference in fire performance between the old and the new technology products had been discovered. That was despite Mr Heath’s acknowledging that he, together with Research and Development Manager Vincent Coppock<sup>584</sup> and Technical Processing

<sup>570</sup> {KIN00022307} Major Changes, Row 7, Column N; Heath {Day79/16:7}-{Day79/17:14}; Rochefort {KIN00008838/9} page 9, paragraph 3.16.

<sup>571</sup> Rochefort {KIN00008838/9} page 9, paragraph 3.16.

<sup>572</sup> {KIN00022307} Major Changes, Row 7, Column N; Rochefort {KIN00008838/9} page 9, paragraph 3.16.

<sup>573</sup> {KIN00022003/2}; Heath {Day79/22:21}-{Day79/23:7}.

<sup>574</sup> {KIN00022307} Major Changes, Row 7, Column N.

<sup>575</sup> Rochefort {KIN00008838/9} page 9, paragraph 3.16.

<sup>576</sup> Meredith {Day75/39:3-13}; Heath {Day79/18:14-25}.

<sup>577</sup> Heath {Day79/21:5}.

<sup>578</sup> Rochefort {Day80/58:5-10}.

<sup>579</sup> The letters “CE” are the abbreviation of French phrase “Conformité Européenne” which literally means “European Conformity”. It is a marking which certifies that a product has met EU health, safety, and environmental requirements.

<sup>580</sup> Rochefort {Day80/60:13}-{Day80/61:1}.

<sup>581</sup> Meredith {Day75/155:6-9}.

<sup>582</sup> Meredith {Day75/40:10-16}.

<sup>583</sup> Meredith {Day75/41:10-15}; Heath {Day79/25:12-13}; {Day79/28:21}-{Day79/29:24}; {Day79/77:12-16}; Rochefort {Day80/89:1-16}.

<sup>584</sup> Heath {KIN00020709/15} page 15, paragraph 3.24.

Manager Gwyn Davies,<sup>585</sup> had been principally responsible for the testing<sup>586</sup> and despite Dr Rochefort's acceptance that as Technical Director (to whom Mr Heath, Mr Coppock and Mr Davies all reported)<sup>587</sup> responsibility for ensuring that products were fit for market, including in terms of fire safety, ultimately fell to him.<sup>588</sup>

- 22.45** Quite apart from that unsatisfactory evidence, we were struck by the fact that there appeared to be no composite record of the fire testing carried out on new technology K15 or of any reported difference in fire performance between the old and the new technology formulations. Although it was difficult to discern what fire testing had actually been undertaken, what did become clear was that there had been no comprehensive programme leading to a proper understanding of the fire performance of new technology K15 before it entered the market. Mr Heath admitted as much and accepted that that should have occurred.<sup>589</sup>
- 22.46** A detailed analysis of the contemporaneous documents, including notes from internal meetings and reports written by Mr Meredith, revealed that from 2005 onwards a number of small and medium-sized tests had been carried out on the new technology K15. That included calorimetry and single burning item tests as well as repeated testing to BS 476 Parts 6 and 7. The documents also revealed that none of that testing appears, in Kingspan's view at the time, to have brought positive news about the fire performance of new technology K15. In particular, numerous internal documents between 2006 and early 2009 reveal discussions about Kingspan's inability to obtain a classification to national Class 0 for the new product and details of its continuing efforts to do so over the course of many years. The documents were widely circulated among technical staff, including Dr Rochefort and Mr Heath. During the same period, however, Kingspan claimed for all external purposes that K15 had achieved that classification.
- 22.47** In a half-yearly report prepared for Mr Heath in July 2007, Ivor Meredith identified one of the low points of the period as a failure to verify basic properties for new technology K15, including its rating as Class 0.<sup>590</sup> In the same report, he referred to numerous failed attempts to pass the BS 476-6 test and said that repeats of tests that had narrowly failed and the addition of fire retardants were being considered.<sup>591</sup>
- 22.48** In an internal report sent to Dr Rochefort and Mr Heath on 7 January 2008 that referred to the European single burning item test, Mr Meredith reported that the introduction of perforations in the foil facers of new technology K15 had led to a reduction in the European classification. He recommended the removal of the perforations and the addition of a fire retardant, noting that the latter could also help to achieve Class 0.<sup>592</sup>
- 22.49** Dr Rochefort told us that Kingspan's fire focus group had done quite a lot of work to establish the effect on fire performance of the newly introduced perforations in the foil facer.<sup>593</sup> Mr Meredith told us that the matter had been discussed at monthly technical meetings; his hypothesis was that the perforations allowed the blowing agent in the

<sup>585</sup> Rochefort {KIN00008838/11} page 11, paragraph 3.22.

<sup>586</sup> Heath {Day79/24:18}-{Day79/25:9}.

<sup>587</sup> Rochefort {Day80/4:23}-{Day80/5:6}.

<sup>588</sup> Rochefort {Day80/8:23}-{Day80/9:2}.

<sup>589</sup> Heath {Day79/21:6-12}.

<sup>590</sup> {KIN00005292/11} penultimate bullet point.

<sup>591</sup> {KIN00005292/7} first paragraph.

<sup>592</sup> {KIN00008847/3} eighth paragraph; {KIN00022466/1} paragraph 1.1, third bullet point "BS 476 Part 6 still elusive for certain formulations...".

<sup>593</sup> Rochefort {Day80/64:12-17}.

foam to ignite more readily,<sup>594</sup> causing a deterioration in fire performance. We note that Professor Bisby's findings about the effect of the perforations tend to support that hypothesis.<sup>595</sup> Dr Rochefort did not say what work had actually been carried out and we found no documents that shed light on any such assessment, other than a reference in the minutes of a meeting on 25 July 2008 to plans to perforate only one side of the facer. We note that at that meeting, which Dr Rochefort attended, someone stated that perforations had been shown to reduce fire performance considerably.<sup>596</sup> In any event, new technology K15 was available for sale before any such assessment had been undertaken, as Dr Rochefort acknowledged.<sup>597</sup>

- 22.50** In a monthly technical report produced in April 2008, Mr Meredith reported indicative calorimeter tests comparing old and new technology K15 in which the latter had showed a faster time to ignition and double the heat output (or rate of heat output, as we understand it).<sup>598</sup>

### Testing under BS 8414

- 22.51** By the end of 2005, BS 8414 Part 2 had been published, containing the large-scale test method for external cladding systems supported by steel frames rather than masonry.<sup>599</sup> As a result, challenges began to arise in relation to Kingspan's use of test data from its BS 8414-1 test in 2005 to support the use of K15 at height on steel-framed buildings, for which no BS 8414 test data existed.<sup>600</sup> In an internal report in January 2008, Ivor Meredith noted that despite Kingspan's fighting the case for each project, the absence of any BS 8414-2 test data was causing it to lose sales on a daily basis. He considered it essential to obtain such data to support the sale of K15 for use on buildings over 18 metres in height.<sup>601</sup>
- 22.52** In 2007 and 2008, four tests under BS 8414-2 were carried out on systems incorporating new technology K15. Two of them, on 20 December 2007<sup>602</sup> and 24 April 2008 respectively,<sup>603</sup> were carried out on systems using solid aluminium rainscreen panels<sup>604</sup> and were undertaken in partnership with Sotech Ltd, a rainscreen manufacturer, and Voestalpine Metsec plc, a supplier of structural steel frame systems. The other two, on 9 April<sup>605</sup> and 6 June 2008 respectively,<sup>606</sup> were carried out in partnership with Kingspan Off-Site and incorporated Kingframe steel loadbearing systems<sup>607</sup> and rendered rainscreen boards.<sup>608</sup> All four systems failed to meet the performance criteria in BR 135.<sup>609</sup> At all times,

<sup>594</sup> Meredith {Day75/155:10}-{Day75/156:9}.

<sup>595</sup> Bisby, Phase 2 Experiments Work Package 2 Report {LBYPWP200000001/120} paragraph 635.

<sup>596</sup> {KIN00022467/1} paragraph 1.2.

<sup>597</sup> Rochefort {Day80/64:18}-{Day80/65:7}.

<sup>598</sup> {KIN00003698} third paragraph.

<sup>599</sup> October 2005 {BSI00000097}.

<sup>600</sup> Heath {Day79/36:18-25}; See for example {KIN00005243/2}.

<sup>601</sup> {KIN00008847/2} fourth paragraph; Meredith {Day75/146:3-8}.

<sup>602</sup> Test 239825{KIN00008847/2}; {BRE00032344/1-3}; {BRE00032344/121-124}; {BRE00032344/170-171}.

<sup>603</sup> Test reference unknown. See {BRE00032344/183}; {BRE00032344/187-190}.

<sup>604</sup> Eggington {SOT00000029/2} page 2, paragraph 9.

<sup>605</sup> Test 241103 {BRE00011552}.

<sup>606</sup> Test 241105 {BRE00011552}.

<sup>607</sup> Stevens {MET00080972/4} page 4, final paragraph.

<sup>608</sup> {BRE00011552/1}.

<sup>609</sup> Heath {Day79/35:7-10}; Rochefort {Day80/70:4-8}. Note that during Test 241105 on 6 June 2008 (Kingspan Off Site) the heat source was extinguished early, thereby terminating the test, due to the failure of the hearth. The rig was allowed to burn for the full duration of 60 minutes for observations to be made. See {BRE00011552} paragraph 1, lines 2-3, "... the full requirements of the standard were not however complied with..."; Wilkinson {MET00080973/6-7} pages 6-7, fourth paragraph.

Kingspan concealed from its three co-sponsors, including Kingspan Off-Site, the fact that its previous test in accordance with BS 8414-1 in May 2005 had been carried out on a system that incorporated the old formulation of K15.<sup>610</sup>

- 22.53** In January 2008, after the first test on 20 December 2007, Ivor Meredith (who had not been present at the test) sent Mr Heath, Dr Rochefort and others a report containing his detailed observations and an analysis of what had occurred.<sup>611</sup> Describing the result as a “raging inferno”, he explained that the top fire barrier had been breached 17 minutes into the test, that the system had failed the temperature criteria in BR 135<sup>612</sup> and that the test had been terminated early because there had been a danger that the laboratory would be set alight.<sup>613</sup>
- 22.54** Mr Meredith also recorded specific observations about the performance of the K15 insulation, as well as offering views (both his own and those of BRE) on the performance of the new K15 compared with the old, which had been tested in 2005. He included photographs of that earlier test in his report in order to demonstrate the differences he was describing.<sup>614</sup> He said that the new K15 had burnt ferociously “on its own steam” and that it was, in his words, “... very different in a fire situation to the previous technology ...”.<sup>615</sup>
- 22.55** Mr Meredith recorded what he described in the report as “official” and “unofficial” comments from BRE.<sup>616</sup> He thought they had been provided by Philip Clark,<sup>617</sup> who had been present at the test together with Dr Colwell and Tony Baker<sup>618</sup> and had been the most approachable on the subject of testing.<sup>619</sup> The “unofficial” comments were that the insulation had been fully involved in the fire, that the foam core had continued to burn after the flame source had been extinguished, that surface spread of flame on the K15 was apparent and finally, that BRE had not remembered the product performing like that in the previous test. The “official line” was that the system as a whole had failed and that responsibility for the failure could not be attributed to any individual component.<sup>620</sup>
- 22.56** All three BRE witnesses denied that they had made “official” and “unofficial” comments in the way described by Mr Meredith and insisted that that was not something BRE would do.<sup>621</sup> Dr Colwell acknowledged that it would have been wholly inappropriate for BRE to do that.<sup>622</sup> However, Mr Clark told us that comments to that effect could have been made by Dr Colwell or Mr Baker<sup>623</sup> and went on to say that although he could not recall making them himself, he might have commented on how bad the burning was over the surface

<sup>610</sup> Dr Rochefort told us that he did not know whether Kingspan Off-Site had been told that the 2005 test in accordance with BS 8414-1 had been carried out on a different, old version of K15: Rochefort {Day80/118:7-11}. All the other witnesses who were involved in this testing confirm that Kingspan Off-Site had not been told: Stevens {MET00080972/12} page 12, second paragraph; Wilkinson {MET00080973/8} page 8; Heath {Day79/90:10-12}; Meredith {Day75/171:20}-{Day75/172:4}; {KIN00020917/1} penultimate paragraph.

<sup>611</sup> {KIN00008847}.

<sup>612</sup> {KIN00008847/2} penultimate paragraph.

<sup>613</sup> {KIN00008847/3} first paragraph.

<sup>614</sup> {KIN00008847/21-22}.

<sup>615</sup> {KIN00008847/3}.

<sup>616</sup> {KIN00008847/3}.

<sup>617</sup> Meredith {Day75/160:3-13}.

<sup>618</sup> “Test witnesses” {KIN00008847/2}.

<sup>619</sup> Meredith {Day75/160:5-7}.

<sup>620</sup> {KIN00008847/3}.

<sup>621</sup> Clark {Day96/166:16-19}; {Day96/168:4-7}; {Day96/173:18-19}; Colwell {Day232/228:18}-{Day232/229:11}; Baker {Day100/59:8-10}; {Day100/60:4-8}.

<sup>622</sup> Colwell {Day232/228:8-20}.

<sup>623</sup> Clark {Day96/165:1-11}.



of the K15 and that he could not rule out having made them.<sup>624</sup> We think it unlikely that Mr Meredith had invented comments of that kind or in that detail. We prefer his evidence and are satisfied that Mr Clark did make them and that Dr Colwell was probably aware that he had done so. That is supported by Mr Meredith’s contemporaneous report and by a number of other contemporaneous documents. One particularly striking example is an email sent on 9 January 2008 by Mr Meredith to Dr Colwell in which he asked her to confirm that BRE would not deviate from the “official statement” and would not state in writing that the failure was due to the flame spread across the K15 insulation.<sup>625</sup>

**22.57** Both Mr Heath and Dr Rochefort confirmed that they had read Mr Meredith’s report at the time,<sup>626</sup> including his strongly worded observations about the performance of K15 in the test in December 2007, in which he had stated that the way in which the K15 had burned was of the “most concern”.<sup>627</sup> Mr Heath told us that he had been concerned by the report.<sup>628</sup> Indeed, he said that he had already been aware that Mr Meredith had concerns about the fire performance of new technology K15 and had agreed that he should write the report in order to draw the attention of more senior Kingspan personnel to them.<sup>629</sup> Save for conveying those concerns to Dr Rochefort and offering support to Mr Meredith, however, Mr Heath did not take any action.<sup>630</sup> Dr Rochefort told us that he too had been disturbed by the report<sup>631</sup> and that he had understood that Mr Meredith was attempting to make him and others sit up and take notice that there was reason to be worried about the fire performance of the new K15 product.<sup>632</sup>

**22.58** Nonetheless, the report was effectively ignored by Dr Rochefort, despite his claim to the contrary.<sup>633</sup> Echoing BRE’s “official line” as recorded in Mr Meredith’s report,<sup>634</sup> both Mr Heath and Dr Rochefort attempted to explain Kingspan’s inaction by saying that BS 8414 was a system test and that it was possible that components of the system other than the K15 might have been responsible for the failure.<sup>635</sup> Apparently for those reasons, neither Dr Rochefort nor Mr Heath gave consideration to suspending the sale of K15.<sup>636</sup> Dr Rochefort said that after the test in December 2007 he had considered moving back to the old technology and that he had discussed that option in a couple of internal emails,<sup>637</sup> but his recollection was not supported by any documents we have seen. It was also inconsistent with the minutes of the many technical meetings held at that time,<sup>638</sup> during each of which Kingspan’s plans for dealing with the fire performance of the new technology were specifically discussed, often as a “high priority” or as “urgent” business. In none of those minutes was there any mention of reverting to old technology K15.<sup>639</sup> We think that Dr Rochefort’s memory was unreliable on that point.

<sup>624</sup> Clark {Day96/166:2-7}.

<sup>625</sup> {KIN00003693/1} final paragraph; {KIN00020908/1} first paragraph and penultimate paragraph.

<sup>626</sup> Heath {Day79/38:1-7}; Rochefort {Day80/70:13-20}.

<sup>627</sup> {KIN00008847/3}.

<sup>628</sup> Heath {Day79/53:6-9}.

<sup>629</sup> Heath {Day79/38:2-13}.

<sup>630</sup> Heath {Day79/56:17}-{Day79/57:2}.

<sup>631</sup> Rochefort {Day80/76:10-14}.

<sup>632</sup> Rochefort {Day80/77:14-25}.

<sup>633</sup> Rochefort {Day80/81:11-16}.

<sup>634</sup> {KIN00008847/3}.

<sup>635</sup> Rochefort {Day80/83:4}-{Day80/83:19}; Heath {Day79/36:14-17}.

<sup>636</sup> Rochefort {Day80/82:2-10}; {Day80/91:17-24}; Heath {Day79/68:4-20}.

<sup>637</sup> Rochefort {Day80/91:24}-{Day80/92:8}.

<sup>638</sup> 30 January 2008 {KIN00022466}; 21 February 2008 {KIN00023870}; 25 July 2008 {KIN00022467}; 22 August 2008 {KIN00023871}; 22 October 2008 {KIN00022468}.

<sup>639</sup> {KIN00022467/1} paragraph 1.2; {KIN00022468/1} paragraph 1.2, fourth bullet point.

- 22.59** On 9 April 2008, a second test of a system incorporating new technology K15 was carried out in accordance with BS 8414-2 but again it failed to meet the performance criteria in BR 135, with temperatures exceeding the required levels at around 16 minutes into the test.<sup>640</sup> That test was organised by Kingspan Off-Site, whose Project and Development Engineer, Aidan Wilkinson,<sup>641</sup> witnessed it. He described the system as having performed “abysmally”.<sup>642</sup> There was then a third test on 24 April 2008, which was the second test carried out in partnership with Sotech and Metsec. Various modifications had been made to the system tested in December 2007 to try to improve its performance, but again it failed to meet the performance criteria in BR 135.<sup>643</sup> Despite that record of persistent failure, neither Dr Rochefort nor Mr Heath nor anyone else at Kingspan was moved to take any further action.
- 22.60** On 6 June 2008 Kingspan Off-Site carried out its second test at BRE in accordance with BS 8414-2 (the fourth in the series). After the test, Aidan Wilkinson, and Mark Stevens, his manager and Technical Team Leader,<sup>644</sup> contacted Kingspan to share their observations about the performance of K15 during both tests and to raise questions about it. In particular, Mr Stevens and Mr Wilkinson had observed that the K15 had continued to burn for more than 30 minutes after removal of the source of ignition.<sup>645</sup> Kingspan Off-Site questioned Kingspan several times both by email and by telephone about whether that was normal or to be expected for K15; they also asked Kingspan for help in identifying what else might have caused the prolonged burning.<sup>646</sup> That was a pressing matter for Kingspan Off-Site, which had already arranged to carry out a series of further tests of systems incorporating K15.<sup>647</sup>
- 22.61** Rather than telling Kingspan Off-Site what all three by then plainly knew about the worrying fire performance of new technology K15,<sup>648</sup> on 2 July 2008 Dr Rochefort, Mr Heath and Mr Meredith worked together to craft a carefully worded response.<sup>649</sup> They purported to express surprise at the poor performance of the product, given what Mr Heath described as Kingspan’s previous success with BS 8414, and focused on the possibility that particular details of the test rig or inconsistencies in fire testing generally might have been the cause of the problem.<sup>650</sup>
- 22.62** Having responded in those terms, Mr Heath sent an email to his Kingspan colleague Gwyn Davies in which he said, “I’m spinning so much I’m dizzy”.<sup>651</sup> Mr Heath, to his discredit, denied before us that that was effectively a boast about being less than truthful,<sup>652</sup> but that is obviously what he meant. He later accepted that there had been gaps in the information he had provided and said that he had been trying to delay matters so that Kingspan could develop a better product for testing.<sup>653</sup> At one stage, Mr Meredith seems to have been unsure of the account he was to give Kingspan Off-Site, asking

<sup>640</sup> {KSO00000099/6} final paragraph; {KIN00008844/1} sixth paragraph.

<sup>641</sup> Wilkinson {MET00080973/1} page 1, final paragraph.

<sup>642</sup> Wilkinson {MET00080973/4} page 4, third paragraph.

<sup>643</sup> Eggington {SOT00000029/3} page 3, paragraphs 17-18. John Eggington was the Managing Director of Sotech at the time of these tests in 2007 and 2008.

<sup>644</sup> Wilkinson {MET00080973/1} page 1, final paragraph; Stevens {MET00080972/3} page 3, first paragraph.

<sup>645</sup> {KIN00009031/1}; {KIN00003714/1}.

<sup>646</sup> {KIN00003704}; {KIN00020917}.

<sup>647</sup> Email from Mr Stevens to Mr Meredith {KIN00009031/1}.

<sup>648</sup> Rochefort {Day80/121:15-16}; Heath {Day79/88:5-8}; {KIN00003704/1} “The question of K15s bad fire performance is no longer just an internal one”.

<sup>649</sup> {KIN00003714/1}.

<sup>650</sup> {KIN00020916}.

<sup>651</sup> {KIN00009031/1}.

<sup>652</sup> Heath {Day79/92:2}–{Day79/93:19}.

<sup>653</sup> Heath {Day79/92:6}–{Day79/94:7}.

Philip Heath by email, “Are we saying that the product supplied which failed their test is the same product that we got to pass the test?”.<sup>654</sup> It is clear to us that both Philip Heath and Ivor Meredith were, and knew that they were, answering Kingspan Off-Site in terms that were not simply vague but actively designed to conceal and mislead.

- 22.63** After further questions from Kingspan Off-Site on 16 July 2008, Dr Rochefort suggested that Kingspan should say that it ought not to carry out further testing as planned while Kingspan investigated possible reasons for the failure, on the basis that the “same batch...may suffer from a similar problem”.<sup>655</sup> As Dr Rochefort acknowledged, Kingspan well knew that the problem was not limited to any particular batch.<sup>656</sup>
- 22.64** The simple truth behind Mr Heath’s “spin” was that Kingspan did not have a version of K15 which it considered capable of performing well enough within a system to enable the criteria in BR 135 to be met,<sup>657</sup> Kingspan was working to understand why, as Mr Meredith put it in an email to Mr Heath on 3 July 2008, old tech worked and new tech did not.<sup>658</sup> Having carefully considered all the evidence, we are in no doubt that it was that fact that drove Kingspan to conceal from Kingspan Off-Site its serious reservations about the fire performance of new technology K15, rather than reasons of confidentiality, as Mr Heath suggested,<sup>659</sup> or a desire not to cause alarm, as Dr Rochefort claimed.<sup>660</sup>
- 22.65** The internal correspondence from July 2008 revealed numerous discussions between the three (and others) about trials, modifications and additives which might improve the fire performance of new technology K15.<sup>661</sup> The contemporaneous documents show that Kingspan was becoming desperate by this time to find answers to its predicament. Mr Meredith described his request for samples of a particular version of the foam for further testing as “business critical”.<sup>662</sup>
- 22.66** In an internal email on 9 June 2008, Dr Rochefort wrote to Mr Meredith and others saying, “Ivor, if you’re confident that old process will pass the test, we may have no choice but to provide old process K15 for Offsite until the FR [fire retardant]<sup>663</sup> issue is sorted out”, adding, “ ... we can’t carry on providing something that we know fails a fire test”.<sup>664</sup> Dr Rochefort told us that despite saying “for Offsite”, he meant that Kingspan might have to revert entirely to producing and supplying old technology K15 across the market.<sup>665</sup> That is not what either Mr Heath or Mr Meredith understood him to mean, however, and neither of them thought that changing back to old technology K15 for the market generally had been considered or discussed as an option at the time.<sup>666</sup> We saw no other document that contained a reference to any consideration of reverting to old technology K15 for general manufacture and sale and we do not believe that Dr Rochefort, or anyone else at Kingspan, gave serious consideration to stopping production of new technology K15. Instead, Kingspan simply hoped to improve the product’s fire performance while continuing to sell it and claiming compliance with Approved Document B on the basis of the 2005 test.

<sup>654</sup> {KIN00020917/1} penultimate paragraph; See also text in red added by Mr Meredith to {KIN00008844/2-3}.

<sup>655</sup> {KIN00003714}.

<sup>656</sup> Rochefort {Day80/121:9-16}.

<sup>657</sup> Heath {Day79/83:8-13}; {Day79/92:14-16}.

<sup>658</sup> {KIN00020917/1}.

<sup>659</sup> Heath {Day79/90:13}-{Day79/91:17}.

<sup>660</sup> Rochefort {Day80/121:22}-{Day80/122:10}.

<sup>661</sup> {KIN00008844}.

<sup>662</sup> {KIN00003704/1}.

<sup>663</sup> Rochefort {Day80/110:10-16}.

<sup>664</sup> {KIN00003704/1}.

<sup>665</sup> Rochefort {Day80/110:3}-{Day80/111:21}.

<sup>666</sup> Heath {Day79/81:22}-{Day79/82:2}; Meredith {Day75/197:3-7}.

- 22.67** In July 2008, Mr Meredith reported that a fire retardant version of K15 was being sent to BRE for indicative calorimetry testing in the hope of finding a lower calorific output and slower time to ignition, characteristics that he said were required to maintain Kingspan's position in the high rise facade market.<sup>667</sup> He told us that this testing was being carried out in an attempt to find small scale tests in which new technology K15 demonstrated a fire performance similar to that of old technology.<sup>668</sup>
- 22.68** Mr Meredith said that he felt a tremendous responsibility to ensure that the product Kingspan was selling was fit for the market.<sup>669</sup> It is clear to us from the evidence that by July 2008 he was worried about the performance in fire of the K15 then being sold. He made repeated and strongly worded attempts to make it clear to his managers how grave his worries were, but his impression at the time was that even if they were listening to him, they were neither responding to, nor acting on, what he was telling them.<sup>670</sup>
- 22.69** Both Dr Rochefort and Mr Heath told us that they had taken Mr Meredith's concerns seriously.<sup>671</sup> They each said that they had been concerned by what they had read in the report he had made in January 2008 and by the performance of K15 in the BS 8414 tests carried out in April and June 2008.<sup>672</sup> Philip Heath accepted that he had been aware in 2008 that there was a "paper trail"<sup>673</sup> showing considerably better performance in fire for old technology K15 than for new.<sup>674</sup> Despite their professed concerns, however, they appear to have taken no action. In particular, no consideration was given to suspending or withdrawing sales of K15, either then or at any time.<sup>675</sup>
- 22.70** Mr Meredith said that Kingspan's reaction to the problem had amounted to no more than hope and the suggestion that further testing might provide a better result.<sup>676</sup> That is consistent with the evidence of Dr Rochefort, who said that Kingspan's response to the concerns expressed by Mr Meredith was that a lot of work was being done to see whether the problems could be solved.<sup>677</sup> It is also clearly borne out by the documents, in particular the records of Kingspan's technical meetings, which show that efforts to improve the fire performance of the new technology foam continued throughout 2008 and into early 2009,<sup>678</sup> ceasing only on the instructions of Mr Heath following the publication of the LABC Type Approval certificate for K15 in May 2009.<sup>679</sup> Kingspan continued to sell K15 to an unsuspecting market without interruption or warning while hoping that a positive test result might turn up.

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<sup>667</sup> {KIN00008848/2}.

<sup>668</sup> Meredith {Day75/199:7-11}.

<sup>669</sup> Meredith {Day75/157:20-23}.

<sup>670</sup> Meredith {Day75/157:24}-{Day75/159:1}.

<sup>671</sup> Rochefort {Day80/130:8-14}; {Day 80/132:19-23}; Heath {Day79/56:10-16}.

<sup>672</sup> Rochefort {Day80/76:10-14}; {Day80/109:22}-{Day80/110:2}; Heath {Day79/53:6-9}; {Day79/77:10-16}.

<sup>673</sup> {KIN00020913/4}.

<sup>674</sup> Heath {Day79/82:25}-{Day79/83:6}.

<sup>675</sup> Rochefort {Day80/82:2-10}; {Day80/91:10}-{Day80/92:4}; Heath {Day79/65:25}-{Day79/66:23}.

<sup>676</sup> Meredith {Day75/158:11-16}.

<sup>677</sup> Rochefort {Day80/132:21-23}.

<sup>678</sup> Minutes of meetings on 22 August 2008 {KIN00023871}; 22 October 2008 {KIN00022468/1} paragraph 1.2; 25 February 2009 {KIN00022475/1-2} paragraph 1.2.

<sup>679</sup> {KIN00005382}.

## The first BBA Certificate: October 2008

- 22.71** The first BBA certificate for K15 was issued on 27 October 2008<sup>680</sup> after several years of work by Kingspan in support of its application.<sup>681</sup> Those involved from Kingspan were Senior Technical Adviser Gareth Mills<sup>682</sup> assisted by Ivor Meredith.<sup>683</sup> Both were supervised by Philip Heath until 2010 and thereafter by Tony Millichap, who replaced Mr Heath as Head of Technical when Mr Heath moved to another part of the business at the end of 2009.<sup>684</sup>
- 22.72** Kingspan was well aware of the importance of BBA certificates in achieving acceptance of construction products by architects and building control bodies.<sup>685</sup> Mr Mills told us that he had regarded a BBA certificate as a marketing tool that would give customers greater confidence in the product;<sup>686</sup> Mr Meredith described a BBA certificate as a “green light of acceptability”.<sup>687</sup> We agree with that characterisation. The process of obtaining the first BBA certificate and deciding its final content involved various discussions between the BBA and Kingspan, principally Mr Mills, as well as comments on drafts being sent back and forth between the two companies. Kingspan circulated drafts internally to a team of proof readers for checking and comment. Mr Mills collated the comments and sent them back to the BBA.<sup>688</sup>

### “Will not contribute to the development stages of a fire ... ”

- 22.73** The first BBA certificate contained three important statements about the fire performance of K15. The first, which appeared on the first page under the heading “Key Factors Assessed”, was that “... the boards will not contribute to the development stages of a fire or present a smoke or toxic hazard”.<sup>689</sup> No witness from Kingspan or from the BBA was able to offer a coherent explanation of the meaning of, or the basis for, that sentence or how it could properly be said to apply to K15, a combustible polymeric foam. Mr Mills did not know what it meant but said he had had no basis for disagreeing with it.<sup>690</sup> Mr Meredith agreed that it was very vague but that he had believed it was a plausible statement.<sup>691</sup> Mr Heath could not tell us what it had been based on but said that he thought it had been intended to reflect the behaviour in fire of thermoset materials.<sup>692</sup> Christopher Hunt of the BBA, who had approved the certificate,<sup>693</sup> told us that he was not sure what the scientific or evidential basis for the statement might have been.<sup>694</sup> He acknowledged that it was “slightly ambiguous”<sup>695</sup> and more confusing than helpful.<sup>696</sup> John Albon, the BBA’s Head of Approvals from 2013 to 2019,<sup>697</sup> told us that he had been concerned by the statement when he read

<sup>680</sup> Certificate 08/4582 Issue 1 {BBA00000038/1}.

<sup>681</sup> Meredith {Day75/41:7-8}.

<sup>682</sup> Mills {KIN00022329/11} page 11, paragraph 36; Mills {Day77/5:13-24}.

<sup>683</sup> Meredith {Day75/201:17-24}.

<sup>684</sup> Millichap {KIN00020821/3} page 3, paragraph 2.4; Mills {Day77/4:12-19}.

<sup>685</sup> Heath {Day79/132:12}-{Day79/133:15}.

<sup>686</sup> Mills {KIN00022329/11} page 11, paragraph 39; Mills {Day77/33:15}-{Day77/34:20}.

<sup>687</sup> Meredith {Day75/201:8-11}.

<sup>688</sup> Mills {KIN00022329/15} page 15, paragraph 45(H); Mills {Day77/51:12}-{Day77/52:10}.

<sup>689</sup> Certificate 08/4582 Issue 1 {BBA00000038/1}.

<sup>690</sup> Mills {Day77/43:1-12}.

<sup>691</sup> Meredith {Day75/202:23}; Meredith {Day75/204:6-13}.

<sup>692</sup> Heath {Day79/139:11-15}.

<sup>693</sup> Christopher Hunt was Head of Approvals (Physics) at the BBA and signed the certificate: Hunt {BBA00011087/3} page 3, paragraph 7; Certificate 08/4582 Issue 1 {BBA00000038/1}.

<sup>694</sup> Hunt {Day108/174:21-25}.

<sup>695</sup> Hunt {Day108/170:8-13}.

<sup>696</sup> Hunt {Day108/175:2}.

<sup>697</sup> Albon {BBA00010723/3} page 3, paragraph 13.

it,<sup>698</sup> describing it in his evidence as an opinion that could not be substantiated and was not appropriate.<sup>699</sup> He therefore removed it.<sup>700</sup> However, that was not until October 2015, when the fourth version of the certificate was issued.<sup>701</sup>

## Class 0

- 22.74** The second significant statement in the BBA certificate about the fire performance of K15 was that it was classified as Class 0 and could therefore be used in accordance with the provisions of paragraphs 12.5 and 12.6 and Diagram 40 of Approved Document B.<sup>702</sup> As we have explained, that was untrue. In October 2008 Kingspan had not been able to obtain a Class 0 classification for the product it was selling and continued, internally, to discuss and report on its attempts to do so throughout 2008 and the early part of 2009.<sup>703</sup>
- 22.75** Although the BBA had requested reaction to fire and surface spread of flame test data from Kingspan at an earlier stage in the preparation of the certificate in September and December 2004,<sup>704</sup> it appears that the only data of that kind provided to the BBA related to tests undertaken between 1991 and 2003 on various products, some produced in Kesteren, rather than at Pembridge, but none of them tests on the new technology K15 that Kingspan was currently selling.<sup>705</sup> Adrian Pargeter told us that investigation of historic records in preparation for the Inquiry had revealed that after the change to new technology in 2006, Kingspan could only have been relying on tests carried out on separate and different products<sup>706</sup> to support its claim that K15 had achieved Class 0. (It also relied on the results of tests carried out on the foil facers alone but they were not provided to the BBA).<sup>707</sup> Ivor Meredith and Philip Heath, as they acknowledged in their evidence, had been aware of that at the time.<sup>708</sup>
- 22.76** On 1 July 2008, Gareth Mills wrote to the BBA<sup>709</sup> proposing the inclusion of the statement that K15 was classified to Class 0. He sent a document listing Kingspan's comments<sup>710</sup> on a BBA draft of the certificate.<sup>711</sup> The text he proposed was an extract from a Kingspan product marketing brochure for K15.<sup>712</sup> Mr Mills did not send the BBA any data derived from tests carried out in accordance with BS 476-6 or BS 476-7 but said that he had thought that such data existed and that it might have been sent to the BBA at some other time by someone else.<sup>713</sup> Whether or not that was his true understanding at the time, it was not correct. In effect, by dint of Mr Mills' efforts, the BBA did no more than recycle Kingspan's own false marketing literature.

<sup>698</sup> Albon {Day110/112:2-21}.

<sup>699</sup> Albon {Day110/112:20}-{Day110/115:1}.

<sup>700</sup> Albon {Day110/112:14-18}.

<sup>701</sup> Certificate 14/5134 Issue 1 {BBA00000040/1}.

<sup>702</sup> Certificate 08/4582 Issue 1 {BBA00000038/5-6} paragraph 7.2.

<sup>703</sup> {KIN00022205}; {KIN00022467/1} paragraph 1.2; {KIN00022468/1} paragraph 1.2; {KIN00022475/1-2} paragraph 1.2; {KIN00022476/1} paragraph 1.2.

<sup>704</sup> {BBA00011093}.

<sup>705</sup> See summary at Moore {Day107/175:5-24}.

<sup>706</sup> Pargeter {Day84/40:13-20}. These were reports of tests carried out on Kesteren-produced products: BS 476-6 on DL 2000 {BBA00011291}; Part 7 on DL3300 {BBA00011292}; Parts 6 and 7 on DL3300 {BBA00011293}.

<sup>707</sup> Pargeter {KIN00022610/29} page 29, paragraph 3.40; Pargeter {Day84/39:6-24}.

<sup>708</sup> Meredith {Day75/41:10-15}; {Day79/28:21}-{Day79/29:24}; Heath {Day79/25:10-13}.

<sup>709</sup> {BBA00000244}.

<sup>710</sup> {BBA00000250/1} fifth row; Mills {Day77/57:16}-{Day77/59:12}.

<sup>711</sup> {BBA00000249}.

<sup>712</sup> Mills {Day77/58:19-24}.

<sup>713</sup> Mills {Day77/59:7-12}; {Day77/60:1}-{Day77/61:23}.

**22.77** Neither at the time the first certificate was published nor at any time thereafter did the BBA have any evidence at all on which to base a statement that K15 had achieved Class 0, as its own witnesses accepted<sup>714</sup> and as Adrian Pargeter effectively confirmed.<sup>715</sup> Kingspan thus persuaded the BBA to state that the product being sold as K15 had achieved a Class 0 rating (just as it was itself doing in its marketing literature)<sup>716</sup> knowing that statement to be false.

### The BS 8414 test in 2005

**22.78** The first issue of the BBA certificate also referred to a test carried out in accordance with BS 8414-1. It provided a fairly lengthy description of the system tested but did not state the date on which the test had taken place and was imprecise about the details of key parts of it. In particular, the certificate made no mention of the masonry backing for the test rig and instead used the phrase “non-combustible substrate”. Most significantly, the description of the system ended with the words, “Within the stated test time the temperature at the level 2 thermocouples did not exceed 600°C, therefore displaying limited fire spread away from the fire source and that the product meets the criteria stated within BRE 135”.<sup>717</sup> That assertion was fundamentally misleading, since the criteria in BR 135 relate to the performance of the system as a whole, not that of any particular component.

**22.79** When asked about that wording, Mr Heath agreed that it was incorrect<sup>718</sup> and sought to explain it away as an oversight on the part of Kingspan.<sup>719</sup> Mr Meredith at first gave a similar explanation, suggesting that Kingspan had had only a limited time to check the accuracy of the BBA’s draft.<sup>720</sup> In fact, however, it is clear that drafts of the certificate had been passing between the BBA and Kingspan for several months from June 2008 onwards before the certificate had been issued.<sup>721</sup> The correspondence reveals that the statement that the product had met the criteria in BR 135 had been proposed by Gareth Mills on 3 October 2008 at a fairly late stage in the process.<sup>722</sup> That was contrary to the evidence Mr Mills had given in his witness statement, which was that the BBA, rather than Kingspan, had suggested the wording.<sup>723</sup>

**22.80** The BBA’s first draft of the certificate relating to K15 dated 4 June 2008 was sent to Kingspan for comment. It included a statement in paragraph 4.7 that K15 was combustible but that it could be used in various circumstances “... where no storey is at a height of more than 18m above ground ...”.<sup>724</sup> In an email of 27 June 2008 to Mr Mills and Mr Heath, Mr Meredith expressed the view that publication of that wording would be a “disaster”.<sup>725</sup> In the same email, he urged caution over the plan to “slip the existing BS 8414 data in at the last minute so they didn’t have much time to look over it and pick holes ...”, warning

<sup>714</sup> Albon {Day110/156:19}–{Day110/157:7}; Moore {BBA00011097/4} page 4, paragraph 15.

<sup>715</sup> Pargeter {Day84/44:6-9}.

<sup>716</sup> {KIN00002580/6}.

<sup>717</sup> Certificate 08/4582 Issue 1{BBA00000038/5} paragraph 7.1.

<sup>718</sup> Heath {KIN00020709/48} page 48, paragraph 7.35.

<sup>719</sup> Heath {Day79/140:22}–{Day79/141:1}.

<sup>720</sup> Meredith {Day75/205:14}–{Day75/206:13}.

<sup>721</sup> Kingspan provided detailed comments on at least three BBA drafts: 1 July 2008 {BBA00000250}; 15 July 2008 {BBA00000211}; 3 October 2008 {BBA00002874}.

<sup>722</sup> {BBA00002874/1}.

<sup>723</sup> Mills {KIN00022329/14} page 14, paragraph 44(L).

<sup>724</sup> {BBA00000249/5} paragraph 4.7.

<sup>725</sup> {KIN00024474}.

that it might be foolish to think that the BBA would do anything other than go over the data with a fine-tooth comb. Mr Meredith need not have worried. The BBA did no such thing and inserted Mr Mills' suggested text verbatim into the final version of the certificate.<sup>726</sup>

- 22.81** Mr Mills said that he could not remember who had proposed the change from the BBA's original description of the system tested in accordance with BS 8414 as based on a "blockwork" substrate<sup>727</sup> to one with a "non combustible" substrate.<sup>728</sup> However, correspondence within Kingspan reveals that the idea had come from Philip Heath, who suggested it on the basis that "it might allow us a little spin in the future".<sup>729</sup> Kingspan had been using similarly inexact language in its correspondence with customers for some time<sup>730</sup> and went on to make use of it more widely in its K15 technical bulletins and product literature following the publication of the BBA certificate in October 2008.<sup>731</sup>
- 22.82** Ivor Meredith understood that the data obtained from the BS 8414-1 test in 2005 related to a system with a masonry substrate and did not apply to a system with a steel framed structure<sup>732</sup> and had made his managers aware of that. Kingspan sought to recommend K15 for use on high-rise buildings by stating (or at any rate implying) that the 2005 test data applied equally to masonry and steel-framed structures as long as the latter were sheathed with a non-combustible board.<sup>733</sup> As the correspondence reveals<sup>734</sup> and as Mr Meredith and Mr Mills acknowledged,<sup>735</sup> that wording was consciously designed to conceal the absence of any data derived from a test in accordance with BS 8414-2, which by 2008 had become a pressing problem for Kingspan.<sup>736</sup> Kingspan's advice to customers that K15 could be used on buildings over 18 metres in height with any non-combustible substrate was not based on any test evidence or the advice of any suitably qualified expert.<sup>737</sup>

#### **"Advice should be sought from the certificate holder"**

- 22.83** A few lines below the description in paragraph 7.1 of the system tested in accordance with BS 8414 the BBA certificate contained paragraph 7.3, which told the reader that, "In buildings with a floor more than 18m above ground level, advice should be sought from the certificate holder."<sup>738</sup> Mr Mills told us that he could not remember how that paragraph had come to be included.<sup>739</sup> He remembered that Kingspan had asked the BBA to remove from an early draft a passage that explicitly restricted the use of K15 to buildings under 18 metres in height.<sup>740</sup> When questioned about that, he accepted that he had proposed the removal from the summary on the front page of the certificate of the words "up to 18m" on the basis that the BS 8414 test report demonstrated that the product could be used on

<sup>726</sup> {BBA00002874/1}; Certificate 08/4582 Issue 1{BBA00000038/5} paragraph 7.1.

<sup>727</sup> {BBA00000219/7} paragraph 7.1.

<sup>728</sup> {BBA00000211/7} paragraph 7.1.

<sup>729</sup> {KIN00024476/1}.

<sup>730</sup> {KIN00005240/2}.

<sup>731</sup> {KIN00002607/3}; {KIN00003545/6}; {KIN00009585/2}.

<sup>732</sup> {KIN00020913/4}; Heath {Day79/43:21}-{Day79/44:2}; {KIN00003701}.

<sup>733</sup> {KIN00002607/3}.

<sup>734</sup> {KIN00024476}.

<sup>735</sup> Meredith {Day76/72:23}-{Day76/73:7}; Mills {Day77/82:10-22}.

<sup>736</sup> {KIN00008847/2}; {KIN00020913/4}; {KIN00003701/1}; Meredith {Day75/146:3-8}.

<sup>737</sup> Heath {Day79/47:18}-{Day79/48:6}.

<sup>738</sup> Certificate 08/4582 Issue 1{BBA00000038/6} paragraph 7.3.

<sup>739</sup> Mills {Day77/49:7-9}.

<sup>740</sup> Mills {KIN00022329/13} page 13, paragraph 44(A); Mills {Day77/50:2-16}.



buildings over 18 metres in height.<sup>741</sup> He said that he had offered to provide the test report to the BBA in order to support his proposal.<sup>742</sup> It could do no such thing, of course, for reasons of which Kingspan was well aware.

- 22.84** The section of the BBA certificate that advised readers to contact Kingspan when considering the use of K15 on a building over 18 metres in height was of substantial benefit to Kingspan. When potential customers sought its advice, Kingspan almost invariably advised them that K15 was suitable for such use, either in a generic sense or for a particular proposal. When doing so, it referred them to the BBA certificate, which directed them straight back to itself. Mr Meredith acknowledged that the clause was very welcome, because it meant that customers would contact Kingspan, giving it an opportunity to sell K15 for use on their projects.<sup>743</sup> In later internal correspondence from January 2013, it was referred to as a “get-out” clause<sup>744</sup> that Kingspan tried to avoid losing.
- 22.85** The self-serving nature of the provision thus allowed Kingspan to give direct advice to potential customers about whether to use K15 on any particular building. The plain and obvious conflict of interest which that created appears to have passed unnoticed by the BBA. NHBC, the largest private building control body in the country, continued to treat that advice as unremarkable until as late as the autumn of 2013, when the significance of the sheer volume of K15 on high-rise buildings began to dawn on it.

### What the BBA did not know

- 22.86** Although the BBA was not aware of the fact,<sup>745</sup> the description in the certificate of the BS 8414 test carried out on K15 rested on a fundamental falsehood. Despite a term of the contract that obliged Kingspan to notify the BBA of any changes to the product or of any new or additional information it had acquired about its suitability for use,<sup>746</sup> Kingspan did not tell the BBA that the test in 2005 had been carried out on a version of K15 that was by then obsolete and was no longer being manufactured.<sup>747</sup> When asked about that, Mr Mills and Mr Heath told us that they had thought the BBA was aware of the change to new technology and the foil facers<sup>748</sup> because of the audits and quality plans in which they had been recorded.<sup>749</sup>
- 22.87** We found no reference to the changes in the composition of K15 or the introduction of perforated foil facers in any BBA document. In any event, it is difficult to see how any quality plan or audit could have recorded the change to new technology. K15 had not been subject to BBA certification at the time of the changes and there would therefore have been no audit or quality plans in which to record that information.<sup>750</sup> Moreover, it became

<sup>741</sup> {BBA00000219/1}; {BBA00000211/1} text in red.

<sup>742</sup> Mills {Day77/31:8-13}; {Day77/49:10}-{Day77/51:11}; {Day77/67:2}-{Day69/69:2}.

<sup>743</sup> Meredith {Day76/6:13-19}.

<sup>744</sup> {KIN00005572/4}.

<sup>745</sup> Albon {Day111/28:10}-{Day111/29:7}.

<sup>746</sup> {BBA00010745/3} paragraph 7(g).

<sup>747</sup> Heath {Day79/137:3-7}; Millichap {Day81/194:13-17}.

<sup>748</sup> Mills {Day77/41:4-14}; Heath {Day79/136:16}-{Day79/137:17}.

<sup>749</sup> Heath {Day79/136:16}-{Day79/137:17}; Mills {Day77/40:3-9}; {Day77/41:4-12}.

<sup>750</sup> Meredith {Day75/40:21}-{Day75/41:3}; Albon {Day111/28:2-7}, “Once we have accepted a report, certified the product, and then have the production under surveillance, we continue to accept that data as being representative of the performance of the product on the understanding that the formulation and specifications are, from that point onwards, unchanged”.

clear that no initial on-site assessment of K15 had taken place before the BBA issued the first certificate, apparently because several other Kingspan products had already obtained BBA certificates and the BBA was satisfied with its quality standards.<sup>751</sup>

- 22.88** Moreover, Kingspan did not tell the BBA that four tests on systems incorporating new technology K15 had failed to meet the criteria in BR 135<sup>752</sup> or that, even in October 2008, it had misgivings about the fire performance of the product.<sup>753</sup> Philip Heath told us that Kingspan did not consider those matters to be relevant.<sup>754</sup> Mr Mills also told us that the four BS 8414-2 test results were not relevant to the scope of approval Kingspan was seeking from the BBA.<sup>755</sup> We disagree. They were plainly relevant, since they were the only tests in accordance with BS 8414 that had been carried out on systems incorporating the product that was the subject of the certificate.

### Amendments proposed by the BBA: December 2008

- 22.89** On 24 December 2008, less than two months after the BBA certificate had been issued, George Lee, the Project Manager who had drafted it,<sup>756</sup> sent an email to Kingspan in which he set out a number of proposed amendments to the part dealing with behaviour of the product in relation to fire. He explained that the BBA had received a number of comments on the clarity of the wording of that section. In particular, he proposed that the section on the first page of the certificate headed “Key Factors Assessed” should be amended by adding the following wording: “The product has been tested to BS 8414-1 for a specific construction on masonry walls”.<sup>757</sup>
- 22.90** Eventually, on 5 March 2009, Philip Heath responded. He expressed concern about the proposal to make changes to the wording of the certificate so soon after it had been issued and warned that there might be cost implications for Kingspan, which he would need to assess before he responded. Two minutes later, he sent the exchange to Ivor Meredith, Gareth Mills and Andrew Pack, then Technical Services Manager.<sup>758</sup> His email said simply, “Let the file gather dust, guys”. Plainly, as Mr Pack and Meredith admitted (but Philip Heath would not),<sup>759</sup> that was an instruction to put off responding to the BBA’s proposed amendments for as long as possible.<sup>760</sup> Mr Meredith told us candidly that this instruction had been given because it was in Kingspan’s interests for the existing BBA certificate to remain in circulation. He said that Kingspan had not been prepared to allow the BBA to make it clear to the public that there were restrictions on the use of K15 on buildings over 18 metres in height because it could limit sales.<sup>761</sup> Mr Mills admitted that that had possibly been the reason for the instruction to delay.<sup>762</sup> Mr Heath denied that, stating that, although Kingspan was keen to extend the scope of the approval, he had simply been concerned about the implications of the amendments for marketing materials, which by that time had been produced.<sup>763</sup>

<sup>751</sup> {BBA0000161/3} final three paragraphs; Albon {BBA00010751/22} page 22, paragraph 74; Albon {Day110/162:11}–{Day110/164:24}; Hunt {Day109/39:12}–{Day109/40:1}.

<sup>752</sup> Mills {KIN00022329/13} page 13, paragraph 43(H); Heath {Day79/138:5-9}; {Day79/142:12-16}.

<sup>753</sup> Heath {Day79/137:18}–{Day79/138:4}; {Day79/142:17-21}.

<sup>754</sup> Heath {Day79/138:1-4}; {Day79/143:1-4}.

<sup>755</sup> Mills {Day77/38:13}–{Day77/39:12}.

<sup>756</sup> Lee {BBA00010794/1} page 1, paragraph 1; Albon {BBA00010751/8} page 8, paragraph 31.

<sup>757</sup> {KIN00009103}.

<sup>758</sup> Pack {KIN00008702/4} page 4, paragraph 2.8.

<sup>759</sup> Heath {KIN00020709/81}, page 81 paragraph 11.47; Heath {Day79/154:20}–{Day79/155:16}. He characterised it as an instruction “not to proactively respond”.

<sup>760</sup> Pack {Day86/147:7-11}; Meredith {Day75/211:2-12}.

<sup>761</sup> Meredith {Day75/212:4-12}.

<sup>762</sup> Mills {Day77/102:23}–{Day77/103:4}.

<sup>763</sup> Heath {Day79/154:20}–{Day79/155:24}.

**22.91** We do not think that Mr Heath was telling the truth. The explanation given by Mr Meredith was strongly supported by the contemporaneous internal correspondence,<sup>764</sup> which, in particular, included Kingspan’s comments on drafts of the certificate. They show that it was trying to persuade the BBA to certify that K15 was suitable for use on buildings over 18 metres in height in a general and unlimited sense and that K15 as a *product* met the criteria in BR 135.<sup>765</sup>

### Marketing and challenges: 2008–2009

**22.92** Throughout 2008, and in the early part of 2009, Kingspan continued to market K15 as a product which had met the criteria in BR 135 and was therefore suitable for use on buildings over 18 metres in height, both on masonry and metal-framed substrates. Its marketing literature included drawings of both types of construction without qualification. Kingspan’s promotional literature referred to the 2005 test without giving a date and without referring to the fact that it was applicable only to masonry substrates. It made no effort to draw the attention of the reader to the fact that BS 8414 is a method for testing a system as a whole rather than an individual component or product.<sup>766</sup> Under the supervision of Philip Heath<sup>767</sup> it did the same in its responses to customers who asked for advice about the use of K15 at height and continued to write “letters of suitability” representing that the 2005 test data was “directly applicable” to various proposed constructions when it plainly was not.<sup>768</sup> Once the BBA certificate for K15 had been issued, Kingspan relied on the sections describing the BS 8414 test and the suitability of the product for use on buildings over 18 metres in height which it had shaped so carefully, sometimes referring to it as constituting the BBA’s approval of the product.<sup>769</sup>

**22.93** Despite those efforts to conceal the true position about K15’s performance in fire, the period was marked by challenges from astute designers. One such was Wintech Group Ltd, a facade engineering consultancy,<sup>770</sup> which in 2006 had begun to ask questions about the suitability of K15 for use in high-rise projects and the relevance of Kingspan’s 2005 test to steel-framed structures.<sup>771</sup> Both Mr Heath and Mr Meredith acknowledged that the questions it raised were valid,<sup>772</sup> but at the time Kingspan fought off the challenges as best it could. Mr Meredith told other designers that Wintech was taking a precautionary approach to following the guidance in Approved Document B.<sup>773</sup>

**22.94** Wintech’s persistence led members of the technical team to seek advice from Mr Heath. On one occasion Mr Meredith asked him for a standard answer because it was becoming difficult for him to know what he could write without risking a legal confrontation. Mr Heath’s response was “Wintech can go f#ck themselves, and if they are not careful we’ll sue the a#se of them”.<sup>774</sup> Mr Heath forwarded the exchange to a friend outside Kingspan, calling the situation a “nightmare” and writing “I’m trying to think of a way out of this one, imagine a fire running up this tower !!!!!!!!!!!!!!!!!!!!!!!”.<sup>775</sup> Even if we were to accept Mr Heath’s explanation that the emails were an attempt to make light of a situation which

<sup>764</sup> {KIN00024474}; {KIN00024476}.

<sup>765</sup> {BBA00000250/1-2}; {BBA00000211/1}; {BBA00000211/7}; {BBA00002874/1}.

<sup>766</sup> {KIN00009703/6}; {KIN00002607/3}.

<sup>767</sup> Heath {Day79/109:5-19}; {KIN00003723}; {KIN00003718}.

<sup>768</sup> {KIN00002589/3-4}; {KIN00009042}; {KIN00002594/2}.

<sup>769</sup> {KIN00002592/3}; {KIN00003723/1}.

<sup>770</sup> Taylor {WIN00000002/1} page 1, paragraph 1.

<sup>771</sup> {KIN00005243/2}.

<sup>772</sup> Heath {Day79/115:22}–{Day79/116:9}; {Day79/120:22}–{Day79/121:7}; Meredith {Day76/86:19-24}.

<sup>773</sup> {KIN00024478/1} penultimate paragraph.

<sup>774</sup> {KIN00005363/1}.

<sup>775</sup> {KIN00009066/1}.

was causing him “frustration”,<sup>776</sup> we think, despite his denials,<sup>777</sup> that they expose a casual disregard for public safety at a senior level in Kingspan, a determination to defend K15’s position in the market at all costs and a keen awareness on Kingspan’s part that it needed to find a way out of the situation it had created through its own mendacity.

## The LABC Certificate 2009

- 22.95** As has been explained elsewhere in this report,<sup>778</sup> in May 2009 Kingspan obtained an LABC System Type Approval Certificate for K15. That certificate, obtained by Andrew Pack and Philip Heath, stated that K15 could be considered a material of limited combustibility and that it was suitable for use in all situations shown in Diagram 40 of Approved Document B, including on buildings over 18 metres in height.<sup>779</sup> Philip Heath’s jubilation at obtaining the certificate was clear from his contemporaneous correspondence, in which he said the document could be “GOLD”.<sup>780</sup> He celebrated the formal confirmation of its issue on 7 May 2009 with the single word “FANBLOODYTASTIC”.<sup>781</sup>
- 22.96** On 7 May 2009, Mr Heath circulated the “GREAT NEWS!” to various internal Kingspan mailing lists, offering special thanks to Mr Pack, summarising the benefits the certificate would bring and highlighting in bold in his quote from the certificate the words “material of limited combustibility”. In the same email, Mr Heath said that the certificate had completed the “tool kit” for K15.<sup>782</sup> The toolkit, he explained, was the marketing information used to sell the product.<sup>783</sup>
- 22.97** In response to a question from Dr Rochefort asking what test results had been used to obtain the certificate, Mr Heath said that Kingspan had sent so much fire data to David Jones, the certificate’s author, that it had “probably blocked his server” and that LABC had convinced itself that K15 was the “best thing since sliced bread” without even having “to get any real ale down him”.<sup>784</sup> Dr Rochefort never received a proper answer to his question.<sup>785</sup> His suggestion that testing of which he had been wholly unaware might have been carried out in Australia, China or Singapore was simply not credible.<sup>786</sup> The reality is that there was no answer. As Mr Pack accepted, Mr Heath’s claim was nonsense.<sup>787</sup> No fire test data at all had been provided to LABC.
- 22.98** On 11 May 2009, in an email to Mr Meredith, Dr Rochefort and others, Mr Heath repeated that the LABC certificate satisfied the requirements for K15 to be installed on buildings over 18 metres in height and gave instructions that no further fire testing was to be carried out on K15.<sup>788</sup> He told us that the decision to stop testing and to rely on the LABC certificate to promote the suitability of K15 for use on buildings over 18 metres in height was a collective one.<sup>789</sup> During a meeting of Kingspan’s Fire Focus Group on 18 May 2009, attended by Dr Rochefort and Mr Meredith but not by Mr Heath, it was agreed that work would continue on the development of a K15 product that would be able to pass a BS 8414-2 test

<sup>776</sup> Heath {Day79/118:4-25}; {Day79/124:5-19}.

<sup>777</sup> Heath {Day79/124:11-19}.

<sup>778</sup> Chapter 23.

<sup>779</sup> {KIN00005705/5}.

<sup>780</sup> {KIN00024991/1}.

<sup>781</sup> {KIN00024993/1}.

<sup>782</sup> {KIN00005383}.

<sup>783</sup> Heath {Day79/189:8-12}.

<sup>784</sup> {KIN00020714}.

<sup>785</sup> Rochefort {Day80/146:15}–{Day80/147:7}.

<sup>786</sup> Rochefort {Day80/144:23}–{Day80/146:14}.

<sup>787</sup> Pack {Day86/135:5-16}.

<sup>788</sup> {KIN00005382}.

<sup>789</sup> Heath {Day79/193:11-13}.

as a back up.<sup>790</sup> However, Mr Heath then reversed that decision, confirming in an email to Mr Meredith on 17 June 2009 that no further facade testing involving K15 would be carried out and that the LABC certificate would be relied on “until we are challenged”.<sup>791</sup> It is therefore clear that at that time Kingspan accepted that it had no K15 product capable of forming part of a facade system that would meet the criteria in BR 135 when tested in accordance with BS 8414-2<sup>792</sup> and that it made a calculated decision to use the LABC certificate to gloss over the absence of relevant test evidence.

- 22.99** Both Mr Heath and Mr Meredith accepted that LABC’s central statement about K15’s suitability for use on buildings over 18 metres in height (described in an internal presentation to Kingspan’s sales teams as “the highlight”)<sup>793</sup> was false and thoroughly misleading. Mr Heath accepted that he had expected it to be challenged.<sup>794</sup> Mr Meredith, who said that at the time he had been “drowning in inquiries” about the use of K15 on buildings over 18 metres in height, told us that he was simply following suit from his line manager that, in the absence of any relevant test evidence, the LABC certificate was the solution.<sup>795</sup> He too expected it to be challenged. Once the certificate had been obtained, the strategy was to send it out to customers and let it do the talking.<sup>796</sup>
- 22.100** By August 2009, that strategy appeared to be working. In an email sent that month to others in the technical and sales teams (including Mr Heath), Mr Meredith noted that questions about the use of K15 at height had died out since obtaining the LABC System Type Approval.<sup>797</sup>

### Amended BBA certificates 2010-2013

- 22.101** Meanwhile, dust had been gathering on the amendments to the certificate relating to K15 that the BBA had proposed in December 2008.<sup>798</sup> Although the next version of the certificate bears the date 6 April 2010,<sup>799</sup> that was said to be the date on which it had been amended; it is clear from later correspondence that it was not the date on which it was issued.<sup>800</sup> No Kingspan witness was able to identify the date on which it had been issued. John Albon and Jon Denyer<sup>801</sup> thought it had been issued on 12 July 2013, although there was some uncertainty about it.<sup>802</sup> We have seen no evidence to confirm or contradict that later date.
- 22.102** The amended certificate contained three significant changes to the text relating to the performance of K15 in fire. First, the section on the front page headed “Key Factors Assessed” contained the additional words that Mr Lee had suggested, namely, “The product has been tested to BS 8414-1:2002 for one specific construction on masonry walls”.<sup>803</sup> The second change was to the description of the system tested in accordance with BS 8414 in 2005, which now stated explicitly that BS 8414-1 was a test for masonry

<sup>790</sup> {KIN00008845/1-2}; Meredith {Day76/58:21}-{Day76/60:20}.

<sup>791</sup> {KIN00005387}.

<sup>792</sup> Rochefort {Day80/155:7-20}; {Day80/143:10-20}.

<sup>793</sup> {KIN00009178/5}.

<sup>794</sup> Heath {Day79/207:11-15}; Meredith {Day76/24:24}.

<sup>795</sup> Meredith {Day76/35:12-24}.

<sup>796</sup> {KIN00005385}.

<sup>797</sup> {KIN00009135/1}.

<sup>798</sup> {KIN00009103}.

<sup>799</sup> Certificate 08/4582 Amended Issue 1{BBA00000037/1}.

<sup>800</sup> {BBA00002644/7}.

<sup>801</sup> Denyer {BBA00010780/4} page 4, paragraph 13.

<sup>802</sup> Denyer {BBA00010780/10} page 10, paragraph 38 (publication date inserted by Jon Denyer); Albon {Day110/109:9-25}.

<sup>803</sup> Certificate 08/4582 Amended Issue 1{BBA00000037/1}.

substrates and omitted the previous assertion that “... the product meets the criteria stated within BRE135”.<sup>804</sup> Last, in the passage immediately following the statement that K15 was rated national Class 0 (which had previously said that the product could be used in accordance with the provisions of paragraphs 12.5 and 12.6 of Approved Document B)<sup>805</sup> the amended version said that the product could also be used in accordance with the provisions of paragraph 12.7 of the guidance.<sup>806</sup>

- 22.103** That proposed draft of the amended certificate was sent to Kingspan on 8 April 2010 by Mr Hunt, who explained the reason for the amendments and sought Kingspan’s agreement to them.<sup>807</sup> In his response, which was not sent until 21 June 2010, Mr Mills effectively proposed reverting to the original, i.e. the complete removal of the amended wording on the first page (“for one specific construction on masonry walls”) and the addition at the end of the section describing the system tested in accordance with BS 8414 the words “... therefore meeting the criteria in BR 135”.<sup>808</sup> After that, no further progress was made for many years. Kingspan failed to respond to another email from Mr Hunt on 9 July 2010 and the BBA decided that the certificate would need to be re-issued rather than amended.<sup>809</sup>
- 22.104** Discussions resumed in January 2013 as part of what appear to have been steps leading to the eventual issue of a new certificate in July 2013. Mr Mills, Mr Meredith and a senior technical adviser at Kingspan, Joel Clarke,<sup>810</sup> considered how best to prevent the inclusion in the certificate of wording that would indicate any restriction on the use of K15 on buildings over 18 metres in height.<sup>811</sup> Tony Millichap oversaw those discussions, which showed that Kingspan was now conscious of its waning influence over the BBA in relation to the contents of the certificate. Indeed, in an email sent to the other three on 9 January 2013 Mr Clarke commented that he thought Kingspan might be “pushing our luck” in seeking to restore the advice to contact the certificate holder<sup>812</sup> and said that at a meeting the day before people had said that the BBA was “onto us”.<sup>813</sup> That may have been right. When the amended certificate was issued Mr Mills’ comments appear to have been ignored and Kingspan’s attempts to ensure that the certificate should include wording to the effect that “the product” had met the criteria in BR 135<sup>814</sup> had not been successful.
- 22.105** Despite the BBA’s evidence<sup>815</sup> and Kingspan’s arguments to the contrary,<sup>816</sup> we think that the BBA’s statement that K15 could be used in accordance with the provisions of paragraph 12.7 of Approved Document B was dangerously misleading because it suggested that K15 was a material of limited combustibility, which was not the case. Apart from Mr Mills, who seems to have thought that the statement was accurate,<sup>817</sup> all the other witnesses who were asked about it, including Mr Meredith<sup>818</sup> and Mr Millichap,<sup>819</sup> acknowledged that

<sup>804</sup> Certificate 08/4582 Amended Issue 1 {BBA00000037/5-6}; See previous wording {BBA00000038/5}.

<sup>805</sup> Certificate 08/4582 Issue 1 {BBA00000038/6}.

<sup>806</sup> Certificate 08/4582 Amended Issue 1 {BBA00000037/5};

<sup>807</sup> {BBA00002644/7}.

<sup>808</sup> {BBA00002644/6}.

<sup>809</sup> {BBA00002644/1-5}.

<sup>810</sup> Clarke {KIN00008790/4} page 4, paragraph 2.6.

<sup>811</sup> {KIN00009353}; {KIN00005570}.

<sup>812</sup> {KIN00005570/2}.

<sup>813</sup> {KIN00005570/1}.

<sup>814</sup> Email from Gareth Mills to the BBA dated 31 May 2013 {KIN00002145/4}, “... for the section relating to BS 8414, we would want the general description of the construction tested included, i.e. similar to that is (sic) our existing certificate, along with some text stating that the result achieved met the criteria from BRE 135...”.

<sup>815</sup> Albon {Day109/56:13}–{Day109/57:2}.

<sup>816</sup> {KIN00025944/34-37} paragraphs 92-101.

<sup>817</sup> Mills {Day77/109:6}–{Day77/115:4}.

<sup>818</sup> Meredith {Day76/3:17-20}.

<sup>819</sup> Millichap {Day81/80:8-20}.

the reference to paragraph 12.7 in those terms was inaccurate and misleading. Mr Albon also acknowledged in his evidence that it was misleading.<sup>820</sup> In its closing statement for Module 2, however, Kingspan went to some lengths to persuade us otherwise.

- 22.106** As we have explained in Chapter 48 of this report, the purpose of paragraph 12.7 was to restrict the use of combustibile insulation materials at height. It did so by advising that only insulation materials of limited combustibility should be used on buildings over 18 metres in height, except where they form part of a cavity wall construction and are enclosed by two leaves of masonry.<sup>821</sup> The exception for masonry cavity wall construction reflects the fact that the insulation is protected from fire on each side by a thick layer of non-combustible material. It was clearly intended to deal with a narrowly defined type of construction wholly unlike those for which the BS 8414 test and the BR 135 criteria were designed.
- 22.107** The passage in question has to be read and understood in the context of the certificate as a whole, which states that it relates to K15 “for use to create a warm frame wall construction or for use against masonry substrates, with a ventilated cavity and a weatherproof cladding system / protective rainscreen”. The accompanying illustration depicts its use with a steel frame construction. Other sections of the certificate, such as paragraphs 1.1, 4, 5.2, 8.2, 8.5 and 12, suggest that it was not directed to the use of the product as insulation inside an enclosed masonry cavity wall and we have seen no clear evidence to suggest that either Kingspan or the BBA had such a use in mind. However, the real vice of the statement lies in the apparently innocuous word “therefore”, which provides the link between the phrase “Class 0 or ‘low risk’” and the statement that the product may be used in accordance with the provisions of paragraph 12.7 of Approved Document B. It is clear that insulation used within a masonry cavity wall construction does not need to be Class 0 or ‘low risk’ or of limited combustibility. The causal link can therefore be relevant only to the first part of paragraph 12.7, thereby suggesting that K15 is of limited combustibility. We therefore think that the overall thrust of the certificate was clear in that respect and that it was both erroneous and misleading.
- 22.108** On 17 December 2013, the BBA issued a third version of the certificate for K15.<sup>822</sup> It significantly tightened the previous language in relation to the use of K15 on buildings over 18 metres in height, in particular by explicitly stating that one specific build-up had met the criteria in BR 135 through a test in accordance with BS 8414 Part 1. In a footnote, it repeated that K15 had been tested in accordance with BS 8414 only in one specific construction and added that a separate test would be required to establish the performance of any other combination of materials. It also removed the statement containing the reference to paragraph 12.7 of Approved Document B and the section directing readers to contact Kingspan for advice on the use of K15 on buildings over 18 metres in height.<sup>823</sup>
- 22.109** In recognition that its continuing efforts to prevent any “restrictive” wording about the use of K15 at height were not going to be successful, Kingspan took comfort from the fact that those restrictions were printed in “the smallest possible font and buried deep in the certificate itself”. That was celebrated internally as “significant progress” from the position in a previous draft, as was the fact that the explicit restriction no longer appeared on the front page of the certificate.<sup>824</sup>

<sup>820</sup> Albon {Day110/179:15}.

<sup>821</sup> {CLG10000007/96}.

<sup>822</sup> Certificate 08/4582 Issue 2{BBA00000036}.

<sup>823</sup> {BBA00000036/6}.

<sup>824</sup> {KIN00005870/1}.

- 22.110** Mr Meredith and Mr Mills both agreed<sup>825</sup> that they, Mr Clarke and Mr Millichap had been working to ensure that the certificate imposed the minimum restrictions on the use of K15.<sup>826</sup> Mr Millichap told us that his team might have been asking for more than was appropriate,<sup>827</sup> but that they had simply been keen to ensure that K15 was presented in the most positive light and had tried to extend the scope of the certificate in a way that was accurate.<sup>828</sup> Mr Meredith went further, however, admitting that inaccurate assertions made by Kingspan had not been due to an excess of enthusiasm but to a conscious attempt to persuade the BBA to accept claims that would maximise sales of K15, whether they were true or not.<sup>829</sup>
- 22.111** Again, we think that the evidence of Mr Meredith was more reliable. We are left in no doubt that Kingspan took advantage of the BBA's initial failure properly to investigate the characteristics of K15 and thereafter did all it could to ensure that the certificates did not include wording that restricted the suitability of K15 for use on buildings over 18 metres in height, both by putting forward wording it knew to be inaccurate and by failing to correct the BBA's own inaccurate statements. Loose language or not,<sup>830</sup> Kingspan's long-running internal discussions about what it could get away with<sup>831</sup> betrayed no concern whatsoever for accuracy.

### LABC, NHBC and Wintech: 2012-2013

- 22.112** By May 2012, the LABC System Type Approval certificate issued to Kingspan in May 2009 had lapsed,<sup>832</sup> leading to what Mr Meredith described in an email sent to Tony Millichap on 15 October 2012 as a "major headache and potentially a lot of lost work" in relation to high-rise buildings. He suggested that without the LABC certificate new data would probably be needed and that pressure should be put on the production teams to develop a form of K15 that could be expected to enable a system to meet the criteria in BR 135.<sup>833</sup> The exchange reveals the degree of reliance that had been placed on the LABC certificate and confirms that at that time Kingspan thought that K15 was still not capable of forming part of a system that could be tested successfully in accordance with BS 8414.
- 22.113** In late 2012, Kingspan thought about continuing to rely on the certificate issued in May 2009, but its lapse had not escaped the notice of Wintech, which continued to raise questions about the suitability of K15 for use on buildings over 18 metres in height.<sup>834</sup> In the event, Kingspan did obtain further LABC certificates for K15, the next being published on 28 August 2013.<sup>835</sup> We deal with those later certificates in Chapter 23.
- 22.114** By 31 October 2013, Wintech's efforts to draw attention to Kingspan's apparent lack of test data for K15<sup>836</sup> had culminated in a meeting between them attended by (amongst others) Dr Rochefort, Peter Wilson, the managing director of Kingspan,<sup>837</sup> and Paul Savidge, the managing director of Wintech.<sup>838</sup> At the meeting Dr Rochefort maintained his view

<sup>825</sup> Meredith {Day76/14:5-9}; Mills {Day77/131:21-24}.

<sup>826</sup> {KIN00005570/1}.

<sup>827</sup> Millichap {Day82/13:3-10}.

<sup>828</sup> Millichap {Day82/7:12-22}.

<sup>829</sup> Meredith {Day76/12:16-20}.

<sup>830</sup> Millichap {Day82/7:4}.

<sup>831</sup> {KIN00009353/1}.

<sup>832</sup> {KIN00005705/1} "Conditions of Certification", second bullet point.

<sup>833</sup> {KIN00005552/1}; Meredith {Day76/37:17}-{Day76/39:2}.

<sup>834</sup> {KIN00005554/2-3}; Meredith {Day76/39:5}-{Day76/41:23}.

<sup>835</sup> {LABC0001000}; {LABC0001001}.

<sup>836</sup> {KIN00005683}.

<sup>837</sup> {KIN00022334/17}.

<sup>838</sup> Savidge {WIN00000004/2} page 2, paragraph 5.



that K15 was suitable for use on buildings over 18 metres in height,<sup>839</sup> but accepted that Kingspan did not have any BS 8414-2 test data and told Wintech that such tests would be undertaken and made available within six months.<sup>840</sup> In an email sent after the meeting, Paul Savidge warned Dr Rochefort that if the data were not made available within that period Wintech would publicise its concerns about the use of K15 on high-rise buildings to the industry at large.<sup>841</sup>

**22.115** The contents of the LABC certificates for K15 had also come to the attention of NHBC. In November 2014, it described the expression “K15 can be considered a material of limited combustibility”, as “all garbage” and the approval of K15 on buildings over 18 metres in height as “an accident waiting to happen”.<sup>842</sup> In Chapter 26 of this report we describe the discussions between NHBC and Kingspan during the period from late 2013 onwards in relation to the use of K15 on buildings over 18 metres in height. Mr Meredith told us that NHBC had started to ask difficult questions in late 2013.<sup>843</sup> Certainly, by February 2014, and following unsuccessful efforts by NHBC to obtain test evidence from Kingspan that demonstrated the suitability of K15 for use on buildings over 18 metres in height (in particular on steel frame systems), NHBC had asked Kingspan to provide written approval for every project of that kind on a job by job basis.<sup>844</sup> The evidence that Mr Meredith had repeatedly assured NHBC he would send to support the suitability of K15 for use at height proved not to exist. Consequently, the pressure on him to resolve the situation increased.<sup>845</sup> On 16 June 2014 NHBC wrote to Kingspan saying that unless test evidence supporting the use of K15 in any construction other than that tested to BS 8414-1 in May 2005 had been provided by 30 June 2014 NHBC would reconsider its acceptance of K15 as suitable for use on buildings over 18 metres in height.<sup>846</sup> In the event, however, neither occurred.

## BS 8414 test: 2014

**22.116** In January 2014, Kingspan embarked on a programme of testing at BRE in accordance with BS 8414-2, the first since June 2008. The tests were arranged by Mr Meredith under the supervision of Mr Millichap and Dr Rochefort.<sup>847</sup> The first test in the series, held on 7 January 2014,<sup>848</sup> incorporated Trespa high pressure laminate rainscreen boards.<sup>849</sup> We were not able to establish whether the test in January 2014 had incorporated K15 insulation boards of the kind that were then being sold commercially. Mr Meredith told us that he thought it had,<sup>850</sup> but Mr Millichap thought otherwise<sup>851</sup> and an internal Kingspan presentation from May 2015 referred to a version of K15 with an unperforated foil facer.<sup>852</sup> (By January 2014, K15 was being manufactured and sold with perforated foil facers.) A spreadsheet produced by Kingspan for the Inquiry described the type of K15 used in

<sup>839</sup> {KIN00003823/2}; Rochefort {Day80/172:4}-{Day80/176:21}.

<sup>840</sup> Rochefort {Day80/181:22}-{Day80/186:4}; Savidge {WIN00000004/25} page 25, paragraphs 63-67; Taylor {WIN00000002/26} page 26, paragraphs 57-61.

<sup>841</sup> {KIN00003823}; Meredith {Day76/139:7-21}.

<sup>842</sup> {NHB00000810/1-3}.

<sup>843</sup> Meredith {Day76/50:7-10}; {NHB00000645/2}.

<sup>844</sup> {KIN00005894/1}.

<sup>845</sup> Meredith {Day76/97:11}-{Day76/99:11}; Evans {Day219/218:25}-{Day219/219:21}.

<sup>846</sup> {NHB00000757/3}.

<sup>847</sup> {KIN00022334/17}.

<sup>848</sup> Test 291718; no report produced.

<sup>849</sup> {KIN00000673}.

<sup>850</sup> Meredith {Day76/110:4-7}.

<sup>851</sup> Millichap {Day82/27:1-8}.

<sup>852</sup> {KIN00021945/17}.

the test as “unknown”.<sup>853</sup> Whatever kind of K15 it contained, however, the system did not meet the criteria in BR 135, the temperature exceeding the relevant limit after just under 15 minutes, with flames breaching the top of the test rig before 30 minutes had elapsed.<sup>854</sup>

- 22.117** Following that test, Kingspan worked on changes in advance of the next test. It is clear that Ivor Meredith, Dr Rochefort and Tony Millichap (among others) were closely involved in the discussions about possible changes. They included a suggestion made by Mr Meredith in an email dated 13 January 2014 to produce for testing a K15 product modified with an alternative blowing agent called ‘solstice’.<sup>855</sup> Dr Rochefort did not agree with changing to a solstice-blown foam and asked Mr Meredith to speak to him about it. Mr Meredith subsequently told Mr Millichap that he thought Dr Rochefort would be concerned about putting too much in writing.<sup>856</sup>
- 22.118** It is apparent from the internal correspondence in January 2014 following the first test<sup>857</sup> that at that point Dr Rochefort, Mr Millichap and Mr Meredith all realised two important things. First, that at that time they did not think that Kingspan had a K15 product that was capable of being used in a system that, when tested in accordance with BS 8414, would meet the criteria in BR 135. That included the K15 that Kingspan was then selling. Secondly, that as a result, the next test or tests could not be carried out on the standard K15 product.<sup>858</sup>
- 22.119** Whatever reservations Dr Rochefort might initially have had about changing to a solstice-blown version of K15, the next test on 19 March 2014<sup>859</sup> was carried out on a system incorporating a 15 millimetre Trespa decorative rainscreen board and a “trial” version of K15 made using solstice as the blowing agent with a 50 or 100 micron unperforated foil facer.<sup>860</sup> Dr Rochefort, Mr Meredith and Mr Millichap were all aware at the time of the test that those were the characteristics of the insulation tested,<sup>861</sup> although the K15 on the market in March 2014 had a 25 micron perforated foil facer and did not use solstice as the blowing agent.
- 22.120** Despite the use of a modified K15 product, by 31 March 2014 Kingspan had learnt from BRE that the system tested on 19 March 2014 had not met the criteria in BR 135.<sup>862</sup> Towards the end of the test flames had breached the top of the rig and the test had therefore been effectively terminated straight away.<sup>863</sup> Kingspan immediately set about challenging BRE’s decision, first by making a formal complaint<sup>864</sup> and then by warning BRE that it was consulting lawyers.<sup>865</sup> Based on its analysis of a video recording of the test, BRE stood firm and did not produce a BR 135 classification report. Mr Meredith nonetheless made good his initial promise to Dr Rochefort and others that he would get something out

<sup>853</sup> {KIN00022357/3}.

<sup>854</sup> {KIN00000673/1}.

<sup>855</sup> {KIN00021095/2} fifth bullet point.

<sup>856</sup> {KIN00021095/1}.

<sup>857</sup> {KIN00021095}.

<sup>858</sup> Millichap {Day81/122:12-25}; Millichap {Day82/27:16-19}.

<sup>859</sup> Test 293940. Test report dated 26 June 2014 {BRE00002516}.

<sup>860</sup> {KIN00022357/3}; {KIN00021945/17}.

<sup>861</sup> Rochefort {Day80/203:5-12}; Meredith {Day76/124:23}-{Day76/125:9}; Millichap {Day82/30:23}-{Day82/31:1}.

<sup>862</sup> {KIN00021907/2}.

<sup>863</sup> {KIN00010461/3}; {BSI00000097/11} clause 8.5.

<sup>864</sup> {KIN00010461/1}; {BRE00003576}.

<sup>865</sup> {BRE00015592/2}.

of the test<sup>866</sup> by obtaining a test report.<sup>867</sup> The resulting test report dated 26 June 2014 was later relied on in a large number of desktop assessments produced to demonstrate that systems incorporating K15 would comply with the criteria in BR 135.

- 22.121** Despite being aware from 31 March 2014 that the system tested on 19 March 2014 had not met the performance criteria in BR 135,<sup>868</sup> Kingspan represented on a number of occasions,<sup>869</sup> even as late as February 2015,<sup>870</sup> that the test supported the suitability of K15 for use on buildings over 18 metres in height. That involved a double falsehood: the insulation tested in that system was not K15 in the form in which it was being supplied to the market and the system had not met the criteria in BR 135.
- 22.122** The next test took place on 7 July 2014. Dr Rochefort directed that terracotta tiles be used as the rainscreen.<sup>871</sup> There was some discussion in late March 2014 between Mr Meredith, Mr Millichap, Dr Rochefort and others at Kingspan about the product that should be used in the next test, standard, solstice or phosphoric.<sup>872</sup> The first was the K15 that was being sold commercially, the second was the trial version which had been tested in March 2014 and the third contained certain other chemical modifications.<sup>873</sup> On this occasion, they decided to use a solstice-blown product with a 50 micron foil facer, perforated on one side and unperforated on the other.<sup>874</sup> Mr Meredith told us that the decision to test that form of the product was taken by all those who had been involved in the discussions,<sup>875</sup> who included Dr Rochefort, Mr Millichap and Peter Wilson.<sup>876</sup> The system tested met the performance criteria in BR 135.<sup>877</sup>
- 22.123** There was evidence that Mr Meredith had taken steps to ensure that labels stating “trial” were removed from the insulation supplied to BRE for the test.<sup>878</sup> He agreed that that might have been to ensure that BRE did not become aware that a trial version of K15 was being tested.<sup>879</sup> Neither the test nor the classification report produced by BRE made any reference to the fact that the insulation was a trial version, both simply referring to it as “K15 Kooltherm insulation board”.<sup>880</sup> As a result, the reader would not have been able to tell from the reports that the insulation was anything other than the K15 then being sold by Kingspan.
- 22.124** Mr Pargeter, Mr Meredith, Mr Millichap and Dr Rochefort all admitted that they had been aware at the time that the test on 7 July 2014 had been carried out on a system incorporating a trial product,<sup>881</sup> a fact clearly borne out by the documents. Mr Millichap<sup>882</sup> and Mr Meredith<sup>883</sup> told us that it had been common knowledge within Kingspan.

<sup>866</sup> {KIN00021907/2}.

<sup>867</sup> {BRE00002516}.

<sup>868</sup> {KIN00021907/2}.

<sup>869</sup> {NHB00000703}; {KIN00002186}; Millichap {Day82/107:5-24}; {Day82/134:2-23}.

<sup>870</sup> {KIN00002199/1}.

<sup>871</sup> {KIN00021907/2}.

<sup>872</sup> {KIN00021907/2}.

<sup>873</sup> Millichap {Day82/54:10-13}.

<sup>874</sup> {KIN00022357/3}; {KIN00021945/17}; Meredith {Day76/158:19-21}.

<sup>875</sup> Meredith {Day76/130/10-19}; {KIN00021907}.

<sup>876</sup> {KIN00021907}.

<sup>877</sup> Test report 297099 dated 10 September 2014 {BRE00002656}; BR 135 Classification report 291642 dated 5 March 2015 {BRE00002514}.

<sup>878</sup> {KIN00021904/3}.

<sup>879</sup> Meredith {Day76/161:4-20}.

<sup>880</sup> {BRE00002656/6}; {BRE00002514/6}.

<sup>881</sup> Meredith {KIN00022312/58} page 58, paragraph 120(a); Millichap {Day82/64:9-15}; Rochefort {Day80/216:13-17}; Pargeter {Day83/191:7-16}.

<sup>882</sup> Millichap {Day82/76:15}-{Day82/77:3}.

<sup>883</sup> Meredith {Day76/157:16}-{Day76/158:2}.

- 22.125** The test result was immediately celebrated internally within Kingspan,<sup>884</sup> with jubilation expressed at the effect it would have on competitors and open discussion of the pressure Kingspan had been under to achieve it.<sup>885</sup> It does not appear to have occurred to any Kingspan employee, other than Mr Millichap, whose objections appear to have been roundly dismissed<sup>886</sup> and must have been short-lived, to question any aspect of the “success” being celebrated. The test result was swiftly also celebrated externally. Kingspan informed NHBC, building contractors, designers and the wider market that it had carried out a successful test to BS 8414-2 as part of its “test portfolio”.<sup>887</sup>
- 22.126** Thereafter, in its correspondence, technical bulletins and promotional literature, Kingspan relied on the result of that test to support the use of standard K15 on buildings over 18 metres in height and that remained its position until it withdrew the test in October 2020.<sup>888</sup> Kingspan’s witnesses were asked why it had relied on a test carried out on a different product, given that all those involved (including Mr Pargeter, who was promoted to Head of Marketing in November 2014)<sup>889</sup> knew that the test had not been carried out on K15 of the kind being sold in the market. There was a conflict of evidence between Mr Meredith, who did not attempt to deny that Kingspan had done so knowingly and deliberately, and Dr Rochefort, Tony Millichap and Adrian Pargeter, who did.
- 22.127** Dr Rochefort told us that at the time he had had no idea that the test carried out in July 2014 was being used by Kingspan to support the sale of standard K15 for use on buildings over 18 metres in height. When faced with documents that tended to show that he had been aware of how the test was being used,<sup>890</sup> he put forward various unconvincing explanations while resolutely denying that Kingspan had deliberately relied on it to promote or sell standard K15.<sup>891</sup> In our view the evidence clearly demonstrated that he was aware that the marketing and technical departments were making use of the test in that way.
- 22.128** Mr Millichap agreed that it was wholly inappropriate to use the July 2014 test to support the sale of standard K15<sup>892</sup> and said that he had not known that that was being done.<sup>893</sup> However, having seen Mr Meredith’s email of 21 August 2014,<sup>894</sup> he accepted that he had known that letters confirming success in the test that had been sent in response to questions from contractors<sup>895</sup> can only have referred to the test in July 2014.<sup>896</sup> Moreover, faced with the record of a meeting held on 15 July 2014, at which he had been instructed to produce reports and letters announcing the result of the test for use as a marketing tool,<sup>897</sup> he admitted that he had been actively involved in using the test to support the sale of standard K15.<sup>898</sup> He also confirmed that he had known throughout his time as Head of Technical that the product Kingspan had tested in July 2014 had never been produced or sold commercially.<sup>899</sup>

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<sup>884</sup> {KIN00010825/2}.

<sup>885</sup> {KIN00010825/1}.

<sup>886</sup> {KIN00010825/1}; Millichap {Day82/75:21}-{Day82/76:13}.

<sup>887</sup> {KIN00002186/2}; Millichap {Day82/104:23}-{Day82/105:4}; {KIN00011049}.

<sup>888</sup> {KIN00024104/1}.

<sup>889</sup> Pargeter {KIN00000494/4-5} pages 4-5, paragraphs 2.7 and 2.8.

<sup>890</sup> {KIN00020736/2} paragraph 6; {KIN00021904/1}.

<sup>891</sup> Rochefort {Day80/222:9}-{Day80/224:3}; {Day80/217:9-19}; {Day80/224:17-22}.

<sup>892</sup> Millichap {Day82/66:12-15}.

<sup>893</sup> Millichap {Day82/64:19}-{Day83/65:6}.

<sup>894</sup> {KIN00020736}.

<sup>895</sup> {KIN00020736/2} paragraph 6.

<sup>896</sup> Millichap {Day82/68:17}-{Day82/69:6}.

<sup>897</sup> {KIN00020736/3}.

<sup>898</sup> Millichap {Day82/72:18-24}.

<sup>899</sup> Millichap {Day82/64:9-15}.

- 22.129** In the summer of 2014 Adrian Pargeter was Kingspan’s Product Development Manager; he was promoted to Head of Marketing in November 2014. It is clear from the documents to which we have referred that he was closely involved in the testing of K15 and the attempts to produce a product that was capable of forming part of a system that would satisfy the criteria in BR 135 when tested in accordance with BS 8414. He could therefore be expected to have had a detailed knowledge of the differences between the various forms of K15 that were produced for testing during that period and, towards the end of 2014, of the steps being taken by the marketing department to promote and sell the product.
- 22.130** Mr Pargeter told us that he had not known that Kingspan had relied on the test in July 2014 in order to market and sell standard K15 until February 2019, when he had discovered it in the course of preparing to give evidence to the Inquiry,<sup>900</sup> although he had known that a non-standard version of K15 had been tested in July 2014. In effect, his evidence amounts to saying that until early 2019 he had thought that two separate tests had been carried out in July 2014, one on the standard product and one on a trial product.
- 22.131** Mr Pargeter told us that he had not been involved in any discussions or decisions to use the report on the test carried out in July 2014 to support the sale of standard K15.<sup>901</sup> However, his evidence was not consistent with a series of documents created in 2014 and 2015 that he had either written, approved or read, all of which contained statements that specifically relied on that test to support the use of K15 on buildings over 18 metres in height. One of them was a technical bulletin published in August 2015 entitled “Routes to Compliance”,<sup>902</sup> which Mr Pargeter confirmed he had read in full (including the appendices and diagrams) thoroughly<sup>903</sup> before he had approved it.<sup>904</sup> The document contained pictures of the systems used for the three BS 8414 tests on which Kingspan was relying by August 2015.<sup>905</sup> One of them was the test carried out in May 2005; another was the test carried out in July 2014. Mr Pargeter said that he had not realised at the time that it was a picture of the test carried out on development material in 2014. There was a series of other documents dating from 2015 and 2016, all of which Mr Pargeter confirmed he had read, in which the test carried out in July 2014 was described or referred to as a test carried out on K15 and was being relied on in support of the promotion, certification or sale of K15.<sup>906</sup>
- 22.132** Given the positions he had occupied within Kingspan, between 2014 and 2019, it would be surprising if Mr Pargeter had not been aware of the nature of the product involved in the July 2014 test or of how his department had been marketing a product as important as K15. We found his attempts to distance himself from the activities of the marketing department dishonest and entirely unconvincing. We have concluded that Mr Pargeter was fully aware, both before and after he became Head of Marketing, that Kingspan was relying on the results derived from a test incorporating a form of K15 that was not being produced commercially to sell standard K15 and that he actively condoned it at a very senior level.

<sup>900</sup> Pargeter {KIN00022610/56-57} pages 56-57 paragraph 7.16; Pargeter {Day83/191:17}-{Day83/192:9}; {Day84/4:14-25}.

<sup>901</sup> Pargeter {KIN00022610/28} page 28, paragraph 3.37.

<sup>902</sup> {KIN00000086}.

<sup>903</sup> Pargeter {Day84/15:17-24}; {Day84/17:14-15}.

<sup>904</sup> Pargeter {Day84/12:21-25}.

<sup>905</sup> {KIN00000086/17}.

<sup>906</sup> {KIN00002289}; {NHB00001109/2} second bullet point; {BBA00000200/5} paragraph 8.2, {BBA00000201/5} paragraph 8.2.

**22.133** We think it highly likely that Kingspan had always intended to rely on the first successful test it could achieve, whatever form of the product had been used in the tested system. Kingspan's reliance after July 2014 on a test carried out using a development product was part of a carefully planned, carefully concealed and long-running deception.

## Conclusions

**22.134** The story of the development and marketing of K15 for use on buildings of over 18 metres in height between 2006 and 2019 is one of deeply entrenched and persistent dishonesty on the part of Kingspan in pursuit of commercial gain coupled with a complete disregard for fire safety. Unfortunately, Kingspan's dishonesty was facilitated, albeit inadvertently, by serious incompetence on the part of two bodies, the BBA and LABC, to which the industry looked for confirmation that K15 was suitable for use on buildings over 18 metres in height. Both those bodies, although supposedly independent, compromised their independence by entering into negotiations with Kingspan over the wording of their certificates and agreeing to include language that was inappropriate and in some cases misleading. They both failed to examine rigorously the material on which Kingspan's applications were based or to require the production of test data that supported its claims.

**22.135** The effect of Kingspan's dishonest marketing of K15 was to create a spurious market for a polymeric insulation product suitable for use on high-rise buildings generally, which drew in Celotex as a competitor. Celotex found it impossible to create a similar product using polyisocyanurate foam and could not understand how Kingspan had been able to produce an organic polymeric insulation board that apparently enabled designers to follow the guidance in Approved Document B relating to buildings over 18 metres in height. It therefore embarked on its own campaign to break into the market by dishonest means. Kingspan cannot be blamed for Celotex's dishonesty, which was the choice of Celotex itself, but it did create the conditions that encouraged it and in which it was able to flourish.

## Chapter 23

# Certification of Kingspan K15 by LABC

### Local Authority Building Control

**23.1** Local Authority Building Control (LABC) is a membership organisation created in 2005 to support all local authority building control teams in England and Wales (all of whom are members) with training, technical matters, and to provide centralised marketing and business development for members through a single network, in part through the creation of a centralised brand that is recognisable to building control users. It also aims to provide advice and assistance to members, to promote technical consistency in the interpretation of building regulations and to provide a forum for discussion between members. LABC is governed by a Board of Directors, with a Chief Executive who until 2016 line managed the Director of Technical Policy.<sup>907</sup> From October 2006 until March 2021, the Director of Technical Policy was Barry Turner.<sup>908</sup>

### LABC's certification schemes

**23.2** By the early part of the present century the informal sharing of information between local authority building control departments about the suitability of construction products had developed into a more formal system known as the Type Approval scheme<sup>909</sup> administered by LABC on behalf of its members. (In 2010 the name of the scheme was changed to the Registered Details scheme.)<sup>910</sup> The purpose of the scheme was to assess and verify the compliance of construction products or systems with the Building Regulations and Approved Documents. The categories of approvals granted under the scheme included a "Product Type Approval", which verified individual products or small components, and a "System Type Approval", a very wide category covering modular building systems as well as individual elements forming part of a larger structure.<sup>911</sup> The intention was to assist individual local authority building control bodies making decisions on specific projects,<sup>912</sup> to promote technical consistency<sup>913</sup> and to make it easier for applicants for approval in different local authority areas to demonstrate compliance with the Building Regulations.<sup>914</sup> The Type Approval scheme was also intended to provide a means of securing long term business for and reinvestment into LABC.<sup>915</sup>

**23.3** The assessment of a product or system for the purposes of granting Type Approval was carried out by the building control department of a member local authority, sometimes referred to as the "research authority"<sup>916</sup> or "matched authority",<sup>917</sup> designated by LABC (if the application was made to LABC) or as a result of a direct approach by the

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<sup>907</sup> Stimpson {LABC0020158/7-11}.

<sup>908</sup> Turner {LABC0002105/4} page 4, paragraph 14; Turner {Day216/4:9-16}.

<sup>909</sup> Turner {LABC0011202/8} page 8, paragraph 30; {LABC0018747}.

<sup>910</sup> Turner {LABC0011202/14} page 14, paragraph 45.

<sup>911</sup> {HBC00000049/10-11} paragraph 2.2.

<sup>912</sup> Turner {LABC0011202/7} page 7, paragraph 27; Turner {Day216/24:18-25}.

<sup>913</sup> Stimpson {LABC0020158/23} page 23, paragraph 25.3.

<sup>914</sup> Turner {LABC0011202/7} page 7, paragraph 26.

<sup>915</sup> {HBC00000049/26} paragraph 7.3.

<sup>916</sup> Stimpson {LABC0020158/24} page 24, paragraph 25.13.

<sup>917</sup> {HBC00000049/5}; {LABC0002281/3}.

manufacturer to a particular local authority.<sup>918</sup> However identified, it was the responsibility of that authority to undertake an objective and impartial technical assessment<sup>919</sup> of a product or system based on information and supporting certification and test results from recognised bodies provided by the manufacturer.<sup>920</sup> The intention was to reflect the investigation that a building control surveyor would otherwise need to carry out to determine compliance with the Building Regulations and Approved Documents,<sup>921</sup> with the additional support of an independent second check.

**23.4** LABC published various editions of a Type Approval Service Manual<sup>922</sup> that set out the framework, process and standards for issuing certificates under the scheme. The manual was intended to act as a guide to assist member local authorities undertaking assessments.<sup>923</sup> Although the process was based on information provided by manufacturers and therefore depended on their honesty and good faith,<sup>924</sup> the assessment of the product or system under consideration was intended to be carried out at a high level and comprehensively checked in all respects.<sup>925</sup> With a view to maintaining the quality of the assessment, the scheme provided for a second check that might take a variety of forms, including referral to a specialist agency, consultant or independent peer review group.

**23.5** Following a successful assessment, a certificate was issued by LABC, which was intended to represent “a singular initial Building Regulation approval in respect of a standard construction matter.” As such, it was intended to confirm that the product or system complied with the Building Regulations for all uses falling within the defined scope and terms of the certificate.<sup>926</sup> It was intended to fulfil a number of functions, including the elimination of the need for repetitive checking of compliance with the Building Regulations.<sup>927</sup> The manual therefore contemplated that all local authorities would accept the certificate (within its terms and limits) without further checking.<sup>928</sup>

### The first certificate for K15: May 2009-May 2012

**23.6** From 2009 onwards, Kingspan obtained a number of LABC certificates for K15.<sup>929</sup> The first was a System Approval certificate dated 1 May 2009 which remained valid until 30 April 2012.<sup>930</sup> A document entitled “Summary of the System and the Main Issues Considered” accompanied and formed part of the certificate<sup>931</sup> and made a number of important statements about the performance of K15 in fire. In particular, having stated that K15 had

<sup>918</sup> Turner {LABC0011202/8-9} pages 8-9, paragraph 31; Stimpson {LABC0020158/23} page 23, paragraph 25.6; {LABC0020158/25} page 25, paragraphs 25.16 and 25.17; {LABC0011202/11} page 11, paragraph 39.

<sup>919</sup> Turner {LABC0011202/5-6} pages 5-6, paragraph 23; Stimpson {LABC0020158/27} page 27, paragraph 25.25.

<sup>920</sup> Turner {LABC0011202/6} page 6, paragraph 25; {LABC0011202/10} page 10, paragraph 35.

<sup>921</sup> Turner {Day216/25:2}-{Day216/26:13}.

<sup>922</sup> {HBC00000049/6-30}.

<sup>923</sup> {HBC00000049/9} paragraph 1.1; Turner {Day216/71:6-10}.

<sup>924</sup> Turner {LABC0011202/12} page 12, paragraph 42; Brennan {LABC0020135/15-16} pages 15-16, paragraphs 21.17 and 21.21; Stimpson {LABC0020158/25} page 25, paragraph 25.15; Ewing {LABC0020139/17} page 17, paragraph 21.18.

<sup>925</sup> {HBC00000049/16} paragraph 3.2.

<sup>926</sup> {HBC00000049/9} paragraph 1.2.

<sup>927</sup> {HBC00000049/9} paragraph 1.2.

<sup>928</sup> {HBC00000049/10} paragraph 2.1.

<sup>929</sup> System Type Approval 1 May 2009 – 1 May 2012, Registered Details RD 165 28 August 2013–28 August 2014, Registered Details August 2014 – 30 November 2014, EWW165 Certificate 9 March 2015–9 March 2016, EWW165 Certificate 24 March 2016–30 March 2019 {LABC0019607/2-3}; Ewing {LABC0020139/22-24} pages 22-24, paragraph 27.

<sup>930</sup> {KIN00005705/1}.

<sup>931</sup> {KIN00005705/3-6}.



been tested in accordance with BS 8414-1, and BS 476, parts 6 and 7,<sup>932</sup> it said that “From the results, it can be considered as a material of limited combustibility and meets the criteria for Class 0 classification for surface spread of flame”.<sup>933</sup> On the next page it stated that “Since K15 can be considered a material of limited combustibility, it is suitable for use in all situations shown on Diagram 40 of Approved Document B Volume 2, including those parts of a building more than 18m above the ground.”.<sup>934</sup>

- 23.7** Those statements were fundamentally incorrect in every respect. K15 was not, and could not be considered, a material of limited combustibility and the tests to which it was said to have been subjected were not capable of establishing whether it was a material of limited combustibility.<sup>935</sup> Its performance in BS 476 tests did not show that it met the criteria for Class 0. Those were matters of critical importance when considering the intended use of K15, particularly on buildings over 18 metres in height. It is therefore necessary to examine how the certificate came to include statements of that kind.
- 23.8** The representatives of Kingspan involved in obtaining the certificate were Andrew Pack, Technical Services Manager,<sup>936</sup> and his line manager<sup>937</sup> Philip Heath, who until 2010 was Technical Manager.<sup>938</sup> On 24 November 2008 Mr Pack contacted Barry Turner by telephone to discuss a Type Approval certificate for K15.<sup>939</sup> Following that call, Mr Turner sent an email<sup>940</sup> to LABC’s Business Development Team informing them that Kingspan had asked for information about obtaining a system type approval for K15 primarily in relation to functional requirements B and C of the Building Regulations. He expressed a preliminary view that LABC could consider granting such approval on the basis that K15 had a BBA certificate and LABC could therefore add an opinion on compliance with the Building Regulations in situations to be described by Kingspan.<sup>941</sup>
- 23.9** Herefordshire County Council agreed to undertake the assessment of K15 and prepare any resulting certificate. The work was given to David Jones, who was a Senior Building Control Surveyor from June 2005 until November 2011 and thereafter a Building Control Team Manager until July 2014.<sup>942</sup> Mr Jones told us that Herefordshire was selected to undertake the assessment not for any reasons of technical expertise but due to its proximity to Kingspan’s Pembridge site.<sup>943</sup> He had never previously been involved in the Type Approval process<sup>944</sup> and believed that the work had been delegated to him because he had a specific role in the department for marketing activity. The Type Approval scheme was viewed as a way of raising the profile of the LABC brand.<sup>945</sup>

<sup>932</sup> BS 8414-2:2002 (Test method for non-loadbearing external cladding systems applied to the face of a building) {CEL00001205}; BS EN 1364-1:1999 (Fire resistance tests for non-loadbearing elements – walls) {BSI00000105}; BS 476-6:1989 (Method of test for Fire propagation for products) {BRE00005557}; BS 476-7:1997 (Surface spread of flame) {CTAR00000017}.

<sup>933</sup> {KIN00005705/4} under the heading “Requirement B – Fire Safety Considerations”.

<sup>934</sup> {KIN00005705/5} paragraph 1.

<sup>935</sup> {KIN00005705/4} under the heading “Requirement B – Fire Safety Considerations”.

<sup>936</sup> Pack {KIN00008702/4} page 4, paragraph 2.8.

<sup>937</sup> {KIN00008752}; Heath {Day79/126:12-13}; Pack {Day86/10:9-12}.

<sup>938</sup> Heath {KIN00020709/4} page 4, paragraph 2.8.

<sup>939</sup> {LABC0002281/4}.

<sup>940</sup> {LABC0002281/3}.

<sup>941</sup> {LABC0002281/3}; Turner {Day216/40:6}-{Day216/42:9}.

<sup>942</sup> Jones {HBC00000029/3-4} pages 3-4; Jones {Day101/7:8}-{Day101/8:22}; Turner {LABC0011202/8} page 8, paragraph 31.

<sup>943</sup> Jones {Day101/16:4-20}.

<sup>944</sup> Jones {Day101/26:18-24}.

<sup>945</sup> Jones {Day101/18:5}-{Day101/19:8}.

- 23.10** Mr Jones was reluctant to undertake the assessment of K15. He could see that it involved testing and certification, which he knew were not matters within his experience or within the experience of any other members of his department.<sup>946</sup> He had not undergone any specific training on the reaction of materials to fire, the testing and certification of construction products, or on the use of materials in buildings over 18 metres in height. There were no buildings over 18 metres in height in Herefordshire, so he had not had to consider the guidance relating to them in the course of his work.<sup>947</sup>
- 23.11** Mr Jones spoke to someone at LABC, probably Philip Harrison,<sup>948</sup> to explain his concern about undertaking the assessment but was told that it would be fairly limited in scope and should involve an initial meeting with the client and a review of the information provided by it. He was also told that if third party certification was considered to be reliable, it could be accepted at face value and that he need not go behind it.<sup>949</sup>
- 23.12** The reliability of third party certification was a matter for LABC rather than the assessing authority and the BBA was regarded as the leading organisation accredited by UKAS and therefore treated with a high degree of trust.<sup>950</sup> Mr Jones specifically remembered being told during the call that he could rely on the existence of a BBA certificate for K15, which he regarded as significant.<sup>951</sup> It provided him with reassurance that he was not expected to delve into complex matters of fire testing.<sup>952</sup> He explained that he was specifically told that his assessment should be based on the BBA certificate and that because the BBA would already have examined all the test information,<sup>953</sup> he need not verify any part of its contents.<sup>954</sup>
- 23.13** LABC did not accept Mr Jones' account of the telephone call, which it said was contrary to its practice both then and now.<sup>955</sup> However, none of its witnesses was able to tell us who had spoken to him or to provide us with any other information about the call he described. David Jones, on the other hand, was a straightforward, candid and credible witness who gave a clear and detailed account of it. We have no doubt that Mr Jones was assured by LABC that there was little to be done beyond checking the BBA certificate (which broadly reflects what a building control officer would have done) and that it was on the basis of that assurance, and the knowledge that there would be a second check,<sup>956</sup> that he agreed to take on the task.<sup>957</sup>

<sup>946</sup> Jones {Day101/17:4-15}. In early 2004, Mr Jones had attended a four-day training course designed for individuals new to the Building Regulations profession. Other than this, his training was "on the job" {Day101/9-23}-{Day101/10:7}; {Day101/12:2-6}; {Day101/60:5}-{Day101/61:2}.

<sup>947</sup> Jones {Day101/12:2}-{Day101/13:7}; {Day101/32:9-15}.

<sup>948</sup> Jones {Day101/30:12}-{Day101/31:8}.

<sup>949</sup> Jones {Day101/31:24}-{Day101/32:11}; {Day101/36:1-7}.

<sup>950</sup> Jones {Day101/33:18}-{Day101/34:25}.

<sup>951</sup> Jones {Day101/32:15-22}.

<sup>952</sup> Jones {Day101/32:9}-{Day101/33:9}.

<sup>953</sup> Jones {Day101/32:17-18}.

<sup>954</sup> Jones {Day101/32:15-22}; {Day101/37:5-10}; {Day101/46:1}-{Day101/47:2}, "I just remember this BBA certificate being the key factor, that, 'No it's okay, don't worry, it's got a BBA certificate' and that was it. That was the answer really".

<sup>955</sup> {LABC0019740/24-25} pages 24-25, paragraph 64 (iv).

<sup>956</sup> Jones {Day101/183:2}-{Day101/186:5}.

<sup>957</sup> Jones {Day101/27:22}-{Day101/29:2}; {Day101/184:21}-{Day101/185:9}.

**23.14** Mr Jones' evidence about what was said during the call is consistent with the terms of LABC's Service Manual in relation to BBA certificates<sup>958</sup> and with Barry Turner's evidence that when carrying out the second level review<sup>959</sup> he would probably not have looked beyond the BBA certificate.<sup>960</sup> That all supported Mr Jones' understanding that in practice LABC did place complete reliance on BBA certificates and expected any authority carrying out an assessment to do the same.

### Mr Jones' meeting with Kingspan in December 2008

**23.15** On 5 December 2008, Mr Jones met Mr Pack and Mr Heath of Kingspan at Kingspan's offices in order to discuss the certification of K15.<sup>961</sup> They told him that Kingspan was keen to be associated with the LABC brand<sup>962</sup> and was aware that an LABC certificate could ease the passage of a product through building control.<sup>963</sup> Mr Jones recalled in particular that they had been enthusiastic about the fire testing that Kingspan had commissioned for K15 and the BR 135 criteria<sup>964</sup> and were keen to market its suitability for use on buildings over 18 metres in height.<sup>965</sup> They emphasised that aspect of the product as a key feature<sup>966</sup> of what they were presenting to him.

**23.16** Mr Heath could not recall being enthusiastic about Kingspan's fire testing<sup>967</sup> and denied having given Mr Jones the impression that K15 was suitable for use on buildings over 18 metres in height without qualification.<sup>968</sup> He told us that, although he had overall responsibility for obtaining the LABC certificate, Mr Pack had been the person leading the project.<sup>969</sup>

**23.17** Mr Pack denied that he had spoken enthusiastically about Kingspan's BS 8414 test<sup>970</sup> and denied that the suitability of K15 for use on buildings over 18 metres in height had been a matter of significance for him or Mr Heath.<sup>971</sup> We found that wholly implausible, however, since the ability to sell K15 as suitable for use on buildings over 18 metres in height had been uppermost in Mr Heath's mind for some time. In reality, Mr Pack could recall little about the meeting,<sup>972</sup> describing his own role in obtaining the LABC certificate as merely administrative.<sup>973</sup> In the light of Mr Pack's later involvement in discussions with Mr Jones about the contents of the certificate that was clearly not true.<sup>974</sup> Both Mr Pack and Mr Heath denied having claimed that K15 was or could be considered a material of limited combustibility or having given that impression.<sup>975</sup>

<sup>958</sup> {HBC0000049/17} paragraph 3.3 under bullet points, "... the holding and submission by the customer of authoritative independent third party verification, particularly if it is from a UKAS accredited source or other method recommended in Approved Document 7, is likely to indicate an acceptable level of satisfaction for our approval purposes and eliminate the need for any additional checking within that aspect".

<sup>959</sup> {LABC0008171}.

<sup>960</sup> Turner {Day216/56:11-14}; {Day216/41:18}-{Day216/42:9}; {Day216/83:13-20}. Mr Turner's internal email in November 2008 {LABC0002281/3} "...given that the product has relevant BBA certification...".

<sup>961</sup> {KIN00024987}; Jones {Day101/48:24}-{Day101/49:9}.

<sup>962</sup> Jones {Day101/41:2-7}.

<sup>963</sup> Jones {Day101/42:5-18}.

<sup>964</sup> Jones {Day101/56:10-15}.

<sup>965</sup> Jones {Day101/52:20}-{Day101/53:1}; {Day101/64:2-24}; Jones {HBC00000029/20} page 20, first paragraph.

<sup>966</sup> Jones {Day101/57:21}-{Day101/58:3}.

<sup>967</sup> Heath {Day79/167:20-25}.

<sup>968</sup> Heath {Day79/179:7-9}.

<sup>969</sup> Heath {KIN00020709/59} page 59, paragraph 8.16.

<sup>970</sup> Pack {Day86/122:15}-{Day86/123:11}.

<sup>971</sup> Pack {Day86/126:22}-{Day86/127:25}.

<sup>972</sup> Pack {Day86/120:20}-{Day86/121:7}; {Day86/124:6-8}; {Day86/130:13-17}; {Day86/149:24}-{Day86/150:12}; {Day86/156:22-24}.

<sup>973</sup> Pack {Day86/100:18}-{Day86/101:20}.

<sup>974</sup> {KIN00024989}; {KIN00024996}; {KIN00024997}; Pack {Day86/170:2}-{Day86/171:24}.

<sup>975</sup> Pack {Day86/148:23}-{Day86/149:9}; Heath {Day79/178:25}-{Day79/179:9}.

- 23.18** We preferred the evidence of David Jones about the meeting to that of Mr Pack and Mr Heath. Mr Jones was careful to say that he could not be specific about the words they had used but he told us that he could say with “some certainty” that he had left the meeting with the clear impression that because K15 behaved like a material of limited combustibility it was, or could be considered to be, a material of limited combustibility.<sup>976</sup> (It is unlikely to have been a coincidence that Kingspan had been making essentially the same claim in correspondence with customers for some time.)<sup>977</sup> The impression Mr Jones had formed was that different products could be used with K15 as part of an external cladding system as long as the fire performance of those products was equal to or better than that of the products used in the tests he had been told about.<sup>978</sup> He also left the meeting with the understanding that there was a clear business advantage to Kingspan in having a product that could be marketed for use on buildings over 18 metres in height because it was not a market that all products could enter.<sup>979</sup> In later discussions with Mr Jones Andrew Pack proposed broadening the terms of the certificate to include a reference to K15’s suitability for use with various cladding products with which it had not been tested, but he did not tell Mr Jones that K15 could only be used at height as part of a system corresponding to that tested in accordance with BS 8414 in 2005.<sup>980</sup>
- 23.19** Mr Jones was given two documents during the meeting,<sup>981</sup> Kingspan’s first BBA certificate, issued on 27 October 2008,<sup>982</sup> and Kingspan’s principal marketing literature for K15 at the time, which was dated November 2008.<sup>983</sup> We have considered the terms of the BBA certificate and the way in which it came to be obtained by Kingspan elsewhere in this report.<sup>984</sup> In relation to fire, it stated on its front page under the heading “Key Factors Assessed” that K15 boards would not contribute to the development stages of a fire or present a smoke or toxic hazard.<sup>985</sup> It also stated that K15 was classified as Class 0<sup>986</sup> and that in a BS 8414-1 test it had displayed limited fire spread away from the source and had met the criteria in BRE 135.<sup>987</sup> That was misleading, since the criteria in BR 135 relate to systems rather than products.
- 23.20** In the same vein, Kingspan’s 2008 promotional literature wrongly stated that K15 had met the criteria in BR 135 and was therefore acceptable for use on buildings over 18 metres in height in accordance with the Building Regulations. It stated definitively (again, wrongly) that K15 did not contribute to the spread of fire within a cladding system.<sup>988</sup> The documents therefore reflected each other as well as the conversation that Mr Jones said had taken place when he met Mr Pack and Mr Heath.<sup>989</sup>

<sup>976</sup> Jones {Day101/76:1-25}-{Day101/78:12-24}; Jones {HBC00000029/37} page 37, final paragraph; Jones {Day86/74:4-25}; {Day101/78:21-25}; {Day101/82:5-20}.

<sup>977</sup> {KIN00002588/2}, “...it has been proved to perform the same as non combustibile material via testing to the full scale BS 8414 test”.

<sup>978</sup> Jones {Day101/70:10-17}; {Day101/71:3-9}. Mr Jones said he understood the parameters to be the non-combustible substrate referred to in the BBA certificate, a system of cavity barriers, and non-combustible cladding panels. That is what Mr Pack confirmed he had told Mr Jones. Pack {Day86/130:21}-{Day86/131:11}.

<sup>979</sup> Jones {Day101/64:21}-{Day101/65:5}.

<sup>980</sup> {KIN00024996}; Pack {Day86/163:12}-{Day86/169:25}.

<sup>981</sup> Jones {Day101/55:9-13}.

<sup>982</sup> BBA Certificate {BBA00000038}.

<sup>983</sup> Eighth issue “Kooltherm K15 Rainscreen Board” {KIN00009703}.

<sup>984</sup> Chapter 23.

<sup>985</sup> BBA Certificate {BBA00000038/1}.

<sup>986</sup> BBA Certificate {BBA00000038/5-6} paragraph 7.2.

<sup>987</sup> BBA Certificate {BBA00000038/5} paragraph 7.1.

<sup>988</sup> {KIN00009703/6}.

<sup>989</sup> Jones {Day101/66:15}-{Day101/67:4}.

- 23.21** Mr Jones asked for no further documents and none were offered.<sup>990</sup> The certificate he drafted was therefore based on those two documents, (principally the BBA certificate) and the information Andrew Pack and Philip Heath had provided during his meeting with them.<sup>991</sup> Mr Jones had not read any of the test standards<sup>992</sup> or reports of the tests<sup>993</sup> he listed in his summary before the certificate was issued.<sup>994</sup> He explained that there would have been little point in doing so because analysing those reports was outside his expertise and would have involved an entirely different exercise from the one he had understood he had been asked to carry out.<sup>995</sup> He simply copied the list of tests from the BBA certificate.<sup>996</sup> He thought that the statement that K15 could be considered a material of limited combustibility was simply a confirmation of something that was already known.<sup>997</sup>
- 23.22** In 2009, Mr Jones did not know that data derived from a BS 8414 test and any subsequent classification in accordance with BR 135 was valid only for the system tested<sup>998</sup> and neither Mr Pack nor Mr Heath told him that,<sup>999</sup> although they were both well aware of the fact.<sup>1000</sup> Nor did he know that Class 0 was demonstrated through testing in accordance with BS 476 Parts 6 and 7, two of the tests he listed in the document accompanying the LABC certificate.<sup>1001</sup> His understanding at the time of the term “material of limited combustibility” was that it referred to a material that had the capacity to burn but was difficult to ignite and would not allow flame to spread easily through it.<sup>1002</sup> That was consistent both with the impression he had been given by Mr Heath and Mr Pack at their meeting that K15 had a limited capacity to burn<sup>1003</sup> and with what he told us had been the widely held view among building control officers that Kingspan products would char slowly and stop burning when the source of ignition was removed.<sup>1004</sup>
- 23.23** David Jones accepted that when he did his research he had become aware of Appendix A to Approved Document B and had thus become aware of the meaning of the expression “limited combustibility”. Nonetheless, he had decided to adopt the wording in the certificate on the basis that there could be different ways of meeting the functional requirements.<sup>1005</sup> When shown the relevant tables in Approved Document B,<sup>1006</sup> however, he agreed that if he had looked at them at the time he would not have written that K15 could be considered a material of limited combustibility.<sup>1007</sup> He told us that he now appreciated that, due to his lack of experience, some of the statements in the certificate should not have been made.<sup>1008</sup> He accepted that he had not drawn a clear enough distinction between a material of limited combustibility, which has a defined meaning, and

<sup>990</sup> Jones {Day101/108:20}-{Day101/109:5}.

<sup>991</sup> Jones {HBC00000029/35-36} pages 35-36, paragraph 57(a)-(h); Jones {Day101/129:4}-{Day101/149:5}.

<sup>992</sup> Jones {Day101/127:16-19}.

<sup>993</sup> Jones {Day101/59:24}-{Day101/60:3}; {Day101/125:20}-{Day101/126:6}.

<sup>994</sup> {KIN00005705/4} under the heading “Requirement B – Fire Safety Considerations”.

<sup>995</sup> Jones {Day101/60:5}-{Day101/63:7}.

<sup>996</sup> Jones {Day101/126:2-6}.

<sup>997</sup> Jones {HBC00000029/37} page 37, first paragraph; Jones {Day101/149:20}-{Day101/150:18}.

<sup>998</sup> Jones {Day101/104:3-19}.

<sup>999</sup> Pack {Day86/130:21}-{Day86/131:2}; Jones {Day101/68:22}-{Day101/69:12}; Pack {Day86/73:1-6}.

<sup>1000</sup> Pack {Day86/22:15}-{Day86/23:12}; Heath {Day78/189:21}-{Day78/190:5}; {Day78/196:16}-{Day78/194:2}.

<sup>1001</sup> Jones {Day101/126:7-23}.

<sup>1002</sup> Jones {HBC00000029/29} page 29, paragraph (a); Jones {Day101/96:9}-{Day101/97:5}.

<sup>1003</sup> Jones {Day101/77:7-23}; See also Kingspan correspondence at, for example {KIN00003685/1} “Therefore it is pigeonholed with the combustible insulations even though the char that forms ‘limits the combustibility’ of the product” {KIN00005388/1} first paragraph.

<sup>1004</sup> Jones {HBC00000029/38} page 38, first paragraph; Jones {Day101/81:13}-{Day101/83:20}.

<sup>1005</sup> Jones {Day101/153:13}-{Day101/156:11}.

<sup>1006</sup> Table A7 {CLG10000007/132}; Table A6 {CLG10000007/131}; Jones {Day101/158:1}-{Day101/161:14}.

<sup>1007</sup> Jones {Day101/162:15-20}.

<sup>1008</sup> Jones {Day101/180:10-12}.

a product which has a limited capacity to burn.<sup>1009</sup> He thought his judgement might have been affected by being given the impression that K15 had already been approved for use on buildings over 18 metres in height by virtue of meeting the criteria in BR 135.<sup>1010</sup> He also accepted that his approach might have been shaped by the commercial pressure on local authority building control officers to find innovative solutions that did not rigidly follow the Approved Documents in order to win business.<sup>1011</sup>

- 23.24** Mr Jones understood that after he had carried out his assessment it would be checked by LABC to ensure there were no errors.<sup>1012</sup> In fact, however, the second check, carried out in March 2009 by a Type Approval Working Group made up of individuals from various local authorities, appears to have been cursory at best. The only question raised was why a system approval was being issued rather than a product approval, K15 plainly being a product rather than a system.<sup>1013</sup> It appears to have gone unanswered and remained unanswered even when Barry Turner was asked about it by LABC's Technical Administrator, Sasha Cruz, in an email sent on 21 April 2009 asking if the certificate could be issued.<sup>1014</sup> No one noticed the fundamental errors in the summary. On 1 May 2009, Ms Cruz sent the certificate to Mr Jones to issue on behalf of LABC.<sup>1015</sup>
- 23.25** Barry Turner accepted that the statement that K15 could be considered a material of limited combustibility was inaccurate and misleading.<sup>1016</sup> He could not explain how it had come to be made, telling us that he did not participate in the review process and repeatedly asserting that he was copied into various relevant emails only "as a matter of courtesy".<sup>1017</sup> We agree with LABC's acknowledgment in its closing statement that Mr Turner was an unhelpful and dismissive witness.<sup>1018</sup> We were left in no doubt that he was seeking throughout to minimise his own technical role, his involvement in the certification process and his responsibility for any aspect of it.
- 23.26** David Ewing, who later managed LABC's Registered Details Approval scheme,<sup>1019</sup> also accepted that the 2009 certificate's wording in relation to K15's fire performance was technically incorrect,<sup>1020</sup> as did LABC itself in its closing statement.<sup>1021</sup>
- 23.27** To their discredit, neither Philip Heath nor Andrew Pack was prepared to accept that he had been aware in 2009 or thereafter that the wording of the certificate was inaccurate, that it would be likely to lead readers to believe that K15 was a material of limited combustibility or that many readers would understand from it that K15 had been approved for use on buildings over 18 metres in height. Both maintained that at the time they had understood that LABC had intended the wording to mean that K15 *could* be suitable for use in such circumstances as part of a system that had been tested in accordance with BS 8414

<sup>1009</sup> Jones {Day101/150:13}-{Day101/151:23}.

<sup>1010</sup> Jones {Day101/162:6-14}.

<sup>1011</sup> Jones {Day101/156:7-11}; Jones {HBC00000029/40} page 40; {Day101/174:4}-{Day101/176:25}.

<sup>1012</sup> Jones {Day101/111:17}-{Day101/112:21}; {Day101/173:12-15}.

<sup>1013</sup> {LABC0008171/2}.

<sup>1014</sup> {LABC0008171/1}.

<sup>1015</sup> {LABC0001882/3}.

<sup>1016</sup> Turner {Day216/36:19}-{Day216/37:2}.

<sup>1017</sup> Turner {Day216/51:9}; {Day216/69:13-17}; {Day217/3:8}; {Day217/12:6-10}; {Day217/23:5}; {Day217/35:17-20}; {Day217/48:6}.

<sup>1018</sup> {LABC0020161/34} page 34, paragraph 138.

<sup>1019</sup> Ewing {LABC0020139/4} page 4, paragraph 7.6.

<sup>1020</sup> Ewing {Day217/148:1-9}.

<sup>1021</sup> LABC Phase 2 Module 2 Closing Submissions {LABC0019740/5-6} paragraph 17; LABC Phase 2 Module 6 Closing Submissions {LABC0020161/25} paragraph 101(a)-(b).

and had met the criteria in BR 135.<sup>1022</sup> However, that was impossible, given that only a limited amount of testing had been carried out, and that on a product that had become obsolete at least two years earlier. In reality, that was neither what the certificate stated nor what Mr Jones had intended.<sup>1023</sup> Mr Heath added that on reflection he could see that the wording had been misleading.<sup>1024</sup> Mr Pack too told us that in hindsight, the wording could have been “slightly better”,<sup>1025</sup> but said that Kingspan relied on LABC and on the wording chosen by Mr Jones.<sup>1026</sup>

**23.28** Both Mr Pack and Mr Heath confirmed that they had understood at all times that K15 was not a material of limited combustibility.<sup>1027</sup> Both were also aware that Approved Document B did not provide that combustible insulation could be considered a material of limited combustibility if used with non-combustible or limited combustibility substrates or outer cladding.<sup>1028</sup> They did not need to rely on hindsight to know that the certificate was wrong in that respect and dangerously misleading. When sent a draft of the certificate and accompanying summary by Mr Jones on 27 February 2009,<sup>1029</sup> neither Mr Pack nor Mr Heath corrected the wording. On the contrary, Mr Heath described the document as “GOLD”<sup>1030</sup> and Mr Pack approved the draft, asking Mr Jones to proceed to issue the certificate and summary.<sup>1031</sup> In his markedly more candid evidence,<sup>1032</sup> Ivor Meredith, told us that he and his superiors had known at the time that the wording was misleading but that it was very advantageous for Kingspan.<sup>1033</sup> He said that Mr Heath had been thrilled with it.<sup>1034</sup>

**23.29** Kingspan’s aim from the outset (as in the case of the BBA certificate) had been to ensure that the wording of the certificate gave as much support for the use of K15 on buildings over 18 metres in height as possible, with no regard for technical accuracy or fire safety.<sup>1035</sup> It is apparent from the triumphant tone of the emails sent by Mr Heath within Kingspan at the time<sup>1036</sup> that his own and Mr Pack’s dogged assertions that they were ignorant of the error on the face of the certificate was untruthful. It was the very wording “...can be considered as a material of limited combustibility...”<sup>1037</sup> that was highlighted in bold in Mr Heath’s announcement to colleagues that the certificate had been obtained and for which he heartily thanked Mr Pack.<sup>1038</sup> That part of the certificate was also described to sales teams as the “highlight” of the document<sup>1039</sup> and led directly to Mr Heath’s instruction to colleagues on 11 May 2009 that no further large-scale testing was to be carried out on K15.<sup>1040</sup> Kingspan had what it needed to maintain its position in the over 18 metre market.

<sup>1022</sup> Heath {Day79/161:5}-{Day79/164:11}; {Day79/174:1-7}; {Day79/176:21}-{Day79/177:23}; {Day79/182:6}-{Day79/183:20}; Pack {Day86/187:6}-{Day86/189:10}; {Day86/192:9}-{Day86/193:9}.

<sup>1023</sup> Jones {HBC0000029/36} page 36; Jones {Day101/128:11-21}.

<sup>1024</sup> Heath {Day79/176:21}-{Day79/177:23}.

<sup>1025</sup> Pack {Day86/188:25}-{Day86/189:1}.

<sup>1026</sup> Pack {Day86/188:15-16}; {Day86/191:21}-{Day86/192:2}.

<sup>1027</sup> Pack {Day86/21:15}-{Day86/22:7}; {Day86/187:1-5}; Heath {Day78/181:7-20}.

<sup>1028</sup> Pack {Day86/190:25}-{Day86/191:18}; Heath {Day79/161:5}-{Day79/162:6}.

<sup>1029</sup> {KIN00024990}.

<sup>1030</sup> {KIN00024991/1}.

<sup>1031</sup> {KIN00024990}.

<sup>1032</sup> Meredith {KIN00022312/1} page 1, paragraph 1.

<sup>1033</sup> Meredith {Day76/30:14-23}.

<sup>1034</sup> Meredith {Day76/33:13-15}.

<sup>1035</sup> Chapter 22.

<sup>1036</sup> {KIN00005383}; {KIN00024993/1}.

<sup>1037</sup> {KIN00005705/4-5}.

<sup>1038</sup> {KIN00005383}.

<sup>1039</sup> {KIN00009178/5}.

<sup>1040</sup> {KIN00005382/1} “The pressure is on other component suppliers to obtain similar statements or prove their non-combustible statements”.

- 23.30** Worse still, neither LABC nor Mr Jones knew that K15 had not achieved results when tested in accordance with BS 476-6 and BS 476-7 that enabled it to be classed as Class 0<sup>1041</sup> and that the sole test in accordance with BS 8414-1 that Kingspan had carried out which met the criteria in BR 135<sup>1042</sup> had incorporated an obsolete form of K15 that was different from the version being produced and sold in 2009 and thereafter.<sup>1043</sup> Those facts were concealed from LABC and from David Jones by Mr Heath, who was aware of the true position.<sup>1044</sup>
- 23.31** We accept both David Jones' description of the assurances he was given by LABC about the scope of the work he was expected to carry out and his account of what he was told by Mr Pack and Mr Heath. He acted largely on trust, but was badly let down by LABC and deliberately misled by Kingspan.<sup>1045</sup> He had expected, as had LABC,<sup>1046</sup> that Kingspan would draw attention to any errors or inaccuracies in the draft documents because it would not wish to risk reputational damage from knowingly marketing K15 on the basis of false information.<sup>1047</sup> In fact, however, the documents which Kingspan provided<sup>1048</sup> in support of its application and the statements made in the course of the meeting between Mr Jones, Mr Heath and Mr Pack were intended to mislead.<sup>1049</sup> The document Mr Jones issued was, nonetheless, an LABC approval certificate and it remains the case that LABC's second level of checks, on which he had also relied,<sup>1050</sup> were woefully inadequate.
- 23.32** Mr Jones could not remember whether he had looked at LABC's Type Approval Service Manual,<sup>1051</sup> but if he did, it is unlikely that he found it to be of great assistance. Although it called for a thorough and comprehensive assessment at a high level, it also said that certificates from authoritative independent third parties, particularly those accredited by UKAS such as the BBA, were likely to indicate an acceptable level of satisfaction.<sup>1052</sup> In the event, Mr Jones did accept the BBA certificate as sufficient evidence of the statements it contained, but he had been told that that was all that was required of him and the truth is that he was neither competent nor qualified to do more.<sup>1053</sup> It is unlikely that he would have agreed to undertake the work if he had been expected to do otherwise.<sup>1054</sup>
- 23.33** Although only Kingspan knew it (because it had largely drafted the text),<sup>1055</sup> the 2008 BBA certificate on which David Jones relied so heavily had also been issued without proper checks having been made and was riddled with fundamental errors and misleading language. To that extent there was, therefore, a fatal flaw in LABC's Type Approval scheme. As a result, Kingspan's initial misleading of the BBA<sup>1056</sup> combined with the failure of the BBA itself to investigate the properties of K15 with sufficient rigour led to the publication of misleading claims about K15 that were repeated and given additional credibility by the LABC certificate.

<sup>1041</sup> Kingspan had tested to BS 476 Parts 6 and 7 the foil facer of K15 boards stapled to a non-combustible substrate {KIN00022205}; See Chapter 22.

<sup>1042</sup> BRE Report {BRE00002511} Test 220876.

<sup>1043</sup> See Chapter 22.

<sup>1044</sup> Heath {Day79/179:10}-{Day79/180:6}.

<sup>1045</sup> Jones {Day101/182:25}-{Day101/185:9}.

<sup>1046</sup> Brennan {LABC0020135/26} page 26, paragraph 39.1.

<sup>1047</sup> Jones {Day101/171:15-21}.

<sup>1048</sup> BBA Certificate {BBA00000038}; Eighth issue "Kooltherm K15 Rainscreen Board" {KIN00009703}.

<sup>1049</sup> Jones {Day101/183:2-18}.

<sup>1050</sup> Jones {Day101/113:4-14}; {Day101/173:2-15}; {Day101/184:21}-{Day101/185:9}.

<sup>1051</sup> Jones {HBC00000051/4} page 4, paragraph 14; Jones {Day101/166:20}-{Day101/167:10}.

<sup>1052</sup> {HBC00000049/17} paragraph 3.3.

<sup>1053</sup> Jones {Day101/39:11}-{Day101/40:5}.

<sup>1054</sup> Jones {Day101/106:19}-{Day101/107:21}; {Day101/196:2-5}.

<sup>1055</sup> See Chapter 22.

<sup>1056</sup> See Chapter 22.



## Concerns raised about the LABC Type Approval for K15

- 23.34** The terms of the LABC certificate appear to have caused immediate concern at BRE<sup>1057</sup> about “misuse of data” and the broad claims that K15 was suitable for all kinds of applications in all sorts of situations,<sup>1058</sup> though it appears that no one there mentioned those concerns to Kingspan.<sup>1059</sup> The inclusion in the certificate of misleading statements was brought to LABC’s attention by Larry Cody, then a director of Rockwool,<sup>1060</sup> who wrote to Barry Turner in September<sup>1061</sup> and again in October 2009<sup>1062</sup> complaining that LABC had stated that K15 could be considered as a material of limited combustibility and pointing to life safety considerations.<sup>1063</sup> Mr Turner did not respond until 23 February 2010,<sup>1064</sup> following a further letter from Mr Cody on 1 February 2010 asking about LABC’s complaints policy and Mr Turner’s failure to answer his previous letter.<sup>1065</sup>
- 23.35** When he did respond to Mr Cody, Mr Turner wrote that he did not consider it a matter for discussion with a competitor, despite the fact that he had already corresponded with Kingspan about the matter.<sup>1066</sup> In the same response, he comprehensively defended the terms of LABC’s claims, telling Mr Cody that the research authority that had undertaken the assessment of K15 had been satisfied that it met the relevant criteria.<sup>1067</sup> He did so, he told us, without even checking the terms of the certificate or engaging with the substance of the complaint.<sup>1068</sup> Bizarrely, he told Mr Cody in a further email that LABC neither accepted nor denied claims made by Kingspan about what the certificate stated.<sup>1069</sup> Mr Turner was unable to explain why he had said that, suggesting only that he might have been trying to protect LABC’s involvement.<sup>1070</sup>
- 23.36** Mr Turner’s complete failure to investigate Mr Cody’s complaint was irresponsible. Although he said that if he had understood the public safety implications he would have dealt with the matter differently,<sup>1071</sup> it is difficult to see how he can have failed to appreciate them, given the clear terms of Mr Cody’s letters. We note that Mr Turner’s immediate dismissal of the reasoned complaint as nothing but gripes from a rival manufacturer in which LABC should not become a referee<sup>1072</sup> was in marked contrast to the tone of his emails<sup>1073</sup> to John Garbutt, Kingspan’s Marketing Director.<sup>1074</sup>
- 23.37** Mr Turner had no satisfactory explanation to offer for LABC’s failure to follow its own complaints procedure, claiming that he had been unaware that Mr Cody had mentioned a formal complaint,<sup>1075</sup> despite having been copied into the email correspondence in which

<sup>1057</sup> {BRE00003314}.

<sup>1058</sup> Colwell {Day233/36:8}–{Day233/38:18}.

<sup>1059</sup> Colwell {Day233/39:2-25}; Smith {Day238/64:17}–{Day238/67:20}.

<sup>1060</sup> Turner {LABC0011202/25} page 25, paragraph 76. Rockwool manufactured non-combustible mineral wool insulation products.

<sup>1061</sup> {LABC0000924}.

<sup>1062</sup> {LABC0000853}.

<sup>1063</sup> {LABC0000853}.

<sup>1064</sup> {LABC0019632/4}.

<sup>1065</sup> {LABC0010318}.

<sup>1066</sup> {LABC0019617}.

<sup>1067</sup> {LABC0019618/1}; Turner {Day216/98:10-17}.

<sup>1068</sup> Turner {Day216/83:4}–{Day216/84:18}; {Day216/98:18}–{Day216/99:15}.

<sup>1069</sup> {LABC0019632/2}.

<sup>1070</sup> Turner {Day216/102:14}–{Day216/103:2}.

<sup>1071</sup> Turner {Day216/101:4-13}.

<sup>1072</sup> Turner {Day216/83:13-20}.

<sup>1073</sup> {LABC0019617}; Turner {Day216/93:15}–{Day216/95:15}.

<sup>1074</sup> Garbutt {KIN00024388/1} page 1, paragraph 1.2.

<sup>1075</sup> Turner {Day216/90:22}–{Day216/91:16}.

he had done so.<sup>1076</sup> Mr Turner also claimed not to have been aware that a formal complaint procedure existed within LABC.<sup>1077</sup> As LABC accepted in its closing statement, Mr Cody's concerns were reasonable and Mr Turner's response was inexcusable.<sup>1078</sup> That was an important early opportunity to correct the fundamental error that had been made. It might not have been missed if Mr Turner had followed LABC's complaints process<sup>1079</sup> when the matter was raised by Mr Cody.<sup>1080</sup>

## Later LABC Registered Details certificates for K15

- 23.38** Although Kingspan's Type Approval certificate for K15 lapsed in May 2012, it was not renewed until 28 August 2013.<sup>1081</sup> The assessment for the second certificate was also carried out by Herefordshire Building Control, on that occasion by Senior Building Control Surveyor Colin Davies<sup>1082</sup> under the supervision of David Jones.<sup>1083</sup> The certificate stated in the accompanying Drawings and Documents List, which was drawn up in its final form by LABC,<sup>1084</sup> that K15 was suitable for use with a variety of outer claddings<sup>1085</sup> and, wholly incorrectly, that K15 could be used on buildings with stories more than 18 metres above ground level provided it was used in combination with suitably non-combustible substrates and ancillary components.<sup>1086</sup> It listed as the supporting documents on which it was based<sup>1087</sup> the Type Approval Summary of May 2009,<sup>1088</sup> the BBA Certificate of October 2008<sup>1089</sup> and a Kingspan marketing brochure for K15 dated March 2011.<sup>1090</sup> The Drawings and Documents List included two diagrams, one showing K15 used on a steel frame system and the other K15 used with a terracotta rainscreen.<sup>1091</sup> In August 2013, neither of the systems illustrated nor any similar systems had been tested in accordance with BS 8414. It remained the case that the only system incorporating any form of K15 that had been tested in accordance with BS 8414 and had met the criteria in BR 135 was the one that had been tested in May 2005 using a different formulation of K15.<sup>1092</sup>
- 23.39** On 1 August 2013 Gareth Mills, a Senior Technical Adviser at Kingspan,<sup>1093</sup> had provided those diagrams to LABC's Technical Co-ordinator, Cathal Brennan,<sup>1094</sup> together with a description of the uses for which K15 was suitable to which we have referred.<sup>1095</sup> Both the diagrams and the text were incorporated into the final document after the peer review process, which had taken place in June 2013.<sup>1096</sup> At that stage the review group had been provided with an amended Type Approval Summary drafted by Mr Davies that had again stated that K15 could be considered a material of limited combustibility.<sup>1097</sup>

<sup>1076</sup> {LABC0010318}.

<sup>1077</sup> Turner {Day216/90:2-4}.

<sup>1078</sup> LABC Phase 2 Module 6 Closing Submissions {LABC0020161/30} paragraphs 117-118.

<sup>1079</sup> {HBC00000049/30} paragraph 8.2.

<sup>1080</sup> {LABC0010318/2}.

<sup>1081</sup> {KIN00009546}.

<sup>1082</sup> Jones {HBC00000029/47} page 47, final paragraph.

<sup>1083</sup> Jones {Day101/186:24}-{Day216/187:15}; {LABC0000893}.

<sup>1084</sup> Jones {HBC00000029/48} page 48;

<sup>1085</sup> {KIN00009547/2} Appendix A, paragraph 1.

<sup>1086</sup> {KIN00009547/2} Appendix A, paragraph 3.

<sup>1087</sup> {KIN00009547/1}.

<sup>1088</sup> {KIN00005705/3-6}.

<sup>1089</sup> {BBA00000038}.

<sup>1090</sup> Ninth Issue {KIN00003545}.

<sup>1091</sup> {KIN00009547/3}.

<sup>1092</sup> See Chapter 22.

<sup>1093</sup> Mills {Day77/4:7-10}; {Day77/7:23}-{Day77/8:2}.

<sup>1094</sup> Brennan {LABC0020135/2-3} pages 2-3, paragraph 7.2.

<sup>1095</sup> {LABC0000954}.

<sup>1096</sup> {LABC00005132}; {LABC0000925}.

<sup>1097</sup> {LABC0000894/3}.

Again, no member of the review group had noticed the mistake. David Ewing accepted that peer reviewers should have noticed that there was no test evidence to substantiate that claim.<sup>1098</sup>

- 23.40** Before agreeing to Mr Mills' proposed amendments, Mr Brennan asked David Ewing and David Jones for their opinions.<sup>1099</sup> Mr Ewing did not respond, leaving the matter to Mr Jones.<sup>1100</sup> He told Mr Brennan that he saw no problem with the amendments and that he could not see anything in them that was not backed up by the technical data underpinning the certificate.<sup>1101</sup> As Mr Jones accepted, that was wrong. It involved a simple perpetuation of the previous error, compounded by the fact that the amendments had not been subjected to the peer review process.<sup>1102</sup> Mr Ewing said that it had not been considered necessary to subject the proposed amendments to the peer review process<sup>1103</sup> but accepted, in hindsight, that the statement that K15 was suitable for use on buildings over 18 metres in height was significant and ought to have been reviewed.<sup>1104</sup>
- 23.41** Mr Ewing accepted that the statements made in the 2013 certificate and its accompanying documents had not been substantiated,<sup>1105</sup> that the two diagrams ought not to have been included, since there was no test evidence to support the use of K15 in the manner shown,<sup>1106</sup> and that the wording wrongly implied approval of the use of K15 on buildings over 18 metres in height in general.<sup>1107</sup> He said that each of the peer reviewers should have examined the BBA certificate or the relevant technical information to see whether it supported the statements made in the certificate but accepted that they would not have been expected to go behind them and check the test results.<sup>1108</sup> The Registered Details process,<sup>1109</sup> according to the Registered Details Manual,<sup>1110</sup> relied just as heavily (if not more so) on the existence and accuracy of BBA certificates<sup>1111</sup> and was therefore as flawed as the Type Approval Scheme before it. However, Mr Ewing accepted that the statements made in the 2013 certificate went beyond those made in the 2008 BBA certificate.<sup>1112</sup> The same was true of the statements made in the 2009 certificate.
- 23.42** On 2 July 2014 Brian Martin of DCLG sent NHBC what he described as a "friendly warning" about the use of K15 on buildings over 18 metres in height,<sup>1113</sup> which Steven Evans of NHBC passed on to Barry Turner on 11 July 2014.<sup>1114</sup> Mr Ewing understood that the revised BBA certificate for K15 was more restricted than the previous version and that LABC needed to take steps to ensure that its own certificate was consistent with the testing undertaken

<sup>1098</sup> Ewing {Day217/119:5-20}; {Day217/120:5-8}.

<sup>1099</sup> {LABC0002502/1}.

<sup>1100</sup> Ewing {Day217/165:6-16}.

<sup>1101</sup> {LABC0000936}.

<sup>1102</sup> Brennan {LABC0020135/29} page 29, paragraph 45.1.

<sup>1103</sup> Ewing {Day217/166:5-11}.

<sup>1104</sup> Ewing {Day217/166:17-24}.

<sup>1105</sup> Ewing {Day217/172:3-9}.

<sup>1106</sup> Ewing {Day217/172:16}-{Day217/173:3}.

<sup>1107</sup> Ewing {Day217/173:5-16}.

<sup>1108</sup> Ewing {Day217/156:3}-{Day217/157:5}.

<sup>1109</sup> As with the Type Approval scheme, a Registered Details certificate was intended to be recognised by all local authority building control departments across England and Wales {HBC00000023/3}; Ewing {Day217/124:4-23}. The same principles applied as had applied to the Type Approval scheme, Turner {Day216/32:22}.

<sup>1110</sup> {HBC00000023}.

<sup>1111</sup> {HBC00000023/19} third paragraph "... a BBA certificate does provide absolute assurance and materials should not then be interrogated further". {LABC0002402/1} "Most of these already have BBA certification which should greatly reduce you (sic) checking time".

<sup>1112</sup> Ewing {Day217/177:15-20}.

<sup>1113</sup> {LABC0000882/3}.

<sup>1114</sup> {LABC0000882/1}.

by Kingspan.<sup>1115</sup> That was not done, but by August 2014, therefore, it had become clear to LABC that people were worried by the fact that Kingspan’s test evidence did not appear to substantiate the claims being made about the suitability of K15 for use at height.<sup>1116</sup> Mr Ewing was aware that there was a risk to buildings on which K15 had been used but had not realised that it might be significant.<sup>1117</sup>

- 23.43** LABC did not take any steps to correct the false impression created by the previous certificate and never asked itself whether as a result of that certificate there might be a number of tall buildings containing combustible cladding.<sup>1118</sup> Although Mr Ewing knew that the Registered Details certificate would need to be amended following the discovery that Kingspan did not have test evidence to support the use of K15 at height, it does not appear to have occurred to him that people might have relied on the previous LABC certificate to approve its use in those situations.<sup>1119</sup> In our view LABC should at least have drawn its members’ attention to the almost complete absence of test data supporting the use of K15 on buildings over 18 metres in height.
- 23.44** Similarly, LABC failed to take any action in response to an email sent on 16 July 2014 by Clive Everett of Europa Façade Consultants in which he asked how the Registered Details certificate for K15 could state that it was suitable for use on buildings over 18 metres in height with a steel frame if it had not been part of a system tested in accordance with BS 8414-2.<sup>1120</sup> Mr Ewing acknowledged that the question was similar to others LABC had heard about through NHBC.<sup>1121</sup> Mr Ewing did not respond to Mr Everett’s email.<sup>1122</sup> He said that he had wanted to wait until he knew what steps LABC was going to take, but that it had then been overlooked.<sup>1123</sup>
- 23.45** LABC had no evidence that any system incorporating K15 had been tested in accordance with BS 8414-2 because there was none. On 6 August 2014, Doug Basen, LABC’s Head of Technical, Practice and Communications<sup>1124</sup> sent Mr Ewing an email drawing his attention to a message that he had sent to Mr Turner in which he had said that he had spoken to Mr Evans at NHBC who did not believe that Kingspan would be able to prove that K15 was acceptable across a range of construction types. Mr Basen expressed his fear that there might be many buildings incorporating K15 which did not meet the very restrictive requirement of a masonry substrate. In response, Mr Ewing said that he had been told by Kingspan at a meeting on 25 July 2014 that “testing to BS 8414 had been undertaken in line with the requirements of BR 135 for materials of limited combustibility” but that LABC had not yet been provided with the test results. Mr Ewing also told Mr Basen that he was in the course of providing Kingspan with a quotation for certificates for up to 30 other Kingspan products and that he was keen to get its custom.<sup>1125</sup>
- 23.46** In spite of the continuing absence of relevant test evidence, LABC’s existing Registered Details certificate for K15 was extended throughout the autumn of 2014.<sup>1126</sup> Mr Ewing said that although that might now appear to have been foolhardy, at the time he

<sup>1115</sup> Ewing {Day217/181:22}-{Day217/182:7}.

<sup>1116</sup> {LABC0000882/3} first paragraph “... it is just the fact that the testing carried out to date does not bear this out”.

<sup>1117</sup> Ewing {Day217/183:3-22}.

<sup>1118</sup> Ewing {Day217/190:3-9}.

<sup>1119</sup> Ewing {Day217/187:4-10}.

<sup>1120</sup> {LABC0000835}.

<sup>1121</sup> Ewing {Day217/192:25}-{Day217/193:5}.

<sup>1122</sup> Everett {CEV00000001/13} page 13, paragraph 51.

<sup>1123</sup> Ewing {Day217/193:12-22}.

<sup>1124</sup> Basen {LABC0020141/5} page 15, paragraphs 7.1-7.2.

<sup>1125</sup> {LABC0002690}.

<sup>1126</sup> {LABC0002679}; {LABC0002700}; {LABC0002701}; {LABC0001843}; {NHB00000798}.

had genuinely believed that Kingspan was seeking to co-operate with LABC by producing the relevant reports.<sup>1127</sup> He had had no reason to think that Kingspan was being anything other than honest.<sup>1128</sup> Mr Ewing accepted that there was a clear failure on his part to notice the inaccuracies in the certificate.<sup>1129</sup> He could not explain why LABC had issued a certificate approving the use of a product in a configuration for which there was no supporting test evidence.<sup>1130</sup> He accepted that by extending the certificate in that way LABC had been treating Kingspan preferentially.<sup>1131</sup>

**23.47** Although from 2015 the Registered Details Certificates did not include the statement that K15 could be considered a material of limited combustibility,<sup>1132</sup> Mr Turner was well wide of the mark when on 16 February 2015 he congratulated Mr Ewing on having scrutinised the application thoroughly.<sup>1133</sup> The certificate issued on 9 March 2015 stated that K15 had been tested to comply with BR 135 for use in rain screen applications above 18 metres in height<sup>1134</sup> as did the certificate issued on 24 March 2016.<sup>1135</sup> That statement, which Mr Turner himself had drafted,<sup>1136</sup> was another serious misrepresentation of the position. BS 8414 was a system test, not a product test and therefore no single component of a system tested in accordance with that method could “comply” with the criteria in BR 135. In the light of the messages that had been flying around over the previous year or so, LABC should have been well aware of that. Mr Turner said that it was unlikely that he had read BR 135 before drafting that wording.<sup>1137</sup> In any event, by March 2015, much of the damage had been done given that the certificate had been in circulation since 2009.

**23.48** Although we accept that many of the various internal LABC emails relating to competitive pricing, bonuses and a desire to establish and maintain strong links with Kingspan<sup>1138</sup> contain comments that may have been made purely in jest,<sup>1139</sup> they make it clear that raising the profile of the LABC brand was very much in the minds of various employees throughout the certification of K15. In December 2014, Mr Brennan expressed concern about losing Kingspan’s business as a result of the delay in issuing a certificate<sup>1140</sup> after Ivor Meredith<sup>1141</sup> of Kingspan had warned him that it might be difficult to obtain approval for the business if it were not issued soon.<sup>1142</sup> Mr Ewing said that LABC had not responded to what he saw as a threat, but accepted that it reflected well on LABC to be asked to certify Kingspan’s products.<sup>1143</sup> There was evidence from another LABC employee, Martin Taylor,<sup>1144</sup> that there was some internal pressure to increase the number of registrations.<sup>1145</sup>

<sup>1127</sup> Ewing {Day218/5:8-23}.

<sup>1128</sup> Ewing {Day218/6:4-7}.

<sup>1129</sup> Ewing {Day218/7:1-15}.

<sup>1130</sup> Ewing {Day218/10:9-17}.

<sup>1131</sup> Ewing {Day218/50:11-17}.

<sup>1132</sup> EWW165 Certificate 9 March 2015-9 March 2016 {LABC0000855}; EWWS165 Certificate 24 March 2016-30 March 2019 {LABC0000971}.

<sup>1133</sup> {LABC0005823/1}.

<sup>1134</sup> {LABC0000855/1}.

<sup>1135</sup> {LABC0000971/1}.

<sup>1136</sup> {LABC0000863/1}; Turner {Day217/26:1}-{Day217/27:7}.

<sup>1137</sup> Turner {Day217/28:19}-{Day217/29:14}.

<sup>1138</sup> {LABC0002402/1}; {LABC0002021/1}; {LABC0008243/1}; {LABC0002686/1}; {LABC0008505/1}; {LABC0008506}; {LABC0002827}; {LABC0002819}.

<sup>1139</sup> Taylor {LABC0020153/60} page 60, paragraph 47.23; Ewing {Day218/22:6}-{Day218/23:15}.

<sup>1140</sup> {LABC0002819}; {LABC0002827}.

<sup>1141</sup> Ball {KIN00020704/3} page 3, paragraph 2.5. Technical Projects Leader from May 2014 onwards.

<sup>1142</sup> {LABC0002819}.

<sup>1143</sup> Ewing {Day218/17:5-19}.

<sup>1144</sup> Taylor {LABC0020153/5} page 5, paragraph 12.1. Registered Details Manager from April 2011 to September 2012 and Technical Development Business Director from May 2015.

<sup>1145</sup> Taylor {LABC0020153/60} page 60, paragraph 47.23.

**23.49** By January 2015, Cathal Brennan had come to regard with scepticism some of Kingspan's promises about repeat business and the certification of other Kingspan products.<sup>1146</sup> He was under the impression that Kingspan was trying to use the prospect of a larger order to persuade LABC to accept its proposed wording in the re-issued certificate for K15.<sup>1147</sup> He regarded that as typical behaviour on the part of Kingspan.<sup>1148</sup>

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<sup>1146</sup> {LABC0002852/6-7}.

<sup>1147</sup> Brennan {LABC0020135/48} page 48, paragraph 93.1.

<sup>1148</sup> Brennan {LABC0020135/31} page 31, paragraph 50.2; Stimpson {LABC0020158/61} page 61, paragraph 101.2.

# Chapter 24

## Celotex RS5000 insulation

### Introduction

**24.1** The insulation used in the cladding system at Grenfell Tower was for the most part Celotex RS5000, a polyisocyanurate (PIR) thermosetting foam product. It was not a material of limited combustibility and was therefore not capable of conforming to the guidance on the construction of external walls contained in paragraph 12.7 of Approved Document B. However, RS5000 was said by Celotex to have been tested in accordance with BS 8414-2 in May 2014 and to have met the criteria in BR 135, thereby conforming to the guidance contained in paragraph 12.5 of Approved Document B. RS5000 was launched in August 2014. It was marketed by Celotex as “the first PIR board to successfully test to BS 8414”,<sup>1149</sup> and as “acceptable for use in buildings above 18 metres in height”.<sup>1150</sup> In fact, however, the test on which Celotex relied as support for that claim had been rigged by the inclusion at critical points in the construction of the system under test of fire-resistant magnesium oxide boards. Needless to say, Celotex concealed the manipulation of the test in its marketing. Moreover, BS 8414 and BR 135 did not provide for the testing and classification of individual products; they applied only to a complete system, which, if it met the criteria in BR 135, could be regarded as suitable for use in buildings over 18 metres in height. Celotex deliberately tucked that information away in the small print of its marketing literature where it was unlikely to be spotted. This part of the report describes the development and testing of RS5000 and explains what led Celotex to market its new product in a dishonest way.

### Background

#### Key personnel and management

**24.2** At the relevant time, the management team within Celotex was known as the management action group.<sup>1151</sup> It was the senior day-to-day decision-making body within Celotex.<sup>1152</sup> Paul Evans (Celotex’s head of marketing from 2013 to 2018,<sup>1153</sup> and Jonathan Roper’s line manager) was a member of the management action group, as were Craig Chambers and Dean O’Sullivan (managing directors of Celotex from 2013 to 2016 and from 2016 respectively). Other management bodies included the product life cycle and planning meeting, whose function was to discuss new ideas for products and projects.<sup>1154</sup> From May 2013, it was replaced by the Service Product Innovation Group.<sup>1155</sup>

**24.3** The dishonest and cynical way in which RS5000 was tested and marketed reflected a culture within Celotex stretching back to at least 2009. There are a number of striking aspects of that history that deserve examination.

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<sup>1149</sup> {CELO00000012}.

<sup>1150</sup> {CELO00000013}.

<sup>1151</sup> O’Sullivan {CEL00010027/72-73} pages 72-73, paragraph 217.

<sup>1152</sup> Evans {Day72/64:3-5}.

<sup>1153</sup> Evans {CEL00010058/6} page 6, paragraph 18.

<sup>1154</sup> Warren {CEL00010043/8} page 8, paragraph 29.

<sup>1155</sup> Warren {CEL00010043/8} page 8, paragraph 30.

## The acquisition by Saint-Gobain

**24.4** Celotex was originally owned by AAC Capital Partners, the private equity arm of ABN Amro. In August 2012 it was acquired with effect from 31 December 2015 by BPB UK Ltd, subsequently re-named Saint-Gobain Construction Products UK Ltd.<sup>1156</sup> The corporate culture of Celotex before its acquisition had been marked by a drive to create profits and increase the company's share price with a view to a sale,<sup>1157</sup> and that continued to be its focus after the sale to Saint-Gobain.<sup>1158</sup> As a consequence of the focus on sales, budgets and the business generally were very lean.<sup>1159</sup> Following the acquisition, Saint-Gobain set an annual budget for increasing profits, of which at least 15% was expected to come from new products.<sup>1160</sup>

## Lambda values

**24.5** As explained elsewhere,<sup>1161</sup> the lambda value of a material represents its thermal conductivity expressed in watts per metre kelvin (W/mK). The lower the lambda value, the better the performance of the product as an insulator. The relevant European and national harmonised standard applicable to PIR products is the standard for rigid polyurethane foam building products, BS EN 13165.<sup>1162</sup> It requires a manufacturer to declare the lambda value of a product as a limit value representing at least 90% of its production with a confidence value of 90%.<sup>1163</sup> The duty of ensuring conformity with the standard rests on the manufacturer, based on tests carried out at the factory.<sup>1164</sup> The standard requires the product to be tested at least once every 24 hours.<sup>1165</sup> It may be tested more often, but there is nothing in the standard to suggest that if the product is tested more than once every twenty four hours it is permissible to select from among the results thus obtained.

**24.6** As well as a culture of maximising profits, there had been a history within Celotex of data manipulation and dissimulation. At least as early as 2009, it had adopted a practice of taking a number of measurements each day of the lambda value of its products and selecting for the purposes of the standards (and ultimately, of course, for the purposes of marketing) the most favourable measurement without declaring the rest.<sup>1166</sup> There was a drive within Celotex to produce products with a lower declared lambda value, both as a way of differentiating them from other PIR products on the market and as a way of competing with Kingspan in the market for insulation on buildings.<sup>1167</sup>

**24.7** Even within Celotex there was an awareness at the time that the selection of data in that way<sup>1168</sup> was questionable. An internal memorandum dated 9 December 2009 described the process as involving a high degree of data management and manipulation in order to "avoid an auditor finding evidence that thermals are selected to give [a set lambda value] rather than recording the results regardless of their value".<sup>1169</sup> Not only did Celotex actively seek to conceal that practice from the British Board of Agrément (BBA), its auditors for

<sup>1156</sup> O'Sullivan {CEL00010027/3} page 3, paragraph 9.

<sup>1157</sup> Hayes {CEL00010154/6} page 6, paragraph 17; Hayes {Day74/30:9-15}; Evans {Day72/67:20-23}.

<sup>1158</sup> Hayes {CEL00010154/6} page 6, paragraph 17; Evans {Day72/68:1-3}.

<sup>1159</sup> Evans {CEL00010058/5} page 5, paragraph 15.

<sup>1160</sup> Hayes {CEL00010154/6} page 6, paragraph 17; Roper {Day70/124:11-16}.

<sup>1161</sup> Chapter 56.

<sup>1162</sup> {CEL00001204/10} paragraph 3.1.1.

<sup>1163</sup> {CEL00001204/14} paragraph 4.2.1.

<sup>1164</sup> {CEL00001204/24} paragraph 7.1.

<sup>1165</sup> {CEL00001204/25} paragraph 7.3 read with Annex B; {CEL00001204/28}.

<sup>1166</sup> {CEL00010498}.

<sup>1167</sup> Hayes {Day74/34:3-24}; Evans {CEL00012233/2} page 2, paragraphs 10-11.

<sup>1168</sup> Evans {Day72/71:7-9}.

<sup>1169</sup> {CEL00010272/1}.



this purpose,<sup>1170</sup> but it also appears that the practice was not disclosed to Saint-Gobain during the acquisition and was mentioned only at a management action group meeting in November 2013.<sup>1171</sup>

- 24.8** The lambda story is revealing. First, it is indicative of a culture in which breaking the rules and misleading external bodies was tolerated long before the advent of RS5000. It demonstrates an historic inability or unwillingness to challenge the honesty and good faith of company practices.<sup>1172</sup> Second, it shows the malign influence of the competition with Kingspan: Paul Evans explained that the drive to create a product with an improved lambda value was a response to a similar development by Kingspan.<sup>1173</sup>

### The change of polyol

- 24.9** A further indication of the nature of the culture at Celotex relates to FR5000 itself. FR5000 was made on two manufacturing lines, known as Hipchen and Henneke. Products manufactured on the Hipchen line were reinforced with glass fibre. Those manufactured on the Henneke line were not.<sup>1174</sup> The products were manufactured using a polymer resin, which was mixed with a polyol and various additives before the mix was allowed to rise on the production line before being cut into shape.
- 24.10** In August 2012, Celotex changed the polyol used on the Hipchen line from ElastoPIR 501 to ElastoPIR 503. ElastoPIR 501 continued to be used on the Henneke line.<sup>1175</sup> No thought appears to have been given to whether the change in formulation might affect the fire performance. Although the BBA expressly warned Celotex that it should tell it about any change in the formulation of the product, Celotex failed to do so,<sup>1176</sup> thereby withholding potentially material technical data.<sup>1177</sup>

## The development of RS5000

### Genesis of the “above 18m project”: 2008-2012

- 24.11** Celotex had manufactured and marketed FR5000 for some years before 2012.<sup>1178</sup> It was not a material of limited combustibility and therefore could not be used in the construction of an external wall of a building over 18 metres in height by anyone who wished to follow the guidance in paragraph 12.7 of Approved Document B. Nor had it been incorporated in a system that had been tested in accordance with BS 8414 and had satisfied the performance criteria in BR 135. That was all well known within Celotex.<sup>1179</sup>
- 24.12** In November 2011, FR5000 was tested in accordance with BS 476-6 and BS 467-7 and achieved a Class 0 classification.<sup>1180</sup> Thereafter, Celotex marketed FR5000 as having Class 0 fire performance “throughout”. The reference to Class 0 was no more than a marketing device;<sup>1181</sup> for reasons we explain later, Class 0 had come to be understood by many in the UK construction industry as meaning that a product could be used on buildings over

<sup>1170</sup> Evans {Day72/74:17-21}; {CEL00010456}.

<sup>1171</sup> {CEL00010286/2}.

<sup>1172</sup> Evans {Day72/83:3-4}; Evans {Day72/83:10-14}.

<sup>1173</sup> Evans {CEL00012233/2} page 2, paragraphs 10-11.

<sup>1174</sup> O’Sullivan {CEL00010027/12} page 12, paragraph 41.

<sup>1175</sup> {CEL00009889}.

<sup>1176</sup> {CEL00009516}.

<sup>1177</sup> Evans {Day72/93:14-17}.

<sup>1178</sup> {CEL00000723}.

<sup>1179</sup> Roper {Day70/139:13-21}; Hayes {Day74/37:7-12}.

<sup>1180</sup> {CEL00000382}.

<sup>1181</sup> Hayes {Day74/35:10-17}.

18 metres in height in compliance with the Building Regulations. Kingspan was marketing its phenolic foam products in that way, and achieving Class 0 fire performance was seen as a way of demonstrating that FR5000 was as good as Kingspan’s K15.<sup>1182</sup> The description of it as being Class 0 “throughout” was intended to enable it to challenge K15, which was being marketed as having a Class 0 core.<sup>1183</sup>

- 24.13** That was a clear abuse of the regulatory regime. The expression “Class 0 throughout” was meaningless because Class 0 is concerned with the reaction to fire of the material forming the surface of a product. It is not concerned with the underlying material, although a product which is composed entirely of a material of limited combustibility will have a Class 0 surface (see Chapter 5). To market FR5000 as “Class 0 throughout” was not only false (because the product was combustible) but can only have been designed to mislead buyers with a poor understanding of fire classification standards. Regrettably, Celotex clearly knew that many potential customers were ignorant and credulous in relation to matters of fire safety. Its marketing of FR5000 in that way laid the ground for the more fundamental mis-selling that was to follow with RS5000.
- 24.14** Celotex had considered developing a product for use on buildings over 18 metres in height in 2008, but had decided not to do so because the cost of testing was thought to be too high.<sup>1184</sup> By 2011, however, it had become aware that it was losing sales as a result of not having a product which could be used on high-rise buildings in accordance with the guidance in Approved Document B.<sup>1185</sup> On 19 October 2011, Robert Warren (then a technical manager, but from 1 May 2013 head of technical)<sup>1186</sup> sent a number of colleagues an email he had received from Adrian Friar, a specification manager at Celotex, asking them to track all enquiries it had received for insulation to be used on buildings over 18 metres in height.<sup>1187</sup>
- 24.15** By August 2012, the tracker was being maintained by Paul Evans.<sup>1188</sup> There was concern that market share was being lost to competitors and that unless action was taken soon the market for insulation suitable for use on buildings over 18 metres in height would be controlled by other manufacturers, particularly Kingspan.<sup>1189</sup> Mr Roper, who subsequently led the project to develop what eventually became RS5000, understood that the project was driven by a desire to compete with Kingspan in that section of the market.<sup>1190</sup>

### Allocation to Jonathan Roper: 2012-2013

- 24.16** On 15 December 2012, Paul Evans, then a product manager at Celotex, met Tony Baker of BRE with a view to discussing the requirements for testing PIR insulation boards for use in external walls of buildings over 18 metres in height.<sup>1191</sup> They discussed both the BS 8414-1 and BS 8414-2 test methods, as well as the fact that the results would have to be classified according to BR 135.<sup>1192</sup>

<sup>1182</sup> Evans {Day72/108:2-5}; Hayes {Day74/34:13}-{Day74/35:17}.

<sup>1183</sup> Hayes {Day74/36:1-8}.

<sup>1184</sup> Warren {CEL00010043/8} page 8, paragraphs 31-32.

<sup>1185</sup> Warren {CEL00010043/9} page 9, paragraph 33.

<sup>1186</sup> Warren {CEL00010043/2} page 2, paragraph 8.

<sup>1187</sup> {CEL00008564}.

<sup>1188</sup> {CEL00008570}.

<sup>1189</sup> {CEL00002892}.

<sup>1190</sup> Roper {Day70/120:10-14}.

<sup>1191</sup> Evans {Day72/96:14-16}; {CEL00002544}.

<sup>1192</sup> {CEL00002544}.

- 24.17** Paul Evans then assigned the task of carrying forward the project to Jonathan Roper.<sup>1193</sup> Mr Roper had joined Celotex in May 2012 straight from university,<sup>1194</sup> having graduated with a degree in business management.<sup>1195</sup> He had no previous experience of the insulation industry and had no relevant scientific qualifications.<sup>1196</sup> Mr Roper told us that he had been closely managed by Mr Evans,<sup>1197</sup> and that he had not done anything or said anything, at least publicly, without Mr Evans' approval.<sup>1198</sup> Mr Roper's experience, as described to us, was echoed by Jamie Hayes, a colleague of Mr Roper, who said that Mr Roper had run everything past Mr Evans.<sup>1199</sup> Mr Evans himself accepted that he had followed what Mr Roper was doing closely.<sup>1200</sup> Given Mr Roper's relative youth and inexperience, it would be surprising if he had not been subject to a high degree of supervision.
- 24.18** Despite his relative youth and inexperience, however, or perhaps because of it, Mr Roper was given the job of developing an insulation product which could be sold for use on buildings over 18 metres in height. Completion of the project was one of his formal goals for 2013.<sup>1201</sup> Mr Roper stood to gain a financial benefit from achieving that goal, since gaining accreditation for FR5000 was worth 20% of his potential bonus.<sup>1202</sup> However, his own understanding was that performance indicators were primarily used to create a focus on key areas for the business and we do not think that he was motivated primarily by the prospect of a bonus.<sup>1203</sup>
- 24.19** In an introductory briefing,<sup>1204</sup> Paul Evans and Robert Warren told Mr Roper that since PIR foam was not a product of limited combustibility, the only way that Celotex could satisfy the criteria in paragraph 12.5 of Approved Document B was to be tested in a system that met the performance criteria of BR 135 following a BS 8414 test.<sup>1205</sup> In March 2013, Mr Roper prepared a paper entitled "Above 18m Action Plan",<sup>1206</sup> in which he set out the steps required to obtain accreditation for FR5000 for use on buildings over 18 metres in height. He noted that the records showed that between August 2012 and January 2013 Celotex had lost the opportunity of selling 70,000m<sup>2</sup> of insulation as the result of not having a product that could meet that requirement.
- 24.20** Mr Roper embarked on a programme of research, reporting the results to Paul Evans. He was assisted by Mr Hayes, a member of the Technical Support team,<sup>1207</sup> who did not himself have any technical expertise or qualifications.<sup>1208</sup> As recorded in the Action Plan,<sup>1209</sup> it involved looking at the recently published third edition of BR 135, which he obtained and sent to both Mr Warren and Mr Hayes.<sup>1210</sup> He noted the criteria and although he did not read the whole document,<sup>1211</sup> he understood that it applied only to complete systems.<sup>1212</sup>

<sup>1193</sup> Evans {Day71/117:15-23}.

<sup>1194</sup> Roper {CEL00010052/2} page 2, paragraph 2.1.

<sup>1195</sup> Roper {Day70/110:4-10}.

<sup>1196</sup> Roper {Day70/110:13-17}.

<sup>1197</sup> Roper {CEL00010052/2-3} pages 2-3, paragraph 2.4.

<sup>1198</sup> Roper {Day70/112:9-11}.

<sup>1199</sup> Hayes {Day74/44:6-9}.

<sup>1200</sup> Evans {Day72/120:18-25}.

<sup>1201</sup> {CEL00002900}.

<sup>1202</sup> Evans {Day72/123:23-25}.

<sup>1203</sup> Roper {Day70/113:2-8}.

<sup>1204</sup> Roper {Day70/140:20}-{Day70/141:3}.

<sup>1205</sup> Roper {Day70/140:13-18}.

<sup>1206</sup> {CEL00001340}

<sup>1207</sup> Hayes {Day74/46:19-22}.

<sup>1208</sup> Hayes {Day 74/5:10-14}.

<sup>1209</sup> {CEL00001340/2}.

<sup>1210</sup> {CEL00011493}.

<sup>1211</sup> Roper {Day70/131:18}-{Day70/132:3}.

<sup>1212</sup> Roper {Day70/143:6-14}.

He was also aware that any classification obtained under BR 135 applied only to the system tested.<sup>1213</sup> As part of his research he and Mr Hayes also looked at Kingspan's publicly available marketing material.<sup>1214</sup>

### June 2013: business case

- 24.21** On 17 June 2013<sup>1215</sup> Mr Roper sent Mr Evans a project plan<sup>1216</sup> and business case<sup>1217</sup> for Celotex to undertake BS 8414 testing. The business case reiterated the point made in the earlier Action Plan that the lack of a product that was suitable for use on buildings over 18 metres in height was one of the main areas in which Celotex was unable to compete with Kingspan.

### Celotex's investigations during 2013

- 24.22** In order to improve his understanding of testing under BS 8414 and classification in accordance with BR 135, Mr Roper obtained assistance from a number of external bodies. Some (NHBC, the BBA and BRE) were introduced to him by Mr Evans,<sup>1218</sup> others he found for himself.

### Sotech and IFC: June to October 2013

- 24.23** Celotex sought advice on how to design a test rig in order to give it the best chance of a favourable result.<sup>1219</sup> On 10 May 2013 Mr Roper contacted a firm of consultants, International Fire Consultants, seeking advice and explaining that Celotex wanted to design a wall incorporating FR5000 which would have the best chance of succeeding in a full-scale test.<sup>1220</sup>
- 24.24** Mr Roper also sought assistance from Sotech Ltd, a designer and manufacturer of cladding with previous experience of the BS 8414 test that he had come across at a RIBA event in June 2013. By that time Sotech had already been involved in two BS 8414 tests using Kingspan insulation, each of which, Mr Roper was told, had failed.<sup>1221</sup> On 20 June 2013, Mr Roper and Mr Hayes met Sotech to discuss testing. A note of the meeting dated 24 June 2013 records that Sotech's previous experience of testing had shown that aluminium railing systems and cladding panels melted and allowed fire to enter the cavity, and that therefore what had proved crucial was the resistance to fire of the outer surface and the performance of the fire barriers.<sup>1222</sup> Mr Roper said that he had understood from the meeting that the success of a BS 8414 test may depend on the cladding material used.<sup>1223</sup> They also discussed K15 and Sotech expressed surprise that K15 was used so widely based only on a single test involving the use of a cement particle board to represent a typical cladding panel.<sup>1224</sup> Both Celotex and Sotech considered the

<sup>1213</sup> {CEL00000584/33}; Roper {Day70/145:5-25}.

<sup>1214</sup> Hayes {CEL00010154//12} page 12, paragraphs 36-37.

<sup>1215</sup> {CEL00001856}.

<sup>1216</sup> {CEL00001857}.

<sup>1217</sup> {CEL00001858}.

<sup>1218</sup> Roper {Day70/132:17-23}.

<sup>1219</sup> Roper {Day71/15:17-19}.

<sup>1220</sup> {CEL00000589}.

<sup>1221</sup> {CEL00001851}.

<sup>1222</sup> {CEL00001863/1}.

<sup>1223</sup> Roper {Day71/5:2-4}.

<sup>1224</sup> {CEL00001863/1}.

Kingspan test to be unrepresentative,<sup>1225</sup> and thought that Kingspan had taken advantage of what they regarded as a carefully worded certificate from the BBA and cleverly designed marketing literature.<sup>1226</sup>

- 24.25** Mr Roper sent his note to Mr Evans on 24 June 2013.<sup>1227</sup> In response Mr Evans indicated that his preference at that stage was to test a commonly used cladding panel rather than simply copying Kingspan’s use of a cement particle board.<sup>1228</sup> International Fire Consultants advised that it should be possible to test with a standard cladding panel using improved fire barriers.<sup>1229</sup>
- 24.26** Mr Roper then arranged a meeting with Peter Jackman, the technical director of International Fire Consultants, on 22 July 2013.<sup>1230</sup> Mr Roper could not recall what had been said at that meeting,<sup>1231</sup> but according to the handwritten notes taken by Robert Warren he was told that Approved Document B only contains guidance and was open to “interpretation”.<sup>1232</sup> We understand that to mean that Mr Jackman thought there were ways of interpreting Approved Document B that would render the guidance less restrictive. For his part, Jamie Hayes recalled a meeting with International Fire Consultants (specifically Peter Jackman and Dr Parina Patel), although he could not recall when it had taken place. He did remember that they had told him and Mr Roper that it might be possible to obtain a field of application report, in other words, to carry out a BS 8414 test and, using the results obtained from it, produce a report which was wider in its scope of application and cover the use of some components other than those used in the test rig.<sup>1233</sup> That reflects the view of some in the industry at the time that “desktop” assessments based on test data were a permissible way of broadening the range of components that could be used in external walls while satisfying Approved Document B.<sup>1234</sup>
- 24.27** Celotex then commissioned International Fire Consultants to conduct small-scale testing with a view to giving an opinion on the likelihood of meeting the criteria in BR 135 if they were to test FR5000 under BS 8414.<sup>1235</sup> On 4 September 2013, Mr Jackman confirmed that he had reviewed BS 476-6 and BS 476-7 test data for FR5000 and concluded that there were grounds for thinking that FR5000 would perform well in a BS 8414 test.<sup>1236</sup> It is unclear on what basis he thought that it was possible to draw that conclusion from BS 476 data, but Celotex did not explore that question with him. On 24 September 2013 Celotex engaged International Fire Consultants to assist in the design of BS 8414 tests, having decided by that stage to test only to BS 8414-2 (i.e. a steel-framed construction).<sup>1237</sup> On 27 September 2013 David Cooper of International Fire Consultants acknowledged the proposal, commenting that the “fire barrier” at storey levels and around the opening would be critical.<sup>1238</sup>

<sup>1225</sup> Roper {Day71/7:2-10}.

<sup>1226</sup> {CELO00001863/1}.

<sup>1227</sup> {CELO00001865}.

<sup>1228</sup> {CELO00001865}.

<sup>1229</sup> {CELO00001864}.

<sup>1230</sup> {CELO00000632}.

<sup>1231</sup> Roper {Day71/16:21-23}.

<sup>1232</sup> {CELO00002743}.

<sup>1233</sup> Hayes {Day74/72:13-17}.

<sup>1234</sup> See Chapter 26, and the note of the meeting on 15 November 2013 between Wintech and NHBC at {NHB00000604}.

<sup>1235</sup> {CELO00000669}; {CELO00000670}.

<sup>1236</sup> {CELO00000673}.

<sup>1237</sup> {CELO00000679}.

<sup>1238</sup> {CELO00000688}.

- 24.28** On 3 October 2013, Mr Roper and Mr Hayes met representatives of International Fire Consultants and Sotech.<sup>1239</sup> Mr Hayes' note of that meeting referred to tests using Kingspan insulation having failed twice with standard cavity barriers.<sup>1240</sup> Mr Hayes also recalled (although it was not mentioned in the note) that there had been discussion of those tests.<sup>1241</sup> Mr Hayes and Mr Roper both told us that following the meeting they had both been aware that, if tested with an aluminium panel, FR5000 was unlikely to pass a BS 8414 test.<sup>1242</sup>
- 24.29** On 31 October 2013 Mr Roper sent International Fire Consultants details of two European Class A2 products he had found during his researches, namely Alucobond A2 and Marley Eternit.<sup>1243</sup> He explained that he saw three options for testing:
- a. test with an ACM panel and an improved cavity barrier system (e.g. with the double cavity barrier discussed at the meeting on 3 October),<sup>1244</sup> although he was not particularly confident in that system following the meeting with International Fire Consultants and Sotech;<sup>1245</sup>
  - b. test with an A2 panel and standard cavity barrier, which he noted was a common system which Celotex could support if challenged; and
  - c. test using a cement particle board as the rainscreen, as he understood Kingspan had done, which he viewed as a last resort
- 24.30** Mr Roper's preference was to test using an A2 panel with standard cavity barriers, but he observed that if this failed then it would be necessary to decide whether Celotex would then want to adopt Kingspan's method or pull out altogether.<sup>1246</sup> What he meant by adopting Kingspan's method can be seen from what Celotex chose to do later.

### Discussions with BRE: May and October 2013

- 24.31** In May 2013, Jonathan Roper asked Tony Baker of BRE which of the BS 8414 tests Celotex should be considering.<sup>1247</sup> Mr Baker advised testing under BS 8414-2, adding that obtaining the classification was likely to be commercially advantageous to Celotex.<sup>1248</sup> Mr Roper contacted Mr Baker again on 21 June 2013, asking to arrange a call with him about the purpose of testing. He said that he was sceptical of how a particular competitor of Celotex (clearly a reference to Kingspan) could have satisfied the criteria in BR 135.<sup>1249</sup> Mr Roper went on to ask Mr Baker for advice about designing the test and whether preventing the flame from entering the cavity altogether would be acceptable,<sup>1250</sup> but he could not recall having received any response to his message.<sup>1251</sup>

<sup>1239</sup> {CEL00011052}.

<sup>1240</sup> {CEL00001195}.

<sup>1241</sup> Hayes {Day74/80:18-23}.

<sup>1242</sup> Roper {Day70/194:2-3}; Hayes {Day74/80:24}-{Day74/81:2}.

<sup>1243</sup> {CEL00000714}.

<sup>1244</sup> Roper {Day71/24:12-16}.

<sup>1245</sup> Roper {Day71/24:9-10}.

<sup>1246</sup> {CEL00000714}.

<sup>1247</sup> {CEL00000585/2}.

<sup>1248</sup> {CEL00000585/2}.

<sup>1249</sup> {CEL00000617}.

<sup>1250</sup> {CEL00000617}.

<sup>1251</sup> Roper {Day70/170:19-21}.

- 24.32** On 18 October 2014, Mr Roper asked Stephen Howard of BRE about the possibility of extending the use of FR5000 to external wall systems similar to one that had been tested successfully under BS 8414.<sup>1252</sup> He again mentioned his concern about how the market was operating, asking how it was possible for competitors who had tested one particular system to sell its products into a variety of different systems used on buildings over 18 metres in height.<sup>1253</sup> Mr Roper confirmed to us that he was referring to Kingspan and Xtratherm (the only other company that offered a product for use on buildings over 18 metres in height at that time).<sup>1254</sup> He told us that the origin of his question lay in a controversy within Celotex between individuals, some of whom viewed BS 8414 as a system test and some of whom viewed it as what he called a “product in application” test.<sup>1255</sup> He put himself, Jamie Hayes and Robert Warren in the former category, and Paul Evans, Craig Chambers and the sales team in the latter,<sup>1256</sup> which he saw as a commercial view based on Kingspan’s approach.<sup>1257</sup> The “commercial view” was not a tenable reading of the guidance in Approved Document B, not least since the third edition of BR 135 published earlier in 2013 had made it plain that the classification applied only to the system as tested and described in the classification report.<sup>1258</sup> It followed that the classification could not apply to a single product forming part of the system tested when it was used in a different system.
- 24.33** Mr Howard responded a few days later on 21 October 2013, saying that the test report would set out exactly what had been tested, and that the way to extend it to other systems was by what he called an “assessment report”, which he described as “fairly standard practice”.<sup>1259</sup> Mr Roper understood him to mean that if he gave BRE details of a particular system they would be able to tell him whether it might pass a BS 8414 test.<sup>1260</sup>

#### The Roper-Evans exchange: 1 November 2013

- 24.34** At the end of October and early November 2013, there was an important internal exchange between Jonathan Roper and Paul Evans. On 31 October 2013, Mr Roper sent a message to Mr Evans saying he needed to speak to him about the “Above 18m” project, and that he would send an invitation to Mr Evans, Mr Warren, Mr Hayes and Mr Chambers because they had reached a point at which a decision had to be made.<sup>1261</sup>
- 24.35** The following day, 1 November 2013, Mr Roper sent another message to Mr Evans setting out the matters for discussion.<sup>1262</sup> He explained that they had originally contemplated testing what they regarded as a “worst case scenario with improved fire barrier” (i.e. using a less fire-resistant panel) that could then be supported by an assessment report which would extend the scope of application. However, he no longer thought that could be done because it was not possible, as he put it, “to find or design a suitable barrier in which we have enough confidence that it can be used behind a standard ACM panel which we know will melt and allow fire into the cavity.” His comments about how an ACM panel would perform in a full-scale test tells us much about how well known its poor fire performance was at the time, at least among manufacturers of insulation.

<sup>1252</sup> {CELO0000708/3}.

<sup>1253</sup> {CELO0000708/3}.

<sup>1254</sup> Roper {Day70/174:22-25}.

<sup>1255</sup> Roper {Day70/171:16}-{Day70/172:2}.

<sup>1256</sup> Roper {Day70/172:13-25}.

<sup>1257</sup> Roper {Day70/163:21-24}.

<sup>1258</sup> {BRE00005555/28} at A2, left column and {BRE00005555/32} at B2 right column.

<sup>1259</sup> {CELO0000708/2}.

<sup>1260</sup> Roper {Day70/176:8-16}.

<sup>1261</sup> {CELO0000716/2}.

<sup>1262</sup> {CELO0000716/1}.

- 24.36** In his email Mr Roper made a number of important observations about the poor level of understanding in the market of the guidance in Approved Document B and how Kingspan had taken advantage of it. He doubted that Kingspan had a report which would support the use of K15 on buildings over 18 metres in height. His view was that it was being used in those circumstances because of widespread ignorance in the market, including among architects, about the applicable requirements<sup>1263</sup> and a failure to think about fire performance as opposed to thermal performance.<sup>1264</sup> He thought that the only person who might possibly challenge a product's use on buildings over 18 metres in height was the building control officer<sup>1265</sup> and that Kingspan had effectively neutralised that risk through the wording of their BBA and Local Authority Building Control (LABC) certificates.
- 24.37** The timing of his observations is uncanny. They were made exactly at the time that Kingspan was using a BBA certificate revised in July 2013 to claim that K15 complied with paragraph 12.7 of Approved Document B (i.e. that it was a material of limited combustibility), a statement that was not only self-evidently incorrect but which was causing concern at NHBC.<sup>1266</sup> It seems that Mr Roper had tapped into a growing awareness in the cladding industry that Kingspan was taking advantage of an erroneous BBA certificate for K15, thereby mis-selling it.
- 24.38** Mr Roper concluded his report to Mr Evans with words that were as prescient as they were frank: "Trying to do the right thing requires a complete re-education of the market and this would require a huge campaign and probably a lawsuit". He told us that by "doing the right thing" he had meant selling a product that had been part of a system that had met the performance criteria in BR 135 for use only in a system which was the same as that tested, and not exploiting market ignorance in a commercially more advantageous way.<sup>1267</sup> He explained that the reason he considered re-education of the market would be necessary was because he considered it to have been distorted by Kingspan. Doing things in the right way would mean explaining to specifiers that they had been using Kingspan K15 inappropriately.<sup>1268</sup>
- 24.39** His report to Mr Evans then proceeded to set out various options: testing with an A2 panel, adopting Kingspan's device of using a cement particle board, or taking the view that, as he put it, "realistically our product shouldn't be used behind most cladding panels because in the event of a fire it will burn".
- 24.40** Mr Evans responded the same day 1 November 2013. His words are, again, worth quoting: "Great summary and shows the real merit of good research and talking to the market. We are trying not to create a 'me too' here but if we do, it will be for the right reasons".<sup>1269</sup> Mr Evans was unable to recall what he had meant by "the right reasons".<sup>1270</sup> Mr Roper said that he had understood "the right reasons" to be commercial reasons.<sup>1271</sup> We accept his evidence and agree that that is indeed what Mr Evans meant. Mr Evans asked Mr Roper to put the contents of his email into some slides for discussion at the meeting scheduled for 4 November 2013.

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<sup>1263</sup> Roper {Day71/35:18-24}.

<sup>1264</sup> Roper {Day71/36:5-6}; {Day71/36:22}-{Day71/37:1}.

<sup>1265</sup> {CELO0000716/1}.

<sup>1266</sup> See Chapter 26.

<sup>1267</sup> Roper {Day71/37:24}-{Day71/38:5}.

<sup>1268</sup> Roper {Day71/38:10-19}.

<sup>1269</sup> {CELO0000718}.

<sup>1270</sup> Evans {Day72/166:11-15}.

<sup>1271</sup> Roper {Day71/44:5-15}.



**24.41** It is clear that by the end of 2013, Celotex had begun to come to terms with the idea that it might follow Kingspan’s lead in relation to the testing and marketing of an insulation product for use on buildings over 18 metres in height. Mr Roper’s preference was still to test a system incorporating an A2 rainscreen panel rather than a cement particle board. He understood that to reflect a preference within Celotex as a whole to test a more representative system.<sup>1272</sup> However, the use of a cement particle board had not been entirely ruled out.<sup>1273</sup> There remained a general desire within Celotex to enter the market for buildings over 18 metres in height in any event and if copying Kingspan was the only way of obtaining a test result that would enable it to do so, it would act accordingly.<sup>1274</sup> In the end, Celotex did indeed adopt the same strategy as Kingspan. It neither tested a representative system nor was truthful in its marketing literature.

#### 4 November 2013 meeting – the 5 options

- 24.42** On 4 November 2013, Mr Roper met Mr Evans, Mr Hayes and Mr Warren. The electronic invitation suggests that Craig Chambers, then managing director of Celotex, was also invited.<sup>1275</sup> Mr Roper,<sup>1276</sup> Mr Hayes<sup>1277</sup> and Mr Evans<sup>1278</sup> all recalled his being there and we are satisfied that he was.
- 24.43** Mr Roper prepared slides for the meeting.<sup>1279</sup> The first slide set out paragraph 12.5 of Approved Document B highlighted in yellow. No one who saw it can have been under any illusion about what the guidance was or what it required.<sup>1280</sup>
- 24.44** Slide 14 set out the options available to Celotex.<sup>1281</sup> The first was “Worst case scenario with field of application report”, which referred to testing a system that would enable a desktop assessment to be produced to allow FR5000 to be used in other systems.<sup>1282</sup> Mr Roper envisaged that it would incorporate ACM rainscreen panels and improved cavity barriers,<sup>1283</sup> but he had little confidence that he could find such a product.
- 24.45** The second was “System Route (Limits Scope – Requires Re-education)”, which referred to testing a representative system and making it clear that any BR 135 classification applied only to the system tested.<sup>1284</sup> The “re-education” mentioned referred to the need to explain to the market that the industry had up to that point misunderstood the effect of full-scale testing and classification in accordance with BS 8414 and BR 135 and had wrongly allowed K15 to be used in a wider set of applications than was justified by the tests.<sup>1285</sup>
- 24.46** The third and fourth options were to test and launch FR5000 with, and without, certification by the BBA and LABC.

<sup>1272</sup> Roper {Day71/25:4-7}.

<sup>1273</sup> Roper {Day71/11:4-16}.

<sup>1274</sup> Roper {Day71/25:20-25}.

<sup>1275</sup> {CELO0003011}.

<sup>1276</sup> Roper {Day71/52:15-23}. Mr Roper’s witness statement to the effect that he himself had not attended this meeting was corrected by him in oral evidence.

<sup>1277</sup> Hayes {Day74/46:11-16}; {Day74/96:1-5}.

<sup>1278</sup> Evans {Day72/170:6-10}.

<sup>1279</sup> {CELO0011199}.

<sup>1280</sup> Roper {Day71/47:5-9}.

<sup>1281</sup> {CELO0011199/14}.

<sup>1282</sup> Evans {Day72/172:12-21}.

<sup>1283</sup> {CELO0000718} and see paragraph 23.29 above.

<sup>1284</sup> Roper {Day71/49:6-10}.

<sup>1285</sup> Evans {Day72/173:12-18}.

- 24.47** The final option was to abandon the market for insulation suitable for use on buildings over 18 metres in height altogether. It was not discussed at any length.<sup>1286</sup>
- 24.48** The next slide assessed the prospects of successfully testing FR5000 with various combinations of other products. A system incorporating an ACM panel and an improved cavity barrier was judged to have less than a 50% chance of success, a system incorporating an A2 rainscreen panel with a standard cavity barrier an 80% chance of success and a system incorporating a cement particle board rainscreen with a standard cavity barrier a 90% chance of success.<sup>1287</sup>

### The decision to proceed

- 24.49** At the meeting a decision was taken to proceed with BS 8414 testing<sup>1288</sup> using an A2 rainscreen panel and then to apply for LABC approval.<sup>1289</sup> Mr Roper said that there had been a difference of opinion between Mr Evans and Mr Chambers on the one hand and Mr Warren on the other over what should be tested. Both Mr Roper<sup>1290</sup> and Mr Hayes<sup>1291</sup> recalled that Mr Warren had thought that Celotex should adopt the “systems route” or opt out, while Mr Chambers and Mr Evans were concerned that that approach would unduly limit the commercial application of the product. Mr Evans denied that that had been his view and told us that, if the product were to be taken to market, Celotex should be clear that it had tested a particular system.<sup>1292</sup> He accepted that people might want to make use of the results to demonstrate that the product could be used in different systems, but did not believe that his and Mr Chambers’ view was entirely different from that of Mr Warren.<sup>1293</sup> We have doubts about the reliability of Mr Evans’ evidence on this point because, in the end, we know that Celotex chose not to be clear about what it had tested. On the contrary, it deliberately concealed from end users a vital component of the system tested, namely the magnesium oxide boards, a decision which we examine below. Mr Chambers did not recall the meeting, but in his written evidence he said that he understood that an insulation material had to be either non-combustible or pass a BS 8414 test in order to achieve compliance with the Building Regulations.<sup>1294</sup>

### Designing the test

- 24.50** On 30 October 2013 Mr Roper was introduced by a colleague at Celotex to Graham Smith of Simco External Framing Solutions Ltd (Simco), a company specialising in the production of external framing systems.<sup>1295</sup> Simco was engaged by Celotex to help design the rig for the BS 8414 test.<sup>1296</sup>
- 24.51** Following the meeting on 4 November 2013, Celotex decided to use a Marley Eternit panel classed A2. Mr Roper explained that Celotex had chosen the Marley panel because Simco had suggested that it was similar to a cement particle board, although providing a decorative facade, and because Marley was a relatively well-established brand.<sup>1297</sup>

<sup>1286</sup> Evans {Day72/174:9-11}.

<sup>1287</sup> {CEL00011199/15}.

<sup>1288</sup> Hayes {Day74/72:15-22}.

<sup>1289</sup> Roper {Day71/54:17-20}.

<sup>1290</sup> Roper {CEL00010052/10} page 10, paragraph 5.15; Roper {Day71/54:10-15}.

<sup>1291</sup> Hayes {Day74/100:6-12}.

<sup>1292</sup> Evans {Day72/177:20-22}.

<sup>1293</sup> Evans {Day72/177:23}-{Day72/178:2}.

<sup>1294</sup> Chambers {CEL00010056/4} page 4, paragraph 20.

<sup>1295</sup> Roper {CEL00010052/8} page 8, paragraph 5.7.

<sup>1296</sup> Roper {Day70/190:4-9}.

<sup>1297</sup> Roper {Day71/67:9-13}.

**24.52** Simco produced drawings for the test rig on 22 January 2014.<sup>1298</sup> The system to be tested comprised a steel frame, a 12mm magnesium oxide sheathing board, 100mm Celotex FR5000, Lamatherm fire barriers and 8mm Marley Eternit cladding. The components appear to have been delivered to BRE’s testing centre at Watford. BRE was unable to produce a complete test file for the first Celotex test, but delivery notes for some of the components were found in the file relating to the second test carried out in May 2014, to which we return below.<sup>1299</sup>

#### The first test: 14 February 2014

- 24.53** The test was carried out on 14 February 2014. Mr Roper, Mr Hayes, Mr Warren and two representatives of International Fire Consultants, Dr Parina Patel and David Cooper, attended.<sup>1300</sup> It was overseen by Philip Clark of BRE. The test was stopped after 26 minutes when flames overtopped the rig,<sup>1301</sup> but Mr Clark allowed the rig to continue burning for a further period to enable Celotex to obtain more data.<sup>1302</sup> BRE subsequently confirmed that the test had failed and that no classification report would be issued.<sup>1303</sup>
- 24.54** Mr Roper said that Mr Clark had commented favourably on the performance of the system, although he understood that it had failed the test.<sup>1304</sup> In particular, he recalled Mr Clark’s saying that he had “seen worse fails” and suggesting that Celotex might want to strengthen the outside of the rig in order to prevent the Marley Eternit panels cracking.<sup>1305</sup> Mr Roper said that he had suggested that the panels were available in 12mm thickness and that Mr Clark had said that he thought that might suffice.<sup>1306</sup> Mr Roper thought that (possibly on a later occasion)<sup>1307</sup> he had discussed with Mr Clark the possibility of using two rainscreen panels at the level of the cavity barrier to prevent cracking and allowing the fire to bypass the barrier.<sup>1308</sup> He was unable to remember the details of the conversation, however.<sup>1309</sup> Mr Clark denied that he had made any comments either about the performance of the system or possible changes to it.<sup>1310</sup>
- 24.55** Mr Roper was an exceptionally candid witness, whose recollection we generally consider to have been reliable. Moreover, a recording made by the head camera worn by Mr Clark during the test reveals that he did say that he had “seen worse”<sup>1311</sup> and that “for a first attempt it’s not bad, actually”.<sup>1312</sup> Mr Clark then turned off the camera. No recording was disclosed of any conversation in which Mr Clark made recommendations about the design of any future test rig,<sup>1313</sup> but the recording that was disclosed supports that part of Mr Roper’s evidence. We therefore accept that Mr Clark did discuss possible changes to the design of the second test rig with Mr Roper, but there is no evidence to suggest that those discussions touched on the use of magnesium oxide boards.

<sup>1298</sup> {CEL00000806}; {CEL00000807}; {CEL00000808}; {CEL00000809}.

<sup>1299</sup> {BRE00032372/4} delivery note for 12mm magnesium oxide sheathing board used in first test; {BRE00032372/5} delivery note for FR5100 used in first test.

<sup>1300</sup> Roper {Day71/68:18}–{Day71/69:6}.

<sup>1301</sup> Roper {Day71/69:7-9}.

<sup>1302</sup> {INQ00014136/3}.

<sup>1303</sup> Hayes {CEL00010154/18} page 18, paragraph 56.

<sup>1304</sup> Roper {Day71/77:1-3}.

<sup>1305</sup> Roper {CEL00010052/12} page 12, paragraph 5.29.

<sup>1306</sup> Roper {Day71/71:17-24}.

<sup>1307</sup> Roper {Day71/74:16-20}.

<sup>1308</sup> Roper {CEL00010052/13} page 13, paragraph 5.31.

<sup>1309</sup> Roper {Day71/74:6-11}.

<sup>1310</sup> Clark {BRE00005768/50} page 50, paragraphs 203-204; Clark {BRE00005768/66} page 66, paragraph 269.

<sup>1311</sup> {INQ00014137/2}.

<sup>1312</sup> {INQ00014137/3}.

<sup>1313</sup> Clark {Day95/101:8}–{Day95/102:15}; {Day95/104:7-16}.

**24.56** This episode caused us to doubt the reliability of Mr Clark’s evidence where it was not supported by the contemporaneous documents. For example, after the test Mr Roper sent Parina Patel and David Cooper of International Fire Consultants thermocouple data from the test,<sup>1314</sup> saying that he had spoken to Mr Clark, who saw no reason why a classification report could not be issued as, in his opinion, extending the test to the full duration of 30 mins would have made little difference.<sup>1315</sup> Mr Clark strongly denied that any such discussion had taken place, to the point of accusing Mr Roper of having invented it at the time,<sup>1316</sup> but there was no reason for Mr Roper to have made up the conversation for the benefit of International Fire Consultants and no plausible explanation of how he had obtained the thermocouple data if not from Mr Clark. We prefer the evidence of Mr Roper.

### Reaction to the failed first test

**24.57** Mr Roper considered that the failure of the first test demonstrated the impossibility of meeting the requirements of BR 135 with a representative system<sup>1317</sup> and in view of the cost of the first test, he did not expect to be given an opportunity to run a second.<sup>1318</sup> By contrast, Mr Evans said that although it had been a disappointment, he had not considered it to have been a significant problem for Celotex.<sup>1319</sup> In the light of the importance of the project and the fact that further testing required budgetary approval,<sup>1320</sup> we do not think that can have been correct. Without passing a BS 8414 test and meeting the BR 135 criteria Celotex could not break into the market for insulation suitable for use on high-rise buildings, and there was at that time no guarantee that further testing would be possible. In reality, the failure of the test in February 2014 was a significant setback.

### Decision to retest

**24.58** After the test, there were further discussions between Mr Roper, Mr Hayes, Mr Evans and Mr Warren.<sup>1321</sup> Mr Evans could not recall them but did not dispute that they had taken place.<sup>1322</sup> Mr Mahoney (then Celotex’s Head of Research and Development) was also consulted, as he had responsibility for the development budget from which a second test would be funded.<sup>1323</sup> Mr Evans indicated that the cost was such that it would also have required the approval of Craig Chambers, who was in any case interested in progress, given that it involved the first launch of a (supposedly) new product since the company’s acquisition by Saint-Gobain.<sup>1324</sup>

### Design changes

**24.59** The discussions centred on how to ensure that any further test could be designed to be successful. Mr Roper said that two main changes had been proposed: the use of thicker rainscreen panels (12mm in place of 8mm) and the use of a 6mm magnesium oxide board in the area of the level 2 thermocouples.<sup>1325</sup> Magnesium oxide is a non-combustible material and the purpose of including it was to reduce the chance that the temperature

<sup>1314</sup> {CELO0000843}.

<sup>1315</sup> {CELO0000842}.

<sup>1316</sup> Clark {Day95/120:4}-{Day95/121:25}.

<sup>1317</sup> Roper {Day71/43:6-12}.

<sup>1318</sup> Roper {Day71/78:18-23}.

<sup>1319</sup> Evans {Day72/182:10-14}.

<sup>1320</sup> Roper {Day71/82:6-22}.

<sup>1321</sup> Roper {Day71/80:7-11}.

<sup>1322</sup> Evans {Day72/190:12-19}.

<sup>1323</sup> Roper {Day71/82:14-24}.

<sup>1324</sup> Evans {CELO0010058/29} page 29, paragraph 102.

<sup>1325</sup> Roper {Day71/81:14-19}.

at that level would exceed 600°C, thereby failing to meet the performance criteria in BR 135.<sup>1326</sup> It was also suggested that a layer of 6mm magnesium oxide board should be used at the top of the rig to provide a firm surface against which the cavity barriers could expand to prevent flames from overtopping the rig.<sup>1327</sup> The 6mm magnesium oxide board was to be covered with 8mm Marley Eternit, rather than the 12mm used elsewhere, in order to ensure as much continuity of the rainscreen surface as possible.<sup>1328</sup> Celotex also decided to reduce the ventilation gaps between the rainscreen panels.<sup>1329</sup> Mr Roper believed there were some gaps but he accepted that they were minimal and less than 10mm.<sup>1330</sup> Taken collectively, those decisions reflected a conscious decision by Celotex to manipulate the design of the rig in order to ensure as far as possible that the performance criteria in BR 135 were met.<sup>1331</sup>

**24.60** The proposal to use a 6mm magnesium oxide board was originally made by Mr Hayes;<sup>1332</sup> Mr Roper and Mr Evans then suggested using the thinner Marley board to cover it.<sup>1333</sup> Mr Evans told us that he could recall only the decision to revise the rig design to incorporate a thicker cladding panel.<sup>1334</sup> He was adamant, despite repeated questioning, that at no point had he known of the presence of a 6mm magnesium oxide board until he had found a reference to it on his phone in 2017, and that the only variation in design that he had been aware of at the time was the change to the thickness of the panel.<sup>1335</sup> He was equally adamant that he had not taken part in any meeting at which the use of a 6mm magnesium oxide board had been discussed,<sup>1336</sup> or that he had known that it had been used in the area of the cavity barriers.<sup>1337</sup> We did not find his evidence on those matters credible and indeed Mr Evans ultimately accepted that he had become aware of the use of the 6mm magnesium oxide boards at the latest by the time of a management action group meeting on 14 May 2014 although he maintained that he had not made the connection even by that time.<sup>1338</sup> Given his faulty memory on this point, we regard the evidence of Mr Hayes and Mr Roper as far more reliable and we conclude that Mr Evans was indeed aware of the changes to the design of the second test.

### No new drawings

**24.61** Celotex did not commission any drawings of the second test rig.<sup>1339</sup> Mr Roper said that that had been in part a financial decision.<sup>1340</sup> He had also formed the view that Simco did not particularly wish to assist further.<sup>1341</sup> Although Mr Roper did not think that the decision not to produce revised drawings had been motivated by a desire to conceal the use of the 6mm magnesium oxide board,<sup>1342</sup> its failure to do so was entirely consistent with Celotex's overall desire to conceal as far as possible the introduction of that layer. The only drawings available to BRE before the test on 2 May 2014, therefore, contained the same design as

<sup>1326</sup> Roper {Day71/97:7-12}.

<sup>1327</sup> Roper {Day71/97:13-17}.

<sup>1328</sup> Hayes {CEL00010154//20} page 20, paragraph 61.

<sup>1329</sup> Roper {Day72/2:8-9}.

<sup>1330</sup> Roper {Day72/3:10-15}.

<sup>1331</sup> Roper {Day71/98:2-3}.

<sup>1332</sup> Roper {Day71/86:4-16}.

<sup>1333</sup> Hayes {Day74/127:13-22}.

<sup>1334</sup> Evans {Day72/192:13-15}.

<sup>1335</sup> Evans {Day72/193:9}-{Day72/195:10}; Evans {CEL00010058/31} page 31, paragraph 114.

<sup>1336</sup> Evans {Day73/2:15}-{Day73/3:5}.

<sup>1337</sup> Evans {Day72/199:1-13}.

<sup>1338</sup> Evans {Day73/8:15-23}; {Day73/9:16}-{Day73/10:15}.

<sup>1339</sup> Roper {Day71/101:1-6}.

<sup>1340</sup> Roper {CEL00010052/13} page 13, paragraph 5.35.

<sup>1341</sup> Roper {Day71/100:9-20}.

<sup>1342</sup> Roper {Day71/101:20-25}.

had been tested in February. Moreover, although revised drawings were subsequently commissioned by Celotex at the end of June 2014,<sup>1343</sup> they also omitted anything to indicate the use of 6mm magnesium oxide boards.<sup>1344</sup>

### Source of materials

**24.62** Cavity barriers were ordered from Siderise Insulation Ltd and were delivered to BRE on 7 April 2014.<sup>1345</sup> The cladding, which was Marley Eternit in thicknesses of 12mm and 8mm, was obtained from a company called FGF Ltd and delivered to BRE on 14 April 2014.<sup>1346</sup> The delivery note for the 8mm ruby Eternit boards that were intended to cover the 6mm magnesium oxide boards was signed by Mr Clark.<sup>1347</sup> The FR5000 was delivered on 1 April 2014, and again was signed for by Mr Clark.<sup>1348</sup>

**24.63** The 6mm magnesium oxide boards were supplied by Euroform Products Ltd, which also supplied the 12mm sheathing board.<sup>1349</sup> Although the invoice shows the delivery as being to Celotex,<sup>1350</sup> Mr Roper asked for it to be delivered to BRE.<sup>1351</sup> Although BRE disclosed a delivery note for the sheathing board from the first test (addressed 'FAO Phil Clark', although signed for by another BRE employee),<sup>1352</sup> no delivery note for the sheathing board used in the second test has been disclosed by BRE. We return to the significance of that below.

### The second test – May 2014

**24.64** The second test was carried out on 2 May 2014. As set out above, the system comprised a steel-framed rig, 12mm magnesium oxide sheathing board, 100mm Celotex FR5000, Lamatherm fire barriers, 8mm Marley Eternit cladding over 6mm magnesium oxide boards over the level 2 thermocouples and 12mm Marley Eternit cladding over all other areas. The results met the criteria in BR 135.

### BRE's knowledge of the design changes

**24.65** As in the case of the test on 14 February 2014, the officer at BRE in charge of the test on 2 May 2014 was Phil Clark. There was a serious conflict of evidence about what, if anything, he knew about the changes in the design between the rig tested in February and the rig tested in May. Mr Clark said that he had known nothing of the changes in design other than the use of thicker external cladding,<sup>1353</sup> but his evidence was contradicted by Mr Hayes and Mr Roper, both of whom had no doubt that he had been well aware not only of the thicker Marley panels but also of the use of the 6mm magnesium oxide boards.<sup>1354</sup> Mr Roper told us that he remembered having referred to the additional materials in the course of a telephone conversation with Mr Clark when the second test was being planned.<sup>1355</sup> Mr Hayes remembered a conversation with Mr Clark in the course of which

<sup>1343</sup> {CEL00000980}.

<sup>1344</sup> {CEL00000997}.

<sup>1345</sup> {BRE00032372/2}.

<sup>1346</sup> {BRE00032372/3}.

<sup>1347</sup> Clark {Day96/3:2-23}.

<sup>1348</sup> {BRE00032372/6}.

<sup>1349</sup> Roper {Day71/98:4-13}.

<sup>1350</sup> {CEL00001985}.

<sup>1351</sup> {CEL00001981}.

<sup>1352</sup> {BRE00032372/4}.

<sup>1353</sup> Clark {BRE00005768/70} page 70, paragraph 287.

<sup>1354</sup> Roper {Day71/99:11-19}; Hayes {Day74/148:11-17}.

<sup>1355</sup> Roper {Day71/98:19-22}.

he had referred to his experiences of working during the BSE outbreak.<sup>1356</sup> Mr Hayes said that during the conversation, Mr Clark had expressed the view in response to a question from Mr Roper that the test would have been successful even without the addition of the 6mm magnesium oxide boards. Mr Clark denied the conversation and sought to cast doubt on Mr Hayes' recollection challenging the description he had given of his office,<sup>1357</sup> but the description given by Mr Hayes was similar to that given by Patrick Jones of Simco, who installed the rig for both tests and we accept what he told us.<sup>1358</sup>

- 24.66** BRE's standard procedures required the project officer to compare the drawings of the test rig with the structure handed over and if any discrepancy were noted to ask for revised drawings.<sup>1359</sup> The senior member of staff who signed the test report was also expected to check the photographs and drawings.<sup>1360</sup> BRE's standard operating procedures dated May 2013 required all components to be checked and, if necessary, samples to be taken.<sup>1361</sup> BRE produced forms for that purpose,<sup>1362</sup> but no checklists were disclosed for the second test, and Mr Clark explained that they had not normally been used, otherwise, perhaps, than as an aide memoire.<sup>1363</sup> Had the drawings been compared to the rig as it was built, or even to the components being delivered to BRE, the discrepancy between the drawings and the rig as built would have been obvious. Indeed, Mr Clark knew that the drawings had not been revised to show the thicker Marley panels and therefore knew that the Simco drawings did not accurately describe the test rig.<sup>1364</sup>
- 24.67** In coming to a decision about whether Mr Clark knew that the second test rig contained the additional 6mm magnesium oxide boards we have carefully considered the detailed submissions made by Celotex and BRE. Having done so, we have come to the conclusion that the evidence, taken as a whole, points strongly to the conclusion that Mr Clark was aware of the presence on the test rig of the 6mm magnesium oxide boards and the 8mm Marley Eternit boards that were used to cover them. First, it is right to say that we found Mr Roper and Mr Hayes more reliable as witnesses than Mr Clark. If the question had turned on the evidence of the witnesses alone we should have accepted their accounts of their conversations with Mr Clark. However, their evidence did not stand alone.
- 24.68** The delivery notes indicate that Mr Clark took delivery of the 12mm Marley panels together with the thinner 8mm ruby panels which were used to cover the 6mm magnesium oxide boards.<sup>1365</sup> There was no rational explanation for including 8mm and 12mm Marley panels in the components unless the thinner panels were to cover the 6mm magnesium oxide boards, and Mr Clark could not explain why the different thicknesses had not been noted other than as the result of an oversight.<sup>1366</sup> Mr Roper had arranged for the delivery of all of those materials and expected Mr Clark to sign for them because, as he understood it, he took delivery of most of the materials used on the test rigs.<sup>1367</sup> It is inherently unlikely that Mr Roper would have openly arranged for the delivery of those materials to BRE, which had a proper system for recording deliveries, if he had been intending to conceal their presence from BRE, and unless Mr Clark was aware of the plan,

<sup>1356</sup> Hayes {CEL00010154/22} page 22, paragraph 67.

<sup>1357</sup> Clark {Day96/27:1-22}.

<sup>1358</sup> Jones {Day99/129:2-20}.

<sup>1359</sup> Clark {BRE00005768/9} page 9, paragraph 41.

<sup>1360</sup> Clark {Day95/56:4-9}.

<sup>1361</sup> {BRE00005773/3}.

<sup>1362</sup> {BRE00005773/3}.

<sup>1363</sup> Clark {Day95/156:19-25}.

<sup>1364</sup> Clark {Day95/158:12-16}.

<sup>1365</sup> {BRE00032372/6}.

<sup>1366</sup> Clark {Day96/7:1-9}; {Day96/8:3-11}.

<sup>1367</sup> Roper {Day71/98:14-18}; Hayes {Day74/145:2-4}.

concealment would have been essential, probably quite difficult and certainly risky. There is no reason to think that BRE's system for recording deliveries was so inefficient that Mr Roper can have expected to get the 6mm magnesium oxide boards onto the test rig without anyone's noticing.

- 24.69** The absence from BRE's disclosure of a delivery note covering the materials supplied by Euroform has not been explained by BRE and no credible explanation for it has been provided. That it was simply lost is too much of a coincidence and does not do justice to BRE's systems. It could have been removed or destroyed deliberately, but no one at BRE other than Mr Clark was involved in the Celotex tests in a way that would provide a motive for doing that. Mr Clark initially told us that he had not had access to either the paper or electronic versions of the test files other than documents that had been provided to him by BRE,<sup>1368</sup> but we subsequently learnt that he had attended BRE's offices over the course of several days when preparing his witness statement for the Inquiry and been given unsupervised access to any documents he wished to review. Mr Clark was unable to explain satisfactorily why he had failed to mention that when he made his statement.<sup>1369</sup>
- 24.70** The use of the ruby Eternit board meant that the rig had a distinctive red band in the area of the level 2 thermocouples and at the top of the rig. Mr Clark said he had understood that the ruby board was used because there had been a shortage of panels in the other colour,<sup>1370</sup> but that was not very plausible and he had not asked whether it had any technical significance.<sup>1371</sup> However, the absence of any attempt on the part of Celotex to divert attention from the use of that material and to forestall questions of that kind is inconsistent with any plan to deceive BRE. Clearly, any attempt to smuggle the ruby board past BRE would have been risky.
- 24.71** Patrick Jones of Simco, who constructed the test rig for Celotex, was clear that he had been given no instructions to conceal the 6mm magnesium oxide board from BRE.<sup>1372</sup> His impression was that BRE was carrying out its normal checks.<sup>1373</sup> The rig was assembled over several days and there was no attempt to prevent BRE from seeing the magnesium oxide boards, and no reason to think that they had not been observed.<sup>1374</sup> He told us that there was nothing underhand going on and that BRE was fully aware of what was on the test rig.<sup>1375</sup> Mr Jones was a patently honest witness who had no reason to be anything other than candid in his evidence.
- 24.72** Following the test, the rig remained standing for some 17 days until it was stripped down on 19 May 2014.<sup>1376</sup> That provided a further opportunity for anyone at BRE to ask questions about the use of the ruby board.
- 24.73** On 15 May 2014, during the stripping down of the rig, which was also carried out by Mr Jones, Mr Roper asked Mr Clark by email to ensure that photographs were taken of the fire barrier at the level 2 thermocouples.<sup>1377</sup> Again, that is wholly inconsistent with an intention on the part of Celotex to deceive BRE or to gamble on its staff's failing to notice the presence of the 6mm magnesium oxide boards. If Mr Roper had hoped that Mr Clark

<sup>1368</sup> Clark {Day95/182:14-21}.

<sup>1369</sup> Clark {Day96/110:2-12}.

<sup>1370</sup> Clark {BRE00005768/66} page 66, paragraph 269.

<sup>1371</sup> Clark {Day95/190:18-24}.

<sup>1372</sup> Jones {Day99/151:19}-{Day99/152:3}.

<sup>1373</sup> Jones {Day99/155:22}-{Day99/156:5}.

<sup>1374</sup> Jones {Day99/151:19}-{Day99/152:3}.

<sup>1375</sup> Jones {Day99/144:8-16}; {Day99/150:23}-{Day99/152:3}; {Day99/164:9-25}.

<sup>1376</sup> {BRE00005548/6}.

<sup>1377</sup> {BRE00005548/6}.



might fail to notice them, it is unlikely that he would have directed his attention to the very place in which they were being used. The photographs on BRE's files clearly show their presence.<sup>1378</sup>

**24.74** The recording made by the head camera worn by Mr Clark during the second test does not of itself demonstrate conclusively that Mr Clark was aware of the presence of the magnesium oxide board, but it contains several comments made by Mr Clark that strongly suggest that he was:

- a. Mr Clark referred to “changing two things at the same time”.<sup>1379</sup> His explanation that that had been a reference to the scientific principle that only one variation should be made to a system at a time was unconvincing. He was unable to explain satisfactorily why, if he thought that only one change had been made, he had referred to changing two things.<sup>1380</sup> Celotex had in fact made two significant changes to the design: the use of an increased thickness of cladding overall (12mm Marley Eternit as opposed to 8mm); and the use of the 6mm magnesium oxide board.
- b. Mr Roper at one point drew Mr Clark's attention to the ruby board, (which he described as “the rose-coloured panel”),<sup>1381</sup> being aware, he said, that Mr Clark knew what material was behind it.
- c. At one point Mr Clark commented, “See how that flame seems to have ceased now that the board is there, because you're losing a lot of the energy from behind it”.<sup>1382</sup> Unless he was aware of the presence of the magnesium oxide board, it is difficult to understand which board he was referring to.
- d. In response to a comment by Mr Clark that the board at the level of the fire barrier had not deformed, Mr Roper said that it was “a shame we put calcium silicate behind it” and subsequently “like I say, it's a shame commercially.”<sup>1383</sup> Mr Roper said that he tended to refer to calcium silicate interchangeably with magnesium oxide, because their fire resistance properties are very similar.<sup>1384</sup> It is likely that they were referring to the 6mm magnesium oxide board because its use in that location would not be adopted commercially.

**24.75** The way in which Celotex behaved in arranging the test was wholly inconsistent with any plan to deceive BRE. It could have acted as it did only with the knowledge of Mr Clark. We are satisfied that Mr Clark was aware of the design of the rig for the second test, including the use of the 6mm magnesium boards and the 8mm ruby Eternit boards, and the reasons for it.

**24.76** The question remains why Mr Clark, a senior BRE burn hall technician, was willing to lend himself to a plan to a test rig that was so obviously unrepresentative and designed only to meet the performance criteria, since there was no evidence that he had anything to gain personally from a successful test. He might have thought that a customer should be allowed to test any design of rig it liked, provided the subsequent report accurately reflected its structure and the outcome of the test, but if that was his view, it is difficult to understand why he subsequently denied any knowledge of the additional material.

<sup>1378</sup> {BRE00030681}.

<sup>1379</sup> {INQ00014220/2}.

<sup>1380</sup> Clark {Day96/55:5-21}.

<sup>1381</sup> {INQ00014220/2}.

<sup>1382</sup> {INQ00014218/3}.

<sup>1383</sup> {INQ00014220/2}; {BRE00035419}

<sup>1384</sup> Roper {Day71/170:12-14}.

In essence, over the years leading up to 2014 BRE had by degrees lost sight of the importance of maintaining a proper distance between itself and clients and of the need for scientific rigour and independence. Its internal controls were not the subject of regular and robust training and there was no independent supervision that ensured that conflicts of interest were properly managed. It had gradually become much closer to its clients and wanted to work with them to find solutions to their problems. Scientific rigour and independence were sacrificed in favour of financial sustainability.

### Decisions following the second test

**24.77** On 12 May 2014, Mr Roper and Mr Evans met to discuss the outcome of the test. The meeting appears to have been held in Mr Chambers's office,<sup>1385</sup> and Mr Roper thought it was likely the purpose of the meeting was to brief him.<sup>1386</sup> Mr Chambers did not believe he had attended such a meeting and could not recall how or by whom he had been advised that the system had passed.<sup>1387</sup>

### The slide show

**24.78** At or just after that meeting Mr Roper was asked by Mr Evans to prepare a presentation which could be used to report to the management action group at their next meeting, which was scheduled for 13 and 14 May 2014. Mr Chambers, Mr Warren and Mr Evans were present on 13 May 2014,<sup>1388</sup> Mr Chambers and Mr Evans were present on 14 May but Mr Warren probably was not. Mr Roper appears not to have attended on either day.

**24.79** The slides created by Mr Roper described the requirements for use of combustible insulation on buildings over 18 metres in height, referring to the text of paragraph 12.7 of Approved Document B.<sup>1389</sup> A further slide set out the conclusions drawn by Mr Roper from the results of his market research, namely,<sup>1390</sup>

- a. that people used K15 because there was no alternative available;
- b. that no one understood the BS 8414 test requirements;
- c. that levels of understanding among building control bodies varied widely; and
- d. that the market would be happy to buy an alternative to K15 if one were available.

**24.80** Although Mr Evans denied that the slide showed that Celotex intended to capitalise on the confusion in the market,<sup>1391</sup> that is the only reason why it could have been relevant for the management action group to know that nobody understood the testing requirements or that building control officers had widely differing levels of understanding on the subject. Mr Evans could not explain those statements, other than by saying that the purpose of the slides was to acquaint everyone with the research that had been carried out,<sup>1392</sup> but that hardly explains why they were thought to be of any interest to senior management. The simplest, and we think the most likely, explanation is that the slides were put before the meeting precisely to enable it to decide whether to take advantage of that confusion, and if so, how.

<sup>1385</sup> {CEL00010627}.

<sup>1386</sup> Roper {Day71/106:18-20}.

<sup>1387</sup> Chambers {CEL00010056/6} page 6, paragraph 31.

<sup>1388</sup> {CEL00009565}.

<sup>1389</sup> {CEL00000933/2}.

<sup>1390</sup> {CEL00000933/11}.

<sup>1391</sup> Evans {Day72/206:9-16}.

<sup>1392</sup> Evans {Day72/207:2-14}.

**24.81** The slides also described the two BS 8414 tests that Celotex had carried out, including the systems tested. The description of the February test referred to 8mm Eternit cladding and Lamatherm cavity barriers.<sup>1393</sup> In the case of the May test, the description listed 12mm Eternit cladding and Lamatherm cavity barriers with 6mm magnesium oxide.<sup>1394</sup> When the slides are compared, differences are quite apparent, although there is no mention of the use of the 8mm Eternit panels that had also been used in the May test. It follows that all those present were, or should have been, aware of the presence of the 6mm magnesium oxide boards used in the May test, as well as the use of the thicker 12mm Eternit boards. Indeed, Mr Evans accepted that the presentation had provided that information.<sup>1395</sup> Mr Evans said he did not remember whether there had been any discussion about the 6mm magnesium oxide boards at the meeting,<sup>1396</sup> or whether anyone had asked how the test had passed in May after it had failed in February.<sup>1397</sup> In our view it is hard to believe that no one at the meeting asked that question, if they had not been told directly, since it was critical to their decision about what to do next. The slides show that the use of the 6mm magnesium oxide boards was openly acknowledged at that meeting.

**24.82** The slides were presented at the meeting on 14 May 2014, at which Mr Evans was scheduled to lead a discussion on the subject at 11.30 am.<sup>1398</sup> There was a disagreement about who presented the slides, but it makes little difference who did so. What is clear is that they show that those attending the meeting were or should have been aware of the presence of the 6mm magnesium oxide boards and that Mr Roper did not seek to keep their use a secret from senior management.

**24.83** The slides may also have been sent to Saint-Gobain. An email from Mr Evans to Mr Roper on 16 May 2014 about the project refers to a meeting with Jonathan Cheeseman of Saint-Gobain’s legal team, which appears also to have been attended by Craig Chambers.<sup>1399</sup> In that email, Mr Evans told Mr Roper that his presentation could provide all the background needed to explain Celotex’s approach. Mr Evans was unable to recall which set of slides he had been referring to,<sup>1400</sup> but given that this set had been used for reporting to the management action group (and that the metadata relating to the short set of slides discussed below suggests that they were not created before 30 May 2014),<sup>1401</sup> it is likely that Mr Evans was referring to the slides shown to the meeting on 14 May 2014.

### **Instruction to produce slides “for general business use”**

**24.84** Mr Roper said that after the meeting, Paul Evans had asked him<sup>1402</sup> to create “for general business use” another version of the slides which did not refer to the February test or to the 6mm magnesium oxide boards.<sup>1403</sup> He told us that Mr Evans had suggested that after the meeting a decision had been taken to launch the product and to say nothing further about the use of 6mm magnesium oxide boards.<sup>1404</sup> Mr Roper subsequently produced such a presentation.<sup>1405</sup> Mr Evans did not remember having given any such instruction, but was

<sup>1393</sup> {CEL00000933/12}.

<sup>1394</sup> {CEL00000933/14}.

<sup>1395</sup> Evans {Day72/211:19-21}.

<sup>1396</sup> Evans {Day72/214:8-10}; {Day73:4/11-16}.

<sup>1397</sup> Evans {Day72/214:21-25}.

<sup>1398</sup> {CEL00009566}.

<sup>1399</sup> {CEL00003121}.

<sup>1400</sup> Evans {Day73/121:5-8}.

<sup>1401</sup> {CEL00000961}.

<sup>1402</sup> Roper {Day71/113:16-19}.

<sup>1403</sup> Roper {CEL00010052/14-15} pages 14-15, paragraph 6.3

<sup>1404</sup> Roper {Day71/114:6-10}.

<sup>1405</sup> {CEL00000961}.

unable to provide any other explanation for Mr Roper's action.<sup>1406</sup> He was also unable to think of any reason why anyone else on the project team might have instructed Mr Roper to do that without his knowledge.<sup>1407</sup> We have little doubt that Mr Roper created the slides because he was asked to do so.

- 24.85** Mr Roper's evidence strongly supports the conclusion that the management action group made a decision at the meeting on 13 and 14 May 2014 to market FR5000 without disclosing the fact that 6mm magnesium oxide boards had been used to improve the performance of the test rig. There was a risk that BRE might disclose the use of the 6mm magnesium oxide and the 8mm Marley Eternit panels in its test report, but it was Celotex's general practice not to release such reports<sup>1408</sup> and it might therefore have hoped to maintain the deception indefinitely. It was, we think, a risk that Celotex was prepared to run, having regard to the ignorance of a substantial section of its potential customers, a point to which we return in Chapter 56.

### BRE draft report

- 24.86** Mr Clark produced a first draft of the test report,<sup>1409</sup> which he sent to Mr Roper on 19 June 2014.<sup>1410</sup> Mr Roper was about to go into a meeting with David White and Graham Perrior of NHBC when it arrived.<sup>1411</sup> It was dated 2 June 2014<sup>1412</sup> and described the system that had been tested as comprising 100mm RS5000 with 8mm Marley Eternit, but made no reference to the 6mm magnesium oxide boards.<sup>1413</sup> Mr Roper denied having asked Mr Clark to omit any reference to the 6mm magnesium oxide boards; he thought it was possible that Mr Clark had done so of his own initiative because of his view that they would not have made any difference in the light of the increase in the thickness of the cladding panel.<sup>1414</sup> Nonetheless, he said that he had been surprised by the omission.<sup>1415</sup> Mr Clark denied having consciously decided to omit any reference to the 6mm magnesium oxide boards; he said that he had simply been unaware of them, although he was unable to explain how he had overlooked them.<sup>1416</sup> He accepted that he must have seen the photograph at Figure 18 of the draft report showing the magnesium oxide board, as he had selected it for inclusion, but said that he had not studied it at the time.<sup>1417</sup>
- 24.87** It was clear from the photographs in the draft test report that at the level 2 thermocouples and at the top of the rig, exterior panels had been used that differed from the rest of the exterior of the rig. Figure 15 showed the ruby Marley Eternit panels at those levels, although it is not possible to tell from the photograph that the thickness of the ruby layer was different from that of the rest of the panels.<sup>1418</sup> However, the fact that those boards were at least of a different colour was not mentioned anywhere in the report. The report also contained a photograph of the rig in the process of being dismantled (Figure 18), which showed the white 6mm magnesium oxide boards quite clearly.<sup>1419</sup> The photograph

<sup>1406</sup> Evans {Day73/13:12-19}.

<sup>1407</sup> Evans {Day73/19:21}-{Day73/20:1}.

<sup>1408</sup> Roome {Day70/73:17-22}; Roper {Day71/135:19-25}.

<sup>1409</sup> Clark {Day95/171:4-7}.

<sup>1410</sup> {CEL00003177}.

<sup>1411</sup> Roper {Day71/120:21}-{Day71/121:3}.

<sup>1412</sup> {CEL00003178/1}.

<sup>1413</sup> {CEL00003178/6}.

<sup>1414</sup> Roper {Day71/128:8-13}.

<sup>1415</sup> Roper {Day71/131:15-24}.

<sup>1416</sup> Clark {Day95/179:25}-{Day95/180:20}.

<sup>1417</sup> Clark {Day96/67:23}-{Day96/68:10}.

<sup>1418</sup> {CEL00003178/25}.

<sup>1419</sup> {CEL00003178/28}.

shows the insulation layer, with one panel of the 6mm magnesium oxide still present at level 2 and the whole of it present at the top of the rig. Those were the levels which had been covered by the ruby cladding panels shown in Figure 15. A simple comparison between the two photographs would have alerted a careful reader to the fact that there was white material behind the ruby cladding but on top of the insulation layer, which called for an explanation.

### Discussion of the draft report

**24.88** On 19 June 2014, following receipt by Celotex of the draft report earlier that morning and after the NHBC representatives had left, a discussion ensued between Mr Roper, Mr Evans and another colleague at Celotex, Paul Reid (although it appears that Mr Reid was not present throughout).<sup>1420</sup> Notes were made on a whiteboard of the concerns raised by NHBC, and the conversation which had subsequently taken place about the BRE draft test report.<sup>1421</sup> A photograph of the whiteboard was taken by Mr Evans.<sup>1422</sup> The first five points reflected concerns that had been raised by NHBC at the meeting that morning (one of which had been that the rig had been deliberately over-engineered through the use of large 12mm cladding panels with minimal gaps)<sup>1423</sup> and Celotex’s potential responses. Some of the proposed responses were less than frank. In relation to NHBC’s concern that the test had been over-engineered, the proposed response was to note that cladding panels were commonly available in 8mm or 12mm but that only 12mm had been available for testing, whereas in fact Celotex had deliberately chosen to use large 12 mm panels. The final entry was in different handwriting, having been added by Mr Roper.<sup>1424</sup> It recorded a concern relating to the use of a “calcium silicate board” at level 2, although, as we noted earlier, Mr Roper did not distinguish in his own mind between calcium silicate and magnesium oxide.<sup>1425</sup> If NHBC were to become aware of the existence of the 6mm magnesium oxide board, Celotex proposed to say that it had confidence in the fire barriers to expand. When examined about that Mr Roper admitted that it was a poor attempt to hide the fact that 6mm magnesium oxide boards had been used.<sup>1426</sup> He said that Mr Evans and Mr Reid had suggested that they remove Figure 18 from the report.<sup>1427</sup> Mr Reid denied having been involved in the conversation at that point or having had any knowledge of the discussion about the removal of Figure 18,<sup>1428</sup> and we are not able to reach any firm conclusion about the extent of his involvement.

### Decision not to correct the report

**24.89** The upshot of the discussion was that it was decided that the omission from the test report of any reference to the 6mm magnesium oxide boards would not be corrected.<sup>1429</sup> Mr Evans did not recall any discussion with Mr Roper about that,<sup>1430</sup> but he did accept that the white board reflected a discussion which had taken place about removing Figure 18.<sup>1431</sup> Although he recalled its having been discussed,<sup>1432</sup> he claimed to be unsure whether

<sup>1420</sup> Roper {CEL00010052/16} page 16, paragraph 7.4.

<sup>1421</sup> {CEL00002517}.

<sup>1422</sup> Evans {Day73:36/6-12}.

<sup>1423</sup> Roper {CEL00010052/16} page 16, paragraph 7.4

<sup>1424</sup> Evans {Day73:37/8-17}.

<sup>1425</sup> Roper {Day71/170:12-14}.

<sup>1426</sup> Roper {Day71/171:22}-{Day71/172:1}.

<sup>1427</sup> Roper {CEL00010052/18} page 18, paragraph 7.16; Roper {Day71/137:21-24}.

<sup>1428</sup> Reid {CEL00011267/11} page 11, paragraphs 57-59.

<sup>1429</sup> Roper {CEL00010052/18} page 18, paragraph 7.14

<sup>1430</sup> Evans {Day73/24:18-23}.

<sup>1431</sup> Evans {Day73:38/19-23}.

<sup>1432</sup> Evans {Day73/29:3-10}.

he had looked at the photograph.<sup>1433</sup> We do not accept that. Figure 18 clearly showed the 6mm magnesium oxide board and it could not have been discussed without Mr Evans' having appreciated that fact. It is also not credible that he could have taken part in a discussion about the removal of a photograph from the report without having looked at the photograph in question.

- 24.90** Similarly, we are not convinced by Mr Evans' assertion that he did not ask about the two orange layers shown in the photographs of the rig.<sup>1434</sup> The test represented the second attempt to succeed in what was an important project for Celotex. We do not think that Mr Evans felt as little concern as he suggested.<sup>1435</sup>

### Request to remove figure 18

- 24.91** On 1 July 2014, Mr Roper replied to Mr Clark's email attaching the draft report with a number of suggested changes, including the removal of Figure 18 and its substitution by some photographs showing the condition of the insulation at the conclusion of the test.<sup>1436</sup> The email refers to a previous discussion between Mr Roper and Mr Clark about the removal of Figure 18, but Mr Clark could not remember what had been said.<sup>1437</sup> Mr Roper could not remember having specifically told Mr Clark that Celotex did not want any reference to be made to the areas of the rig where the 6mm magnesium oxide board had been used; the focus, as he recalled it, was simply on getting Figure 18 removed.<sup>1438</sup>
- 24.92** The reason Mr Roper gave for asking Mr Clark to remove Figure 18 from the test report was not the true reason, as he admitted. The truth was that Celotex wanted to ensure that a picture showing the 6mm magnesium oxide board did not appear anywhere in the report.<sup>1439</sup> Mr Roper said that Mr Evans and Mr Reid had told him to send the false explanation,<sup>1440</sup> but that he had thought that Mr Clark was aware of the real reason.<sup>1441</sup> Mr Evans did not remember having asked Mr Roper to send the email,<sup>1442</sup> and he may not have done, but he was copied into it and did not express any surprise at the request. We are satisfied that he knew about it, but cannot say whether Mr Reid also knew.
- 24.93** Mr Roper also sent Mr Clark some revised drawings, which showed a ventilation gap that had not existed on the rig as built but still did not show the 6mm magnesium oxide boards.

### Internal review and issue of the report

- 24.94** BRE did not reply to those requests. Internally, the final version of the report was checked by Tony Baker<sup>1443</sup> and Stephen Howard,<sup>1444</sup> each of whom failed to identify the discrepancy between the description of the system tested and the presence of the white layer shown in Figure 18 or the ruby Marley Eternit boards shown in Figure 15.

<sup>1433</sup> Evans {Day73/29:17}.

<sup>1434</sup> Evans {Day73/66:9-21}.

<sup>1435</sup> Evans {Day73/68:2-7}.

<sup>1436</sup> {CEL00001350/2}.

<sup>1437</sup> Clark {Day96/65:19-24}.

<sup>1438</sup> Roper {Day71/178:20}-{Day71/179:8}.

<sup>1439</sup> Roper {Day71/141:22}.

<sup>1440</sup> Roper {Day71/141:23}-{Day71/142: 4}.

<sup>1441</sup> Roper {Day71/142:20}-{Day71/143:3}.

<sup>1442</sup> Evans {Day73/33:4-13}.

<sup>1443</sup> {BRE00005851}; Baker {Day100/143:4-11}.

<sup>1444</sup> {BRE00030677}; Howard {Day99/41:2-12}.

**24.95** The final test report was issued by BRE on 1 August 2014. It included the additional photographs but also Figure 18, which became Figure 19 in the final version.<sup>1445</sup> As with earlier versions of the draft, the description of the system tested contained no mention of either the 8mm ruby Marley Eternit boards or the 6mm magnesium oxide boards.<sup>1446</sup> Mr Roper said that he, Mr Evans and Mr Warren had discussed the report and had decided that it would be risky to press BRE to remove Figure 19, as it might result in their correcting the description of the system.<sup>1447</sup>

#### Mr Clark's involvement in the BRE test report

**24.96** As set out above, we are satisfied that Mr Clark was aware of the changes that had been made to the design of the rig tested on 2 May 2014, including the use of the 8mm ruby Marley Eternit boards and the 6mm magnesium oxide boards at two levels. We also think that he realised that the presence of the 6mm magnesium oxide board might have enabled the system to pass the test, although it would not be used in a commercial context. That being so, we have to ask ourselves why he failed to include them in the list of components in the test report, not least since the delivery note for the ruby 8mm Marley Eternit was available to him on the test file.<sup>1448</sup>

**24.97** Mr Roper denied having specifically asked him to do so, although, as can be seen from the attempt to suppress Figure 18 in the draft report, we have little doubt that he would, if necessary, have done so. It is likely, in our view, that Mr Clark was aware of Celotex's wish to avoid any reference to the magnesium oxide boards (and therefore the 8mm ruby Marley Eternit boards) and did not need to be asked to omit any reference to them. Mr Clark denied having deliberately omitted any reference to either of those components.<sup>1449</sup>

**24.98** In view of the length of time it took to issue the draft report (just over 6 weeks), it is possible that Mr Clark simply relied on the original drawings when drafting the description of the system. That might explain why the draft referred to 8mm Marley Eternit panels as shown in the drawings for the first test.<sup>1450</sup> It might also explain the omission of the 6mm magnesium oxide boards, which had also not been used in the first test. However, we do not think that is the most likely explanation. We think he was willing to leave out any reference to them in order to assist Celotex, though how he expected the report to escape the scrutiny of those who would need to approve it before it was issued is less clear. Perhaps he knew that the system for reviewing reports was not very rigorous. Mr Clark said he had not looked at Figure 18 again in light of the request to remove it, because BRE did not remove material in response to a request from a client.<sup>1451</sup> We think that is probably what happened.

**24.99** Although Mr Clark did not remove Figure 18 from the report, that does not mean that his omission of a reference to the 6mm magnesium oxide boards from the list of components was an oversight. He knew, or at least suspected, that the system had only met the BR 135 performance criteria at least in part because of the presence of the 6mm magnesium oxide boards, and that such boards were not representative of a system in actual use on

<sup>1445</sup> {CELO0001109/29}.

<sup>1446</sup> {CELO0001109/6}.

<sup>1447</sup> Roper{CELO0010052/18} page 18, paragraph 7.16; Roper {Day71/144:25}-{Day71/145: 7}.

<sup>1448</sup> {BRE00032372/3}.

<sup>1449</sup> Clark {Day96/75:6-13}.

<sup>1450</sup> {CELO00000807}.

<sup>1451</sup> Clark {Day96/71:17}.

a real building. He therefore knew that referring to the presence of those boards in the report would significantly undermine the commercial viability of the product and therefore deliberately omitted any reference to them.

**24.100** The test report was subsequently peer reviewed by Stephen Howard and Mr Baker, neither of whom inquired about the white layer of magnesium oxide board or the ruby Eternit boards. However, that merely suggests a lack of curiosity and a review system that was less than robust. There is no evidence that in conducting their review either of them realised that Celotex had manipulated the test by adding a layer of magnesium oxide board behind the ruby Eternit boards, still less that they realised that Mr Clark was aware of the fact.

### The RS5000 classification report

**24.101** The classification report was issued by BRE on 4 August 2014 and reissued following typographical corrections on 11 August 2022.<sup>1452</sup> It ran to 12 pages and described the test in the same terms as the test report, omitting any reference to the 6mm magnesium oxide boards or the 8mm Marley Eternit boards.<sup>1453</sup> The classification report did not contain any photographs. Indeed, there is nothing in it to alert even a scrupulously careful reader to the possibility that the description of the components of the rig was incomplete.

### The abridged report

**24.102** The classification report contained a prominent notice that it was only to be distributed in its entirety, without amendment and that any reference to the results contained in it was to be accompanied by a copy of the full report, or a link to a copy of the full report.<sup>1454</sup> Despite that, on 11 August 2014, Mr Roper sent Paul Evans copies of the test and classification reports, asking for a discussion about which they were going to use as proof that Celotex had satisfied BR 135.<sup>1455</sup> Although his recollection of that discussion was hazy,<sup>1456</sup> he recalled that there was some reluctance to provide customers with any reports, and that they had decided that an abridged version of the classification report should be produced for customers to avoid having to provide them with details of the test rig.<sup>1457</sup> Mr Roper understood that a similar approach had been adopted by Kingspan.<sup>1458</sup>

**24.103** The abridged report was prepared on Mr Roper's instructions.<sup>1459</sup> It contained no diagrams or photographs showing the system tested, but it did contain a list of components which omitted the 6mm magnesium oxide boards and the 8mm ruby Eternit boards.<sup>1460</sup> On 15 August 2014 a copy was sent to Jonathan Roome, again at Mr Roper's request.<sup>1461</sup> It was then sent by him to clients, including Harley on 27 August 2014.<sup>1462</sup>

**24.104** As early as 29 August 2014, Anthony Harris of Celotex contacted Mr Roper and Mr Roome because a client to whom Celotex had provided the abridged report had complained that it was incomplete and that sections were missing.<sup>1463</sup> Mr Roper replied the same day providing the full classification report, but not the full test report. He told Mr Harris that

<sup>1452</sup> {CELO0002133/1}.

<sup>1453</sup> {CELO0002133/4}.

<sup>1454</sup> {CELO0002133/1}.

<sup>1455</sup> {CELO0009724/1}.

<sup>1456</sup> Roper {Day71/153:17-19}; {Day71/152:24}-{Day71/153:8}.

<sup>1457</sup> Roper {Day71/154:3-6}.

<sup>1458</sup> Roper {Day71/154:14-23}.

<sup>1459</sup> Roper {Day71/155:11-18}.

<sup>1460</sup> {CELO0011125/2}.

<sup>1461</sup> {CELO0009725}.

<sup>1462</sup> {CELO0011960}.

<sup>1463</sup> {CELO0010805}.



the salient information was contained in the BR 135 classification report.<sup>1464</sup> As Mr Roper accepted, the salient information was not in fact contained in that report, not least because it did not include the photograph of the 6mm magnesium oxide boards.<sup>1465</sup>

## The marketing of RS5000

- 24.105** Preparatory work on marketing materials to support the launch of RS5000 started in July 2014. On 1 July 2014, Jonathan Roper sent Paul Evans a marketing plan<sup>1466</sup> which set out the objectives for RS5000, including being presented as Celotex’s “primary rainscreen application offering to compete directly with Kingspan K15 & Rockwool Duo-Slab”.<sup>1467</sup> It also contained a phrase that would become something of a mantra in the marketing material, “the first PIR insulation board tested and approved to BR 135 and therefore acceptable for use in buildings above 18m in height”. Mr Roper and Mr Hayes then started work preparing the marketing literature which was intended to accompany the launch of RS5000.<sup>1468</sup>
- 24.106** On 15 July 2014, Mr Evans replied to an email from another colleague in the marketing team, Bex Hartlebury, about a press launch for RS5000, complaining that the message that RS5000 was acceptable for use on buildings over 18 metres in height was not always prominent enough, but saying that it was necessary to exercise caution about how that message was given and how often.<sup>1469</sup> Mr Evans accepted in evidence that there was a risk that without qualification it might mislead people into thinking that RS5000 was generally suitable for use on buildings above 18 metres in height,<sup>1470</sup> but he denied that Celotex was trying to walk a fine line between the headline and the small print.<sup>1471</sup> In our view, however, that is exactly what it was trying to do.

## The RS5000 marketing literature

- 24.107** Celotex launched RS5000 on 5 August 2014. A number of documents were prepared to assist in its marketing:
- a. a Rainscreen Cladding Compliance Guide (“the Compliance Guide”);<sup>1472</sup>
  - b. a Rainscreen Cladding Specification Guide (“the Specification Guide”);<sup>1473</sup>
  - c. a Handy Guide;<sup>1474</sup> and
  - d. a Data Sheet.<sup>1475</sup>

They were drafted by Mr Roper with the assistance of Mr Hayes (in relation to the Specification Guide)<sup>1476</sup> and others in the marketing and technical teams<sup>1477</sup> but they were reviewed and ultimately approved by Paul Evans.<sup>1478</sup> Mr Evans told us that Celotex also sought guidance on them from Saint-Gobain, in that they had been passed to the

<sup>1464</sup> {CELO0010805}.

<sup>1465</sup> Roper {Day71/162:12-23}.

<sup>1466</sup> {CELO0001213}.

<sup>1467</sup> {CELO0001214/2}.

<sup>1468</sup> {CELO0003179/4}; Roper {Day71/194:13-23}.

<sup>1469</sup> {CELO0009674}.

<sup>1470</sup> Evans {Day73/86:5-10}.

<sup>1471</sup> Evans {Day73/86:18-24}.

<sup>1472</sup> {CELO0000012}.

<sup>1473</sup> {CELO0000013}.

<sup>1474</sup> {CELO0000437}.

<sup>1475</sup> {CELO0007961}.

<sup>1476</sup> Hayes {Day74/173:11-20}.

<sup>1477</sup> Evans {Day73/81:16-22}.

<sup>1478</sup> Evans {Day73/82:1-3}.

legal team, but he was unsure whether they had been reviewed by anyone on the Saint-Gobain board.<sup>1479</sup> Mr Roper also told us that Saint-Gobain’s internal lawyers had reviewed the documents and that it had been as a result of that review that the disclaimers had appeared in the documents.<sup>1480</sup> We accept their evidence about that.

**24.108** We therefore turn to examine those documents.

### The Compliance Guide

**24.109** The front cover of the Compliance Guide stated that it was for use “when specifying Celotex RS5000 in buildings above 18m”,<sup>1481</sup> explaining on the first inside page that it provided a step by step guide to the alternative route to compliance under Approved Document B by meeting the performance criteria in BR 135 following testing to BS 8414-1:2002 or BS 8414-2:2005.<sup>1482</sup> That was not accurate, if only because RS5000 had not been tested in accordance with BS 8414-1:2002 (masonry wall construction).<sup>1483</sup> Mr Evans was unable to explain that inaccuracy.<sup>1484</sup>

**24.110** On page 3, it contained the following disclaimer:

“The classification applies only to the system as tested and detailed in the classification report. The classification report can only cover the details of the system as tested. It cannot state what is not covered. When specifying or checking a system it is important to check that the classification documents cover the end-use application”.<sup>1485</sup>

**24.111** The next page of the Compliance Guide contained a description of the system tested together with a diagram, Figure 4. The following components were listed:

- a. 12mm Fibre Cement Panels;
- b. Supporting aluminium brackets and vertical rails;
- c. 100mm Celotex RS5000;
- d. 12mm non-combustible sheathing board;
- e. 100mm SFS system; and
- f. 2 x 12.5mm plasterboard.<sup>1486</sup>

**24.112** The description did not disclose either the presence of the 6mm magnesium oxide boards nor the 8mm Marley Eternit boards. Although the text goes on to warn that “the fire performance and classification report issued only relates to the components detailed and constructed in Figure 4” and that “any changes to the components listed and construction method set out in Figure 4 will need to be considered by the building designer”,<sup>1487</sup>

<sup>1479</sup> Evans {Day73/82:3-17}.

<sup>1480</sup> Roper {Day71/182:5}-{Day71/183: 6}.

<sup>1481</sup> {CELO0000012/1}.

<sup>1482</sup> {CELO0000012/2}.

<sup>1483</sup> Evans {Day73/51:9-11}.

<sup>1484</sup> Evans {Day73/52:13-19}.

<sup>1485</sup> {CELO0000012/3}.

<sup>1486</sup> {CELO0000012/4}.

<sup>1487</sup> {CELO0000012/4}.

Figure 4 also omitted any reference to those elements. They had been omitted because, as Mr Evans admitted, any reference to them would have revealed that the system tested had been entirely unrepresentative of a commercial construction.<sup>1488</sup>

- 24.113** The failure to refer to the 6mm magnesium oxide boards or the 8mm Eternit boards completely undermined the disclaimers on pages 3 and 4. If the description of the system tested was materially incomplete, as it was, even the most rigorous attempt to reproduce it was bound to fail. In its statements to the Inquiry Celotex was at pains to point out that the statements that RS5000 was suitable for use on buildings over 18 metres in height should be read in the context of the disclaimer on page 3 of the Compliance Guide, but the disclaimer was effectively meaningless, as Celotex well knew.

### The Specification Guide

- 24.114** The introduction to the Specification Guide described RS5000 as

“a premium performance PIR solution for use in rainscreen cladding applications and suitable for use in building (sic) above 18 metres in height”.<sup>1489</sup>

and in a section headed “Fire Performance”, it went on to describe RS5000 as having been

“successfully tested to BS8414-2:2005 [...], meets the criteria set out in BR 135 and is therefore acceptable for use in buildings above 18m in height”.<sup>1490</sup>

This slogan was repeated throughout Celotex’s other marketing material for RS5000.

- 24.115** Almost identical wording could be found in a Technical Bulletin issued by Kingspan in 2011, in which it described K15 as “successfully tested to BS8414:2002, can meet the criteria within BR 135 and is therefore acceptable for use above 18 metres”.<sup>1491</sup> The similarity was not coincidental. As Mr Roper confirmed, Celotex took the wording directly from Kingspan’s literature.<sup>1492</sup> Celotex had identified the device by which Kingspan had for years succeeded in selling an insulation product tested in one particular configuration for general use on buildings above 18 metres in height and had decided to adopt it.

- 24.116** The Specification Guide then described the system tested in the same terms as the Compliance Guide (i.e. without mentioning the 6mm magnesium oxide or 8mm Marley Eternit boards), together with the qualification that “the fire performance and classification report for Celotex RS5000 only relates to the components detailed above”.<sup>1493</sup> Unlike the Compliance Guide, there is no diagram identifying that the listed “fibre cement panels” were in fact Marley Eternit. It did refer readers to the Compliance Guide for “full” specification details and provided a draft specification clause which said that “RS5000 has been successfully tested to BS8414-2:2005 and meets the performance criteria of BR 135”.<sup>1494</sup>

- 24.117** Mr Roome accepted with hindsight that the Specification Guide was a thoroughly misleading document,<sup>1495</sup> and that a reader might have interpreted the claim that RS5000 was suitable for use on buildings over 18 metres in height as meaning it could be used

<sup>1488</sup> Evans {Day73/62:15-22}.

<sup>1489</sup> {CELO0000013/3}.

<sup>1490</sup> {CELO0000013/5}.

<sup>1491</sup> {CELO0008510}.

<sup>1492</sup> Roper {Day71/184:16-17}.

<sup>1493</sup> {CELO0000013/5}.

<sup>1494</sup> {CELO0000013/8}.

<sup>1495</sup> Roome {Day69/99:10-12}.

generally above that height.<sup>1496</sup> The document was indeed thoroughly misleading and, although Mr Roome himself may not have realised it, had been deliberately crafted to mislead the reader into buying RS5000 for use on buildings over 18 metres in height without worrying about whether the external wall of which it was to form part was the same as that which had been tested. The disclaimer on page 5 that the fire performance and classification report related only to the components listed was not only buried away in the small print but was, as we have explained, itself disingenuous because the components of the system tested had not been fully described.

### Other marketing documents

- 24.118** The Handy Guide repeated the expression “the first PIR board to meet the criteria set out in BR 135 and therefore is acceptable for use in buildings above 18m in height”, without qualification, although it advised that the product should be installed in accordance with instructions supplied by Celotex.<sup>1497</sup>
- 24.119** The Product Datasheet contained the same claim prominently on the first page.<sup>1498</sup> Headers on each page included, without qualification, the words “suitable for buildings above 18m in height”. Mr Roper explained that the reason for the disclaimer being placed on the third page was that certain people at Celotex wanted “to dilute that system message as much as they could”.<sup>1499</sup> Mr Evans did not agree; his view was that it was not intended to be a free-standing statement but was to be read in conjunction with the description of the system that had been tested,<sup>1500</sup> but the description given on the third page of the Product Datasheet did not mention the magnesium oxide boards or the use of 8mm Marley Eternit. The section did contain a warning that the fire performance and classification report related only to the components described above,<sup>1501</sup> but that was itself misleading because the components of the system tested had not been fully described.
- 24.120** A press release prepared for the launch of RS5000 described it as a “new premium performing PIR solution for rainscreen cladding applications.”<sup>1502</sup> That claim was itself false, because RS5000 was merely FR5000 under a different name. The press release repeated the claim that RS5000 was “acceptable for use in buildings above 18m in height” without qualification.
- 24.121** Taken in the round, the marketing literature for RS5000 contained two messages, both of which were false and deliberately misleading. The first, aimed at the designer or cladding specialist who did not read beyond the first page, was that RS5000 was suitable for use on any building over 18 metres in height, whereas it was not. The second was the warning aimed at the more conscientious reader that the fire performance and classification for RS5000 related only to the components described as making up the system tested, when in fact the components were misdescribed.

<sup>1496</sup> Roome {Day69/100:1-9}.

<sup>1497</sup> {CEL00000437/8}.

<sup>1498</sup> {CEL00007961/1}.

<sup>1499</sup> Roper {Day71/205:8-10}.

<sup>1500</sup> Evans {Day73/70:23}-{Day73/71:2}.

<sup>1501</sup> {CEL00007961/3}.

<sup>1502</sup> {CEL00009599/1}.

### Internal launch of RS5000

- 24.122** RS5000 was launched on 5 August 2014, at a regional sales meeting at which Jonathan Roper gave a presentation to the sales team about the product.<sup>1503</sup> His slide presentation<sup>1504</sup> included a quotation from paragraph 12.7 of Approved Document B<sup>1505</sup> as well as the historical context provided by the fires at Knowsley Heights,<sup>1506</sup> Garnock Court,<sup>1507</sup> and in Dubai.<sup>1508</sup> Although he referred to test method BS 8414 and explained in terms that BR 135 was a system classification,<sup>1509</sup> he repeated the assertion that RS5000 was the first PIR board to meet successfully the performance criteria in BR 135 for insulated cladding systems and was therefore acceptable for use in buildings above 18 metres in height.<sup>1510</sup>
- 24.123** Jonathan Roome was present at the launch. Although he understood from the presentation that a BR 135 classification applied only to the system as tested,<sup>1511</sup> he accepted that the words “therefore acceptable for use above 18 metres in height” gave the impression that RS5000 was generally suitable for use on high-rise buildings and could be read as a representation that it was suitable for use in any rainscreen system on buildings over 18 metres in height.<sup>1512</sup> That is consistent with the evidence of Mr Roper, who said that, although he had wanted to make it clear that the test applied to a system as a whole, he had felt that the members of the management action group present at the launch had not wanted that message to be too prominent. He agreed that the combination of an early reference to the nature of the classification and the subsequent emphasis on the sales message had been a way of satisfying the technical requirements while giving a strong message to the sales teams that RS5000 was generally acceptable for use on buildings over 18 metres in height.<sup>1513</sup>
- 24.124** The launch presentation did not describe in any detail the system that had been tested but it did contain a diagram showing the rainscreen panel as 12mm Marley Eternit over 100mm of insulation.<sup>1514</sup> Mr Roome confirmed that he understood that to have been the system tested because it matched the depiction in the Compliance Guide and Specification Guide.<sup>1515</sup> That was all that he and the rest of the sales team were given by way of information about the system tested.<sup>1516</sup> He was not aware that 6mm magnesium oxide boards had been used in the test,<sup>1517</sup> and never became aware of it during the remainder of his time at Celotex.<sup>1518</sup>
- 24.125** The failure to identify the true components of the test in May 2014 was only one of a number of ways in which the presentation was misleading. It also implied that RS5000 was a completely new product and made no mention of the first, failed, test in February 2014. Mr Roome confirmed that he had not been aware of either fact. That was the result of a

<sup>1503</sup> Roper {Day71/208:16-22}.

<sup>1504</sup> {CELO0008668}.

<sup>1505</sup> {CELO0008668/5}.

<sup>1506</sup> {CELO0008668/11}.

<sup>1507</sup> {CELO0008668/13}.

<sup>1508</sup> {CELO0008668/14}.

<sup>1509</sup> {CELO0008668/15-16}.

<sup>1510</sup> {CELO0008668/26}.

<sup>1511</sup> Roome {Day69/52:1-9}.

<sup>1512</sup> Roome {Day69/53:2-9}.

<sup>1513</sup> Roper {Day71/213:2-13}.

<sup>1514</sup> {CELO0008668/27}.

<sup>1515</sup> Roome {Day69/59:1-5}.

<sup>1516</sup> Roome {Day69/97:2-9}.

<sup>1517</sup> Roome {Day69/60:2-6}.

<sup>1518</sup> Roome {Day69/60:19-23}.

deliberate choice by Celotex.<sup>1519</sup> In similar vein, Mr Roome was provided with the 12-page classification report only when he requested it following a direct enquiry from Harley,<sup>1520</sup> and during his time at Celotex he never saw the full 32 page test report.<sup>1521</sup>

## Aftermath of the launch

### Relations with NHBC

- 24.126** As we have already explained, Celotex had been in contact with NHBC since November 2013, when Mr Roper sought advice from Graham Perrior about his interpretation of the requirements for use of insulation on buildings over 18 metres in height.<sup>1522</sup> His approach was prompted by concerns about apparent inconsistencies in the approach being taken by NHBC.<sup>1523</sup> That was again motivated by a desire to understand how Kingspan was being widely used despite having carried out only one BS 8414 test.<sup>1524</sup>
- 24.127** On 15 May 2015 Jonathan Roper told Graham Perrior and David White of NHBC that Celotex had passed a BS 8414 test.<sup>1525</sup> We have already touched briefly on the meeting between Celotex and NHBC on 19 June 2014 which was held to discuss that test.<sup>1526</sup> At that meeting NHBC raised a number of concerns which Mr Evans recorded on a white board.<sup>1527</sup> Celotex did not tell NHBC about the test in February 2014 which had failed or about the use of the 6mm magnesium oxide boards used in the successful test in May 2014.<sup>1528</sup> Celotex deliberately misled NHBC about the true nature of the system that had been tested in order to obtain its approval of RS5000, which was seen as critical to the success of the product.<sup>1529</sup>
- 24.128** On 30 July 2014, Mr Roper sent the final draft of the test report to David White and Graham Perrior,<sup>1530</sup> possibly at the request of NHBC.<sup>1531</sup> That involved a certain level of risk, because the report contained the photograph showing the presence of the magnesium oxide boards. Mr Roper gave NHBC the impression that the report described exactly what had been tested,<sup>1532</sup> but that was not the case, since it omitted any reference to the magnesium oxide boards and the 8mm ruby Eternit panels.
- 24.129** By September 2014, NHBC was still expressing reservations about RS5000. On 5 September 2014, Jonathan Roper sent an email to Paul Evans explaining that he was aware of instances in which building control officers had refused to accept RS5000 on the basis that it had not been approved by NHBC.<sup>1533</sup> On the same date, a Celotex area sales manager, Michael Healey, asked NHBC to explain what problems it had with the test data.<sup>1534</sup> His request was made in response to a message from a designer on a project in which the NHBC project manager (Jon Behan) had said that there were questions about

<sup>1519</sup> Roper {Day71/220:19}–{Day71/221: 9}.

<sup>1520</sup> Roome {Day70/73:12-16}.

<sup>1521</sup> Roome {Day70/73:17-22}.

<sup>1522</sup> {CEL00000748}.

<sup>1523</sup> Roper {Day70/198:5-15}.

<sup>1524</sup> Roper {Day70/201:20-22}.

<sup>1525</sup> Roper {Day71/166:9-18}.

<sup>1526</sup> Roper {CEL00010052/15} page 15, paragraph 7.1.

<sup>1527</sup> {CEL00002517}.

<sup>1528</sup> Roper {CEL00010052/16} page 16, paragraph 7.4

<sup>1529</sup> Roper {Day71/172:2-11}.

<sup>1530</sup> {CEL00000992}.

<sup>1531</sup> Roper {Day71/181:9-22}.

<sup>1532</sup> {CEL00000992}.

<sup>1533</sup> {CEL00001020}.

<sup>1534</sup> {CEL00001022/3}.

the tests that had been carried out and that the matter had been raised with Celotex.<sup>1535</sup> On 22 September 2014, Mr Behan replied to Mr Healey, telling him that at present Celotex had no relevant test certificate to show that RS5000 was suitable for use on buildings over 18 metres in height.<sup>1536</sup> When Mr Healey referred to the test that Celotex had undertaken, Mr Behan said that NHBC had “issues” with it and that the Celotex technical department was well aware of them.<sup>1537</sup> Mr Healey sent that exchange to Mr Roper who in turn sent it on to Mr Evans.<sup>1538</sup> It was understood as an indication that NHBC would not accept the use of RS5000 on buildings over 18 metres in height.<sup>1539</sup>

**24.130** The importance of NHBC approval to Celotex was reflected in its 2015 budget presented at Saint Gobain’s headquarters at Les Miroirs in Paris on 14 October 2014, which included £20,000 for “NHBC ‘buy-in’ for above 18m applications”.<sup>1540</sup> It is unclear what the money was actually allocated for. Paul Evans thought that it might have been for additional testing but could not recall.<sup>1541</sup> He denied, however, that it was for lobbying.<sup>1542</sup> Despite its importance to Celotex, NHBC’s approval of RS5000 for use on buildings over 18 metres in height was not forthcoming. By 7 January 2015, Celotex had learned through an email sent by a client (Nigel Shields of Durkan) to another Celotex area sales manager (Nigel Waring) that NHBC would not accept Celotex fire test data because it did not represent a true test of the product in all its applications. Worse still, NHBC was very nervous of its use on high-rise buildings and had taken steps to consult fire and rescue services.<sup>1543</sup> Although, as Mr Evans accepted, that was an indication that NHBC regarded RS5000 as dangerous,<sup>1544</sup> it did not cause Celotex to reconsider its marketing strategy.

### Problems in the market

**24.131** At the same time as NHBC was making its disquiet clear, difficult questions were being asked by clients about the breadth of application of Celotex’s BR 135 classification. On 16 January 2015, Daniel Anketell-Jones of Harley sent an email to Jonathan Roome in relation to another project,<sup>1545</sup> in which he explained that a customer had asked exactly how RS5000 had been installed when it was tested, who had carried out the testing, how it had been fixed, what it had been covered with, what rainscreen had been used, what support structure, and, most importantly, what had been the results. Mr Anketell-Jones described the request as a headache for Celotex, which indeed it was, because it was seeking detailed information that Celotex did not wish to make public.<sup>1546</sup>

**24.132** The challenges faced by Celotex from the more astute section of the market were most clearly illustrated by a complaint made by Ardmore Construction Ltd in March 2015 after NHBC had rejected the use of RS5000 that had been installed on a high-rise building at Octavius Street in Deptford, London.<sup>1547</sup> Ardmore’s Technical Director had complained about a lack of clarity in the marketing literature and asked for evidence of the fire testing on which Celotex relied to support its claim that RS5000 was suitable for use on

<sup>1535</sup> {CEL00001022/4}.

<sup>1536</sup> {CEL00001022/2}.

<sup>1537</sup> {CEL00001022/4}.

<sup>1538</sup> {CEL00001022/1}.

<sup>1539</sup> Evans {Day73/126:2-6}.

<sup>1540</sup> {CEL00003342/21}.

<sup>1541</sup> Evans {Day73/176:17-19}.

<sup>1542</sup> Evans {Day73/176:20-23}.

<sup>1543</sup> {CEL00003445}.

<sup>1544</sup> Evans {Day73/127:17-25}-{Day73:128:1-3}.

<sup>1545</sup> {CEL00000019/2}; Roome {Day70/63:14-18}.

<sup>1546</sup> Roome {Day70/61:16-22}.

<sup>1547</sup> {CEL00002193}.

buildings over 18 metres in height. Mr Evans told us that the complaint had been taken seriously at Celotex,<sup>1548</sup> but the marketing literature remained unchanged. He was unable to explain why Celotex had not been concerned that it was not clear enough to avoid a problem with a major developer and why there had not been discussions within Celotex about improving it.<sup>1549</sup>

### LABC approval

- 24.133** Celotex also sought to obtain an LABC certificate for RS5000. It was seen as an important form of approval,<sup>1550</sup> in part because it would protect the use of RS5000 from the risk of challenge.<sup>1551</sup> It was also seen as a route by which Celotex could market RS5000 as being suitable for use in systems other than that tested.<sup>1552</sup> Before the test in February 2014 Mr Roper had been in contact with David Ewing of the LABC, who was then responsible for managing the Registered Details scheme,<sup>1553</sup> and had been told by him that as Kingspan K15 was described as Class 0, it could be described as a material of limited combustibility.<sup>1554</sup> Mr Roper realised that that was wrong but he did not correct the LABC's mistake because he thought it was advantageous to Celotex not to do so.<sup>1555</sup>
- 24.134** The first LABC certificate for RS5000 was issued on 21 August 2014.<sup>1556</sup> The accompanying drawing and document list stated that it was "for use in rainscreen wall construction including above 18m in height".<sup>1557</sup> The only test information provided was contained in the Advice Notes, which said that RS5000:

"had successfully tested to BS 8414:2 2005, meets the criteria in BR 135 and is therefore acceptable for use in buildings with storeys above 18m in height (subject to the board being fixed to a non-combustible substrate) alternative compliance to ADB".<sup>1558</sup>

That wording had been taken directly from an email Mr Roper had sent to Tim Bartlett of West Suffolk building control, the person responsible for preparing Celotex's Registered Details certificate, even to the point of including the transposition of a typographical error.<sup>1559</sup> However, the wording and the message it was intended to convey was untrue and misleading.<sup>1560</sup> The certificate, together with the document and drawing list, were sent by Jonathan Roome to Daniel Anketell-Jones of Harley on 27 August 2014.<sup>1561</sup>

- 24.135** In early November 2014, Samantha Li of the LABC sent an email to Jonathan Roper explaining that the LABC was intending to change the form of its certificates and that the certificate for RS5000 would be reissued in the new style.<sup>1562</sup> Mr Ewing explained that he had decided to change the form of Registered Detail certificates because he thought

<sup>1548</sup> Evans {Day73/166:22-25}.

<sup>1549</sup> Evans {Day73/165:3-9}; {Day73/167:8-15}.

<sup>1550</sup> Roper {Day72/26:9-16}.

<sup>1551</sup> Roper {Day71/35:11-16}; {Day72/44:15-22}.

<sup>1552</sup> {CELO0000735/4}; Roper {Day72/29:24}-{Day72/30:7}.

<sup>1553</sup> Ewing {Day217/95:18-22}.

<sup>1554</sup> {CELO0000939/5}.

<sup>1555</sup> Roper {Day72/34:14-23}.

<sup>1556</sup> {CELO0000010}.

<sup>1557</sup> {CELO0000009}.

<sup>1558</sup> {CELO0000009}.

<sup>1559</sup> {CELO0001995}.

<sup>1560</sup> Roper {Day72/41:14-20}.

<sup>1561</sup> {CELO0000006}.

<sup>1562</sup> {CELO0002021/2}.



that the previous version did not give enough information to local authorities considering whether to approve the use of materials.<sup>1563</sup> He had been prompted to take that course by concerns raised in relation to the certificate relating to Kingspan’s K15.<sup>1564</sup>

- 24.136** The new certificate was attached to Ms Li’s email. It stated that it had first been issued on 21 August 2014 and was valid until 21 August 2015.<sup>1565</sup> It now stated on the first page that RS5000 complied with BR 135 for use in rainscreen applications on buildings over 18 metres in height, but referred the reader to the conditions of the certificate for more information. They made clear that RS5000 was acceptable for use on such buildings “subject to matching the specification criteria of the BRE fire test report 295255 carried out”.
- 24.137** Mr Roper, whose role as product manager of RS5000 had by this time passed to Debbie Berger, sent the email to Ms Berger on 3 November 2014, asking her to reply to the LABC with a request that it remove references to the fact RS5000 was the same product as FR5000.<sup>1566</sup> Ms Berger replied to Samantha Li on 6 November 2014, attaching some suggested text which removed the reference to the test report and repeated the claim that RS5000 complied with BR 135 “subject to the board being fixed to a non-combustible substrate”. She also included a reference to a BBA certificate.<sup>1567</sup> Ms Berger accepted that that her proposed text had been misleading,<sup>1568</sup> as it suggested that the product could be used in any system with a non-combustible substrate and not merely the system that had been tested. Furthermore, it was not true that there was a BBA certificate relating to RS5000.<sup>1569</sup>
- 24.138** Later the same day Ms Berger sent Ms Li another email, observing again that the new certificate was available on the LABC website and asking for access to it to be restricted until they had sorted out the wording.<sup>1570</sup> Ms Li replied, saying that she would check with her manager to see if they could prevent the page from being available to the public. The LABC appears to have treated that as a request for the registration to be withdrawn.<sup>1571</sup> Celotex does not appear to have been told that the registration was being withdrawn, but we accept that it was removed from the LABC’s website as a result of its request.
- 24.139** Six months later Mr Ewing wrote to Celotex again, referring to concerns about the wording of certificates<sup>1572</sup> and attaching a further revised certificate in draft.<sup>1573</sup> The revised certificate was finally issued in September 2015,<sup>1574</sup> long after the initial orders of RS5000 for Grenfell Tower had been placed.

### Handover to Debbie Berger

- 24.140** Ms Berger took over the role of product manager with responsibility for RS5000 from Mr Roper on 1 October 2014.<sup>1575</sup> On 26 September she had a handover meeting with Mr Roper during which nothing was said about the use of 6mm magnesium oxide

<sup>1563</sup> Ewing {Day217/122:13-25}-{Day217/123:1-3}.

<sup>1564</sup> Ewing {Day217/123:16-20}.

<sup>1565</sup> {LABC0000312}.

<sup>1566</sup> {CEL00002021}.

<sup>1567</sup> {CEL00002022}.

<sup>1568</sup> Berger {Day78/75:2-8}.

<sup>1569</sup> Berger {Day78/77:5-16}.

<sup>1570</sup> {CEL00008691/2}.

<sup>1571</sup> Phase 2 Module 2 – Written closing submission on behalf of LABC {LABC0019740/28} page 28, paragraph 73.

<sup>1572</sup> {CEL00001286}.

<sup>1573</sup> {CEL00003741}.

<sup>1574</sup> {CEL00000389}.

<sup>1575</sup> Berger {Day78/6:15-17}.

boards during the test in May,<sup>1576</sup> although the concerns about the test raised by NHBC were mentioned.<sup>1577</sup> Ms Berger discovered that the 6mm magnesium oxide boards had been used only later when she spoke to Mr Hayes on 24 October 2014 with a view to understanding the nature of the test in greater technical detail. His demeanour on that occasion led her to think that he had concerns about the test.<sup>1578</sup> On 27 October 2014, Ms Berger obtained the full 32 page test report from Mr Roper<sup>1579</sup> and met Mr Hayes again, either the same day or some days later, to discuss it. Mr Hayes told Ms Berger about the 6mm magnesium oxide boards and using a diagram showed her where on the rig they had been placed.<sup>1580</sup> Ms Berger also made a note on her copy of the report, next to a diagram of the system before the test, with the expression “WTF? 6mm MgO + 8mm Marley Eternit panel”.<sup>1581</sup> She had clearly been shocked by what she had been told.<sup>1582</sup> Despite her shock, however, Ms Berger took no steps to alert her colleagues or anybody else to the fact that the report did not accurately describe the system tested.<sup>1583</sup>

### Contact with BRE

- 24.141** On 8 October 2014 Jonathan Roome attended a CWCT conference,<sup>1584</sup> at which Dr Sarah Colwell of BRE was one of the speakers. Mr Roome met her and together they arranged a meeting between her and one of her colleagues to discuss, as Mr Roome put it, how Celotex might improve its approach to marketing RS5000.<sup>1585</sup> The meeting was planned for 4 November 2014.
- 24.142** A week later, on 17 October 2014, Stephen Howard of BRE sent an email to Mr Roper and Ms Berger referring to an earlier conversation about the content of the classification reports and the amount of technical detail they contained.<sup>1586</sup> Ms Berger sent the message on to Mr Roome on 20 October 2014, saying that she would set up a meeting with Mr Howard to discuss how the report on RS5000 could be structured to provide relevant commercial information without disclosing anything sensitive.<sup>1587</sup>
- 24.143** In the event, Mr Roome and Ms Berger met Mr Howard on 4 November 2014. Dr Colwell did not attend. Notes of the meeting prepared by Ms Berger refer to growing uncertainty in the market, which had been “burnt by K15 approvals in the past”.<sup>1588</sup> That was a reference to an unhappy experience which NHBC had had in the latter months of 2013 and thereafter with the BBA certificate for K15 and its widespread use above 18 metres.<sup>1589</sup> Ms Berger noted that accreditation bodies required more information in order to give approvals and that further testing with a variety of facades was required.

<sup>1576</sup> Berger {Day78/27:7-12}.

<sup>1577</sup> {CEL00002555/2}.

<sup>1578</sup> Berger {Day78/39:17-21}.

<sup>1579</sup> {CEL00009742}.

<sup>1580</sup> {CEL00002686}; Berger {Day78/41:23}-{Day78/42:4}.

<sup>1581</sup> {CEL00008507/13}.

<sup>1582</sup> Berger {Day78/52:14-19}.

<sup>1583</sup> Berger {Day78/61:19-23}.

<sup>1584</sup> {CEL00001255}.

<sup>1585</sup> {CEL00001255}.

<sup>1586</sup> {CEL00002131}.

<sup>1587</sup> {CEL00002131}.

<sup>1588</sup> {CEL00001260}.

<sup>1589</sup> See Chapter 26 for the detailed analysis.

### February 2015: market analysis slideshow

- 24.144** For the purpose of a meeting of the Service Product Innovation Group in February 2015 Mr Roome prepared a series of slides identifying three tiers of potential customers. (We have described the slides and what they depicted in Part 6, Chapter 56 dealing with the way in which Celotex RS5000 insulation came to be chosen for use in the refurbishment.) He denied that their implication was that the more ignorant a customer was of the restriction on the use of combustible insulation on buildings over 18 metres in height and the less well-equipped to ask difficult technical questions, the more likely it was that Celotex would be able to sell it RS5000,<sup>1590</sup> but it is difficult to see how else they can be understood.
- 24.145** As we have said, the slides reflected a deeply cynical view that there were ignorant or reckless contractors in the market of whom advantage could be taken without any regard for the safety of occupants.
- 24.146** A very different approach to knowledgeable third parties can be seen in an email sent by Jamie Hayes to Paul Evans, Rob Warren and Louise Garlick on 25 March 2015 with advice on what to say where NHBC or LABC were involved and the client's proposed construction differed from the system tested.<sup>1591</sup> In the case of the LABC, potential customers were to be provided with a copy of the Compliance Guide and advised that, if they were using a substantially different design from the system tested, they should discuss the position with building control. If NHBC was involved, clients were to be provided with the Compliance Guide and told that Celotex did not support the use of RS5000 unless the design of the proposed system exactly matched the description given in its literature (although that did not in fact reflect the system that had been tested). Following discussions with Mr Evans, Mr Hayes subsequently promulgated an internal instruction at Celotex that in all cases where it provided a U-value calculation, and where it was asked whether a particular design complied with the Building Regulations, a copy of the Compliance Guide should be provided and customers told that it was the responsibility of building control to judge compliance.<sup>1592</sup>

### Desktop study (March 2015)

- 24.147** In due course a meeting took place on 20 February 2015 between Frans Paap and Andrew Evans of Exova and Debbie Berger and Rob Warren of Celotex.<sup>1593</sup> The notes of the meeting record that Exova needed to see the full test report and the Class 0 reports and refer to the need for a "case by case basis assessment".<sup>1594</sup> Ms Berger said that she had not understood that to mean that a separate desktop assessment would have to be made for each project.<sup>1595</sup>
- 24.148** On 18 March 2015 Ms Berger sent Mr Paap the full 32 page RS5000 test report. Her covering email set out four systems which she said were commonly presented to Celotex at the design stage and which she wanted Exova to assess: brickwork, a ventilated cavity with terracotta cladding, a ventilated cavity with A1 cladding and a ventilated cavity with a

<sup>1590</sup> Roome {Day 69/81:23}-{Day69/82:4}.

<sup>1591</sup> {CEL00003597}

<sup>1592</sup> {CEL00003604}.

<sup>1593</sup> Berger {CEL00010055/57} page 57, paragraph 213.

<sup>1594</sup> {CEL00002691}.

<sup>1595</sup> Berger {Day78/144:21-25}.

Class 0 aluminium rainscreen.<sup>1596</sup> However, as she ought to have realised, any desktop study based on the test report was bound to be misleading and dangerous because the report did not correctly describe the system tested.<sup>1597</sup>

### Exova's draft report

- 24.149** Exova produced a draft report dated 7 May 2015.<sup>1598</sup> It set out the test evidence relied on, which had been taken from the full 32-page BRE Report.<sup>1599</sup> It did not refer to the 6mm magnesium oxide boards or the 8mm Marley Eternit boards because they did not appear in the report and Mr Paap had not been told about them.<sup>1600</sup>
- 24.150** The report concluded that all the designs set out in Ms Berger's email would pass, save for the ventilated cavity system with aluminium Class 0 cladding. In respect of any such system, Exova concluded that it could not be judged with certainty to meet the performance requirements in BR 135.<sup>1601</sup> The report was formally issued on 26 May 2015.<sup>1602</sup>

### NHBC's reaction

- 24.151** The draft report was presented to NHBC at a meeting on 19 May 2015 attended by Debbie Berger, Paul Evans and Rob Warren for Celotex and Graham Perrior, Steve Evans, David White and John Lewis for NHBC.<sup>1603</sup> It was not well received by NHBC, which considered that its generic nature indicated a failure by Celotex to understand the purpose of desktop studies.<sup>1604</sup> The monthly report to the management action group described the meeting as "quite heated".<sup>1605</sup>
- 24.152** NHBC's objections were set out in greater detail in an email sent by Mr Perrior to Mr Evans on 8 June 2015, which was sent on by Mr Evans to Ms Berger and Mr Warren. In it Mr Perrior identified a number of shortcomings and concluded that it appeared that the basis of Exova's analysis did not reflect a true model of a ventilated facade or take fully into account the fact that a large part of the Marley rainscreen had caught fire.<sup>1606</sup> NHBC did not, of course, know that the description of the system in the Exova report contained material omissions; its concern was whether a system such as that described would ever be built in practice. Mr Evans told us that he had been concerned by the fact NHBC thought Celotex's position was untenable and that nothing, in effect, had changed in the year since their meeting on 19 June 2014. However, he intended to work with NHBC to understand what needed to be done to gain its acceptance.<sup>1607</sup> The report to the management action group acknowledged that at some point it would be necessary to consider another test to broaden the scope of use of RS5000.<sup>1608</sup> However, Celotex kept selling RS5000 and no further testing was undertaken before the fire at Grenfell Tower.

<sup>1596</sup> {CELO0003589}.

<sup>1597</sup> Evans {Day73/154:21}-{Day73/155:1}.

<sup>1598</sup> {CELO0002040}.

<sup>1599</sup> {CELO0002040/5}.

<sup>1600</sup> Berger {Day78/149:13-24}.

<sup>1601</sup> {CELO0002040/9}.

<sup>1602</sup> {CELO0001116}.

<sup>1603</sup> Berger {CELO0010055/61} page 61, paragraph 230; {CELO0003682}.

<sup>1604</sup> Berger {Day78/156:22}-{Day78/157:6}.

<sup>1605</sup> {CELO0003710/8}.

<sup>1606</sup> {CELO0001122/2}.

<sup>1607</sup> Evans {Day73/195:19-25}.

<sup>1608</sup> {CELO0003710/8}.

## Chapter 25

# Certification of Celotex RS5000 by LABC

### Initial contact with LABC

- 25.1** On 29 October 2013, Jonathan Roper, Celotex’s Product Manager, spoke to Cathal Brennan, LABC’s Technical Co-ordinator about the possibility of obtaining an LABC certificate for RS5000. Mr Brennan informed his colleague David Ewing, the manager of LABC’s Registered Details Approval scheme,<sup>1609</sup> of the conversation by email, telling him that Mr Roper had asked a number of questions about a competitor (by which he subsequently confirmed he meant Kingspan) and LABC’s relationship with it.<sup>1610</sup>
- 25.2** Celotex saw obtaining an LABC Registered Details Certificate as an important step in promoting RS5000,<sup>1611</sup> in part because it would protect its use from the risk of challenge by building control officers.<sup>1612</sup> Indeed, marketing material sent by LABC to Celotex included the claim that it could be considered a “fast track” through building control because, once it had been approved, local authority building control departments would not have to repeat the process.<sup>1613</sup>
- 25.3** Mr Roper subsequently met Mr Ewing on 18 November 2013 at Celotex’s offices to discuss the process of obtaining an LABC certificate. Mr Ewing understood that Celotex wanted a certificate to enable the product to compete with Kingspan K15.<sup>1614</sup> He was not aware at that stage that RS5000 was the same as FR5000; he had believed that Celotex had been developing a new product.<sup>1615</sup>
- 25.4** At the meeting, Mr Roper questioned whether Kingspan K15 could be described as a material of limited combustibility (as it was in the LABC certificate then in force).<sup>1616</sup> Mr Ewing was not able to answer that question, given his lack of knowledge at the time, so he asked David Jones, who had carried out the research leading to the issue of the certificate relating to K15.<sup>1617</sup>
- 25.5** On 19 December 2013 Mr Ewing sent Mr Jones an email seeking his assistance with Celotex’s question.<sup>1618</sup> On 20 December 2013 Mr Jones responded, referring Mr Ewing to section 7 of the BBA certificate relating to K15, an extract from Kingspan’s technical literature and LABC’s internal assessment. Mr Jones told him that as K15 was described as Class 0, it could be termed a material of limited combustibility and so was suitable for use on buildings over 18 metres in height in accordance with Approved Document B. That was a fundamental misunderstanding on his part<sup>1619</sup> and none of the material Mr Jones relied on supported that conclusion. Mr Ewing told us that he had not been sure that that answered his question, but he assumed that that was due to his own lack of

<sup>1609</sup> Ewing {LABC0020139/4} page 4, paragraph 7.6.

<sup>1610</sup> {LABC0008417}.

<sup>1611</sup> Roper {Day72/26:9-16}.

<sup>1612</sup> Roper {Day71/35:11-16}; {Day72/44:15-22}.

<sup>1613</sup> {CELO0010021/1}.

<sup>1614</sup> Ewing {Day218/143:1-11}.

<sup>1615</sup> Ewing {Day218/143:12-20}.

<sup>1616</sup> Ewing {Day218/147:18-20}.

<sup>1617</sup> Ewing {Day218/147:22}-{Day218/148:4}.

<sup>1618</sup> {LABC0005339}.

<sup>1619</sup> Chapter 5.

understanding.<sup>1620</sup> Nevertheless, he did not seek help from anyone else in attempting to understand it.<sup>1621</sup> Mr Ewing passed the substance of Mr Jones’s response on to Mr Roper on 2 January 2014.<sup>1622</sup> Mr Roper replied on 3 January 2014, stating that Celotex was confident that it could also prove that RS5000 was classified as Class 0.<sup>1623</sup> He realised that LABC had made a fundamental mistake but thought that it was viewed as advantageous to Celotex and therefore did not correct Mr Ewing.<sup>1624</sup>

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**25.6** Following the test in accordance with BS 8414-2:2005, on 2 May 2014, Mr Roper contacted Mr Ewing again on 15 May 2014 to confirm that Celotex wanted to pursue an application for an LABC Registered Details Certificate.<sup>1625</sup> Tim Bartlett of West Suffolk District Council had been identified by LABC as a suitable person to assess the product because he was on LABC’s registration and partnerships group and regularly involved in peer reviews, but no steps had been taken to ascertain his level of understanding of Approved Document B.<sup>1626</sup>

**25.7** Mr Bartlett visited Celotex’s office<sup>1627</sup> during the week of 9 June 2014 to discuss the application. Following his visit, Mr Roper provided what he called the “first batch” of information to support the application and set out the wording that Celotex was seeking to have included in the certificate.<sup>1628</sup> It read as follows:

“ – Celotex RS5000 can be used with a variety of cladding systems (including masonry or rainscreen systems) and can be fixed back to a structural steel frame with a sheathing board or direct back to masonry.

...

– Celotex RS5000 has successfully tested to BS 8414:2 2005, meets the criteria set out in BR 135 and therefore is acceptable for use in buildings with storeys above 18m in height (subject to the board being fixed to a non-combustible substrate) alternative compliance to AD B.

– The product has Class 0 fire performance.”

**25.8** That description of RS5000’s fire performance had been taken almost directly from Appendix A to the Registered Details certificate for K15.<sup>1629</sup> Mr Ewing thought he had realised at the time that Celotex was effectively seeking the same broad statements that had been made in respect of Kingspan K15.<sup>1630</sup>

**25.9** Mr Roper sent a further email to Mr Bartlett on 17 June 2014 providing a copy of a letter from BRE confirming that a system incorporating RS5000 had been tested in accordance with BS 8414-2 and that a test report and classification document under BR 135 was being issued.<sup>1631</sup> The letter did not give any details about the system that had been tested, nor did it say what conclusions BRE had drawn when classifying it.<sup>1632</sup>

<sup>1620</sup> Ewing {Day218/150:11-24}.

<sup>1621</sup> Ewing {Day218/151:5-11}.

<sup>1622</sup> {LABC0001706}.

<sup>1623</sup> {LABC0001706}.

<sup>1624</sup> Roper {Day72/32:15}-{Day72/33:23}.

<sup>1625</sup> {LABC0001706}.

<sup>1626</sup> Ewing {Day218/153:16}-{Day218/154:10}.

<sup>1627</sup> {LABC0000279}.

<sup>1628</sup> {LABC0000279}.

<sup>1629</sup> {LABC0001001/2}; Roper {Day72/41:4-24}.

<sup>1630</sup> Ewing {Day218/155:11-25}.

<sup>1631</sup> {LABC0000329/3}.

<sup>1632</sup> {LABC0000285}.

**25.10** Notwithstanding that, on 30 June 2014 Mr Bartlett sent an email to Mr Brennan telling him that that was his last day at West Suffolk and that although he had not been able to finalise Celotex’s certificate pending provision of further information, once that information was available he expected it to satisfy the requirements.<sup>1633</sup> Among the information that was yet to be received was the BR 135 classification report from BRE.<sup>1634</sup> Mr Bartlett attached to his email a draft Compliance Declaration form, Drawing and Documents List and a briefing note which stated:

“Celotex RS5000 has been successfully tested to BS 8414:2 2005, meets the criteria set out in BR135 and therefore is acceptable for use in buildings with storeys above 18m in height (subject to the board being fixed to a non-combustible substrate) alternative to compliance to AD B.”<sup>1635</sup>

That was the very wording that had been requested by Jonathan Roper and was used by Celotex as a central plank of its marketing strategy. By suggesting, and then relying on, untrue and misleading statements of that kind it hoped to avoid challenge by building control officers.<sup>1636</sup> However, a statement that Celotex RS5000 had been successfully tested to BS 8414 and met the criteria set out in BR 135 could never properly be made, since such claims could be made only in relation to the system as a whole and not in relation to individual components. It is remarkable that LABC saw fit to prepare a draft of that kind without having seen the classification report itself. Its approach was fundamentally flawed.<sup>1637</sup> However, at the time no one at LABC challenged Mr Bartlett’s approach or the claims made about the product’s performance. Mr Ewing accepted that he might have been under the misapprehension at the time that if a product had formed part of a system which had obtained a classification report in accordance with BR 135, it could be used on any buildings above 18 metres in height.<sup>1638</sup>

**25.11** In the event, despite having left West Suffolk, Mr Bartlett continued to be involved in the assessment process for RS5000. On 24 July 2014, he sent an email to Mr Brennan (with a copy to Mr Ewing) attaching further documents for the RS5000 certificate and indicating that it was ready for peer review.<sup>1639</sup> Among the attachments to that email were BRE’s letter of 17 June 2014<sup>1640</sup> and a Class 0 classification report for RS5000 dated 14 July 2014.<sup>1641</sup> No BR 135 classification report was attached, not least since LABC had not received one. Further, none of the attachments described the system that had been tested or how it had performed against the criteria in BR 135. Mr Bartlett told Mr Ewing that Celotex was still waiting for the test report but had provided the letter from BRE in the hope that LABC would accept it as sufficient proof of compliance.<sup>1642</sup>

**25.12** On the same day, Mr Brennan circulated the Compliance Declaration, Drawings and Document List and details of RS5000 to the peer review group.<sup>1643</sup> Mr Bartlett responded the same day, attaching a draft certificate,<sup>1644</sup> the wording of which stated that RS5000 was suitable for use on buildings over 18 metres in height.<sup>1645</sup>

<sup>1633</sup> {LABC0000306}.

<sup>1634</sup> Ewing {Day218/158:3-11}.

<sup>1635</sup> {LABC0000345/2}.

<sup>1636</sup> Roper {Day72/44:15}-{Day72/45:6}; {Day72/46:15-18}.

<sup>1637</sup> Ewing {Day218/158:12-16}.

<sup>1638</sup> Ewing {Day218/158:17-21}.

<sup>1639</sup> {LABC0000339}.

<sup>1640</sup> {LABC0000342}.

<sup>1641</sup> {LABC0000344}.

<sup>1642</sup> {LABC0005566}.

<sup>1643</sup> {LABC0005564}.

<sup>1644</sup> {LABC0000369}.

<sup>1645</sup> {LABC0000370}.

- 25.13** On 8 August 2014, Mr Ewing sent an email to Cathal Brennan and Sam Li Muller noting that Celotex had still not provided a BR 135 classification report.<sup>1646</sup> He observed that that was an important document as LABC was under scrutiny from NHBC regarding its certification of Kingspan K15.<sup>1647</sup> He said that the certificate for RS5000 should not be issued until the report had been received.<sup>1648</sup>
- 25.14** Later that day, an LABC employee, Robert Adungo, sent an email to Mr Brennan noting that Celotex’s publicity for the launch of RS5000 included the claim that it was “supported by LABC approval”. That was not correct, because LABC had not issued a certificate. Nonetheless, Mr Brennan told Celotex that it could refer to LABC at the product launch, presumably in a way that implied that LABC had approved, or was going to approve, the product.<sup>1649</sup> Mr Brennan said that he had acted on the basis of a misunderstanding of BRE’s letter of the 17 June 2014 and on the fact that RS5000 had received four votes at the peer review stage.<sup>1650</sup> However, the holding letter from BRE did not provide any basis for a claim of that kind and those who carried out the peer review had not themselves been provided with a classification report and so had no basis for reaching any final view about the product’s compliance with the statutory guidance.<sup>1651</sup> That was plainly not an acceptable approach.<sup>1652</sup>
- 25.15** Mr Ewing sent an email to Mr Roper shortly after, asking for the classification report.<sup>1653</sup> Mr Roper responded, attaching a copy of the BR 135 classification report.<sup>1654</sup> Mr Ewing sent it on to Mr Brennan, with the comment that it contained everything needed to satisfy the criteria in paragraphs 12.5 and 12.6 of Approved Document B. However, in saying that Mr Ewing was still labouring under the misapprehension that the classification report provided some form of general support for the use of RS5000 on buildings over 18 metres in height, which was not the case.<sup>1655</sup>
- 25.16** Despite having been alerted to the fact that Celotex’s marketing and promotional materials included a claim that RS5000 had its approval, notwithstanding that it had not issued a certificate for the product, LABC did not attempt to make Celotex correct that statement or remonstrate with it for making a misleading claim.<sup>1656</sup>
- 25.17** On 11 August 2014, Mr Bartlett confirmed that, having seen the classification report, everything appeared to be in order, although he noted that it related to the particular system tested rather than the use of RS5000 on buildings over 18 metres in height generally. He therefore questioned whether the certificate should be limited to the specific system tested.<sup>1657</sup> In response, Mr Ewing confirmed that the certificate should relate to what had been tested,<sup>1658</sup> but then expressed the view that the rainscreen construction was relatively standard, a comment for which, as he accepted, there had been no basis.<sup>1659</sup> Despite that fact, the LABC issued a certificate which implied generic

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<sup>1646</sup> {LABC0005598}.

<sup>1647</sup> As to that, see Chapter 23.

<sup>1648</sup> {LABC0005598}.

<sup>1649</sup> {LABC0005601}.

<sup>1650</sup> {LABC0005601}.

<sup>1651</sup> Ewing {Day218/175:18}-{Day218/176:9}.

<sup>1652</sup> Ewing {Day218/172:18-23}.

<sup>1653</sup> {LABC0000288/2}.

<sup>1654</sup> {LABC0000288}; {LABC0000289}.

<sup>1655</sup> Ewing {Day218/178:15-17}. The question put to Mr Ewing referred to K15 but was clearly intended to refer to RS5000.

<sup>1656</sup> Ewing {Day218/180:4-11}.

<sup>1657</sup> {LABC0005608}.

<sup>1658</sup> {LABC0005608}.

<sup>1659</sup> Ewing {Day218/181:21-24}.



approval for the use of RS5000 on buildings over 18 metres in height.<sup>1660</sup> The certificate was effective from 21 August 2014 until 21 August 2015.<sup>1661</sup> It was accompanied by a Drawing and Document List. The contents of the certificate are set out in detail in Chapter 24. We reiterate that it gave an untrue and misleading impression that RS5000 was suitable for use on buildings over 18 metres in height generally.

## Withdrawal and reissue of registered detail certificates for RS5000

- 25.18** In early November 2014, Sam Li Muller, a Consult and Technical Administrator at LABC, sent an email to Jonathan Roper explaining that LABC had changed the format of its certificates and attaching the certificate for RS5000 in the new style.<sup>1662</sup> The new certificate stated that it had first been issued on 21 August 2014 and was valid until 21 August 2015.<sup>1663</sup> It now stated on the first page that RS5000 “complies with BR 135 for use in rainscreen applications above 18 metres in height”, but referred the reader to the conditions of the certificate for more information. The conditions made clear that RS5000 was acceptable for use on buildings above 18 metres in height, “subject to matching the specification criteria of the BRE fire test report 295255 carried out”.<sup>1664</sup>
- 25.19** Mr Roper forwarded that email to Ms Berger at Celotex,<sup>1665</sup> who was by then the product manager for RS5000. She responded to Ms Li Muller seeking changes to the wording and attaching suggested text that removed the reference to the test report and repeated the claim that RS5000 complied with BR 135 “subject to the board being fixed to a non-combustible substrate”, referring to a BBA certificate that in fact related to FR5000.<sup>1666</sup>
- 25.20** Discussions about the suggested changes took place between Ms Li Muller, Mr Brennan and Mr Ewing throughout November 2014.<sup>1667</sup> Meanwhile, Ms Berger had noticed on 6 November 2014 that the new-style certificate was available on the LABC website and asked the LABC to limit access to it until the wording had been sorted out.<sup>1668</sup> Ms Li Muller said she would check with her manager to see if they could prevent the page from being visible to the public and as a result access to it was withdrawn.
- 25.21** On 12 May 2015 Mr Ewing sent Ms Berger an email to which he attached a revised certificate.<sup>1669</sup> He explained there had been concern that earlier LABC certificates implied general approval for the use of thermosetting insulation materials on buildings over 18 metres in height, which he said had never been the intention.<sup>1670</sup> The attached document was watermarked “Draft”.<sup>1671</sup>
- 25.22** The revised certificate, under the heading “Description of Product”, stated that RS5000 had been assessed by BRE and “complies with BR135 for use in rainscreen applications above 18 metres in height subject to the board being fixed to a non-combustible substrate \*see condition of certificate for more information”.<sup>1672</sup> The first line under the heading “Conditions of Certificate” read “For use in rainscreen wall constructions including

<sup>1660</sup> {LABC0000360}, {LABC0000361} and {LABC0000362}.

<sup>1661</sup> {LABC0000358} and {LABC0000359}.

<sup>1662</sup> {CELO0002021/2}.

<sup>1663</sup> {LABC0000312}.

<sup>1664</sup> {LABC0000312/2}.

<sup>1665</sup> {CELO0002021}.

<sup>1666</sup> {CELO0002022}.

<sup>1667</sup> {LABC0002803}; {LABC0001780}.

<sup>1668</sup> {CELO0008691/2}.

<sup>1669</sup> {LABC0000332}.

<sup>1670</sup> {LABC0000332}.

<sup>1671</sup> {LABC0000333}.

<sup>1672</sup> {LABC0000321}.

above 18m in height”. Further down and within a different sub-paragraph it read “This classification is only valid for the system specification and detailing outlined in section 2 of the BRE classification report 295255...”.<sup>1673</sup> No one could explain why that information had not been given greater prominence. Mr Ewing accepted that the certificate could have been drafted in a much clearer way to avoid confusion.<sup>1674</sup>

- 25.23** The new-style LABC certificate was eventually published on 10 September 2015.<sup>1675</sup> A further (and final) LABC certificate was issued on 19 August 2016 in very similar terms to that which had been issued on 10 September 2015, save that it included details of the system which had been tested.<sup>1676</sup> That certificate was withdrawn on 16 June 2017 in the aftermath of the Grenfell Tower fire.<sup>1677</sup>
- 25.24** It was Mr Ewing’s understanding that there had been no certificate for RS5000 in place or available on LABC’s website between November 2014 and July 2015, but he could not be sure whether Celotex had been told that or that it had been told that it should not use the certificate that had been issued.<sup>1678</sup> He was unable to recall why he had sent an email to Ms Li Muller on 1 July 2015 asking her to check which certificate was publicly available.<sup>1679</sup> He could not state categorically that the certificate had been removed.<sup>1680</sup> In its written closing statement for Module 2, LABC referred to Ms Berger’s email of 6 November 2014 as a request for the registration to be withdrawn,<sup>1681</sup> to which the LABC had acceded. However, the correspondence was not expressed in that way and we have seen no evidence to suggest that Celotex was told that the certificate had been withdrawn.
- 25.25** Even if the certificate had been removed, Celotex could not reasonably have understood that to have been the case from the messages they received from LABC. Although Mr Ewing sent the ‘new style’ certificate to Celotex, the version held by LABC was still marked as a draft as late as May 2015. At no stage did LABC clearly state that the certificate issued in August 2014 for RS5000 was no longer valid and there was no formal process through which information of that kind could be expected to be communicated.<sup>1682</sup>
- 25.26** In those circumstances, Mr Ewing’s assumption that Celotex realised that a new certificate had been issued and would act with integrity by not relying on the old certificate, knowing it had been changed,<sup>1683</sup> was naïve. Yet again, LABC failed to communicate properly with Celotex and failed to take proper steps to ensure that it understood that the previous certificate (which stated on its face that it was valid until August 2015) should not be used. There is no evidence that LABC took any steps to inform local authority building control departments or approved inspectors (in particular NHBC) that the old certificate could no longer be relied on. Plainly, it should have done so.

<sup>1673</sup> {LABC0000321}.

<sup>1674</sup> Ewing {Day218/201:1-6}.

<sup>1675</sup> {LABC0000321}; Ewing {Day218/201:7-10}.

<sup>1676</sup> {LABC0000337}.

<sup>1677</sup> {LABC0020139/48}

<sup>1678</sup> Ewing {Day218/194:21}–{Day218/195:17}.

<sup>1679</sup> {LABC0000330}.

<sup>1680</sup> Ewing {Day218/203:16}–{Day218/204:5}.

<sup>1681</sup> Phase 2 Module 2 Closing Submissions {LABC0019740/28} page 28, paragraph 73.

<sup>1682</sup> Ewing {Day218/205:2}–{Day218/206:8}.

<sup>1683</sup> Ewing {Day218/195:11-17}.

## Chapter 26

# The National House Building Council

### NHBC and associated organisations

- 26.1** The National House Building Council (NHBC) is the largest provider of warranties for newly built properties in the UK and (through its subsidiary) the largest private building control body in England and Wales.<sup>1684</sup> NHBC did not provide building control or warranty services for the Grenfell Tower refurbishment, but it had (and retains) a major influence over standards in the housebuilding industry.<sup>1685</sup> Its dealings with Kingspan and DCLG (“the department”), in particular Brian Martin, in the period 2010 to 2016 are revealing.
- 26.2** NHBC was established in 1936 in order to respond to what was seen as the poor quality of construction provided by the housebuilding industry.<sup>1686</sup> At the time of the Grenfell Tower refurbishment it provided warranties of the quality of construction in the form of its “Buildmark” warranty and building control services as an approved inspector under the Building Act 1984. In both contexts it occupied a dominant position in the private sector market, supplying over 80% of warranties on newly built properties<sup>1687</sup> and about 60% of the services provided to the residential market by approved inspectors.<sup>1688</sup>
- 26.3** NHBC is a private company limited by guarantee,<sup>1689</sup> meaning that it retains any profits it makes rather than distributing them to shareholders.<sup>1690</sup> Warranties are issued by the company itself, whereas building control services are provided by NHBC Building Control Services Ltd (NHBC BCS), a profit-making company of which NHBC is the sole shareholder.<sup>1691</sup>
- 26.4** The “Buildmark” warranty is a policy of insurance. Although the standards required for a property to be eligible for a “Buildmark” warranty were set by the Standards department of NHBC, the wording of the policy and its underwriting were handled by a different department.<sup>1692</sup> The issue of warranties was carried out separately from the provision of building control services.<sup>1693</sup>
- 26.5** Oversight of both warranty and building control operations was provided by NHBC’s Technical Services Department; Steve Evans was the Building Control Manager and John Lewis one of the specialist surveyors.<sup>1694</sup> John Lewis reported to Steve Evans who in turn reported to Diane Marshall in her role as Head of Technical Services. She in her turn

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<sup>1684</sup> Evans {Day219/17:5}-{Day219/18:17}.

<sup>1685</sup> Evans {NHB00003020/13} page 13, paragraph 36(c).

<sup>1686</sup> Evans {NHB00003020/4} page 4, paragraph 15.

<sup>1687</sup> {NHB00003501}.

<sup>1688</sup> Evans {Day219/18:4-17}.

<sup>1689</sup> Evans {NHB00003020/4} page 4, paragraph 15.

<sup>1690</sup> Evans {Day219/19:5-25}.

<sup>1691</sup> Evans {Day219/19:5-25}.

<sup>1692</sup> Evans {Day225/82:9}-{Day225/83:4}.

<sup>1693</sup> Evans {NHB00003020/5} page 5, paragraph 18 (b).

<sup>1694</sup> Evans {NHB00003020/6} page 6, paragraph 18 (c).

reported to Ian Davis, the Operations Director, who was a member of NHBC's board of directors.<sup>1695</sup> Ms Marshall occasionally reported directly to the board in respect of technical matters and the financial affairs of NHBC BCS.<sup>1696</sup>

- 26.6** The Technical Services Department contained a group set up specifically to deal with projects over eight storeys in height. It was called the Major Projects Team.<sup>1697</sup> NHBC did not, however, employ any specialist fire engineers after 2008 and it was not until John Lewis completed a Masters' degree in fire and explosion engineering in 2013 that the teams had access to any internal fire safety expertise.<sup>1698</sup> Even during that period, Mr Lewis's work was never reviewed by anyone with equivalent qualifications.<sup>1699</sup> Mr Lewis was joined by another fire engineer, Maulik Katkoria, in 2016.<sup>1700</sup>

## The Building Control Alliance

- 26.7** The Building Control Alliance (BCA) was formed in 2008 with five member organisations, the Association of Consultant Approved Inspectors (ACAI), Local Authority Building Control (LABC), the Royal Institution of Chartered Surveyors (RICS), the Chartered Institute of Building (CIB) and the Chartered Association of Building Engineers (CABE).<sup>1701</sup> The alliance was established to promote the role of building control bodies, respond to government proposals, provide mediation services and provide a unified view on areas of uncertainty in the Building Regulations. It was, at least in part, a response to a government review of building control and opposition from building control bodies to a proposed relaxation of building control requirements.<sup>1702</sup> It was later incorporated as a limited company.<sup>1703</sup> Although the BCA published guidance for the construction industry, it had no statutory standing and was an unregulated, voluntary, professional body.<sup>1704</sup>
- 26.8** NHBC was not itself a member of the BCA, but it was a member of the ACAI, through which it was actively involved in the BCA.<sup>1705</sup> Steve Evans was a founding member of the BCA executive board and was chair of the Technical Group from 2010 until 2019.<sup>1706</sup> He was involved in publishing guidance notes, including Technical Guidance Note 18 first published in June 2014.<sup>1707</sup> Diane Marshall was a member of the BCA's executive committee from its inception in 2007.<sup>1708</sup>

## NHBC's knowledge of Kingspan K15: 2010

- 26.9** By 2010 at the latest, NHBC was aware that combustible insulation was commonly being used in the external walls of buildings over 18 metres in height. In April of that year BRE published a report entitled *Fire performance of highly insulated residential buildings and modern methods of construction: A literature review*<sup>1709</sup> that had been commissioned by NHBC Foundation, a body established and funded by NHBC to carry out research and

<sup>1695</sup> Lewis {NHB00003433/5} page 5, paragraph 18 (c) and {NHB00002769}; Marshall {Day225/79:9-18}.

<sup>1696</sup> Marshall {Day225/79:9-18}.

<sup>1697</sup> Lewis {Day223/7:9-14}.

<sup>1698</sup> Lewis {Day223/5:24}-{Day23/6:20}.

<sup>1699</sup> Lewis {Day223/7:5-8}.

<sup>1700</sup> Lewis {Day223/6:21}-{Day223/7:1}.

<sup>1701</sup> Evans {NHB00003020/59} page 59, paragraph 164 (b).

<sup>1702</sup> Evans {Day219/38:15}-{Day219/40:5}; Turner {LABC0011202/28} page 28, paragraph 92.

<sup>1703</sup> Evans {NHB00003020/59} page 59, paragraph 164 (f).

<sup>1704</sup> Evans {Day219/53:14}-{Day219/55:4}.

<sup>1705</sup> Evans {Day219/41:22}-{Day219/42:12}.

<sup>1706</sup> Evans {NHB00003020/60} page 60, paragraph 166-167.

<sup>1707</sup> Evans {NHB00003020/61} page 61, paragraph 168.

<sup>1708</sup> Marshall {NHB00003434/4} page 4, paragraph 16; Marshall {Day225/86:4-7}.

<sup>1709</sup> {NHB00000452}.

provide guidance to the house-building industry. During the preparation of the report, BRE consulted a group of industry professionals that included two representatives of NHBC, John Lewis and Dave White.<sup>1710</sup> Mr Lewis confirmed that he had read the report at around the time of its publication.<sup>1711</sup>

- 26.10** The report contained a detailed explanation of the principal regulatory requirements applicable to residential buildings and the materials that were commonly used to construct them. It warned that the growing prevalence of modern insulation products meant that the fire load within dwellings had increased leading to a greater risk of fire spreading through the fabric of the building.<sup>1712</sup> It concluded that the materials being used in the construction of modern buildings appeared to be resulting in increasingly large fire losses.<sup>1713</sup>
- 26.11** Mr Lewis accepted that by April 2010 at the latest he had been aware that combustible insulation was being used much more commonly in the external walls of buildings over 18 metres in height<sup>1714</sup> and that the most commonly used product was Kingspan K15.<sup>1715</sup> He said that Kingspan K15 was commonly accepted by fire engineers on the basis of its BBA certificate and that NHBC relied heavily on Kingspan's own assurances concerning the way in which its products could be used.<sup>1716</sup> For her part, Diane Marshall said that it had been NHBC's practice until 2015 to allow the use of Kingspan K15 on buildings over 18 metres in height, again on the basis of the BBA certificate.<sup>1717</sup>

### The BBA certificate

- 26.12** The first BBA certificate for Kingspan K15 was issued on 27 October 2008. It referred to one successful test in accordance with BS 8414 Part 1 in 2005.<sup>1718</sup> It stated that Kingspan K15 might be used in accordance with paragraphs 12.5 and 12.6 of Approved Document B,<sup>1719</sup> but warned that advice should be sought from the certificate holder if the product were being considered for use on buildings over 18 metres in height.<sup>1720</sup> That statement remained in the version of the BBA certificate that was amended in April 2010 and published in July 2013.<sup>1721</sup>
- 26.13** Seeking advice from the manufacturer in that way was not a route to compliance with the functional requirement of the Building Regulations indicated by Approved Document B. Kingspan could never have given any advice sufficient to satisfy the guidance in Approved Document B or the requirements of the Building Regulations other than that the system proposed for use was or was not the same as that which had been the subject of the 2005 test.<sup>1722</sup> It should have been obvious to any properly informed reader of the BBA certificate that Kingspan's own advice could not safely be relied upon.
- 26.14** Nonetheless, NHBC did exactly that. Steve Evans told us that NHBC had been satisfied with a letter from Kingspan's technical department stating that the proposed system was acceptable without knowing anything about the knowledge or experience of the writer and

<sup>1710</sup> {NHB00000452/6}.

<sup>1711</sup> Lewis {Day223/17:8}.

<sup>1712</sup> {NHB00000452/5}.

<sup>1713</sup> {NHB00000452/9}.

<sup>1714</sup> Lewis {Day223/19:5-7}.

<sup>1715</sup> Lewis {NHB00003433/7} page 7, paragraph 26.

<sup>1716</sup> Lewis {NHB00003433/7} page 7, paragraph 26; Lewis {Day223/22:21}-{Day223/23:20}.

<sup>1717</sup> Marshall {NHB00003434/17} page 17, paragraph 72.

<sup>1718</sup> {BBA00000038/5}.

<sup>1719</sup> {BBA00000038/5-6}.

<sup>1720</sup> {BBA00000038/6}.

<sup>1721</sup> {BBA00000037/5}.

<sup>1722</sup> Lewis {Day223/152:1-19}.

without any guidance from NHBC about what technical information it should contain.<sup>1723</sup> He told us that it was for the NHBC surveyor receiving the letter to decide whether it contained enough information to enable him to approve the use of K15 on a building over 18 metres in height.<sup>1724</sup>

- 26.15** Diane Marshall sought to justify NHBC’s reliance on assurances by Kingspan by referring back to the BBA certificate itself.<sup>1725</sup> She appeared to think that the effect of the recommendation that advice should be sought from the certificate holder was effectively to enable Kingspan to certify that its products could be used in applications which bore no relation to that on which the BBA certificate was based.
- 26.16** If that was her belief it overlooked two matters of fundamental importance: first, that reliance on the advice of the manufacturer of a product could never have been a proper way of ensuring compliance with the Building Regulations, and secondly, as Ms Marshall accepted, the advice Kingspan provided was generally no more than a bald assertion that K15 was suitable for the project, without any technical assessment or analysis.<sup>1726</sup>

### Paragraph 12.7 of Approved Document B

- 26.17** When it was revised in July 2013, the BBA certificate included a new statement that Kingspan K15 could be used in accordance with paragraph 12.7 of Approved Document B, which required insulation products used in buildings over 18 metres in height to be materials of limited combustibility.<sup>1727</sup> K15 was not a material of limited combustibility and the reference to paragraph 12.7 was therefore clearly wrong. That mistake should have been obvious to all at NHBC who knew, or should have known, that it was a phenolic foam and therefore combustible.<sup>1728</sup>
- 26.18** Despite that, no one at NHBC said anything to the BBA about the error in the certificate until July 2015. The witnesses from whom we heard sought to justify that omission by relying on the Approved Document providing guidance on regulation 7 of the Building Regulations 2010.<sup>1729</sup> Paragraph 1.15 of that document stated that an independent product certification scheme might indicate that a material is suitable for its intended purpose and use, but the operative word there is “might”.<sup>1730</sup> Paragraph 1.18 stated that past experience, such as use in an existing building might show that a product could perform the function for which it was intended, but again, the operative word is “might”.<sup>1731</sup> Neither of those paragraphs detracts from the clear requirements of functional requirement B4(1) and the guidance in Approved Document B. If those at NHBC thought they did, they were wrong. Diane Marshall ultimately accepted that the guidance in the Approved Document on regulation 7 could have no bearing on paragraph 12.7 of Approved Document B but she insisted that it provided an alternative route to compliance with functional requirement B4(1).<sup>1732</sup>

<sup>1723</sup> Evans {Day219/126:19}-{Day219/135:5}.

<sup>1724</sup> Evans {Day219/133:12}-{Day219/134:1}.

<sup>1725</sup> Marshall {Day225/155:3}-{Day225/158:22}.

<sup>1726</sup> See for example the Kingspan letter of 13 January 2014 to Mount Anvil in respect of its Eagle House project {KIN00002663}; Marshall {Day225/155:3-6}.

<sup>1727</sup> {BBA00000037/5}.

<sup>1728</sup> Marshall {Day225/115:15}-{Day225/116:11}; Evans {Day219/66:1-4}; Lewis {Day223/37:1-4}.

<sup>1729</sup> {INQ00014930}.

<sup>1730</sup> {INQ00014930/13}.

<sup>1731</sup> {INQ00014930/14}.

<sup>1732</sup> Marshall {Day225/101:4-7}.

**26.19** In support of that position, Ms Marshall appeared to rely on a section in Approved Document B entitled “Use of Guidance”, which stated that building control bodies might accept the certification of products under approved product certification schemes as evidence that they complied with a relevant standard.<sup>1733</sup> She appeared to think that a building control body need look no further than, for example, a BBA certificate, nor examine its contents critically, when deciding whether a product was suitable for use, even when some of the statements in it were obviously wrong.<sup>1734</sup> We cannot agree. It should have been clear to everyone at NHBC that there was nothing in regulation 7 or Approved Document B that could justify such a perverse outcome. We read regulation 7 and that paragraph in Approved Document B as saying no more than that ordinarily a building control body should be able to rely on statements in certificates issued by certification bodies accredited by UKAS, but not that they are entitled to do so in the face of ambiguity or obvious error.

### Internal discussions about K15: August to November 2013

**26.20** On 28 August 2013, Steve Cook (NHBC’s Area Technical Manager for London) wrote to Steve Evans saying that the question of using what he referred to as “non-combustible cavity insulation” in buildings with a storey over 18 metres in height was causing a lot of concern to customers.<sup>1735</sup> He asked whether NHBC was in possession of any guidance on the issue or whether it might be able to encourage Kingspan to test its K15 and K12 products to achieve certification as non-combustible. Steve Evans replied that NHBC had no involvement in the testing carried out by Kingspan, but that he would discuss with John Lewis whether NHBC might be able to draft some guidance.<sup>1736</sup>

**26.21** Mr Cook may have used the phrase “non-combustible” as shorthand for having limited combustibility, or perhaps he did not understand the difference. Either way, Mr Lewis and Mr Evans both told us that they knew at the time those emails were exchanged that Kingspan K15 was combustible and should not be used in the external walls of buildings above 18 metres in height.<sup>1737</sup> However, neither of them could recall having discussed the matter or reaching any consensus on NHBC’s approach to Kingspan K15 at that time.<sup>1738</sup> Certainly, no new guidance was issued.

**26.22** On 16 October 2013, John Lewis and Steve Cook received an email from a project surveyor in NHBC’s Technical Services department. The surveyor said, in summary, that he did not think that Kingspan K15 was a material of limited combustibility but had become aware of a colleague in NHBC who believed that it was and had consequently been accepting its use on buildings above 18 metres in height.<sup>1739</sup> Mr Cook responded the following day, saying that any insulation used on high-rise buildings was required to be a material of limited combustibility but that Kingspan did not have test evidence to show that K15 met that requirement.<sup>1740</sup>

**26.23** Although John Lewis claimed that those emails indicated confusion about whether Kingspan K15 was acceptable for use on high-rise buildings, both he and Steve Evans conceded that they had known that paragraph 12.7 of Approved Document B advised

<sup>1733</sup> {CLG00000224/7}.

<sup>1734</sup> Marshall {Day225/114:1}-{Day225/120:13}.

<sup>1735</sup> {NHB00000583}.

<sup>1736</sup> {NHB00000583}.

<sup>1737</sup> Evans {Day219/65:1-4}; Lewis {Day223/36:15}-{Day223/37:4}.

<sup>1738</sup> Evans {Day219/71:15}-{Day219/72:3}; Lewis {Day223/40:20}-{Day223/41:5}.

<sup>1739</sup> {NHB00000587}.

<sup>1740</sup> {NHB00000587}.

that insulation materials should be of limited combustibility and that Kingspan K15 did not meet that guidance.<sup>1741</sup> Nonetheless, NHBC was routinely accepting it for use on high-rise buildings.<sup>1742</sup> John Lewis sought to justify that approach, again by reference to regulation 7 of the Building Regulations. He conceded, however, that he had never checked whether regulation 7 supported NHBC's approach and could not recall anyone else at NHBC having done so.<sup>1743</sup> Had he done so, we think he would have reached the clear conclusion that it did not.

- 26.24** John Lewis was shown an email sent by Chris Macey of Wintech, the façade engineering consultants, to Dave White of NHBC on 4 October 2013 in which Mr Macey said that Kingspan K15 was not a material of limited combustibility.<sup>1744</sup> Mr Macey noted that K15 was widely used and said that Kingspan's marketing material wrongly implied that it was suitable for all applications. He expressed the view, which he said was shared by BRE, that it should not be used without supporting documentation or test data to confirm its acceptability. Mr Lewis rightly accepted that what Mr Macey had said was correct.<sup>1745</sup>
- 26.25** In his email, Chris Macey offered to meet NHBC in order to explain Wintech's concerns, and Dave White began to make arrangements for a meeting.<sup>1746</sup> We return to that meeting below.
- 26.26** Meanwhile, on 31 October 2013, Brian Stevenson, Steve Cook and Paul Williams, three Area Technical Managers employed by NHBC in its Technical Services department, exchanged emails concerning Kingspan K15. Mr Williams said that he had been told that NHBC was no longer accepting K15 on the basis that it was combustible and asked whether NHBC's surveyors had been advised accordingly. Mr Cook said that most surveyors were aware of that view. Mr Stevenson responded that he was certainly not aware that it was NHBC's policy not to accept K15,<sup>1747</sup> which it had previously accepted on the basis that it held a BBA certificate.<sup>1748</sup> Mr Lewis told us that he was surprised by Mr Stevenson's ignorance of that matter.<sup>1749</sup>
- 26.27** On 4 November 2013, Paul Williams wrote to NHBC's south-west area technical team saying that John Lewis and Steve Evans were reviewing whether K15 could be accepted for use on high-rise buildings, as NHBC had doubts about its combustibility.<sup>1750</sup> In reality, as we have said above, neither Steve Evans nor John Lewis had any such doubts: they both knew perfectly well that K15 was combustible and thus did not meet the guidance in paragraph 12.7 of Approved Document B for use in the external walls of buildings over 18 metres in height.
- 26.28** Chris Cooley, a Project Surveyor in the Technical Services Department, responded to Mr Stevenson on 8 November 2013 asking how long the promised review would take. He also asked what the alternatives were to using K15 and pointed out that there were no other foam insulation boards that were of limited combustibility and therefore mineral wool was the only material that could be used on high-rise buildings. He stressed that surveyors needed to communicate their requirements at the outset of any design process

<sup>1741</sup> Lewis {Day223/45:4-9}; Evans {Day219/81:2-13}.

<sup>1742</sup> {NHB00000587/2}; Evans {Day219/78:1}-{Day219/82:12}; Lewis {Day223/46:14}-{Day223/47:7}

<sup>1743</sup> Lewis {Day223/47:8}-{Day223/48:15}.

<sup>1744</sup> {NHB00000585}.

<sup>1745</sup> Lewis {Day223/50:20}.

<sup>1746</sup> {NHB00000585/1}.

<sup>1747</sup> {NHB00000589}.

<sup>1748</sup> Stevenson {NHB00003524/2} paragraphs 10-11.

<sup>1749</sup> Lewis {Day223/53:6-9}.

<sup>1750</sup> {NHB00000594/3}.



and warned that a refusal by NHBC to accept K15 would give rise to a major problem with customers who relied on foam board insulation to achieve required U-values.<sup>1751</sup> Mr Cooley warned that Mr Evans should be prepared to receive a barrage of enquiries. That message worked its way up to Steve Evans the same day.<sup>1752</sup> Mr Evans could have been in no doubt, by that point, therefore, about the serious consequences of NHBC's building control officers' having routinely accepted the use of K15 on high-rise buildings in the past and continuing to do so. However, NHBC did not immediately act on what it now knew.

- 26.29** Although Mr Lewis candidly accepted that a change in NHBC's position on K15 would have resulted in a lot of angry customers, he denied that its failure to act was motivated by commercial considerations.<sup>1753</sup> Likewise, Ms Marshall denied that the likely reaction of customers was a factor in its continued acceptance of K15; she said it had not been taken into consideration.<sup>1754</sup> In our view, however, in the light of Chris Cooley's email that was not credible.
- 26.30** Ultimately, Mr Evans came to accept that the NHBC's failure to adopt a tougher stance on K15 had indeed been motivated by the likely reaction of its customers. He said that what he characterised as a "knee-jerk" reaction would have caused a lot of disruption to NHBC, which wished to get hold of all the facts before it made a decision.<sup>1755</sup> He claimed that NHBC continued to permit the use of K15 because it had no information that it was not safe,<sup>1756</sup> but K15 could not be regarded as safe for use on buildings over 18 metres in height since it was not a material of limited combustibility and its use did not comply with paragraph 12.7 of Approved Document B, as NHBC well knew. Furthermore, NHBC also knew that K15 had been and was still being approved for use in the external walls of high-rise buildings which were not constructed in the same way and with the same components as the system that Kingspan had tested in 2005.<sup>1757</sup> In those circumstances, NHBC had no reason to think that K15 was generally safe for use on high-rise buildings and every reason to challenge the claim in Kingspan's marketing literature that it was. NHBC's continued endorsement of its use from then on was unjustifiable and amounted to an abdication of its responsibility.

### Meeting with Wintech: 15 November 2013

- 26.31** The meeting between Wintech and NHBC took place on the morning of 15 November 2013. John Lewis, Dave White and Graham Perrior represented NHBC; Stuart Taylor and David Watakabi represented Wintech. John Lewis said that meeting had been responsible for bringing concerns about K15 to the forefront of his mind.<sup>1758</sup>
- 26.32** In the hours following that meeting, Mr Lewis compiled a note of the discussions, together with a draft of what he described as an internal guidance note, which he circulated at 14.45 the same day.<sup>1759</sup> The second paragraph of Mr Lewis' note is of particular importance. It described how Wintech had outlined the route to compliance, as recommended in Approved Document B, and set out in bullet points three ways of following it, which formed

<sup>1751</sup> {NHB00000594/3}.

<sup>1752</sup> {NHB00000594/1}.

<sup>1753</sup> Lewis {Day223/60:17-22}.

<sup>1754</sup> Marshall {Day225/161:10-19}.

<sup>1755</sup> Evans {Day219/222:3-20}

<sup>1756</sup> Evans {Day219/223:2-17; {Day219/174:11}-{Day219/175:21}.

<sup>1757</sup> John Lewis's email of 19 November 2013 {NHB00000604/1}.

<sup>1758</sup> Lewis {NHB00003433} page 12, paragraph 47.

<sup>1759</sup> {NHB00000604/4}; {NHB00000605}.

the basis of his internal guidance note. Although it was described as “internal” at that time, the guidance note eventually became (with only minor amendments) Technical Guidance Note 18, published by the BCA in June 2014.<sup>1760</sup>

- 26.33** One important element in the discussion was Wintech’s view, apparently shared by Mr Lewis, that after the 2006 amendments paragraph 12.7 of Approved Document B required all elements of a cladding system to be of limited combustibility, including the external facing material, not only the insulation. The alternative route to compliance was to test the entire proposed system in accordance with BS 8414 and satisfy the performance criteria in BR 135. As a further alternative, a “desktop” opinion from BRE, based on test data, that the performance criteria in BR 135 would be met by the system, would also suffice.
- 26.34** When Mr Lewis was asked why he felt that he needed to recite the guidance in Approved Document B in such detail to his colleagues, he said that, although NHBC already knew it, it had not really digested it.<sup>1761</sup> He explained that the guidance in Approved Document B was not second nature to NHBC and that it had not previously understood properly the restrictions on the use of combustible insulation in high-rise buildings.<sup>1762</sup> For NHBC as an institution to have had such a poor grasp of the statutory guidance on a matter affecting the safety of life significantly detracted from its ability to discharge its function as an approved inspector.
- 26.35** Although Mr Lewis’s notes referred to the use of desktop studies, he candidly admitted that he had never heard of them being provided but said that the representatives of Wintech had told him that other building control bodies had accepted them as demonstrating compliance with the Building Regulations.<sup>1763</sup> The basis of that part of the guidance was, therefore, purely anecdotal, although in principle a desktop assessment was an acceptable method of demonstrating compliance, provided it was performed competently using appropriate data. However, it was unwise, in our view, to produce draft guidance of that kind, even in its most rudimentary form, without finding out whether BRE, Exova, or other testing houses were capable of producing reliable desktop studies and how widespread was the practice of building control officers’ accepting them.
- 26.36** Mr Lewis’s notes referred to the Class 0 classification, which it described as “solely a measure of the spread of a flame across the surface”.<sup>1764</sup> In fact that was incorrect, because Class 0 refers to both the spread of flame and fire propagation. Mr Lewis said that there was a lot of misunderstanding and confusion within NHBC about Class 0 and that he was not fully aware at the time of the way in which the classification was achieved.<sup>1765</sup> That confusion about the meaning of Class 0 was not limited to NHBC but was shared by industry generally, and had been for many years.
- 26.37** In the following days, NHBC discussed the guidance note internally. On 19 November 2013 Mr Lewis agreed to put it into a form that would enable it to be presented for consideration at a forthcoming meeting of the BCA.<sup>1766</sup> He also told Steve Evans in terms that Kingspan had tested K15 only once on a masonry wall construction, that K15 was acceptable only if incorporated into an identical system, and that since most

<sup>1760</sup> Lewis {Day223/74:16-20}.

<sup>1761</sup> Lewis {Day223/63:20-25}.

<sup>1762</sup> Lewis {Day223/64:13-15}.

<sup>1763</sup> Lewis {Day223/66:15}-{Day223/67:3}.

<sup>1764</sup> {NHB00000604/5}.

<sup>1765</sup> Lewis {Day223/68:19}-{Day223/69:25}.

<sup>1766</sup> {NHB00000604}.

of the schemes being approved by NHBC involved steel-framed constructions it should not be accepting K15, if it intended to follow the guidance in Approved Document B and BR 135.<sup>1767</sup> Mr Lewis told us that none of his colleagues at NHBC disagreed with that view.<sup>1768</sup>

- 26.38** Nonetheless, NHBC continued to accept K15 for use on high-rise buildings. In an email sent on 2 December 2013 Steve Evans asked John Lewis for his comments on a draft message he was proposing to send to all NHBC technical staff saying that there was some confusion about whether K15 could be treated as a material of limited combustibility but that until NHBC was in a position to say otherwise, its policy was to continue to accept the use of K15 in rainscreen and masonry construction on buildings over 18 metres in height.<sup>1769</sup> Mr Lewis responded by saying that there was no confusion and that K15 was not a material of limited combustibility. He advised in his email that staff should be told to check with Kingspan first, but that NHBC was obliged in principle to accept the statement in the BBA certificate that K15 could be used in accordance with paragraph 12.7 of Approved Document B (i.e. that it *was* a material of limited combustibility).<sup>1770</sup>
- 26.39** Mr Evans' draft and Mr Lewis's response betray serious flaws in NHBC's thinking. First, the language of these communications strongly suggests that Mr Evans was anxious to play down the potential threat to safety by requiring Kingspan to justify the use of K15 in each individual case and in the meantime to continue to accept it for use on buildings over 18 metres in height generally. NHBC knew that K15 could not be used in a system other than one that was identical to the system tested in 2005, which was very different from any of the systems being passed by its building control officers. Secondly, they were both quite wrong to think that NHBC was obliged to endorse the use of K15. On the contrary, as Mr Lewis clearly knew, paragraph 12.7 of Approved Document B did not apply to the product because it was not a material of limited combustibility. Mr Lewis sought to justify his statement by saying that the statement in the BBA certificate that advice should be sought from Kingspan if K15 was proposed for use on high-rise buildings indicated a route to compliance.<sup>1771</sup> However, as he ultimately accepted, it did no such thing; the "route" it suggested was, at best, a way of circumventing the guidance in Approved Document B, rather than following it.
- 26.40** At that point, rather than issue a flimsy warning to its staff, NHBC ought to have told them to stop accepting K15 for use in the external wall of any building over 18 metres in height immediately unless and until they had evidence that that system had met the performance criteria in BR 135 following a test under BS 8414. The failure of NHBC to do so reflects a desire at the time to placate customers and manufacturers at the expense of safety.
- 26.41** The BBA certificate was subsequently amended to remove the advice to contact the manufacturer,<sup>1772</sup> but NHBC's policy in late 2013 was conceived before it had any knowledge of that change and cannot therefore be justified by reference to the amended certificate. As Mr Lewis explained, NHBC foresaw that a refusal to accept K15 would have a massive effect across the industry.<sup>1773</sup> It also believed that any change in its position on K15 would have isolated it from the rest of the industry, as the use of K15 was endorsed by the

<sup>1767</sup> {NHB00000604}.

<sup>1768</sup> Lewis {Day223/75:20}.

<sup>1769</sup> {NHB00000615/2}.

<sup>1770</sup> {NHB00000615/1}. Lewis {Day223/161:14-22}.

<sup>1771</sup> Lewis {Day223/161:14-22}.

<sup>1772</sup> {BBA00000036/6}.

<sup>1773</sup> Lewis {Day223/165:16}-{Day223/166:12}.

LABC. As Mr Lewis put it, that led NHBC to ask whether there was any point in rejecting K15 when it was likely to be approved by local authority building control departments.<sup>1774</sup> In our opinion, that was an unacceptable approach for NHBC to take.

### Dealings with Kingspan: November 2013 to April 2014

- 26.42** On 26 November 2013, Mr Lewis sent an email to Kingspan asking for advice about the use of K15 on a project involving a building over 18 metres in height.<sup>1775</sup> He noted that K15 was not a material of limited combustibility and therefore asked how the alternative route to compliance in Approved Document B, namely, testing in accordance with BS-8414 and classification in accordance with BR 135, could be achieved. Kingspan's initial response came on 12 December 2013 and merely referred Mr Lewis to the BBA certificate as the basis for the use of K15 on high-rise buildings.<sup>1776</sup>
- 26.43** Mr Lewis was, unsurprisingly, not satisfied with that response and repeated his request the same day.<sup>1777</sup> He explained that his original question had been prompted by the BBA certificate's suggestion that NHBC should seek advice from Kingspan about the suitability of K15 rather than simply reading the product literature. Mr Lewis pointed out that K15 was not a material of limited combustibility and that there had been only one test under BS-8414-1 involving K15 for which results were available. He questioned how K15 could be used as part of a differently constructed external wall or on any system attached to a structural steel frame (which required testing under BS 8414-2).
- 26.44** Mr Lewis had not received any substantive response by the following day and therefore wrote again, with copies to Steve Evans, Dave White and Graham Perrior.<sup>1778</sup> He said that he and his managers at NHBC wished to raise the matter with Kingspan's management team and requested a meeting in early 2014. He noted that, given the number of affected projects that it was dealing with, NHBC wished to start to advise its customers that K15 did not comply with the Building Regulations or the BBA certificate when used on a building over 18 metres in height.
- 26.45** It is clear from Mr Lewis's email that, despite what its witnesses repeatedly told us, NHBC did not in fact consider that the BBA certificate provided conclusive evidence that K15 was safe or acceptable for use in accordance with the Building Regulations. Indeed, the import of Mr Lewis's message to Kingspan of 13 December 2013 was plainly that the BBA certificate did not support the use of K15 on buildings over 18 metres in height, despite what it said. In our view, NHBC correctly thought that the BBA certificate was wrong in stating that K15 could be used in accordance with paragraph 12.7 of Approved Document B and was free to reject it as proof that K15 was suitable for use under those circumstances. However, it chose not to act on what it knew, pending receipt of an explanation from Kingspan, in order to avoid provoking protests from customers and Kingspan alike. As to that, Mr Lewis had told Mr Evans on 2 December 2013 that he doubted that Kingspan would be able to provide the evidence required to justify the use of K15 on high-rise buildings<sup>1779</sup> but admitted he feared the massive effect across the industry that a change in NHBC's position would cause.<sup>1780</sup>

<sup>1774</sup> Lewis {Day224/19:10-24}.

<sup>1775</sup> {NHB00000644/5}.

<sup>1776</sup> {NHB00000644/3}.

<sup>1777</sup> {NHB00000644/2}.

<sup>1778</sup> {NHB00000644}.

<sup>1779</sup> {NHB00000615/2}.

<sup>1780</sup> Lewis {Day223/165:2}-{Day223/166:12}.

- 26.46** As Mr Lewis conceded, his threat to advise NHBC’s customers that K15 was not suitable for use on high-rise buildings was intended to prompt a response from Kingspan.<sup>1781</sup> It achieved its aim and Steve Evans, John Lewis, Graham Perrior and Dave White of NHBC met Richard Bromwich, Kingspan’s National Business Development Director, and Ivor Meredith, its Technical Project Manager, in January 2014.<sup>1782</sup> Mr Lewis told us that at the meeting Kingspan had not contradicted his understanding of Approved Document B<sup>1783</sup> and had confirmed that there was currently only one successful BS 8414 test of a system incorporating K15.<sup>1784</sup>
- 26.47** At that meeting, Kingspan produced a video showing the flame from a blowlamp being applied to a sample of K15 and suggested that, in Mr Lewis’ words, “it doesn’t burn particularly”,<sup>1785</sup> notwithstanding the absence of any test data to justify that conclusion. Mr Lewis said he did not think that that was an acceptable, independent or robust way of verifying the suitability of K15,<sup>1786</sup> but NHBC continued to accept the use of the product on high-rise buildings on the basis of an assertion that it was accepted for use on many tall buildings around the world.<sup>1787</sup>
- 26.48** John Lewis accepted that he had been aware that Appendices A and B to BR 135 provided that the results of a BS 8414 test could be used to justify the use of a combustible material only in an external wall system that was identical to that which had been tested.<sup>1788</sup> He also accepted that it had been clear to him that there were simply no test results available to support the use of K15 in the many external wall systems in which it had already been used.<sup>1789</sup> However nobody at NHBC accepted, as they should have done, that the only advice that Kingspan could properly give to its customers was that K15 could not be used at all on buildings over 18 metres in height except as part of a system exactly the same as that tested in 2005.
- 26.49** At that point, NHBC should immediately have stopped approving the use of K15 on buildings above 18 metres in height. However, it did not. It continued to endorse the use of K15, despite the guidance in Approved Document B, because Kingspan was willing to confirm that it was suitable.<sup>1790</sup> That approach made no sense, as Mr Lewis accepted in hindsight, but it was adopted because NHBC felt at the time that Kingspan was the only party with detailed knowledge of K15’s fire performance.<sup>1791</sup> Mr Lewis told us that he had raised concerns with his superiors in NHBC that the justification for approving the use of K15 was becoming ever flimsier but that no change had been made.<sup>1792</sup> NHBC’s approach of relying uncritically on what Kingspan itself claimed for K15, given that it cannot have been in any doubt that Kingspan was selling K15 on the basis of a self-evidently misleading BBA certificate, demonstrated weakness and a failure to live up to its responsibilities. It was all the more serious for the fact that NHBC was an institution responsible for providing building control services in respect of a large number of new buildings and for ensuring their compliance with the Building Regulations.

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<sup>1781</sup> Lewis {Day223/125:5-13}.

<sup>1782</sup> {NHB00000652}.

<sup>1783</sup> Lewis {Day223/125:23}-{Day223/126:5}.

<sup>1784</sup> {NHB00000652/1}.

<sup>1785</sup> Lewis {Day223/131:3-10}.

<sup>1786</sup> Lewis {Day223/131:14}.

<sup>1787</sup> Lewis {Day223/131:3-10}.

<sup>1788</sup> Lewis {Day223/155:17}-{Day223/157:8}.

<sup>1789</sup> Lewis {Day223/157:8}.

<sup>1790</sup> Lewis {Day223/126:21-22}.

<sup>1791</sup> Lewis {Day223/127:2-14}.

<sup>1792</sup> Lewis {Day223/131:15-24}.

- 26.50** Although NHBC realised that the BBA certificate was flawed, no one thought to ask the BBA on what basis it had been issued,<sup>1793</sup> even though Mr Lewis was not aware of any other BBA certificates which advised the reader to refer to the manufacturer for advice in the same way.<sup>1794</sup>
- 26.51** NHBC held a further meeting with Kingspan on 2 April 2014, attended by John Lewis and Dave White. Mr White reported the results of that meeting to NHBC's technical services managers the same day. He said that for external walls of buildings over 18 metres in height, the only system incorporating K15 for which there was full proof of fire performance was one with a masonry backing wall.<sup>1795</sup> His message was unequivocal. However, even at that point, NHBC did not stop endorsing the use of K15 on high-rise buildings. John Lewis sought to justify that failure by referring to the fact that the BBA certificate for K15 had been revised in January 2014.<sup>1796</sup> That certificate removed the reference to paragraph 12.7 of Approved Document B and the advice to consult the manufacturer, leaving the 2005 test in accordance with BS 8414 as the sole means of achieving compliance.
- 26.52** NHBC discovered the change on or around 25 February 2014.<sup>1797</sup> Thereafter, all projects for which an initial notice had been served before January 2014 were accepted on the basis of Kingspan's historic assurances.<sup>1798</sup> NHBC intended those projects for which the initial notice had been served in or after January 2014 to be the subject of a more rigorous assessment of whether K15 could be used.<sup>1799</sup> It was likely to be several months at least until any new projects reached the stage of completion, during which Kingspan might produce proof that K15 was acceptable for use on buildings over 18 metres in height before NHBC had to take a final position.<sup>1800</sup> In our view, that was not a responsible approach for NHBC to adopt. It was well aware that there could be no proof of the kind envisaged because no BS 8414 test results could be applied to high-rise buildings generally, and Kingspan had not produced any desktop assessments from BRE to support such an approach.
- 26.53** On 3 April 2014, Phil Pettinger, a Special Risk Projects Manager employed by NHBC, responded to Mr White's email.<sup>1801</sup> He said that every job involving a building over 18 metres in height that Special Risk Project Managers dealt with proposed or had used K15. He made plain that K15 was being widely accepted by both NHBC and other building control bodies.<sup>1802</sup> John Lewis accepted that it had been clear to him at the time that there was an industry-wide problem with the acceptance of K15 and that Mr Pettinger's email had come as no surprise.<sup>1803</sup> However, he said that NHBC had not raised the matter with other building control bodies or investigated whether any of them had any other understanding of how K15 could safely be used on buildings over 18 metres in height because of the pressure of time.<sup>1804</sup> However, given that NHBC had gained time by waiting for Kingspan to justify the use of K15 on high-rise buildings, we do not understand what the pressure of time was. A simple enquiry of the LABC or the BCA was all that was required.

<sup>1793</sup> Lewis {Day223/129:6}; {Day223/153:24}-{Day223/155:11}; {Day223/163:5-17}.

<sup>1794</sup> Lewis {Day223/129:17}.

<sup>1795</sup> {NHB00000688/2}.

<sup>1796</sup> {NHB00000853/11}.

<sup>1797</sup> {NHB00000689/3-4}.

<sup>1798</sup> Lewis {Day223/131:3-10}; {Day223/178:20}.

<sup>1799</sup> Lewis {Day223/134:23}-{Day223/135:5}.

<sup>1800</sup> Lewis {Day223/135:20-24}.

<sup>1801</sup> {NHB00000688/1}.

<sup>1802</sup> {NHB00000688/1}.

<sup>1803</sup> Lewis {Day223/141:1}-{Day223/142:11}.

<sup>1804</sup> Lewis {Day223/143:1-10}.

**26.54** On 25 February 2014, Steve Evans asked Mr Lewis to study the new version of the certificate and make an assessment,<sup>1805</sup> but it took him until 9 May 2014 to respond.<sup>1806</sup> In the event, his conclusion was that there was no justification for NHBC to continue accepting K15.<sup>1807</sup> Mr Lewis said that NHBC had been hoping that Kingspan would produce a justification for the use of K15 on high-rise buildings but it never materialised. He said that in the meantime, a practice had developed of asking for desktop studies to justify the use of K15 on high-rise buildings,<sup>1808</sup> but we have not seen any evidence of that.

### TGN 18 (Issue 0): draft

**26.55** The guidance note that Mr Lewis had drafted within hours of NHBC's meeting with Wintech on 15 November 2013 was presented materially unamended as a formal document by Steve Evans to the Technical Working Group of the BCA on 9 December 2013. He proposed that it should be adopted as BCA policy guidance.<sup>1809</sup> It was indeed adopted without material change and became the BCA's Technical Guidance Note 18 (TGN 18), *Use of Combustible Cladding Materials on Residential Buildings Issue 0*, dated June 2014. It was published in July or August 2014.<sup>1810</sup>

**26.56** Like Mr Lewis's guidance note, the proposed guidance put before the BCA in December 2013 referred to three potential routes to compliance with functional requirement B4(1) for the external walls of buildings over 18 metres in height. The first was that all the elements should be materials of limited combustibility, in accordance with paragraph 12.7 of approved Document B. That included the insulation, internal lining board and the external facing material.<sup>1811</sup> That represented Mr Lewis's understanding of the position based on a discussion he had had with Tony Baker of BRE by email in November 2013.<sup>1812</sup> In that exchange Mr Lewis had said that he thought that the provisions of paragraph 12.7 of Approved Document B extended to external cladding panels because it seemed to him logical to expect them to perform as well as the insulation in a fire.<sup>1813</sup> Mr Baker had responded by saying that all significant elements of the cladding system should be included in any analysis.<sup>1814</sup>

**26.57** That approach appears to have reflected BRE's view, at least according to what Dr Sarah Colwell told NHBC in a meeting on 27 November 2014.<sup>1815</sup> It did not come as a surprise to John Lewis.<sup>1816</sup> However, as the evidence from David Metcalfe of CWCT shows, that was by no means the general view of the industry at the time.<sup>1817</sup> In fact, as Mr Lewis accepted, Approved Document B advised in paragraph 12.7 that insulation materials should be of limited combustibility and in diagram 40 that external surfaces should have a Class 0 or Euroclass B or better classification.<sup>1818</sup> Accordingly, by suggesting that "all elements"

<sup>1805</sup> {NHB00000689/3}

<sup>1806</sup> {NHB00000689/1}.

<sup>1807</sup> {NHB00000689/1}.

<sup>1808</sup> Lewis {Day223/176:25}-{Day223/178:14}.

<sup>1809</sup> {NHB00000604/2}; {NHB00000605}; Evans {Day219/104:7-9}.

<sup>1810</sup> {NHB00000760}.

<sup>1811</sup> {NHB00000760/2}.

<sup>1812</sup> {NHB00002971}.

<sup>1813</sup> {NHB00002971/2}.

<sup>1814</sup> {NHB00002971}.

<sup>1815</sup> {NHB00000829}.

<sup>1816</sup> Lewis {Day223/100:12}.

<sup>1817</sup> Metcalfe {CWCT0000115} page 10, paragraph 36.

<sup>1818</sup> Lewis {Day223/92:21}-{Day223/94:4}.

of the external wall should be composed of materials of limited combustibility, TGN 18 presented a restrictive and conservative view of Approved Document B that was not widely shared in the industry.

- 26.58** The second option in TGN 18 was for the client to submit evidence that the complete cladding system had been tested in accordance with BS 8414 and classified in accordance with BR 135. TGN 18 did not refer to classifications; instead it stated that the results of a test in accordance with BS 8414 would need to be supported by proof that the acceptance criteria in BR 135 had been met.<sup>1819</sup> Mr Lewis told us that that was simply intended to mean that full test data should be supplied, because NHBC had not realised that BRE would also produce classification reports with any test data.<sup>1820</sup>
- 26.59** The third option in TGN 18 was the production of a desktop study of the kind that Wintech had told NHBC had been accepted by other building control bodies. However, that was the first time that Mr Lewis had encountered such an approach being adopted in relation to an external wall.<sup>1821</sup> Wintech had not provided NHBC with any details of how the process would work in practice or any examples.<sup>1822</sup> That proposed third route to compliance was entirely theoretical, in as much as it was not based on experience of any such assessments and neither BRE nor any of the other testing houses had been asked whether they could provide desktop assessments and if so how they went about doing so.
- 26.60** Mr Lewis maintained that Appendix A of Approved Document B endorsed the use of desktop studies but he could not recall whether they had been discussed at the meeting with Wintech and there is no evidence to suggest that they had been.<sup>1823</sup> He said that he had examined the provisions of Appendix A before drafting the guidance note,<sup>1824</sup> but any examination he did carry out can only have been cursory because the guidance note (and accompanying email) had been produced in a matter of hours.
- 26.61** In any event, we do not think that Appendix A of Approved Document B did endorse the use of desktop studies. Paragraph 1 of the introduction, which set the context for what followed, referred to the fact that much of the guidance in the document was given in terms of performance in relation to British or European Standards for products or methods of test or design or in terms of European Technical Approvals. In such cases the guidance required the material product or structure under consideration to have been assessed from test evidence against appropriate standards or by using relevant design guides as meeting the performance required by the tests.<sup>1825</sup> In our view, that provision was clearly referring to the results of tests on the relevant material, product or structure and not to the extrapolation of data from tests on a different material, product or structure.
- 26.62** Moreover, even if it were thought that that passage supported the use of desktop assessments, that reasoning could not sensibly be applied to a complex structure such as the entire external wall of a building. Such an interpretation would undermine the express routes to compliance given in Approved Document B, which required either compliance with the “linear route” or a full-scale test in accordance with BS 8414. It would make no sense for Appendix A to permit the use of combustible materials in circumstances where the proposed structure had not been tested at all.

<sup>1819</sup> {NHB00000760/2}.

<sup>1820</sup> Lewis {Day223/105:4}-{Day223/106:12}.

<sup>1821</sup> Lewis {Day223/106:5}-{Day223/108:1}.

<sup>1822</sup> Lewis {Day223/204:7-20}.

<sup>1823</sup> Lewis {Day223/109:5-11}.

<sup>1824</sup> Lewis {Day223/109:16-21}.

<sup>1825</sup> {CLG00000224/119}.



- 26.63** That is not to say, however, that a desktop assessment is never acceptable as a means of demonstrating compliance with one of the functional requirements, but it must be based on sufficient accurate test evidence.<sup>1826</sup> NHBC had no basis for promoting desktop assessments as an alternative way of showing compliance with functional requirement B4(1) without identifying the test data that should be used, the method that should be employed or the qualifications that were required on the part of those who were to conduct them.
- 26.64** When Mr Lewis had spoken of the available test data for K15 in his email of 15 November 2013 setting out his draft internal guidance, he had rightly pointed out that any difference between a proposed external wall system and the system that had been tested by Kingspan would prevent any direct reliance on the test result, and that the limited test data available would make it difficult to draw any reliable conclusions about the fire performance of the proposed system.<sup>1827</sup> However, when it came to drafting TGN 18, it appears that NHBC did not consider either of those matters or make any enquiries of BRE about how desktop studies could safely be performed. Mr Lewis told us that NHBC was doing whatever it could to put a guidance note together and simply did not think about consulting BRE.<sup>1828</sup> Nor did it give any thought to who might be responsible for conducting the desktop studies it was supporting or the qualifications they might need to hold, beyond the rather vague reference to a suitable independent testing body accredited by UKAS.<sup>1829</sup>
- 26.65** In his witness statement, Mr Lewis said that the third option had been included because he and Mr Evans had wanted to include a route to compliance for those developers who were unable to comply with the two routes described in Approved Document B.<sup>1830</sup> In his oral evidence, however, he said that they were considering all the options and that it had made sense to include it. We do not agree. It was wholly unnecessary and indeed dangerous for NHBC to strive to find a way to help developers who wished to use non-compliant cladding products to do so, having applied little or no thought to that suggested route. The “desktop study” route should not have been suggested by NHBC or the BCA because NHBC had no grounds for thinking that anyone in the industry understood what data was required for a reliable desktop assessment or had the competence necessary to produce one.
- 26.66** In our view, NHBC’s desire for a third route to compliance was rooted in three things. First, it had formed a view that the requirements of the “linear route” were particularly onerous. However, that view does not appear to have been shared by the industry at large and, in any event, however onerous, it was not for NHBC to seek to ameliorate the requirements of the guidance.
- 26.67** Secondly, NHBC considered that the tests required by the second option were time-consuming and expensive and were in any event of limited application because they were irrelevant if any element of the system differed from that which had been tested.<sup>1831</sup> Again, however, it was not appropriate for NHBC to seek to circumvent or dilute the effectiveness of the guidance by suggesting another route to compliance.

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<sup>1826</sup> Torero {Day292/92:6}-{Day292/95:16}.

<sup>1827</sup> {NHB00000604/4}.

<sup>1828</sup> Lewis {Day223/111:1}-{Day223/112:19}.

<sup>1829</sup> Evans {Day220/:47-13}-{Day220/50:19}.

<sup>1830</sup> Lewis {NHB00003433/35} page 35, paragraph 133; Lewis {Day223/189:24-25}.

<sup>1831</sup> Lewis {Day223/190:8-15}.

- 26.68** Finally, Mr Lewis explained that NHBC did not want to prevent the industry from achieving the high degrees of insulation performance that combustible insulation products provided.<sup>1832</sup> However, as a provider of building control services, it was precisely NHBC's role to ensure that unsafe products that were frequently being proposed for use were not approved by its building control officers. Its evident desire to assist the industry was wholly inappropriate. As Mr Lewis was constrained to accept, the practice of building control bodies and approved inspectors "working with" the industry rather than holding it to proper standards was corrupting, because it tended to undermine the independence of building control officers and approved inspectors.<sup>1833</sup>
- 26.69** Mr Lewis denied that the third route to compliance proposed by TGN 18 had been devised as a means of legitimising schemes using K15 that he knew had been wrongly approved by NHBC in the past.<sup>1834</sup> Although we accept his evidence that it arose directly from the suggestion made by Wintech at the meeting on 15 November 2013, that was all it was, a suggestion based on hearsay and anecdote. The evidence shows that NHBC clearly understood that the use of K15 could not be justified by any other means and that refusing to approve the use of K15 on high-rise buildings would have significant commercial repercussions.

### **TGN 18 (Issue 0): June 2014**

- 26.70** TGN 18 was formally issued in June 2014.<sup>1835</sup> The three alternative routes to compliance were identical to those included in John Lewis's initial draft prepared on 15 November 2013, save that a sentence had been added to the second route to identify some of the requirements of BR 135. There is no evidence that the BCA itself took any steps to verify or investigate the validity and safety of the three options, in particular to examine the basis for option 3, and we infer that it did not.
- 26.71** In the result, the BCA promulgated the third route to compliance on the basis of extremely limited information, namely the second-hand assurances of Wintech, and without any independent verification or indication of how it could operate in practice. Moreover, although each of the NHBC witnesses sought to justify its inclusion by reference to Appendix A of Approved Document B, there is no evidence that it had received any consideration within NHBC or the BCA.
- 26.72** In the circumstances, the inclusion of the third option in TGN 18 was irresponsible. It was not motivated by a desire for rigour in the application of Approved Document B, nor by a desire to improve fire safety standards in high-rise buildings, but by NHBC's desire to assist developers to find a way to justify the use of non-compliant products.

### **Discussions with the government and industry: 2014 – 2015**

- 26.73** On 2 July 2014 Brian Martin of the department sent an unprompted email to Neil Smith of NHBC to provide a "friendly warning" that PIR insulation was being used in cladding systems. He did so because, as he put it, people were under the impression that PIR was a material of limited combustibility (which was not the case) and he thought that NHBC

<sup>1832</sup> Lewis {Day223/193:13}

<sup>1833</sup> Lewis {Day223/194:1}-{Day223/196:3}.

<sup>1834</sup> Lewis {Day223/196:4-11}.

<sup>1835</sup> {NHB00000760}.

ought to ensure that its surveyors were aware of that.<sup>1836</sup> Mr Martin's email was sent at 11.42, shortly before a meeting of the CWCT at 14.00 that day. Mr Martin attended that meeting but did not stay until the end.<sup>1837</sup>

- 26.74** Mr Martin's email came as no surprise to NHBC, as it had been endorsing the use of PIR insulation since at least November 2013 in the full knowledge that it was not a material of limited combustibility.<sup>1838</sup> It took NHBC until 11 July 2014 to respond and when the response came, it came from Steve Evans, to whom Mr Smith had passed Mr Martin's email. Mr Evans drafted a response and discussed it with Diane Marshall before it was amended and sent.<sup>1839</sup> He said that there was no reason to suspect that buildings which had been built with Kingspan K15 were at risk; it was just the fact that testing carried out to date did not bear that out. Kingspan, he said, was confident that the testing currently being carried out would prove the suitability of the material for use on buildings over 18 metres in height.<sup>1840</sup>
- 26.75** The first sentence was clearly misconceived.<sup>1841</sup> Although Mr Evans did not accept it,<sup>1842</sup> the fact that there was no available test evidence to indicate that K15 was compliant was itself a reason to suspect that buildings on which it had been installed were at risk. The statement amounted to a suggestion that any untested combustible insulation material was safe for use on buildings over 18 metres in height unless testing proved otherwise. That was obviously not the case. For her part, Ms Marshall sought to explain that sentence by saying that the high-rise buildings containing K15 which NHBC had approved in the past had been accepted on the basis of the BBA certificate.<sup>1843</sup> However, the sentence does not say that NHBC had relied on the BBA certificate and, for reasons already given, the BBA certificate for K15 was plainly unreliable. She also told us that she had placed confidence in the fact that Kingspan had told NHBC that it was going to conduct more tests,<sup>1844</sup> but that was not a sound basis for the assertion that tall buildings with K15 in their external walls were not at risk.
- 26.76** The second sentence of Mr Evans' email merely perpetuated the falsehood, disseminated by Kingspan with the assistance of NHBC and with the inadvertent support of the LABC and the BBA, that a single successful BS 8414 test could support the generic use of K15 in external walls of buildings over 18 metres in height generally, irrespective of the construction of the system. It could only have made sense if Steve Evans had been suggesting that Kingspan would subject every external wall system in which K15 had been used (of which there were very many) to a BS 8414 test, but that was clearly not his intention. As John Lewis accepted, that would require a vast number of tests (as many as there were different external wall systems containing K15), occupying BRE for months.<sup>1845</sup>
- 26.77** The correspondence was not sent to John Lewis until 15 August 2014 and he was not consulted on its contents.<sup>1846</sup> Mr Lewis said that NHBC did not see Mr Martin's email as a reason to change anything it was doing because it was already aware of the historic legacy

<sup>1836</sup> {NHB00000732/3}.

<sup>1837</sup> Lewis {Day224/5:4-22}.

<sup>1838</sup> Evans {Day220/67:3}-{Day220:68:5}.

<sup>1839</sup> {NHB00000732/1}.

<sup>1840</sup> {NHB00000732/2}

<sup>1841</sup> Evans {Day220/90:2-25}

<sup>1842</sup> Evans {Day220/91:1}-{Day220/93:11}

<sup>1843</sup> Marshall {Day226/16:1}-{Day226/18:4}.

<sup>1844</sup> Marshall {Day226/17:25}-{Day226/18:4}.

<sup>1845</sup> Lewis {Day224/14:6-22}.

<sup>1846</sup> Lewis {Day224/4:15}-{Day224/5:25}; {Day224/11:11-16}

of buildings containing combustible insulation, was continuing to press Kingspan for the results of tests on K15 (thus far without success), and in any event had already drafted TGN 18 as a response to the problem.<sup>1847</sup>

- 26.78** Steve Evans' response to Brian Martin contrasted starkly with the position he had taken in correspondence with Kingspan the previous month. On 16 June 2014, he had told Richard Bromwich of Kingspan that the change in the BBA certificate for K15 meant that NHBC had no remaining basis for accepting its use on buildings over 18 metres in height.<sup>1848</sup> He warned that unless Kingspan could produce additional test evidence supporting the use of K15 in constructions which differed from the BS 8414-1 test referred to in the BBA certificate by 30 June 2014, NHBC would need to reconsider its acceptance of K15 on such buildings. That was some six months after its meeting with Kingspan in January 2014. NHBC must have realised by that point, if not earlier, that it was being deceived by Kingspan. Mr Evans' message of 16 June 2014 simply gave Kingspan a further opportunity to keep selling K15 for use on buildings over 18 metres in height in the UK market safe in the knowledge that NHBC had not instructed its surveyors to reject it.
- 26.79** In the event, Mr Evans' deadline of 30 June 2014 came and went without any action being taken by NHBC. Instead, it continued to give Kingspan further time to produce the results of tests that it must have known could not provide a satisfactory resolution. Mr Lewis said that had been because a change in NHBC's position would have created a storm within the industry and would in any event have been futile because local authority building control officers would have accepted the use of K15 based on the LABC certificate, which stated that it could be considered a material of limited combustibility.<sup>1849</sup> That was not a responsible position for NHBC to take.
- 26.80** By August 2014, NHBC was clearly becoming increasingly uncomfortable with Kingspan's failure to provide convincing evidence that K15 was suitable for use on high-rise buildings. On 15 August 2014, Steve Evans wrote to Ivor Meredith of Kingspan requesting a letter of comfort from BRE pending receipt of further promised test results in order to protect everyone's position in circumstances where it could be months before the further information was received and there were many designers currently using or planning to use K15.<sup>1850</sup>
- 26.81** That was itself a telling request for a number of reasons. First, it is wholly unclear what comfort Kingspan could give in relation to the use of K15 on buildings over 18 metres in height. Secondly, it revealed that NHBC knew that it was open to criticism and possibly claims for accepting K15 for use on high-rise buildings when it knew that it did not comply with the guidance in Approved Document B and could therefore not demonstrate compliance with the Building Regulations by the linear route. Thirdly, it treated Kingspan and NHBC as if they had a common interest in Kingspan's continuing to market K15 for use on high-rise buildings. That was a fundamental misconception. It was NHBC's responsibility as an approved inspector to ensure that its surveyors and building control officers applied the Building Regulations correctly and rejected the use of any materials or products that would prevent the building from complying with them. The action of NHBC provides a vivid example of a large body with substantial influence over building control officers nationwide

<sup>1847</sup> Lewis {Day224/9:18-25}.

<sup>1848</sup> {NHB00000757/3}.

<sup>1849</sup> Lewis {Day224/18:3} – {Day224/19:24}.

<sup>1850</sup> {NHB00000757/1}.

electing to co-operate with manufacturers rather than robustly enforce regulations designed to protect life. The attitude of NHBC, as revealed by Mr Evans' message, deserves criticism in the strongest terms.

### Meeting with Arup and BRE: autumn 2014

- 26.82** On 30 October 2014, Steve Evans wrote to Dr Barbara Lane of Arup Fire seeking a meeting to discuss technical issues relating to the use of combustible materials in the external facades of high-rise buildings.<sup>1851</sup> In her response Dr Lane said that Arup believed that the use of combustible materials in residential buildings was an accident waiting to happen.<sup>1852</sup> A meeting then took place between Arup and NHBC on 25 November 2014.<sup>1853</sup> Despite Arup's clear concerns, NHBC did not think to tell Brian Martin that, contrary to the previous assurances given by Steve Evans in his letter of 11 July 2014, there was indeed a real risk to existing buildings.<sup>1854</sup> Nor did NHBC, even at that late stage, a year after the Wintech meeting, start refusing to accept K15 for use on high-rise buildings.<sup>1855</sup>
- 26.83** On 27 November 2014, Steve Evans, John Lewis, Graham Perrior and Dave White of NHBC met Dr Sarah Colwell, Steve Manchester and Stephen Howard of BRE. At that meeting, NHBC was told that the time between a BS 8414 test and the consequent BR 135 classification was usually short and learned that no classification report had been issued in relation to K15.<sup>1856</sup> Therefore, despite BRE's unwillingness for reasons of client confidentiality to answer specific questions about Kingspan's latest tests, it was clear to NHBC that at least one of them had failed.<sup>1857</sup>
- 26.84** Dr Sarah Colwell also confirmed that BRE had agreed with NHBC's view that the provisions in paragraph 12.7 of Approved Document B applied to all major components of a cladding system, including the external finish.<sup>1858</sup> John Lewis specifically asked Sarah Colwell about that because of the resistance to that view that NHBC was receiving from customers. He wanted BRE to confirm that in its view Option 1 in TGN 18 issue 0 interpreted that paragraph correctly.<sup>1859</sup> However, Dr Colwell did not explain how she derived that meaning from the language of paragraph 12.7.<sup>1860</sup>

### Contact with the BBA: January 2015

- 26.85** NHBC did not contact the BBA about its certification of Kingspan K15 until January 2015, some seven years after the BBA certificate had first been published and a year after the certificate had been amended to remove the instruction to seek advice from Kingspan.<sup>1861</sup> On 27 January 2015, Graham Perrior asked John Albon of the BBA to explain why the certificate had been changed, which he said had seriously affected the situations in which K15 was acceptable.<sup>1862</sup>

<sup>1851</sup> {NHBO0000811/4}.

<sup>1852</sup> {NHBO0000811/3}.

<sup>1853</sup> {NHBO0000829/1}.

<sup>1854</sup> Evans {Day220/154:15}-{Day220/158:3}.

<sup>1855</sup> Evans {Day220/157:1-11}.

<sup>1856</sup> {NHBO0000829/2}.

<sup>1857</sup> Lewis {Day224/89:20}-{Day224/90:14}.

<sup>1858</sup> {NHBO0000829/2}.

<sup>1859</sup> Lewis {Day224/69:8-12}.

<sup>1860</sup> Lewis {Day224/69:1-7}.

<sup>1861</sup> {NHBO0000895/3}.

<sup>1862</sup> {NHBO0000895/3}.

**26.86** The BBA provided a comprehensive response the following day, the essence of which was that the change to the certificate was a matter of emphasis and there had been no change in the assessment criteria or scope of approval.<sup>1863</sup> When he saw that response, Graham Perrior was unimpressed. He passed it on to Dave White and Steve Evans that day saying that the BBA’s position was not correct.<sup>1864</sup> Regrettably, no one at NHBC had asked the BBA to explain its statement that K15 could be used in accordance with paragraph 12.7 of Approved Document B and Mr Evans could not explain why it had not done so.<sup>1865</sup> Mr Evans maintained before us that even at that stage NHBC could continue to rely on the BBA certificate to approve the use of K15 on high-rise buildings because it said that it could be used in accordance with paragraph 12.7 of Approved Document B, but we find it difficult to understand that position, given that K15 was known not to be a material of limited combustibility.<sup>1866</sup>

## Reliance on TGN 18

**26.87** On 5 February 2015 NHBC told Kingspan that it would no longer approve the use of K15 on high-rise buildings unless evidence of compliance with the Building Regulations was provided in accordance with TGN 18.<sup>1867</sup> Kingspan’s response was to instruct its lawyers to allege that it was being treated unfairly and to threaten legal action against NHBC.<sup>1868</sup>

**26.88** NHBC’s new policy applied to all projects using K15 from 1 January 2014.<sup>1869</sup> However, NHBC continued to accept confirmation from Kingspan that K15 was suitable for any project for which the initial notice had been given before that date.<sup>1870</sup> John Lewis accepted that K15 was no less combustible on 31 December 2013 than it had been on 1 January 2014, and could not explain why NHBC had not changed its approach.<sup>1871</sup> In our view, the policy adopted by NHBC in early 2015 towards the continued acceptance of Kingspan K15, despite what it knew, could not reasonably be justified.

## The 2015 policy review

**26.89** Following the adoption of its new policy towards K15, NHBC launched what it termed the “Combustible Cladding Review”.<sup>1872</sup> In accordance with the instructions of the board,<sup>1873</sup> the review was limited to buildings over 18 metres in height currently under construction or about to start.<sup>1874</sup> The board also decided not to tell its previous customers that NHBC had approved external cladding systems on high-rise buildings that contained combustible insulation.<sup>1875</sup> That decision was apparently based, at least in part, on the fact that at the time NHBC had held what it regarded as a valid BBA certificate.<sup>1876</sup> We have no reason to doubt that that was in fact in part the basis of its decision. However, we do not accept Ms Marshall’s assertion that the BBA certificate for K15 ever justified such an approach, certainly not after NHBC had become aware that it was erroneous and unreliable.

<sup>1863</sup> {NHB00000898/2}.

<sup>1864</sup> {NHB00000899}.

<sup>1865</sup> Evans {Day221/52:15-18}.

<sup>1866</sup> Evans {Day221/53:18-24}.

<sup>1867</sup> {NHB00000922/1}.

<sup>1868</sup> {KIN00008283}.

<sup>1869</sup> {NHB00000934}.

<sup>1870</sup> As per Steve Evans’s instructions on 2 December 2013 at {NHB00000935} as set out in {NHB00000934}.

<sup>1871</sup> Lewis {Day223/157:25}-{Day223/158:17}.

<sup>1872</sup> Lewis {NHB00003433/32} page 32, paragraph 115.

<sup>1873</sup> Marshall {Day226/32:7-15}.

<sup>1874</sup> Lewis {Day224/158:22}-{Day224/159:5}; Marshall {Day226/5:14-19}.

<sup>1875</sup> Marshall {Day226/33:25}-{Day226/34:7}.

<sup>1876</sup> Marshall {Day226/33:15}-{Day226/34:19}.

The board's decision not to tell previous customers of the fact that its building control officers had approved cladding systems that were at least at serious risk of preventing the building from complying with one of the principal functional requirements of the Building Regulations, and so a potential danger to life, was irresponsible.<sup>1877</sup> As we shall see, the scale of the problem was huge.

- 26.90** The review categorised buildings as being either high, medium or low risk according to the materials used in their construction.<sup>1878</sup> Those categories had been suggested by John Lewis based on his knowledge of combustible materials and were accepted by Steve Evans.<sup>1879</sup> Mr Lewis described the review as a screening exercise, although he conceded that some projects with ACM PE had slipped through the net.<sup>1880</sup>
- 26.91** The results of the review were subsequently put into a table that identified in detail the projects in which NHBC had been involved that included the use of combustible materials.<sup>1881</sup> All the buildings in the review were ultimately accepted by NHBC, despite containing combustible materials,<sup>1882</sup> although many required remedial work to be carried out before they could be finally approved.<sup>1883</sup> NHBC's approval was ultimately given by Steve Evans and Diane Marshall, neither of whom had any fire engineering qualifications, based on the advice and expertise of John Lewis or Maulik Katkoria as fire engineers.<sup>1884</sup>

## Revision of TGN 18: June 2015

### TGN 18 (Issue 1): June 2015

- 26.92** Issue 1 of TGN 18 was published by the BCA in June 2015. That revision had been drafted by John Lewis at the request of Steve Evans<sup>1885</sup> and contained two major changes. First, the pool of people who could produce desktop studies was widened to include any suitably qualified fire specialist. Secondly, a holistic fire engineering solution was included as a fourth alternative route to compliance.
- 26.93** John Lewis<sup>1886</sup> and Steve Evans<sup>1887</sup> said that the first change had been prompted by responses from the three testing houses which said that they were struggling to keep up with the number of requests for desktop studies. However, we have not seen any contemporaneous documents to suggest that that was the case and it was certainly not mentioned in the minutes of the meeting between BRE and NHBC in November 2014.<sup>1888</sup> We think that if BRE had been inundated with requests for desktop reviews, Dr Colwell would probably have raised the matter at the meeting with NHBC on 25 November 2014, but there is no evidence that she did. Although Mr Evans recalled a discussion about it, Mr Lewis did not.<sup>1889</sup> We prefer Mr Lewis' recollection, given the total absence of any reference to the matter in the contemporaneous documents. In our view, it is more likely that the change was motivated by a desire on the part of NHBC to make it easier for developers to obtain timely building control approval.

<sup>1877</sup> Marshall {Day226/33:25}-{Day226/34:19}.

<sup>1878</sup> Lewis {NHB00003433/32} page 32, paragraph 118.

<sup>1879</sup> Lewis {Day224/164:13-19}.

<sup>1880</sup> Lewis {Day224/164:20}-{Day224/165:14}.

<sup>1881</sup> {NHB00003038}.

<sup>1882</sup> Evans {Day221/19:3-18}.

<sup>1883</sup> Lewis {Day224/168:7-10}.

<sup>1884</sup> Evans {Day221/41:18}-{Day221/43:21}.

<sup>1885</sup> Lewis {Day224/91:1}-{Day224/92:4}; {Day224/99:21-23}.

<sup>1886</sup> Lewis {NHB00003433/38} page 38, paragraph 148; Lewis {Day224/99:13}-{Day224/100:19}.

<sup>1887</sup> Evans {NHB00003020/77} page 77, paragraph 200 (a).

<sup>1888</sup> {NHB00000829/2-3}.

<sup>1889</sup> Lewis {Day224/111:16}-{Day224/112:18}.

**26.94** The second change was the inclusion of a holistic fire-engineered solution. That had always been an alternative way of demonstrating compliance with functional requirement B4(1), as clearly provided by Approved Document B.<sup>1890</sup> It was included simply for completeness.<sup>1891</sup>

### Option 3 and desktop studies

**26.95** As NHBC's only qualified fire engineer, John Lewis was responsible for examining the desktop studies that it received.<sup>1892</sup> He found them to be of variable quality, those from BRE and Exova being the most comprehensive.<sup>1893</sup> Initially he found few problems with the studies he received, but after the publication of Issue 1 of Technical Guidance Note 18 in June 2015 the standard began to drop.<sup>1894</sup> He did not accept, however, that those who were permitted to produce reports were not qualified to do so.<sup>1895</sup>

**26.96** John Lewis reported his concerns to Diane Marshall,<sup>1896</sup> who was aware that some desktop studies submitted to NHBC often lacked proper references to relevant test data and that others applied only the requirements of diagram 40 of Approved Document B as opposed to the guidance in paragraph 12.7.<sup>1897</sup> She nonetheless claimed to believe that desktop studies worked well so long as they were done correctly.<sup>1898</sup> However, there was no established method for assessing whether they had been done correctly.

**26.97** In his report Professor Luke Bisby expressed the view that the change to TGN 18 in relation to desktop studies further eroded the already weak oversight of competence in this part of the industry.<sup>1899</sup> We agree. It is clear that in 2015 the practice of producing desktop assessments was fraught with dangerous shortcomings.

## Further discussions with industry: 2015–2016

### Paragraph 12.7 of Approved Document B and “filler”

**26.98** On 15 June 2015, Steve Evans wrote to Brian Martin, whom he regarded as the “guardian of Approved Document B”,<sup>1900</sup> to seek clarification of the meaning of “filler material etc” in paragraph 12.7 of Approved Document B.<sup>1901</sup> He was keen to know what the department understood “filler” to mean and whether the suggested restriction to materials of limited combustibility extended to the external surface of a cladding panel. Given that NHBC had taken the view when drafting TGN 18 that all elements of the external wall construction should be materials of limited combustibility (a view shared by BRE), it is surprising that Mr Evans felt that he had to ask those questions. However, he told us that many of NHBC's customers had been challenging its view that paragraph 12.7 required cladding panels to be composed of materials of limited combustibility rather than simply being classified Class 0.<sup>1902</sup> The key point was that contained in the last paragraph of the email. NHBC was of the view that there was little point in ensuring that insulation products were materials

<sup>1890</sup> {CLG00000224/15}, at paragraph 0.30.

<sup>1891</sup> Lewis {Day224/95:6-23}.

<sup>1892</sup> Lewis {Day224/115:21-25}.

<sup>1893</sup> Lewis Second Statement {NHB00003433/48} page 48, paragraph 182 (b).

<sup>1894</sup> Lewis {Day224/123:23}-{Day224/124:19}.

<sup>1895</sup> Lewis {Day224/124:20}-{Day224/125:7}.

<sup>1896</sup> Marshall {Day226/59:2-10}.

<sup>1897</sup> Marshall {Day226/60:11-22}.

<sup>1898</sup> Marshall {Day226/61:6-13}.

<sup>1899</sup> Bisby, Phase 2 Report - BR 135 Desktop Assessment Report {LBYP20000004/37} paragraph 277.

<sup>1900</sup> Evans {Day221/68:15-17}; {NHB00002792/3}.

<sup>1901</sup> {NHB00002792}.

<sup>1902</sup> Evans {Day221/55:16}-{Day221/56:15}.



of limited combustibility if they could be faced with a cladding finish which, although Class 0, could contribute to the spread of fire, but there was a difference of opinion within the industry. For that reason, he was seeking clarification from the department.

**26.99** Despite NHBC's plea for help, Mr Martin's response was that he could not offer a formal view, because the interpretation of Approved Document B as it applied to specific projects was a matter for the relevant building control body.<sup>1903</sup> As Mr Evans said at the time, that was not an answer at all.<sup>1904</sup> Nonetheless, Mr Evans did not press Mr Martin for a clearer statement and Mr Lewis thought that his existing response might be enough to justify the position taken by NHBC in its discussions with one particular developer.<sup>1905</sup> Although NHBC had confidence in its own view that all components of the external wall of a high-rise building should be materials of limited combustibility, large swathes of the industry disagreed. Given NHBC's powerful influence in the industry, it is regrettable that it did not press Mr Martin to adopt a clear position.

### BRE and Siderise Conference: January 2016

**26.100** On 13 January 2016, Steve Evans attended a conference on external facades organised by BRE and Siderise. He gave a presentation entitled *Facades to Tall Buildings: Routes to Compliance* and took questions from the audience. Among those present was Nick Jenkins of Booth Muirie, a supplier of rainscreen materials, including aluminium composite panels.<sup>1906</sup> During the question and answer session, Mr Jenkins explained that combustible ACM panels were commonly being used on high-rise residential buildings and expressed his grave concern that they did not meet the requirements of the Building Regulations.<sup>1907</sup> Mr Evans' response was that an ACM panel with a Class 0 classification was considered to comply with Approved Document B.<sup>1908</sup> He referred to what he described as an anomaly in Approved Document B created by the different requirements of paragraph 12.7 and Diagram 40. Although he acknowledged that ACM panels could technically be compliant if they met the requirements of Diagram 40, he said that that was not an approach he agreed with.<sup>1909</sup>

**26.101** Mr Evans's own position was that NHBC could not demand higher standards than those required by the Building Regulations.<sup>1910</sup> That may be so, but it begs the question what the Building Regulations actually required. Mr Evans confirmed that NHBC's position as expressed in Option 1 of TGN 18 (both Issues 0 and 1), namely, that all elements of the external wall of a high-rise building had to be of limited combustibility, had not altered between June 2014 and January 2016.<sup>1911</sup> There was therefore an obvious inconsistency between what he told the conference and NHBC's approach at the time, which he sought to explain away by saying that his answer at the conference had been badly worded.<sup>1912</sup> He said that his claim to have discussed with the department what he called the anomaly in Approved Document B was a reference to NHBC's email exchange with Brian Martin in June 2015, although, as NHBC recognised at the time, those perfunctory discussions had not advanced matters at all.<sup>1913</sup>

<sup>1903</sup> {NHB00002792/4}.

<sup>1904</sup> {NHB00002792/2}.

<sup>1905</sup> {NHB00002792}; Evans {Day221/72:4-23}.

<sup>1906</sup> Murden {BLM00000004/1} page 1, paragraph 7.

<sup>1907</sup> {INQ00014949/10-11}.

<sup>1908</sup> {INQ00014949/12}.

<sup>1909</sup> {INQ00014949/12 -13}. The video clip is at {SIL00010066}, played at {Day 221/79:4-15}.

<sup>1910</sup> Evans {Day220/167:7}-{Day220/170:24} and {Day221/37:6-23}; Lewis {Day224/188:13}-{Day224/189:8}.

<sup>1911</sup> Evans {Day221/89:5-7}.

<sup>1912</sup> Evans {Day221/87:14}-{Day221/88:6}.

<sup>1913</sup> Evans {Day221/90:1}-{Day221/91:9}.

- 26.102** The significance of the conference in January 2016 was twofold. First, Mr Evans did not adopt the position set out in TGN 18, and thus publicly adopt a clear position, even though it might, on one reading of Approved Document B, be over-strict. Secondly, the discussion brought home to NHBC (if it had not realised it earlier) that there was a significant number of high-rise buildings in the UK which its building control surveyors (and others) had approved as compliant with the Building Regulations but which contained combustible materials in the external wall systems that should not have been accepted.
- 26.103** On 19 January 2016, after the conference, Mr Jenkins took the matter up with Steve Evans in email correspondence, picking up the ambiguities in some of the responses given by the panel at the conference. He asked whether the entire external wall of a high-rise building had to be of limited combustibility or whether, where ACM cladding panels were used, it was sufficient that they be classified Class 0.<sup>1914</sup> Steve Evans responded on 29 January 2016 saying that Approved Document B advised that all materials used in the external wall should comply with both paragraph 12.7 and Diagram 40, thereby contradicting the view he had expressed at the conference.<sup>1915</sup> Mr Evans fairly acknowledged before us that his position was indeed directly inconsistent with what he had said at the conference but insisted that it was what he had been trying to express.<sup>1916</sup> We are not convinced by that answer, not least because Mr Evans took ten days to respond to Mr Jenkins, during which time he had had plenty of time to think about the point carefully.
- 26.104** Although Steve Evans told us that NHBC would not have approved any buildings clad in ACM panels with unmodified polyethylene cores,<sup>1917</sup> we do not accept that. John Lewis conceded that the 2015 review had revealed a number of such buildings that had been approved by NHBC.<sup>1918</sup> By early 2016 at the latest NHBC knew at the highest levels of its management that there were a substantial number of high-rise buildings in the UK on which ACM panels with unmodified polyethylene cores had been installed and which had been passed as compliant by NHBC's building control surveyors.<sup>1919</sup>

### The July 2016 guidance note

- 26.105** After NHBC changed its policy in February 2015 to require proof of compliance with the Building Regulations in accordance with TGN 18, it noticed that it was frequently being provided with the same desktop study amended in insubstantial ways to cater for differences between projects.<sup>1920</sup> As no further test data had been forthcoming from Kingspan, despite a string of promises stretching back to January 2014, NHBC realised that it was likely to continue to receive desktop studies based on the same data. It therefore decided that it could dispense with the requirement for such studies altogether for certain façade systems.<sup>1921</sup>
- 26.106** Accordingly, in July 2016, NHBC published a guidance note entitled *Acceptability of Common Wall Construction Containing Combustible Materials in High Rise Buildings*.<sup>1922</sup> The note was drafted by John Lewis and approved by Steve Evans, Diane Marshall, Ian Davis and the NHBC Executive Committee.<sup>1923</sup> The new guidance set out functional requirement

<sup>1914</sup> {BLM00000211/4}.

<sup>1915</sup> {BLM00000211/2}.

<sup>1916</sup> Evans {Day221/100:22-23}.

<sup>1917</sup> Evans {Day221/120:4}-{Day221/121:7}.

<sup>1918</sup> Lewis {Day225/42:17}-{Day225/45:25}.

<sup>1919</sup> Lewis {Day225/42:17}-{Day225/45:25}.

<sup>1920</sup> Lewis {NHB00003433/53} page 53, paragraph 194.

<sup>1921</sup> Lewis {NHB00003433/54} page 54, paragraph 195.

<sup>1922</sup> {NHB00001293}.

<sup>1923</sup> Lewis {NHB00003433/55-56} pages 55-56, paragraphs 204-205.

B4(1) and the four options contained in Issue 1 of TGN 18, which it described as alternative ways of demonstrating compliance with the Building Regulations. It went on to say that the new guidance had been produced to provide advice to builders on some of the most common wall types in relation to which NHBC would no longer require a desktop assessment in accordance with Option 3 in TGN 18 in order to demonstrate compliance. In the appendices it described three common wall and façade types that were acceptable to NHBC without the need to provide a desktop assessment provided that the design specification and installation met the minimum requirements set out in the appendices.

- 26.107** Appendix 3 covered aluminium composite panels. The requirements for automatic approval included the use of panels with a minimum Euroclass B classification and a Class 0 classification for surface spread of flame. Also acceptable as part of the system were Kingspan K15 and Celotex RS5000 insulation boards.
- 26.108** Diane Marshall told us that NHBC had been prompted to issue the guidance partly by the poor quality of the desktop studies submitted to it and partly by the administrative burden of reviewing many assessments relating to similar systems,<sup>1924</sup> but clearly neither of those was a good reason for NHBC to abdicate its responsibility for examining carefully the proposed structure of an external wall. Ms Marshall sought to justify NHBC's approach by reference to regulation 7 of the Building Regulations and said that it was common knowledge that past experience could be used to inform future decisions.<sup>1925</sup> However, no one at NHBC had ever examined Approved Document B to see whether that was a permissible approach.<sup>1926</sup> We do not think it was.
- 26.109** Paragraph 1.18 of the Approved Document supporting regulation 7 states that past experience, such as the use of a material in an existing building, may show that it can perform the function for which it is intended.<sup>1927</sup> Ms Marshall conceded that a cladding system would need to comply with functional requirement B4(1) in order to demonstrate that the same system, if installed on another building, could perform the function for which it was intended as contemplated by regulation 7. However, she appeared not to grasp the important point that a previous desktop assessment could never demonstrate compliance in the absence of relevant test data relating to the particular system being used as the exemplar.<sup>1928</sup>
- 26.110** Both Diane Marshall and Steve Evans agreed that the guidance note published by NHBC involved drawing an inference from underlying assessments that were themselves based on inferences from some underlying data.<sup>1929</sup> However, NHBC was not concerned by the fact that there had been no large-scale testing of any systems incorporating ACM panels,<sup>1930</sup> and the guidance note was published without any contribution from organisations such as BRE or Exova.<sup>1931</sup> That was particularly surprising given that NHBC was aware of the international cladding fires involving ACM panels in 2015 and early 2016.<sup>1932</sup>

<sup>1924</sup> Marshall {Day226/62:14-18}.

<sup>1925</sup> Marshall {Day226/73:9-21}.

<sup>1926</sup> Marshall {Day226/74:18-23}.

<sup>1927</sup> {INQ00014930/14}.

<sup>1928</sup> Marshall {Day225/73:9}-{Day225/74:10}.

<sup>1929</sup> Marshall {Day226/70:14-23}.

<sup>1930</sup> Evans {Day221/138:11}-{Day221/139:25}.

<sup>1931</sup> Evans {Day221/147:24}-{Day221/148:7}.

<sup>1932</sup> Evans {Day220/19:14-17}; {Day220/21:20-23}; Lewis {Day225/8:18-22}.

- 26.111** Appendix 3 did contain a warning that the use of aluminium composite panels with polythene or polythene and mineral cores which did not achieve a Euroclass B classification fell outside the scope of the guidance.<sup>1933</sup> Diane Marshall said that that had been intended to mean that all panels with polyethylene cores were prohibited in addition to those with fire retardant cores that had not achieved Class B.<sup>1934</sup> In other words, she suggested that the clause “which do not achieve a minimum Class B combustibility classification” was to be read as if in parenthesis, so that all ACM panels with unmodified or modified polyethylene cores fell outside the guidance.<sup>1935</sup> We are unable to accept that interpretation. First, no one at NHBC suggested that the passage was intended to have that meaning until Ms Marshall proposed it in the course of her evidence. Secondly, and more importantly, some ACM panels with fire retardant polyethylene cores can be classified Class 0 and Euroclass B. Indeed, some of Arconic’s Reynobond FR core panels were. No-one at NHBC had done any research before the note was published on the fire-retardant versions of ACM panels and their corresponding Euroclass classifications, and there was therefore no basis on which to ban all panels with polyethylene cores regardless of their mineral content.<sup>1936</sup> Thirdly, if that had been intended, it would have been easy simply to say that all ACM panels with polyethylene cores fell outside the scope of the guidance note, without referring to any classification.
- 26.112** We think it clear that the sentence meant what it says, namely, that only ACM panels with polyethylene cores that were classified Class 0 or Euroclass B were covered by the guidance, without regard to the nature of the core. Mr Lewis, who drafted the note, told us that he thought that it would effectively exclude ACM panels with unmodified polyethylene cores, but he could not explain why he had not said so plainly.<sup>1937</sup>
- 26.113** The guidance note was silent on the size and orientation of the cladding panels, the spacing between them, the fixing method (cassette or riveted) and the width of the drained and vented cavity, all of which were capable of affecting the fire performance of the system as a whole. Steve Evans said that the guidance note was intended to apply to external wall systems that were practically identical to those in the numerous desktop studies submitted to NHBC,<sup>1938</sup> but he was unable to explain what that meant.<sup>1939</sup>
- 26.114** Diane Marshall conceded that the guidance note permitted the use of external wall systems containing insulation and cladding that were not materials of limited combustibility and was therefore inconsistent with her understanding of paragraph 12.7 of Approved Document B.<sup>1940</sup> Although the witnesses denied it,<sup>1941</sup> the 2016 guidance note was clearly inconsistent with the policy NHBC had adopted in 2015 and, as Kingspan said in an internal email of 8 July 2016, eased the passage of compliance for K15.<sup>1942</sup> Given the trouble that NHBC had had with Kingspan since early 2014, the sudden blanket approval of the use of K15 in the external walls of buildings over 18 metres in height was, to say the least, surprising.

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<sup>1933</sup> {NHB00000065/4}.

<sup>1934</sup> Marshall {Day226/79:4-16}.

<sup>1935</sup> Marshall {Day226/83:1-24}.

<sup>1936</sup> Lewis {Day225/35:22}-{Day225/37:4}.

<sup>1937</sup> Lewis {Day225/33:24}-{Day225/35:21}.

<sup>1938</sup> Evans {NHB00003020/102} page 102, paragraph 251 a.

<sup>1939</sup> Evans {Day221/147:12-22}.

<sup>1940</sup> Marshall {Day226/90:22}-{Day226/91:7}. At least if, as she thought, all elements of the cladding system had to be material of limited combustibility, as Option 1 in TGN 18 provided.

<sup>1941</sup> Lewis {Day225/51:18}-{Day225/52:5}.

<sup>1942</sup> {KIN00002297/1}.

- 26.115** The guidance note was presented to an NHBC conference in London on 7 July 2016. It is a tragic irony that that was the same date as the issue by RBKC's building control officer of the certificate of practical completion for the Grenfell Tower refurbishment, the new cladding on which was composed of Celotex RS5000, a small amount of Kingspan K15 and ACM panels with unmodified polyethylene cores that purported to hold a Euroclass B classification.
- 26.116** For NHBC building control officers the guidance note was effectively a substitute for Approved Document B. For them to accept an external wall as complying with functional requirement B4(1), it was no longer necessary for the insulation (let alone all the elements) to be of limited combustibility, or, as an alternative, to have a full system test meeting the criteria in BR 135, or a desktop assessment, or a holistic fire-engineered solution. It was sufficient for the external wall to be composed of the common products listed. It drove a coach and horses through the guidance in Approved Document B and rendered TGN 18 completely irrelevant. There is no evidence that the BCA was ever consulted about it. We agree with Mr Lewis when he said that the guidance note should never have been produced.<sup>1943</sup>

## Events after the fire at Grenfell Tower

### Approach from Brian Martin

- 26.117** On 16 June 2017, two days after the fire at Grenfell Tower, Brian Martin wrote to Diane Marshall attaching a script written to rebut a newspaper article which had stated that ACM panels with polyethylene cores complied with the guidance in Approved Document B.<sup>1944</sup> He asked whether she would be prepared to make a public statement to that effect as an independent expert. Ms Marshall told us that she did not know why Brian Martin had approached her and had not given any thought at the time to whether it was appropriate for him to do so.<sup>1945</sup>
- 26.118** In contrast to the guidance note published by NHBC in July 2016, the script stated that only materials of limited combustibility could be used in the external walls of buildings over 18 metres in height.<sup>1946</sup> Nonetheless, Diane Marshall told Brian Martin that she fully agreed with the proposed text.<sup>1947</sup> She did not, however, agree to act as the required independent expert and instead suggested he approach the chairman of the BCA.<sup>1948</sup> She said that her decision had not been motivated by the obvious inconsistency between the position of NHBC and that of the department but by the fact that she did not consider NHBC's views to be representative of the industry.<sup>1949</sup> We find that an unconvincing explanation given the influence of NHBC nationally, its role in the production of TGN 18 and the issue of its guidance note.

<sup>1943</sup> Lewis {Day225/60:1-9}.

<sup>1944</sup> {NHB00001460/2}; {NHB00001458}.

<sup>1945</sup> Marshall {Day226/103:1}-{Day226/104:9}.

<sup>1946</sup> Marshall {NHB00003434/43} page 43, paragraph 201.

<sup>1947</sup> {NHB00001460/1}.

<sup>1948</sup> {NHB00001460/1}.

<sup>1949</sup> Marshall {Day226/105:16}-{Day226/109:18}.

### Withdrawal of the guidance note

- 26.119** On 26 June 2017, Brian Martin wrote to Diane Marshall again to say that NHBC’s 2016 guidance note had been raised in response to the Grenfell Tower tragedy, but he offered no further explanation. He questioned its evidential basis and asked for the test results from any BS 8414 testing which had taken place using Class B ACM panels.<sup>1950</sup>
- 26.120** On 28 June 2017, NHBC withdrew the 2016 guidance note on the basis of commercial considerations rather than any consultation with fire specialists.<sup>1951</sup> Diane Marshall told us that the guidance relating to ACM panels with polyethylene cores was open to being misread.<sup>1952</sup> We do not accept that and we do not accept that the guidance note was a distraction from the tragedy at Grenfell Tower. On the contrary, it is of direct relevance to the attitudes of industry and NHBC at the time.
- 26.121** Diane Marshall responded to Mr Martin on 29 June 2017,<sup>1953</sup> the day after the guidance note had been withdrawn.<sup>1954</sup> She was aware it had been receiving media attention but disputed that she was concerned about the department’s request for evidence.<sup>1955</sup> We do not accept that the timing was coincidental. Enquiries from government were clearly instrumental in NHBC’s decision to review its policy and withdraw the note. Indeed, Ms Marshall conceded that she was aware that no relevant ACM panels had ever been part of a successful test in accordance with BS 8414.<sup>1956</sup>

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<sup>1950</sup> {NHB00001465/2}.

<sup>1951</sup> Marshall {Day226/96:25}-{Day226/97:24}.

<sup>1952</sup> Marshall {Day226/81:22}-{Day226/84:7}.

<sup>1953</sup> {NHB00001465/1}.

<sup>1954</sup> Marshall {NHB00003434/43} page 43, paragraph 201.

<sup>1955</sup> Marshall {Day226/110:8}-{Day226/112:13}.

<sup>1956</sup> Marshall {Day226/119:9}-{Day226/120:12}.

# Chapter 27

## Siderise cavity barriers

### Background

- 27.1** Siderise Insulation Limited ('Siderise') designs and manufactures fire, thermal and acoustic insulation products for use in curtain walling and cladding. It also supplies associated products, such as brackets, sealants and tapes for use with its products.<sup>1957</sup> It sells direct to customers or through distributors.<sup>1958</sup> It is a member of various industry bodies, including the Centre for Window and Cladding Technology and the Association for Specialist Fire Protection.<sup>1959</sup> It has contributed to the development of publications and guidance relating to external walls<sup>1960</sup> and has hosted industry conferences on facades in collaboration with the Building Research Establishment (BRE).<sup>1961</sup>
- 27.2** As well as manufacturing cavity barriers, Siderise provided additional services to its customers,<sup>1962</sup> including advice on the suitability of its products for particular applications<sup>1963</sup> and guidance on installation.<sup>1964</sup>

### Product Development and Testing

- 27.3** A cavity barrier is defined in Appendix E of Approved Document B as "a construction, other than a smoke curtain, provided to close a concealed space against penetration of smoke or flame, or provided to restrict the movement of smoke or flame within such a space."<sup>1965</sup> The guidance in Approved Document B is that cavity barriers should provide 30 minutes' integrity and 15 minutes' insulation when tested to the relevant part of BS 476.<sup>1966</sup>
- 27.4** According to Siderise's witnesses, cavity barriers were traditionally tested in accordance with the general principles set out in BS 476 Part 20,<sup>1967</sup> which is the British Standard containing general principles governing the method of determining the fire resistance of elements of construction.<sup>1968</sup> Part 20 was accompanied by supplementary standards for testing specific elements of construction, namely, Part 21 for loadbearing elements, Part 22 for non-loadbearing elements, Part 23 for fire-protecting suspended ceilings and Part 24 for ventilation ducts.<sup>1969</sup> Those supplemental parts did not apply to cavity barriers, which had to be tested in accordance with the general fire resistance principles outlined in BS 476-20.<sup>1970</sup>

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<sup>1957</sup> Swales {SIL00000306/3} page 3, paragraphs 11 and 13.

<sup>1958</sup> Swales {SIL00000306/3} page 3, paragraph 11.

<sup>1959</sup> Swales {SIL00000306/4} page 4, paragraph 14.

<sup>1960</sup> Including the ASFP Red Book chapter "Firestopping: Linear Joint seals, penetrations & cavity barriers", Swales {SIL00000306/4} page 4, paragraph 14.

<sup>1961</sup> Swales {SIL00000306/4-5} pages 4-5, paragraph 16. The first was on 1 November 2012 and the second on 13 January 2016.

<sup>1962</sup> Siderise Site Services dated January 2016 {SIL00002589}.

<sup>1963</sup> Swales {SIL00000306/7} page 7, paragraph 28.

<sup>1964</sup> Siderise Site Services dated January 2016 {SIL00002589}.

<sup>1965</sup> Approved Document B 2013 {CLG00000224/143}.

<sup>1966</sup> Approved Document B 2013 {CLG00000224/125} Table A1, Item 15.

<sup>1967</sup> Mort {SIL00000298/10} page 10, paragraph 38; {BSI00001748}.

<sup>1968</sup> {BSI00001748/1}.

<sup>1969</sup> Part 21 {BSI00001745}; Part 22 {BSI00001743}; Part 23 {BSI00000074}; Part 24 {BSI00000075}.

<sup>1970</sup> Mort {Day102/16:23}-{Day102/18:1}.

- 27.5** The cavity barriers installed at Grenfell Tower were vertical “full-fill” barriers and horizontal “open-state” barriers. A full-fill barrier consisted of a solid piece of material spanning the entire cavity, thus forming a permanent vertical barrier against the horizontal spread of fire. An open-state barrier had a gap between the face of the barrier and the rainscreen panels to allow the passage of air and moisture. It had an intumescent strip on the outside edge that was designed to expand to fill the gap when exposed to heat in order to restrict the passage of fire vertically.<sup>1971</sup> The intumescent strip could be effective in sealing the cavity only if the surface against which it expanded remained in place.<sup>1972</sup> The effectiveness of a “full-fill” cavity barrier also depended on the integrity of the surfaces it abutted, in particular the rainscreen.
- 27.6** Stephen Swales, Chief Commercial Officer at Siderise, explained that from the late 1990s onwards Siderise had begun to develop open-state cavity barriers in response to demands from industry for a product that would leave a gap to allow for ventilation and the passage of moisture behind the rainscreen but which would close the gap in the event of fire.<sup>1973</sup> From around 2002 Siderise began to evaluate a number of different intumescent materials through a programme of testing carried out with the company that later became Exova.<sup>1974</sup>
- 27.7** Christopher Mort, the Sales and Technical Engineer for Siderise (and from 2011 their Technical Officer for Fire), was responsible for ensuring that the new product complied with the relevant statutory and regulatory requirements.<sup>1975</sup> At a product development meeting in July 2006 it was agreed that the aim was for the product to meet the requirements of a modified BS 476 Part 20 test.<sup>1976</sup> Mr Mort told us that it had been accepted within Siderise that testing to the general principles of BS 476 Part 20 was not ideal, as the standard could not be applied directly to open-state cavity barriers.<sup>1977</sup> (There was no precedent for testing open-state cavity barriers and Siderise was the only company embarking on such testing at the time.)<sup>1978</sup> The standard test procedure in BS 476 Part 20 was therefore modified following discussions with Exova, in particular to dispense with the requirement that there be no gaps present at the start of the test.<sup>1979</sup> The standard test procedure involved pushing a metal rod into the test specimen. If it was possible to penetrate the full width, the product failed the test.<sup>1980</sup> All open-state cavity barriers automatically failed that requirement because of the gap that was present in the cold state. Instead, Siderise agreed with Exova that it would monitor and record the closure of the gap and test the integrity of the product at that stage.<sup>1981</sup>
- 27.8** At no stage did Siderise or Exova ask any other industry bodies or anyone in government whether such a test method was appropriate. Siderise relied entirely on the advice it received from Exova.<sup>1982</sup>

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<sup>1971</sup> Mort {Day102/21:3-16}.

<sup>1972</sup> Mort {Day102/22:13-24}.

<sup>1973</sup> Swales {SIL00000306/11-12} pages 11-12, paragraphs 44-46.

<sup>1974</sup> Swales {SIL00000306/12} page 12, paragraph 45.

<sup>1975</sup> {SIL00002586}, {SIL00002587} and Mort {Day102/27:4-13}.

<sup>1976</sup> {SIL00002587}.

<sup>1977</sup> Mort {SIL00000298/10} page 10, paragraph 38.

<sup>1978</sup> Swales {SIL00000306/10} page 10, paragraph 39 and Mort {Day102/43:23}-{Day102/44:8}.

<sup>1979</sup> Mort {Day102/28:24}-{Day102/29:7}.

<sup>1980</sup> Mort {Day102/29:8-13}.

<sup>1981</sup> Mort {Day102/29:18}-{Day102/30:12}.

<sup>1982</sup> Mort {Day102/44:24}-{Day102/45:13}.



**27.9** Between 2007 and 2011 Exova carried out four tests on open-state cavity barriers on which it produced reports.<sup>1983</sup> During each of the tests the product was held between two concrete lintels.<sup>1984</sup> Insulation and integrity were measured only after the intumescent strip had closed the gap.<sup>1985</sup> All the reports contained important qualifications about the procedure that had been adopted. They stated that the results related only to the behaviour of the specimens under the particular conditions of the test, were not intended to be the sole criteria for assessing the potential performance of the products in use and did not reflect their behaviour in an actual fire. In addition, they stated that the results of the tests might not be applicable to situations in which the width of joints, orientation or supporting construction varied from those of the test. Since no movement was induced during the tests it was not possible to evaluate the products' performance where movement was induced under actual fire conditions.<sup>1986</sup> They were important qualifications, because they set out clear limits on the testing that Exova had undertaken.<sup>1987</sup> Anyone reading the test reports should have appreciated that they could not be relied on to predict with any accuracy how the products would perform in a fire or, in particular, how they would perform as part of a ventilated rainscreen system. That was made particularly clear in the test report issued in 2011, which included the following paragraph drawing attention to the risk of failure of the rainscreen:

“This report does not consider the fire resistance performance of the rainscreen element or whether fire spread may occur as a consequence of collapse or failure of the rainscreen. The approving authority or regulator should decide whether it is necessary for the rainscreen to be ‘fire rated’, whether it is of an appropriate construction and whether separate test or assessment evidence is necessary.”<sup>1988</sup>

**27.10** In the test report dated 20 September 2011<sup>1989</sup> Exova combined favourable integrity test results from tests carried out in 2010<sup>1990</sup> with favourable insulation results from tests carried out in 2007<sup>1991</sup> and concluded that Siderise open-state cavity barriers would achieve 60 minutes' integrity and 30 minutes' insulation respectively,<sup>1992</sup> although no one specimen had produced both results.<sup>1993</sup> Nonetheless, there is no reason to think that the product did not in fact meet those standards.

**27.11** Siderise considered that successful testing to some, but not all, of the requirements of BS 476 Part 20 would evidence compliance with the guidance in Approved Document B, as it would demonstrate that the open-state cavity barriers met the requirement for 30 minutes' insulation and 15 minutes' integrity.<sup>1994</sup>

<sup>1983</sup> February 2007 {SIL00000290}; January 2009 {SIL00000223}; August 2010 {SIL00000224}; September 2011 {SIL00000211}.

<sup>1984</sup> Mort {Day102/63:7-10}; {Day102/65:14-18}; {SIL00000290/12}; {SIL00000223/4}; {SIL00000224/12}; {SIL00000211/5}.

<sup>1985</sup> Mort {Day102/63:21}-{Day102/64:4}; {SIL00000290/28}; {SIL00000223/3}; {SIL00000224/23}; {SIL00000211/8}.

<sup>1986</sup> {SIL00000290/28}; {SIL00000223/7}; {SIL00000224/24}; {SIL00000211/7}.

<sup>1987</sup> Mort {Day102/68:17-21} and {Day102/69:2-4}.

<sup>1988</sup> {SIL00000211/4}.

<sup>1989</sup> {SIL00000211/7}.

<sup>1990</sup> {SIL00000224/3}.

<sup>1991</sup> {SIL00000290/4}.

<sup>1992</sup> Mort {Day102/77:25}-{Day102/78:12}.

<sup>1993</sup> Mort {Day102/78:13-16}.

<sup>1994</sup> Mort {Day102/32:2-7}.

## Testing in accordance with BS 8414

- 27.12** According to Mr Swales, before the Grenfell Tower fire there had been a general reluctance to conduct large-scale tests in accordance with BS 8414 as they were considered too costly.<sup>1995</sup> However some guidance relating to the use of cavity barriers suggested that it was nevertheless important to consider whether full-scale testing for reaction to fire (as opposed to resistance to fire) might provide important information on whether they could perform effectively as part of a ventilated rainscreen system. For example, Technical Report 31 of the European Organisation for Technical Approvals on “Fire Resistance Tests for Cavity Barriers” dated October 2008<sup>1996</sup> stated that the method of testing it described was not applicable to horizontal cavity barriers in rainscreen cladding systems because it was difficult, if not impossible, to model the correct thermal exposure and boundary conditions in a test for resistance to fire. It therefore recommended that the fire resistance of horizontal cavity barriers be assessed in the context of a full-scale facade test.<sup>1997</sup> According to Mr Swales, Siderise was a strong advocate of BS 8414 testing and was keen to test its cavity barriers in that way, having actively sought out partners for such tests in the period before 2017.<sup>1998</sup>
- 27.13** At the time Siderise cavity barriers were specified for use on Grenfell Tower, Mr Mort was not aware of any testing that had been undertaken by Siderise, or by anyone else using its products, that demonstrated how they would perform in conjunction with metal composite rainscreen panels.<sup>1999</sup> However, it had taken part in six BS 8414 tests between 2012 and May 2015.<sup>2000</sup> The cladding used for those tests had been rainscreen boards or terracotta tiles but not aluminium composite material;<sup>2001</sup> the insulation had been either PIR or phenolic foam boards or mineral wool.<sup>2002</sup> Not all of the systems tested met the criteria in BR 135. In particular, a test undertaken in conjunction with Celotex RS5000 insulation in February 2014 failed to do so.<sup>2003</sup> Mr Mort was aware that during the test the Marley Eternit panels had pulled away from the rig and distorted, thereby rendering the cavity barriers ineffective because they had nothing against which they could form a seal.<sup>2004</sup> Siderise was aware that the effectiveness of its cavity barriers, whether full-fill or open-state, in creating and maintaining a seal depended on the integrity of the rainscreen.<sup>2005</sup>

## Industry Testing

- 27.14** Since it was not possible to test open-state cavity barriers in accordance with BS 476 Part 20,<sup>2006</sup> Siderise worked with the Association for Specialist Fire Protection, laboratories, certification engineers, manufacturers,<sup>2007</sup> members of the Comité Européen de Normalisation and the British Standards Institution to develop a new method of testing entitled “Technical Guidance Document 19” (“TG19”).<sup>2008</sup> The test, which was published by

<sup>1995</sup> Swales {SIL00000306/17} page 17, paragraph 64.

<sup>1996</sup> {INQ00014544}.

<sup>1997</sup> {INQ00014544/7} section 1, paragraph 4.

<sup>1998</sup> Swales {SIL00000306/17} page 17, paragraph 64.

<sup>1999</sup> Mort {Day102/122:10-22}.

<sup>2000</sup> Swales {SIL00000306/17} page 17, paragraph 63.

<sup>2001</sup> Mort {Day102/136:14-19}.

<sup>2002</sup> Swales {SIL00000306/17} page 17, paragraph 63.

<sup>2003</sup> {Day102/135:19}-{Day102/136:2}. For our factual findings in relation to these Celotex tests see Chapter 24.

<sup>2004</sup> Mort {Day102/144:8-12}.

<sup>2005</sup> Mort {Day102/145:8-17}.

<sup>2006</sup> Swales {SIL00000306/13} page 13, paragraph 49 and Mort {Day102/80:25}-{Day102/81:3}.

<sup>2007</sup> Including Siderise, Hilti, Rockwool, Firetherm, Firestopit and Promat.

<sup>2008</sup> Swales {SIL00000306/13} page 13, paragraph 49.

the Association in 2014, required an open-state cavity barrier to close within five minutes of the beginning of the test.<sup>2009</sup> Any failure of integrity before that was to be disregarded unless any part of the surface exhibited sustained flaming above the seal.<sup>2010</sup> In other words, the test standard permitted the response of the product during the first five minutes to be ignored, save in the event of extreme flaming.<sup>2011</sup>

- 27.15** TG19 was specifically designed for small-scale furnace testing of open-state cavity barriers.<sup>2012</sup> Small-scale furnace testing was considered appropriate because it demonstrated the performance of the product in isolation.<sup>2013</sup> The test did not, therefore, extend to assessing the performance of open-state cavity barriers as part of a ventilated rainscreen system.<sup>2014</sup> TG19 expressly recommended that to evaluate the performance of open-state cavity barriers as part of a cladding system, a large-scale test, such as a BS 8414 test, should be considered.<sup>2015</sup> It also referred to a warning in the second edition of BR 135 that small-scale tests had been found not to reflect the fire hazard associated with full-scale cladding systems.<sup>2016</sup> Siderise appreciated the importance of that warning before it became involved in the Grenfell Tower refurbishment.<sup>2017</sup>
- 27.16** Technical Note 17 published by the Centre for Window and Cladding Technology in March 2011<sup>2018</sup> also contained a warning that cavity barriers could be tested in accordance with the principles contained in BS 476-20 (and other similar standards), but that their performance in conjunction with rainscreen panels might be different.<sup>2019</sup> Mr Mort confirmed that he had been aware of that guidance from 2011.<sup>2020</sup>
- 27.17** The recommendation that any proposed system be tested in accordance with BS 8414 was included in TG19 because the two tests served different purposes. The test described in TG19 measured the properties of a cavity barrier, in particular the duration of insulation and integrity, in isolation but, unlike a BS 8414 test, did not measure the performance of an external wall system as a whole.<sup>2021</sup> On the other hand, a BS 8414 test did not measure the performance of individual components.<sup>2022</sup> Siderise was aware before the Grenfell Tower fire that if cavity barriers were used as part of a ventilated rainscreen system, the rainscreen panels might distort or become detached and thus compromise the effectiveness of the cavity barriers.<sup>2023</sup>
- 27.18** On 15 May 2013,<sup>2024</sup> Siderise tested an open-state cavity barrier between two concrete lintels<sup>2025</sup> in accordance with a draft version of TG19.<sup>2026</sup> Exova produced a report on 23 July 2013<sup>2027</sup> which contained warnings similar to those in the reports mentioned

<sup>2009</sup> {SIL00001540/14}.

<sup>2010</sup> {SIL00001540/15}.

<sup>2011</sup> Mort {Day102/123:17}-{Day102/124:1}.

<sup>2012</sup> Mort {SIL00000298/11} page 11, paragraph 40.

<sup>2013</sup> Mort {Day102/91:14-24}.

<sup>2014</sup> Mort {Day102/101:9-21}.

<sup>2015</sup> {SIL00001540/3}.

<sup>2016</sup> {SIL00001540/17}.

<sup>2017</sup> Mort {Day102/128:1-13}.

<sup>2018</sup> {CWCT0000019}.

<sup>2019</sup> {CWCT0000019/5}.

<sup>2020</sup> Mort {Day102/131:7}-{Day102/132:5}.

<sup>2021</sup> Mort {Day102/117:19}-{Day102/118:4}.

<sup>2022</sup> {SIL00001540/16}; Mort {Day102/120:3-10}.

<sup>2023</sup> Mort {Day102/120:11}-{Day102/121:20}.

<sup>2024</sup> Swales {SIL00000306/13} page 13, paragraph 50 and {SIL00000212/3}. Siderise again tested open state cavity barriers on 24 April 2014 with Chiltern International {SIL00000288}.

<sup>2025</sup> {SIL00000212/2}; Mort {Day102/92:6-16}.

<sup>2026</sup> Entitled "ASFP TG 3 N64, fourth draft February 2013".

<sup>2027</sup> {SIL00000212}.

above. In particular, it made it clear that the test results were not to be used as the sole basis for assessing the fire performance of the cavity barriers and that the results were not applicable to situations in which the width of the joints or the depth, orientation or supporting construction was different. It also drew attention to the fact that the test did not induce movement and therefore might not represent conditions that would be encountered in a fire.<sup>2028</sup> The report also made it clear that the results were applicable only to a void of the size tested.<sup>2029</sup> Siderise staff understood those limitations, including the staff in its sales and marketing teams.<sup>2030</sup>

**27.19** As far as Mr Mort was aware, there were no discussions with DCLG about adding a reference to TG19 to Approved Document B.<sup>2031</sup>

## Extended Application Assessments

**27.20** Siderise also carried out extended application assessments for cavity barriers of the kind that were used at Grenfell Tower. For that purpose, it used data from previous tests to calculate whether the products could be used in situations other than those in which they had been tested.<sup>2032</sup> That enabled it to assess the ability of its open-state cavity barriers to seal voids of greater width than those that had been used for the tests.<sup>2033</sup>

**27.21** All the extended application assessments for the products as used on Grenfell Tower were signed by Christopher Mort and dated 23 June 2017;<sup>2034</sup> in other words, they post-dated the fire by a few days.<sup>2035</sup> No formal assessment had been carried out before that date, or at any rate no reference to one appeared in any document.<sup>2036</sup> Mr Mort said that informal assessments had been carried out, but he accepted that there was nothing in the documents provided to us to support that.<sup>2037</sup> At Grenfell Tower, Siderise supplied cavity barriers for voids of between 326 and 425mm without having tested its products in voids of that width and without having undertaken any formal extended application assessments.<sup>2038</sup>

**27.22** Even when Siderise did undertake formal extended application assessments in June 2017, it did not seek any external verification for its conclusions.<sup>2039</sup> Mr Mort's explanation was that external validation was not required by Siderise or by Approved Document B.<sup>2040</sup> It did not occur to him that it might be inappropriate for Siderise to certify its own products for use in extended applications without the support of an independent expert.<sup>2041</sup>

<sup>2028</sup> {SIL00000212/32}.

<sup>2029</sup> {SIL00000212/34}.

<sup>2030</sup> Mort {Day102/100:7-20}.

<sup>2031</sup> Mort {Day102/134:16-23}.

<sup>2032</sup> Mort {Day102/174:10-16}.

<sup>2033</sup> Swales {SIL00000306/14} page 14, paragraph 52.

<sup>2034</sup> {SIL00000204/22}; {SIL00000204/29}; {SIL00000204/35-6}; and {SIL00000204/42-43}.

<sup>2035</sup> Mort {Day102/175:2-18}.

<sup>2036</sup> Mort {Day102/178:21}-{Day102/179:13}.

<sup>2037</sup> Mort {Day102/180:13}-{Day102/181:5}.

<sup>2038</sup> Mort {Day102/180:13-21}.

<sup>2039</sup> Mort {Day102/177:8-16}.

<sup>2040</sup> Mort {Day102/177:20-23}.

<sup>2041</sup> Mort {Day102/178:4-8}.

## Marketing material

### Datasheet 2110

- 27.23** In mid-2012 Siderise produced datasheet 2110 relating to Lamatherm cavity barriers for rainscreen cladding.<sup>2042</sup> It gave copies of it to Harley in August 2013 in connection with two projects which required rainscreen cavity fire barriers.<sup>2043</sup> The title of the datasheet was “Cavity Barriers for Rainscreen Cladding”. In the introduction it stated that rainscreen cladding systems typically incorporated a ventilated air space to allow the drainage of rainwater and that, to accommodate that design feature, Siderise had developed a purpose-made solution, namely, a horizontal cavity barrier with an integral intumescent strip along the edge which “fully closes the ventilated air gap in the event of a fire”.
- 27.24** The datasheet referred to the four Exova reports<sup>2044</sup> and said that the product had been tested by Exova and in its opinion represented a practical solution for a particularly demanding condition.<sup>2045</sup> However, nowhere in any of the reports had Exova expressed that opinion.<sup>2046</sup> Mr Mort told us that he had reviewed the data sheet to ensure that it was accurate,<sup>2047</sup> but he was unable to explain how it had included Exova’s apparent endorsement.<sup>2048</sup> He suggested that there might have been conversations with Exova, of which he had been unaware at the time, during which Exova had expressed that opinion,<sup>2049</sup> but we think that unlikely, since as Sales and Technical Engineer, he had a leading role in arranging and attending the testing with Exova.<sup>2050</sup> Plainly, Siderise should not have relied in its marketing material on an endorsement that was not genuine.
- 27.25** Under the heading “Advantages”, the datasheet set out the results achieved in tests conducted by Exova using the principles of BS 476-20 & BS EN 1366-4:2006.<sup>2051</sup> It stated that a technical failure of integrity and insulation was deemed to have occurred at the start of the test due to the passage of flame through the open void, but went on to state that following the rapid expansion of the intumescent strip, the gap had become fully sealed and that the product had achieved the required standards for integrity and insulation.<sup>2052</sup>
- 27.26** The datasheet did not describe the nature of the test in detail, nor did it reflect any of the qualifications set out in the test reports, including the warning that the results might not apply to situations in which the supporting construction differed from that of the test. The datasheet also failed to warn the reader that it was not possible to evaluate the product’s performance in circumstances where movement of the supporting construction was induced by exposure to fire. Finally, the datasheet did not draw attention to the fact that cavity barriers might be rendered ineffective if the rainscreen became distorted or dislodged in a fire.

<sup>2042</sup> {SIL00004672}.

<sup>2043</sup> Richard Kay (Siderise) emailed it to Mark Harris (Harley) in relation to the Wayland House project on 19 August 2013 {SIL00000325/2}. Richard Kay also sent it to Tim Lovell (Harley) in relation to the 10 Trinity Square project on 5 August 2013 {SIL00000327}.

<sup>2044</sup> As discussed above, February 2007 {SIL00000290}; January 2009 {SIL00000223}; August 2010 {SIL00000224}; September 2011 {SIL00000211}.

<sup>2045</sup> {SIL00004672} section ‘Introduction’, second column final paragraph.

<sup>2046</sup> Mort {Day102/197:4-12}.

<sup>2047</sup> Mort {Day102/193:4-6}.

<sup>2048</sup> Mort {Day102/199:11-16}.

<sup>2049</sup> Mort {Day102/196:16-20}; {Day102/197:10-21}.

<sup>2050</sup> Mort {SIL00000298/2} page 2, paragraph 7(b); Mort {Day102/69:6-17}.

<sup>2051</sup> {SIL00004672/1}.

<sup>2052</sup> {SIL00004672/1} section “Fire Performance”.

- 27.27** If the construction industry is to function effectively and safely it requires products that do the job expected of them and are marketed honestly. Although there is no evidence to suggest that, unlike Arconic, Kingspan and Celotex, Siderise set out in its marketing literature deliberately to mislead, it was suggested that its datasheet was in fact misleading because it suggested that its cavity barriers were effective when used in rainscreen cladding systems of all kinds, when the tests it had carried out did not support that claim.<sup>2053</sup> We think that the datasheet should have described more fully the nature of the tests it had carried out. The unqualified statement that the horizontal cavity barrier “fully closes the ventilated air gap in the event of a fire” tended to suggest that it would do so regardless of the nature of the rainscreen panel against which it was to form a seal. On the face of it, that was misleading, because no test had been carried out in conjunction with any recognised form of rainscreen panel. However, it is unlikely that any competent designer reading the datasheet would have been misled about the suitability of the product for particular rainscreen applications.
- 27.28** The title of the datasheet, “Cavity Barriers for Rainscreen Cladding”, indicated no more than that the product had been designed for use in rainscreen cladding systems, which was indeed the case. Any competent fire engineer should have been aware of the warning in the second edition of BR 135 that small-scale tests on individual products had been found not to reflect the fire hazard associated with full-scale cladding systems<sup>2054</sup> and would have realised that the effectiveness of cavity barriers in any ventilated rainscreen system depends not only on the quality of the product itself but on whether the rainscreen panels remain in place during a fire. A competent fire engineer would also have asked for the underlying fire test data<sup>2055</sup> to obtain a proper understanding of the tests that had been carried out on the product.
- 27.29** We recognise, however, that this kind of marketing literature would also have been read and relied on by a wide range of construction professionals, including architects, cladding designers<sup>2056</sup> and building control officers, some of whom might not have been familiar with test method BS 476-20. Although Siderise argued that anyone familiar with BS 476 Part 20 or BS EN 1366-4 would have been aware that tests on cavity barriers are carried out on the product held between concrete lintels,<sup>2057</sup> its marketing literature stated only that the tests had been carried out “using the principles” of those methods.<sup>2058</sup> We do not think that some professionals, for example, reasonably competent cladding contractors, could be expected to be familiar with those fire resistance tests, although they should have appreciated that tests on cavity barriers are generally conducted with the product held between walls of fire resisting construction and that their performance in conjunction with rainscreen panels might be different.<sup>2059</sup> However, anyone with even a basic understanding of the principles underlying the use of cavity barriers who gave the matter a moment’s thought would have realised that, if the rainscreen became distorted or dislodged for whatever reason, no cavity barrier of any kind could continue to be effective.
- 27.30** Although the datasheet was intended to, and did, tell the reader that the intumescent strip would expand effectively to close the gap in a rainscreen system in the event of a fire, the description of the way in which it worked made it clear that the claim was based on

<sup>2053</sup> {BSR00000070/31} page 31, paragraph 9.1.

<sup>2054</sup> {SIL00001540/17}.

<sup>2055</sup> Siderise made those available only on request: Mort {Day102/73:8-24}.

<sup>2056</sup> Jonathan Sakula’s evidence was that specialist cladding designers would normally have referred to the manufacturer’s technical literature Sakula, Façade Expert Report {JOS00000001/49} paragraph 12.1.

<sup>2057</sup> {SIL00010048/12}.

<sup>2058</sup> {SIL00004672/1}.

<sup>2059</sup> Sakula {Day125/80:5}-{Day125/81:8}.

an assumption that the rainscreen would retain its integrity and provide a stable surface against which the intumescent strip could expand. It may not have been clear to some readers of the datasheet that the product had been tested between two concrete lintels, but any competent designer should have appreciated that the stability of the rainscreen was essential to its effective operation, as it was to the effectiveness of the vertical full-fill cavity barriers.

- 27.31** It has been suggested that Siderise ought to have postponed marketing its products for use in rainscreen applications until there was a body of data from BS 8414 tests which demonstrated that they were effective when used in conjunction with particular rainscreen panels, and then only for use in systems of those kinds. In our view that is unrealistic. The BS 8414 test is not designed to test individual products and the behaviour of the rainscreen in response to an actual fire may depend on many factors. It may not accurately reflect its behaviour in a test. The fact is that the cavity barriers sold by Siderise, both full-fill and open-state, met the claims made for them in relation to integrity and insulation and the open-state barriers functioned effectively when tested in accordance with the principles of BS 476-20. Design professionals must take responsibility for ensuring that the choice of rainscreen panel will not render the cavity barriers ineffective. No competent design professional could reasonably have understood the datasheet to mean that the cavity barrier would remain effective even if the rainscreen became seriously distorted or detached and no one claimed to have understood it in that way.
- 27.32** The statement that the ventilated air gap would be fully closed in the event of a fire was therefore subject to the implicit qualification that the rainscreen remained in place and retained its rigidity and integrity. That qualification would have been obvious to a competent designer or cladding contractor but not necessarily to others. Siderise could not assume that everyone who read the datasheet would be competent and would be aware of the implicit qualification. It should therefore have made the qualification explicit.

### **Sending the datasheet to Harley**

- 27.33** When Siderise sent datasheet 2110 to Harley in August 2013 it did not provide Harley with any information about the suitability in general of cavity barriers for use in rainscreen systems or the potential limits on their effectiveness. Nor did it refer to the nature of the tests that it had carried out on its own product. However, it was for Harley and others to determine whether the combination of materials it was using on a particular project, including the external wall at Grenfell Tower, would satisfy the Building Regulations. Siderise was not asked for general advice about the suitability of its products for use at Grenfell Tower nor is there any evidence that Harley relied on datasheet 2110 for the purposes of the design of the external wall. Siderise cannot reasonably be criticised for failing to point out to Harley that if a rainscreen failed, the cavity barriers would cease to be effective.

### **Postscript**

- 27.34** Functional requirement B3(4) of the Building Regulations requires a building to be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited. Functional requirement B4(1) requires that the external wall shall adequately resist the spread of fire over the walls having regard to the height, use and position of the building. Section 9 of the 2013 revision of Approved Document B

provided guidance on the use of cavity barriers. It included advice in paragraph 9.15.d<sup>2060</sup> that they should be fixed so that their performance is unlikely to be made ineffective by the failure in a fire of any material or construction which they abut. The risk that cavity barriers in the external wall construction of a building with ventilated rainscreen cladding might become ineffective if the rainscreen failed appears therefore to have been foreseen. Despite that, none of those involved in the design of the refurbishment of Grenfell Tower appears to have considered how the rainscreen was likely to react if exposed to fire or whether its behaviour might undermine the effectiveness of the cavity barriers. In our view, designers should give much more thought to the behaviour in fire of rainscreen panels intended for use in conjunction with cavity barriers in order to comply with functional requirements B3(4) and B4(1).

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<sup>2060</sup> {CLG00000224/86}.



# Chapter 28

## United Kingdom Accreditation Service

### Role and function

- 28.1** The United Kingdom Accreditation Service (UKAS) assesses, against nationally and internationally accepted standards of accreditation, those organisations which provide conformity assessment services, such as certification, testing, inspection, calibration and verification.<sup>2061</sup>
- 28.2** UKAS was established in 1995 as a company limited by guarantee.<sup>2062</sup> Throughout its existence it has operated under a memorandum of understanding with the government.<sup>2063</sup> In 2009 it was appointed the national accreditation body for the purposes of article 4(1) of Regulation (EC) No 765/2008 under the Accreditation Regulations 2009.<sup>2064</sup> It was, and as at June 2017 remained, the only body exercising that function in the UK.<sup>2065</sup> It is a not-for-profit organisation<sup>2066</sup> funded primarily by the fees it charges under contracts entered into on its standard terms<sup>2067</sup> with the organisations it accredits.<sup>2068</sup> Our findings about its policies and operations are to a large extent based on the evidence of Lorraine Turner, its Accreditation Director.
- 28.3** Since the early 2000s, UKAS has accredited the BBA to certify products and systems under its Agrément certification schemes.<sup>2069</sup> As an accredited organisation the BBA issued a certificate for Arconic's Reynobond ACM panels.<sup>2070</sup> UKAS also accredited BRE. It had done so for several years before April 2002, when it first accredited BRE to perform large-scale fire tests in accordance with what became BS 8414.<sup>2071</sup> As an accredited organisation BRE carried out BS 8414 tests on systems incorporating Kingspan K15 and Celotex RS5000.

### Policies and procedures

- 28.4** UKAS accredited organisations to various national and international standards, in particular,
- ISO/IEC 17065, *Conformity assessment – Requirements for bodies certifying products, processes and services*,<sup>2072</sup> which was the standard by which it assessed the BBA's Agrément certification schemes,<sup>2073</sup> and

<sup>2061</sup> See [Ukas.com/about-us/about-ukas](https://www.ukas.com/about-us/about-ukas).

<sup>2062</sup> Turner {UKAS0011242/4} page 4, paragraph 7(a).

<sup>2063</sup> UKAS Memorandum of Understanding (MOU) 2006 {UKAS0011258}; UKAS Memorandum of Understanding (MOU) 2007 {UKAS0011259}; UKAS Memorandum of Understanding (MOU) 2009 {UKAS0011260}; UKAS Memorandum of Understanding (MOU) 2009 {UKAS0011261}; UKAS Memorandum of Understanding (MOU) 2013 {UKAS0011262}; UKAS Memorandum of Understanding (MOU) 2014 {UKAS0011263}; UKAS Memorandum of Understanding (MOU) 2017 {UKAS0011264}; UKAS Memorandum of Understanding (MOU) 2021 {UKAS0011251}.

<sup>2064</sup> Turner {UKAS0011242/8-9} pages 8-9, paragraph 7(g); UKAS was appointed pursuant to The Accreditation Regulations 2009 {UKAS0011250}.

<sup>2065</sup> UKAS Closing Submissions for Module 6 {UKAS0011447/5} page 5, paragraph 17.

<sup>2066</sup> Turner {UKAS0011242/8-9} pages 8-9 paragraph 7(g).

<sup>2067</sup> Turner {Day226/174:5-7}; {UKAS0011300}; {UKAS0011301}; {UKAS0011302}.

<sup>2068</sup> Turner {Day 226/147:5-17}. The MOUs allowed for sponsoring government departments to provide financial assistance in defined circumstances. Those circumstances were not relevant to any matters before this Inquiry.

<sup>2069</sup> {BSI00001920}.

<sup>2070</sup> {BBA00000047}.

<sup>2071</sup> {BSI00001726}; {BSI00001924}.

<sup>2072</sup> {BSI00001920}.

<sup>2073</sup> Albon {BBA00010723/7} page 7, paragraphs 19-20.

- b. ISO/IEC<sup>2074</sup> 17025, *General requirements for the competence of testing and calibration laboratories*<sup>2075</sup> which was the standard by which it assessed BRE's performance of BS 8414 tests.<sup>2076</sup>

- 28.5** For both of those standards the process adopted by UKAS for accrediting an organisation involved checking both the technical requirements of each accredited activity as well as that organisation's processes and safeguards, such as its management systems, internal auditing, environmental conditions and the training of its personnel.<sup>2077</sup>
- 28.6** In addition, its internal policies provided for a rolling programme of annual assessment visits,<sup>2078</sup> examining each of the organisation's accredited activities at least once over a four-year period.<sup>2079</sup> If it found that improvement was needed, by identifying a failure or "non-conformity" with a relevant standard, UKAS required the organisation to propose steps known as "improvement actions" to address the deficiencies. UKAS assessed whether those improvement actions met the problem and had been performed satisfactorily and then decided whether the body had met the accreditation standard. In addition, UKAS could make extra visits, including unannounced visits, outside the rolling programme and did make extra visits to some bodies as a result of the Grenfell Tower fire. However, it rarely made unannounced visits,<sup>2080</sup> so the organisation in question almost always knew when a visit was about to take place.
- 28.7** It was not possible for UKAS to review all the activities of an organisation being considered for accreditation. Each organisation subject to accreditation was therefore required to keep detailed management records, to audit its own performance and to record its more serious non-conformities. Accredited organisations were required to report any significant non-conformities to UKAS,<sup>2081</sup> but if they failed to do so, UKAS had access to the records when carrying out the next assessment and could see how the organisation had dealt with them.<sup>2082</sup> However, that meant that the effectiveness of its oversight depended to a significant extent on the honesty and integrity of the organisation in question<sup>2083</sup> and its ability and willingness to examine its own behaviour and respond comprehensively to rigorous self-evaluation as well as criticism by UKAS.
- 28.8** UKAS formed committees to advise on technical matters.<sup>2084</sup> Members were drawn from professional bodies, regulators, customers of accredited organisations and the government.<sup>2085</sup> The only committee within UKAS that considered matters relating to construction was the Construction Industry Technical Advisory Committee.<sup>2086</sup> However, for

<sup>2074</sup> ISO/IEC stands for International Organization for Standardization/International Electrotechnical Commission.

<sup>2075</sup> {BSI00001726}; {BSI00001924}.

<sup>2076</sup> Howard {BRE00005771/4} page 4, paragraph 18.

<sup>2077</sup> Turner {Day226/174:11}-{Day226/175:16}; {BSI00001920}; {BSI00001726}.

<sup>2078</sup> General Principles of Assessment of Conformity Assessment Bodies by the United Kingdom Accreditation Service (GEN-1) {UKAS0011246/13} figure 1; The Accreditation Process – Policy and Associated Requirements (ACC 1000) {UKAS0011247/22-23} section 6.8.2.

<sup>2079</sup> The Accreditation Process – Policy and Associated Requirements (ACC 1000) {UKAS0011247/32-39}; Turner {Day 226/181:1-10}.

<sup>2080</sup> Turner {Day226/188:21}-{Day226/189:11}.

<sup>2081</sup> General Principles of Assessment of Conformity Assessment Bodies by the United Kingdom Accreditation Service (GEN-1) {UKAS0011246/18} section 4.5.2; Turner {UKAS0011422/11} page 11, paragraphs 8.1-9.1.

<sup>2082</sup> Turner {UKAS0011422/12} page 12, paragraph 11.1.

<sup>2083</sup> Turner {Day226/195:25}-{Day226/197:14}.

<sup>2084</sup> Turner {UKAS0011242/13} page 13, paragraph 10(b).

<sup>2085</sup> Turner {UKAS0011242/13} page 13, paragraph 10(c).

<sup>2086</sup> Turner {UKAS0011242/14} page 14, paragraph 11.

years before the fire that committee’s work focussed on topics relating to infrastructure, for example, building roads and bridges.<sup>2087</sup> It rarely considered matters relating to fire testing or the fire safety of products used in construction and did not do so at all after 2000.<sup>2088</sup>

**28.9** UKAS published accreditation schedules that listed all the activities that a particular organisation was accredited to perform. That was the principal way in which the construction industry could find out what functions a particular organisation was accredited to carry out at any time. If UKAS was satisfied that an accredited organisation was failing to meet the standards required for accreditation, it had the power to suspend or withdraw accreditation, either partially or fully.<sup>2089</sup> If it had proof of fraudulent behaviour or an accredited organisation deliberately provided false information or deliberately violated accreditation rules, UKAS was obliged to initiate the process for withdrawal of accreditation.<sup>2090</sup> If UKAS suspended or withdrew an organisation’s accreditation, it did not publish the reasons for doing so because it considered itself bound by the confidentiality undertaking in its standard terms.<sup>2091</sup> In cases of fraud or where there were serious concerns about safety UKAS would consider who needed to know about such matters. That might involve notifying the regulator or, if there were no regulator, might involve putting the information into the public domain.<sup>2092</sup> Since the fire UKAS has changed its standard terms to make clear that it is not bound by confidentiality in cases of fraud or a risk to the safety or health of individuals.<sup>2093</sup> UKAS had no regulatory or enforcement powers.

## Accreditation of the BBA

**28.10** UKAS accredited the BBA to issue Agrément certificates for certain products. A schedule<sup>2094</sup> was agreed with the BBA, known as “BBA Document 001”, setting out thirteen “Technical Specifications”, each of which contained short descriptions of categories of products in respect of which UKAS agreed that the BBA could assess and, if appropriate, issue Agrément certificates. For example, Technical Specification 0012 was for “Wall and cladding products and systems”, within which both cladding products and built-in cavity wall insulation products were briefly and broadly described.<sup>2095</sup>

**28.11** The Technical Specifications listed core certificates for each product category, known as “Leader” certificates.<sup>2096</sup> When a product falling within one of the categories came to be assessed, the BBA’s project manager was required to follow the process that had been used to produce the Leader certificate. Those processes were not recorded in any

<sup>2087</sup> Turner {UKAS0011242/14} page 14, paragraph 11(b).

<sup>2088</sup> {UKAS0010843/4} item 4.5; {UKAS0010844/2} item 4.2; {UKAS0010845/2} item 3.2.

<sup>2089</sup> General Principles of Assessment of Conformity Assessment Bodies by the United Kingdom Accreditation Service (GEN-1) {UKAS0011246/30} section 6; The Accreditation Process – Policy and Associated Requirements (ACC 1000) {UKAS0011247/24-25} section 7.2.

<sup>2090</sup> The Accreditation Process – Policy and Associated Requirements (ACC 1000) {UKAS0010905/19} section 7.2.11; General Principles of Assessment of Conformity Assessment Bodies by the United Kingdom Accreditation Service (GEN-1) {UKAS0011246/30} section 6.5; Turner {UKAS0011422/14} page 14, paragraph 15.1.

<sup>2091</sup> Turner {Day226/206:21}–{Day226/207:9}.

<sup>2092</sup> Turner {Day226/210:7}–{Day226/211:10}.

<sup>2093</sup> Turner {Day226/211:11-16}; UKAS closing submissions for Module 6 {UKAS0011447/13-14} pages 13-14, paragraphs 40-42.

<sup>2094</sup> Albon {BBA00010723/8-9} pages 8-9, paragraphs 23-29; {BBA00010722}; Randall {UKAS0011424/11} page 11, paragraphs 14.1-14.2.

<sup>2095</sup> {BBA00010722/6-7}.

<sup>2096</sup> Haynes {BBA00010784/5} page 5, paragraphs 20-21; Randall {UKAS0011424/11-12} pages 11-12, paragraph 14.4.

separate document; instead, the project manager was expected to follow the steps taken to produce the Leader certificate, as set out in the contract between the BBA and the relevant manufacturer.<sup>2097</sup>

- 28.12** We have not seen any evidence that when it assessed the BBA’s competence to issue Agrément certificates UKAS carried out a critical examination of the process by which individual Leader certificates had been produced. Instead, it appears that it considered whether the BBA had followed the steps set out in the contracts with its customers. However, that did not enable it to understand what the BBA was doing to follow those steps. The appendix to the contract made in 2006 between the BBA and Arconic for the certification of Reynobond, for example, consisted merely of short and rather uninformative summaries of the aspects to be considered, such as “behaviour under fire”.<sup>2098</sup> It contained no description of the steps the project manager was expected to take to assess and record the product’s properties. Accordingly, when it came to assess the work of the BBA, UKAS could not tell what the project manager was supposed to have done and therefore whether it had been done properly or at all. That led to a tendency on the part of UKAS to look only at the BBA’s generic documentary processes rather than examine its technical assessment of performance for each type of product to see whether it was sound. In that respect there seems to have been a gap in its assessment of the BBA’s Agrément certification scheme.
- 28.13** UKAS’s policy relating to the assessment of conformity to ISO/IEC 17065 was to conduct a technical review of all schemes at least once every four years.<sup>2099</sup> It regarded each category of products (for example, wall and cladding products and systems) as a separate scheme<sup>2100</sup> and accredited the BBA on that basis. Accordingly, although UKAS assessed the Agrément process as a whole, because it was similar for every scheme, it should have assessed the scheme for each of the thirteen Agrément product types separately every four years.
- 28.14** In practice, however, it failed to do so. The BBA’s Agrément certification relating to “Wall and cladding products and systems” was assessed just once between 2008 and 2016, in 2009.<sup>2101</sup> UKAS thus failed to meet its own requirements for assessment of the BBA during that period. It is possible that UKAS treated an assessment of one scheme as being sufficient to accredit the BBA for all thirteen Technical Specifications, but there is no evidence that it did and if that was its reasoning, it was unsatisfactory, given the very significant differences between the products and systems covered by the Technical Specifications. Overall, as Ms Turner accepted, UKAS did not pay sufficient attention to the BBA’s activities for Agrément certification.<sup>2102</sup>
- 28.15** For its part, the BBA did not comply with its obligation to keep UKAS informed of important developments as part of the continuing accreditation of its certification activities. Despite becoming aware in 2014 that there had been a very serious misstatement about fire performance in the certificate relating to K15,<sup>2103</sup> the BBA neither reported it to UKAS as significant non-conforming work nor recorded it as such in its own records so that UKAS could discover it on the next assessment.<sup>2104</sup> It should have been clear to the BBA that

<sup>2097</sup> Randall {UKAS0011424/11} page 11, paragraph 14.2.

<sup>2098</sup> {BBA00008042/11}.

<sup>2099</sup> {UKAS0011247/35}.

<sup>2100</sup> Turner {Day227/81:16}–{Day227/82:1}.

<sup>2101</sup> {UKAS0000586/5-6}; Randall {UKAS0011424/13} page 13, paragraph 17.2.

<sup>2102</sup> Turner {Day227/93:10-17}.

<sup>2103</sup> The certificate provided that K15 could be used in accordance with Approved Document B paragraph 12.7, see Chapter 22; {BBA00000178}.

<sup>2104</sup> {UKAS0000977}; There was no mention of this significant non-conforming work in UKAS’s subsequent management review: {UKAS0000977/4-5}.

the information was relevant to its accreditation and needed to be shared with UKAS in accordance with its publicly available principles of assessment and standard terms of contract.<sup>2105</sup> We note that UKAS has now put the matter beyond any doubt by amending its standard terms.<sup>2106</sup>

- 28.16** The steps taken by UKAS after the Grenfell Tower fire to review its assessment of the BBA shed significant light on the efficacy of its previous practices. On 12 July 2017, UKAS made an extra visit to the BBA to consider the Reynobond certificate.<sup>2107</sup> That visit prompted a further visit<sup>2108</sup> on 15 August 2017 which examined the Reynobond certificate in greater depth and considered the BBA’s work in reissuing several certificates relating to ACM material after the fire.<sup>2109</sup>
- 28.17** At around the same time, UKAS received correspondence from a person who alleged that the Reynobond certificate was not up to date, that the BBA lacked competence, that it had failed to heed previous cladding fires and that it did not attach sufficient importance to fire performance generally.<sup>2110</sup> The UKAS assessors who attended the BBA had known of those allegations before the visits in July and August 2017.<sup>2111</sup>
- 28.18** When they visited the BBA in July 2017, the UKAS assessors identified only two respects in which remedial action in relation to the Reynobond certificate was considered mandatory: changes to statements concerning the use of the material on buildings over 18 metres in height (including the removal of the picture of a tall building on the front of the certificate) and a change in the name of the holder from “Alcoa” to “Arconic”.<sup>2112</sup> The BBA had already identified those errors and at the time of the visit had made arrangements to correct them in the forthcoming reissue of the certificate.
- 28.19** The assessors also examined the BBA’s conformity with ISO/IEC 17065, not only at the date of the visit but also over the period since the certificate relating to Reynobond had been first issued in January 2008. However, despite declaring in their report that the statements made in the certificate were supported by appropriate test data,<sup>2113</sup> they failed to notice that the fire performance certificates provided by Arconic at the time of the initial assessment related only to the product in rivetted form, not in cassette form. They also failed to notice that the description of the product blurred the distinction between the form in which it left the factory (flat sheets) and the form it would take in use, which required that it be cut to shape and drilled for rivets or fabricated into cassettes. Those were significant failings, because in these particular assessments UKAS’s specific role was to consider whether statements made by the BBA about the performance of the product were complete and accurate. The assessors noted that Arconic had failed to respond to the BBA’s requests for information when the certificate was reviewed between 2013 and 2015, even though the BBA’s own processes required responses,<sup>2114</sup> but failed to take any further steps to understand whether there were any problems or risks with continuing

<sup>2105</sup> General Principles of Assessment of Conformity Assessment Bodies by the United Kingdom Accreditation Service (GEN-1) {UKAS0011246/18} section 4.5.2; {UKAS0011300/3-4} section 2.7; Turner {Day226/193:12}-{Day226/194:6}.

<sup>2106</sup> UKAS Closing Submissions for Module 6 {UKAS0011447/12-15} paragraphs 39-46; UKAS Phase 2 statement {UKAS0011448/8} paragraphs 34-36.

<sup>2107</sup> Randall {UKAS0011424/14-15} pages 14-15, paragraph 18.1.

<sup>2108</sup> {UKAS0001077/4}.

<sup>2109</sup> {UKAS0001083}.

<sup>2110</sup> {UKAS0001382}.

<sup>2111</sup> Randall {UKAS0011424/15} page 15, paragraph 18.2.

<sup>2112</sup> {UKAS0001077/4-8}; {UKAS0001077/7}; {UKAS0001077/8}.

<sup>2113</sup> {UKAS0001077/4}.

<sup>2114</sup> Randall {UKAS0011424/20} page 20, paragraph 28.1; {UKAS0001083/6}.

certification. Ms Turner admitted that Arconic’s failure to respond should have prompted UKAS to examine more fully the merits and robustness of the BBA’s decision to continue to certify Reynobond.<sup>2115</sup>

- 28.20** The file that UKAS reviewed in the course of those assessments contained correspondence from which UKAS could have seen that the BBA was prepared to negotiate with Arconic about the wording of the certificate. For instance, it contained correspondence in November 2007 in which Claude Wehrle of Arconic negotiated the additions to the draft BBA certificate for Reynobond with Hamo Gregorian.<sup>2116</sup> It should have been plain to UKAS that, if manufacturers were allowed to influence statements made in certificates, the quality of certificates might be undermined. We consider that UKAS should have identified the willingness of the BBA to discuss the wording of its certificates with manufacturers and at least have questioned whether it affected the independence, quality and accuracy of the certificates it issued.
- 28.21** UKAS also considered the technical competence of Valentina Amoroso<sup>2117</sup> and Prayer Nkomo, both of whom had been involved in the reviews of the Reynobond certificate. However, it did not record any assessment of the competence of Hamo Gregorian and Brian Haynes, who had worked on the original Reynobond certificate.<sup>2118</sup> That was a significant oversight, because one purpose of the visits was to assess the validity of the certificate for the whole of the period from its initial issue in 2008. That required a more thorough investigation into whether those involved in the initial certification had the necessary skills and had properly assessed the product’s performance at the outset.
- 28.22** The Lead Assessor for UKAS on the visits to the BBA in both July and August 2017 was Cary Randall, who had previously been employed by the BBA on Agrément certification until 2012.<sup>2119</sup> Indeed, his own work on the BBA’s certification of a cladding product had been assessed by UKAS in 2009, the only assessment of the “Wall and cladding products and systems” scheme it had carried out.<sup>2120</sup> Mr Randall had also worked for a time for Geoffrey Gurney, who had provided technical approval for the Reynobond certificate.<sup>2121</sup> His appointment created a potential conflict of interest, as UKAS was aware. However, it decided that it was not inconsistent with its policy for Mr Randall to assess the BBA because five years had passed since his employment by it and its policy required only a two-year interval.<sup>2122</sup>
- 28.23** Although the potential for bias was to some extent mitigated by the fact that Mr Randall was assisted by individuals who had no connection with the BBA,<sup>2123</sup> we consider that the decision to use him was unwise. He was not merely assessing the BBA’s current performance; his task included the assessment of previous work, some of which had been done while he was still an employee of the BBA. Although Mr Randall had no involvement in the BBA’s original certification of Reynobond or in its reviews of the certificate, his involvement in similar work for the BBA and his employment by it during the period under consideration would have made it difficult for him to examine its work critically.

<sup>2115</sup> Turner {Day227/117:11}–{Day227/118:1-5}; {Day227/128:13-20}; {Day227/131:18}–{Day227/132:2}.

<sup>2116</sup> {MET00055859}; {BBA00008042/515-517}.

<sup>2117</sup> {UKAS0001077/8}.

<sup>2118</sup> Randall {UKAS0011424/18} page 18, paragraph 23.1.

<sup>2119</sup> Randall {UKAS0011424/3} page 3, paragraph 5.1

<sup>2120</sup> {UKAS0000586/5-6}.

<sup>2121</sup> {UKAS0001077/3-5}; Albon {BBA00010723/6} page 6.

<sup>2122</sup> Turner {UKAS0011424/18} page 18, paragraph 12(a).

<sup>2123</sup> Mr Randall was assisted by Technical Assessor Dan Patterson (for the July review) and observed by Sam Giles (for both): Randall {UKAS0011424/15} page 15, paragraphs 19.1-19.2; {UKAS0001077}; {UKAS0001083}.

**28.24** The assessments of the BBA carried out by UKAS in 2017 resulted in almost no significant criticism. In our view UKAS should have examined the history of the BBA's work on the Reynobond certificate more critically and, given that the assessment specifically considered the entire history of the certificate from 2008 onwards, should have considered whether the BBA's work was sufficiently robust for the whole of the period from that date until the Grenfell Tower fire. That was all the more so in the light of the fact that the fire had involved a product that had been certified by the BBA and that it had received highly critical allegations about the BBA's past performance. Having noticed that the certificate had failed to state that the product was not suitable for use on buildings over 18 metres in height, the BBA should have been required as part of the assessment process to ascertain why the certificate had been wrong and why the error had been allowed to persist for so many years. UKAS should have made critical findings and should have considered suspending the BBA's accreditation until it had done so.<sup>2124</sup> The fact that UKAS failed to scrutinise the BBA's processes in that way and does not appear to have considered imposing any sanction of that kind indicates to us that its assessment of the BBA was too lenient.

### Accreditation of BRE

**28.25** UKAS accredited BRE to perform BS 8414 tests in accordance with ISO/IEC 17025. The tests of systems incorporating Kingspan K15 and Celotex RS5000 were carried out under that accreditation. It also accredited BRE under ISO/IEC 17025 to perform many other activities and each assessment generated lengthy and detailed reports covering a variety of subjects.<sup>2125</sup> Any weaknesses identified by UKAS in BRE's systems must therefore be understood in the context of the full report.<sup>2126</sup> However, there were some weaknesses that should have been of particular concern to UKAS but which it failed to identify and its failure to do so indicates defects in its assessment process.

**28.26** To meet the requirements of ISO/IEC 17025, BRE was required to conduct internal audits which assessed its own performance and recorded failures and corrective action.<sup>2127</sup> That was particularly important, because assessments by UKAS could only involve a sample of BRE's work.

**28.27** Between 2012 and 2016, assessors repeatedly raised concerns about the quality of BRE's auditing. In 2012, it made several criticisms of BRE processes, principally, that its audit procedures were not recorded, that there was no comprehensive management of audits for the entire year, that the few audits of testing that had been carried out had not been reported to the Quality Manager and that no corrective action had been recorded.<sup>2128</sup> In its report of 24 July 2012 UKAS told BRE that it would not renew its accreditation unless it was able to demonstrate at a further visit that management control was being exercised and that the management system was being implemented.<sup>2129</sup> At the next visit BRE was able to satisfy UKAS about those matters<sup>2130</sup> and in 2013 it demonstrated some improvement,<sup>2131</sup> but in its assessments in 2014 and 2015 UKAS recorded delays in carrying out and responding to audits.<sup>2132</sup> In 2015, in particular, UKAS reported that BRE had failed

<sup>2124</sup> Turner {Day227/133:9}-{Day227/134:10}.

<sup>2125</sup> Turner {Day226/176:11-14}.

<sup>2126</sup> Turner {Day227/19:24}-{Day227/20:10}; {Day227/21:25}-{Day227/21:1-7}.

<sup>2127</sup> {BSI00001726/19-20} section 4.14.1-4.

<sup>2128</sup> {UKAS0004239/4}; {UKAS0004239/11}.

<sup>2129</sup> {UKAS0004239/6}.

<sup>2130</sup> {UKAS0004253}.

<sup>2131</sup> {UKAS0004269/8}.

<sup>2132</sup> {UKAS0004315/3}; {UKAS0004315/11}; {UKAS0004339/3}.

to record as non-conforming work certain deficiencies that had been noted in audits.<sup>2133</sup> UKAS assessors noted that the BRE had not investigated the scale and effect of that non-conforming work, so it was not possible to understand whether it was necessary to take immediate action, for example, by halting work.<sup>2134</sup>

- 28.28** It is clear from the assessments made by UKAS that throughout the period BRE's internal auditing processes were inadequate and UKAS should have been aware of that.<sup>2135</sup> Although it is now not possible to determine whether there was a single root cause of that underperformance,<sup>2136</sup> UKAS should have identified the problem and required BRE to investigate it.

### Assessment of BS 8414 testing

- 28.29** In the four years between 2012 and 2016, UKAS witnessed only one test in 2016 as part of its assessment of BRE's competence to conduct BS 8414 tests<sup>2137</sup> and there are no records of its having witnessed any such tests during the period between 2008 and 2011. UKAS planned to witness BS 8414 testing every year from 2011 to 2016<sup>2138</sup> and although we accept that there might have been difficulties in arranging to observe a full-scale test, nonetheless UKAS failed to meet its own policy<sup>2139</sup> of witnessing a live test once every four-years.<sup>2140</sup>

- 28.30** In its assessment in 2016, UKAS recorded the following findings and requirements for improvement in relation to BS 8414 testing:

- a. that BRE did not maintain a formal record of the procedure for carrying out BS 8414 tests, but relied on informal documents that did not form part of the quality assurance system;<sup>2141</sup>
- b. that the test area and control rooms in the burn hall used for BS 8414 tests were untidy and disorganised, with equipment and test materials not being stored appropriately.<sup>2142</sup>

BRE was therefore not meeting the ISO/IEC 17025 standard in those respects and improvements were required if BRE was to maintain accreditation.

- 28.31** In failing to witness BS 8414 tests for many years UKAS was depriving itself of the ability to monitor BRE's performance effectively and was unable to say if BRE was conducting the tests accurately and consistently.

<sup>2133</sup> {UKAS0004339/3}; {UKAS0004339/7}.

<sup>2134</sup> {UKAS0004339/7}; {UKAS0004353}.

<sup>2135</sup> Turner {Day227/20:11}-{Day227/21:15}.

<sup>2136</sup> Turner {Day227/21:15-23}.

<sup>2137</sup> UKAS Assessment Report 2012 {UKAS0004239}; UKAS Assessment Report 2013 {UKAS0004269}; UKAS Assessment Report 2014 {UKAS0004315}, where BS 8414 was assessed by checks on equipment and discussion only (see {UKAS0004315/28-29}); UKAS Assessment Report 2016 {UKAS0004364}.

<sup>2138</sup> Visit Plan 2011 {UKAS0004200/5}; Visit Plan 2012 {UKAS0004230/3} which planned to assess all reaction to fire tests; Visit Plan 2013 {UKAS0004265/12}; Visit Plan 2014 {UKAS0004313/7}; Visit Plan 2015 {UKAS0004329/3}.

<sup>2139</sup> {UKAS0011247/39}.

<sup>2140</sup> Turner {Day227/8:8-9}.

<sup>2141</sup> {UKAS0004364/21}.

<sup>2142</sup> {UKAS0004364/21}.



## Subsequent assessments of BRE

- 28.32** As in the case of the BBA, certain events that occurred after the fire show that longstanding defects in the assessments by UKAS of BRE continued in the years after the Grenfell Tower fire and proved stubbornly resistant to correction.
- 28.33** In September 2017, Sam Giles, Head of Construction and Physics in the Operations Department, reported to his seniors on the three bodies accredited by UKAS that had been connected with the refurbishment of Grenfell Tower, the BBA, BRE and Exova.<sup>2143</sup> The report described the additional visits and other investigations that had been conducted by UKAS by that time. In the case of BRE, they included reviewing the records of the BS 8414 tests that DCLG had commissioned in July 2017, including the tests on systems which reproduced the external wall of the tower.<sup>2144</sup> Although its review was based only on the records, UKAS identified a number of deficiencies, including inadequate staff training records, the absence of any formal contract between DCLG and BRE and inconsistencies in the recording of technical findings.<sup>2145</sup> Mr Giles suggested that in the light of what it had discovered UKAS needed to take a tougher approach to BRE, particularly with regard to implementing required improvements.<sup>2146</sup>
- 28.34** However, it appears that there was no change in the existing state of affairs. On 23 October 2020, Kingspan wrote to BRE to tell it that it had withdrawn several BS 8414 test reports on K15 because the material used in the tests had not been representative of the product it was selling.<sup>2147</sup> Despite the fact that the letter was reported in the specialist construction press shortly afterwards,<sup>2148</sup> UKAS became aware of it only on 17 March 2021 when Sam Giles noticed the article and circulated it within the organisation.<sup>2149</sup>
- 28.35** UKAS immediately arranged an extraordinary assessment of BRE, which was conducted in May 2021 by John Leadbeater, Senior Assessment Manager and Technical Focus Person for fire testing,<sup>2150</sup> with responsibility for leading on fire testing.<sup>2151</sup> He found no evidence that the tests had been performed incorrectly, but he did find evidence of weakness in complying with documentary requirements and internal audit procedures.<sup>2152</sup> He recommended that if similar non-compliances were noted on the next routine assessment, there might be grounds for partial or full suspension of the BRE's accreditation for those activities.<sup>2153</sup>
- 28.36** BRE objected to various aspects of the report<sup>2154</sup> and as a result UKAS withdrew it and replaced it with a less critical version that made it clear that the findings had no bearing on the current performance of BRE.<sup>2155</sup> That was done without consulting Mr Leadbeater, who was not made aware of the decision to withdraw the original report.<sup>2156</sup>

<sup>2143</sup> {UKAS0010859}; {UKAS0010860}.

<sup>2144</sup> {UKAS0004456}.

<sup>2145</sup> {UKAS0004456/3-4}.

<sup>2146</sup> {UKAS0010860/2}.

<sup>2147</sup> {KIN00024104}.

<sup>2148</sup> On 5 November 2020, Inside Housing magazine published an article about this letter: <https://www.insidehousing.co.uk/news/kingspan-withdraws-insulation-fire-test-admitting-it-is-not-representative-of-product-on-market-for-15-years-68461>.

<sup>2149</sup> {UKAS0011430}.

<sup>2150</sup> Leadbeater {UKAS0011426/4-5} pages 4-5, paragraphs 3.2-3.3.

<sup>2151</sup> Turner {Day227/33:6-13}; Leadbeater {UKAS0011426/5} page 5, paragraph 3.3.

<sup>2152</sup> {UKAS0004773}.

<sup>2153</sup> {UKAS0004773/7}.

<sup>2154</sup> {UKAS0004774}.

<sup>2155</sup> {UKAS0004778}; {UKAS0011435}; Leadbeater {UKAS0011426/20} page 20, paragraph 18.1.

<sup>2156</sup> Mr Leadbeater's annotated comments: {UKAS0011435/3}; Turner {Day227/56:13}-{Day227/57:11}.

- 28.37** In the end UKAS decided to avoid any potential conflict by withdrawing the revised report and leaving all potential criticisms until the next assessment of BRE, which was imminent.<sup>2157</sup> It was conducted by Mr Leadbeater over several days in July and August 2021, as a result of which he made numerous adverse findings and identified a number of areas for improvement.<sup>2158</sup>
- 28.38** One consequence of withdrawing Mr Leadbeater’s first report was that his observations about the historical deficiencies of BRE were subsumed in an assessment of how BRE was performing in July 2021.<sup>2159</sup> Similarly, after that assessment discussions about BRE’s performance turned on how UKAS could prevent a recurrence of the failures, a matter that UKAS proposed to make the subject of requirements for improvement.<sup>2160</sup> Although an organisation’s current competence is, rightly, the main question for UKAS, a process that fails to take account of historic performance risks overlooking significant trends. An organisation could, and on the evidence before us did, propose measures to deal with problems as though they were of an isolated nature when they were symptomatic of more general shortcomings. BRE should have conducted a searching analysis of both the root cause of the deficiencies and their effects, and if it did not, UKAS should have required it to do so.

## Conclusions

- 28.39** UKAS accepted in its closing statement that its dealings with the BBA and BRE showed that its systems were in need of improvement.<sup>2161</sup> It also told us that it had introduced a number of changes to its policies and procedures that were intended to rectify the defects that had been identified.<sup>2162</sup> In October 2022, we received further documents from UKAS indicating that it was continuing to make efforts to address weaknesses.<sup>2163</sup> We take account of those matters when we come to make our recommendations. Nonetheless, the evidence of the way in which UKAS handled the accreditation of BRE and the BBA in the period before the Grenfell Tower fire has led us to the following conclusions:
- a. UKAS did not follow its own policies in relation to the frequency of assessing activities. Its assessment of the BRE’s performance of BS 8414 tests between 2008 and 2016 was inadequate, with just one test being witnessed in 2016.<sup>2164</sup> It also failed to carry out a proper assessment of the BBA’s Agrément schemes, assessing the certification of only a few categories of products sporadically between 2008 and 2015.
  - b. It failed to identify a consistent failure on the part of BRE to audit its work adequately in the years 2012-2016. UKAS should have required BRE to examine the underlying cause or causes of those repeated auditing failures. Similarly, when other failures were identified, it failed to require the BBA or BRE to complete a comprehensive investigation into their cause and possible wider effects.
  - c. When assessing the BBA after the fire it failed to identify important errors in the issuing and review of the Reynobond certificate, which resulted from a failure to examine the information available in the assessments with sufficient rigour. It was also

<sup>2157</sup> Leadbeater {UKAS0011426/20} page 20, paragraph 18.1; Turner {Day277/57:24}-{Day227/58:8}.

<sup>2158</sup> {UKAS0011327/35-45}; {UKAS0011314} rows 107-120.

<sup>2159</sup> {UKAS0011327}.

<sup>2160</sup> {UKAS0011331}.

<sup>2161</sup> UKAS Closing Submissions for Module 6 {UKAS0011447/18} page 18, paragraph 56.

<sup>2162</sup> UKAS Closing Submissions for Module 6 {UKAS0011447/8-17} pages 8-17, paragraphs 25-53.

<sup>2163</sup> {UKAS0011454}; {UKAS0011455}; {UKAS0011456}; {UKAS0011457}.

<sup>2164</sup> Turner {Day 227/7:5-18}.

unwise of UKAS, after the Grenfell Tower fire, to allow a former employee to assess the BBA's Agrément Scheme.

## The relationship between UKAS and accredited bodies

- 28.40** Although we accept that UKAS took its role as national accreditation body seriously, the reliability of its assessments depended on the honesty and co-operation of the organisations it was accrediting. It was therefore left to the organisations themselves to identify weaknesses, to report them to UKAS and to implement improvements in good faith. UKAS left a great deal to trust. Although a degree of trust was essential, UKAS should have taken a more searching, even sceptical, attitude to the bodies it accredited.
- 28.41** Sam Giles identified that as a potential problem in 2017 after the Grenfell Tower fire. After an assessment of the BRE, the BBA and Exova (conducted in July and August 2017), Mr Giles concluded in September 2017 that some organisations might be displaying a degree of arrogance in dismissing findings made by UKAS.<sup>2165</sup> However, despite Mr Giles' observations, his comments did not appear to prompt a reconsideration of the relationships between UKAS and some of its accredited bodies, at least at that time. For example, UKAS assessors might have been instructed to adopt a less trusting view of the organisations subjected to routine assessment and to push them to consider in greater detail the cause and effect of any critical findings that UKAS made.
- 28.42** UKAS was sometimes too willing to accept the competence of an organisation without having reviewed all the relevant documents<sup>2166</sup> and sometimes too quick to minimise or ignore its deficiencies or to accept superficial improvements as adequate. That was demonstrated by events both before and after the fire. The effect of failing to require more thorough investigations into the causes and effects of shortcomings was that opportunities to improve the work of organisations engaged in testing and certifying products were lost.
- 28.43** UKAS's powers in the face of recalcitrant or defective bodies are surprisingly limited. The most it can do in the face of unsatisfactory conduct on the part of an accredited organisation is to suspend or withdraw accreditation. It has no legal powers or role in enforcement. Moreover, the fact that accreditation is voluntary presents a particular challenge, in that, subject to market pressures, a certification body can simply decline to be accredited by UKAS at all.
- 28.44** That seems to us to be a thoroughly unsatisfactory state of affairs. A voluntary system of accreditation, where the accrediting body has no power of enforcement other than suspension or withdrawal of accreditation, in the end simply leaves the designer and building owner having to trust the certificate or test report and classification. It deprives them of the confidence that the relevant body has itself adopted rigorous methods which are wholly free from the commercial pressures inherent in relationships with manufacturers.

<sup>2165</sup> {UKAS0010859}; {UKAS0010860/3}.

<sup>2166</sup> {Day227/144:25}-{Day227/145:5}.



# Chapter 29

## Failures in the system

**29.1** Our examination of the role played by the government and other bodies that had important parts to play in the testing and certification of construction products enable us to identify a number of respects in which the systems designed to ensure the safety of buildings in general and of high-rise buildings in particular failed to achieve the purposes for which they were established.

### The government

**29.2** As the organisation with primary responsibility for establishing and maintaining a system for the regulation of construction work in the interests of public safety the government should ensure that as far as reasonably possible regulations and guidance keep pace with developments in construction materials and techniques. It should also take reasonable steps to ensure that regulations are enforced and that any guidance it publishes is clear and easily accessible to all those in the industry.

**29.3** In our view between 1991 and 2017 the government failed to discharge those responsibilities in a number of ways. That was primarily due to its failure to ensure that the department responsible for the Building Regulations and statutory guidance was expected to monitor the performance of the system as a whole (including the effectiveness of building control) and inform itself of developments in the methods and materials being used in the construction industry with a view to ensuring that the regulations and guidance were understood and followed and, where necessary, clarified or amended. We have criticised officials for failing to take steps of that kind, but officials can act only in accordance with the way in which the department is organised. If, as appears to have been the case, the department was not expected to ensure that the regulations were being properly followed, officials cannot be blamed for failing to make enquiries or taking active steps to discover what is going on.

**29.4** In the period between the fire at Knowsley Heights in 1991 and the fire at Grenfell Tower in 2017 there were numerous opportunities for the department to identify the risks posed by the use of combustible insulation and cladding panels, particularly on high-rise buildings, and take action in relation to them. Of particular significance is the failure by the government to implement the recommendations of the Select Committee in December 1999, or at least keep them under review, and its failure to pay due regard to the striking results of the test in 2001 involving aluminium composite panels with unmodified polyethylene cores.

**29.5** The report of the Select Committee warned the government in unambiguous terms that it should not take a serious fire in which people were killed before steps were taken to minimise the risks posed by some external cladding systems. Unfortunately, that warning was ignored and although a large-scale system test (which became BS 8414) was introduced as an alternative way of assessing risk, national Class 0, which was based on small-scale testing, was allowed to remain in the statutory guidance as the primary standard for external wall coverings, notwithstanding its clear and well-known limitations. On numerous occasions the department was made aware that national Class 0 was wholly inadequate as a measure of the propensity of composite panels to promote the spread

of fire across an external wall but it allowed it to remain in the statutory guidance as an acceptable standard until after the Grenfell Tower fire. As soon as the obvious inadequacy of Class 0 for that purpose was demonstrated by the fire, the Building Regulations and guidance were changed. The need for that change could and should have been identified and acted upon years earlier.

- 29.6** The failure of the government following the large-scale test in 2001 of a system incorporating aluminium composite panels with unmodified polyethylene cores to take any steps to ascertain the extent to which panels of that kind were in use or to warn the construction industry about the risks they posed represents a significant failure of the system, as was the department's failure to publish the results of the test.
- 29.7** The review of Approved Document B between 2005 and 2006 provided the department with another opportunity to clarify the guidance on compliance with functional requirement B4(1). Changes were made to paragraph 12.7 of Approved Document B but the choice of language was vague and ill thought out and the changes were slipped in at a late stage in the process with no proper consultation. The failure to follow established procedures appears to have been driven by a desire to achieve a quick solution to a previously unforeseen problem, but an absence of proper consultation and time for thought resulted in an unsatisfactory amendment that was responsible for confusion and uncertainty. Once again, there was a failure of sound policy-making and the systems designed to ensure an effective outcome.
- 29.8** In the period between 2012 and 2017 the department received warnings about the risks posed by polymeric insulation products and aluminium composite cladding products with polyethylene cores. It also became aware of several major cladding fires abroad. They should have alerted it to the dangers posed by those materials and should have led it to investigate the extent to which such materials were being used by the construction industry in this country. The department appears to have proceeded on the assumption that, because a serious high-rise cladding fire had not occurred in this country, the regulatory regime was sufficient to prevent one from occurring. That was a mistaken assumption for which there was no basis.
- 29.9** Despite those warnings, the department failed to amend or clarify the guidance in Approved Document B on the construction of external walls, which, by 2013 at the latest, it knew was unclear and not properly understood by a significant proportion of those engaged in the UK construction industry. By February 2016 it was aware that some in the industry were worried that combustible insulation and ACM PE panels were routinely being used on high-rise buildings in breach of functional requirement B4. The failure to act on that knowledge represented a serious failure on the part of the government to take seriously its responsibility for the safety of those living in such buildings.
- 29.10** If systems of government are to work well it is necessary that those who are employed to operate them are carefully appointed. It is not clear how Brian Martin was chosen to be the official with day-to-day responsibility for the Building Regulations and Approved Document B, why he was allowed to remain in that position for so long or why he was allowed to wield so much influence over the department's response to developments. His repeated failures to bring to the attention of more senior officials serious risks of which he became aware suggest that he was given a much greater degree of responsibility than was justified without suitable oversight.

- 29.11** More senior officials must also take responsibility for what were systemic failures. Anthony Burd, Mr Martin's line manager, was directly involved in the introduction into paragraph 12.7 of the expression "filler material" and appears to have been solely responsible for the further addition at the last minute of the reference to gaskets and sealants. He should have ensured that more senior officials were told about it.
- 29.12** It was a serious weakness in the organisation of the department that Mr Martin was given too much independence in deciding how it should respond to information reaching it from the industry and elsewhere. As his Deputy Director for a significant part of the relevant period, Bob Ledsome must bear some of the responsibility for that because he did not exercise the degree of oversight that matters of such importance required. He could and should have done more to understand the potential risks involved in the use of certain products, particularly when he became aware in late 2015 of various international cladding fires. Given the extent to which matters affecting the safety of people's lives depended on Mr Martin's recognition of a serious danger and the soundness and thoroughness of his decision-making, Mr Ledsome, Mr Burd and later Mr Harral should have exercised a greater degree of supervision over him, if only to ensure that his response to events was appropriate. It was a serious failure of the system to allow an area of activity that directly affected the safety of people's lives to depend on the judgment of one relatively junior official.
- 29.13** The effective working of the system was not enhanced by the privatisation of BRE. In our view its relationship with the department became less beneficial after it was required to operate in a commercial environment. The transition from adviser to contractor meant that it did not regard itself as being under a duty to provide robust and independent advice to the government. Indeed, the department made it clear that it should not volunteer policy advice but should confine itself to providing the services described in its contracts. The flaws in the relationship between BRE and the department were epitomised by the Investigation of Real Fires contracts<sup>2167</sup> under which BRE's contribution to discussions was restricted.
- 29.14** Once the relationship between BRE and the department had been put on a purely commercial footing, it was for the department to decide what it wanted BRE to provide. If it did not want BRE to provide policy or any other advice it was free to make that clear. However, for the relationship to work to best advantage it was desirable that the department should have the benefit of BRE's advice and experience. Unfortunately, that did not always occur. BRE's investigation into the Lakanal House fire was curtailed by the department prematurely and at every stage, including the inquests, officials displayed a short-sighted attitude towards learning the wider lessons of the fire. Lessons could and should have been learnt that might have improved the robustness and clarity of the regulatory regime before the refurbishment of Grenfell Tower was carried out.
- 29.15** The department's response to the coroner's recommendations was inadequate. No-one treated them with any sense of urgency; officials did not explain clearly to the Secretary of State the steps that were required to comply with them and at least one junior official appeared to treat the coroner with disdain. There was a lack of clarity about which of them had been accepted and which rejected and there was no system for monitoring or tracking them.

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<sup>2167</sup> See Chapter 8.

- 29.16** The picture of a department struggling under significant pressure was reinforced by the response of ministers and officials to other external bodies. Legitimate concerns repeatedly raised by the All-Party Parliamentary Group on Fire Safety were met with a defensive and dismissive attitude by officials, reflected in the responses of ministers to correspondence. They ought to have considered whether the concerns were well-founded, and if so, what action was required.
- 29.17** In the years that followed the receipt of the coroner's recommendations the government's deregulatory agenda, enthusiastically supported by some junior ministers and the Secretary of State, dominated the department's thinking to such an extent that even matters affecting the safety of life were ignored, delayed or disregarded. Senior officials and ministers alike appeared to be almost completely unaware of the day-to-day effect of those policies on junior officials who were charged with matters of that kind. Mr Ledsome made no attempt to bring to the attention of any more senior official the negative effect on his team of the pressure to deregulate and no senior official or minister appears to have given any real thought to whether it was appropriate that the policy of deregulation should apply to the Building Regulations and statutory guidance.
- 29.18** Building control was a regulatory activity in which the department played no direct role, but senior officials and ministers ought to have ensured that arrangements were in place to monitor the system and ensure that it was working properly. From 2013 onwards there were warnings about systemic failings and risks to public safety that junior officials should have brought to the attention of those in more senior positions, but no formal process for doing so existed.
- 29.19** The effectiveness of the Building Regulations division was undermined by a failure to include among its responsibilities monitoring the effectiveness of the Building Regulations and statutory guidance and the development of new methods of construction and the use of new materials and by a lack of sufficient resources to enable it to identify and record risks to public safety arising from the use of unsuitable materials. Nor did it have sufficient resources to ensure that the guidance in Approved Document B was kept up to date and fit for its purpose. The division was not afforded the priority it deserved and was not given the resources and expertise it needed to carry out the demands on it.
- 29.20** There were serious and longstanding failings of leadership at the highest levels. Senior officials should have taken a closer interest in the working of a small, but important, part of the department that was responsible for significant matters affecting the safety of people's lives. The fact that the Building Regulations division was not expected to monitor the way in which the regulations and guidance were understood and applied created a dangerous situation, given the low levels of competence in the construction industry, the introduction of new construction materials, such as polymeric insulation and ACM panels with combustible cores, and the extent to which many in the industry regarded Approved Document B as prescribing the circumstances in which combustible materials could be used in the construction of external walls without regard to the functional requirements. Most importantly, there was a failure to create a climate in which concerns reaching the department about matters affecting the safety of life were expected to be raised with more senior officials and frank advice given.
- 29.21** In conclusion, we have come to the view that over a period of many years the department failed to recognise the importance of the Building Regulations and the accompanying statutory guidance as a system of regulation whose purpose was to ensure public safety, including the safety of those who live and work in high-rise buildings. For that reason it failed to put in place arrangements to ensure that the working of the system was properly



monitored and that steps were taken as and when necessary to ensure that it remained capable of achieving its purposes. Those were systemic failings of a kind for which ministers and the senior officials responsible for the organisation of the department must take responsibility. Despite the warning from the Select Committee in 1999 that action needed to be taken on the use of combustible materials in the construction of external walls, inertia combined in later years with a drive to avoid regulation made it likely that only a major fire in a high-rise building leading to a large number of casualties would prompt it to take the necessary action. The government must take responsibility for the systemic failures that played a significant part in enabling the Grenfell Tower fire to occur.

- 29.22** Regrettably, there was a similar failure on the part of the government to ensure that the provisions of the Fire Safety Order relating to the carrying out of fire risk assessments were capable of being implemented as effectively as the nature of the activity required. The problem lay in the competence of those who held themselves out as capable of carrying out such assessments, particularly in relation to high-risk buildings, and the government's apparent determination not to respond to repeated calls for the regulation of the industry. The need for regulation to ensure the competence of those practising as fire risk assessors was drawn to the department's attention by the Chief Fire and Rescue Adviser in 2009 and over the following years calls came from various quarters for the industry to be regulated.
- 29.23** When the matter next came before the relevant minister (then Brandon Lewis MP) in 2013, reluctance to introduce new regulations appears to have trumped the need to put the industry on a sound footing. The determination to pursue a solution based on the creation of voluntary schemes of accreditation of a kind that had not previously proved effective resulted in stalemate. Unfortunately, the government failed to pay proper attention to the voice of the fire sector whose various bodies were largely in agreement about what was needed. That may have reflected the degree of importance ministers attached to fire risk assessments, but whatever the reason, its refusal to act was in our view a serious error and a failure of the system designed to keep people safe from the effects of fire.
- 29.24** Much the same can be said of the department's response to requests for clarification of the Fire Safety Order. As early as 2012 the London Fire Commissioner asked the minister (again, Brandon Lewis MP) to provide guidance on the meaning of the expression "[parts] used in common". His call for clarification was echoed by the coroner at the Lakanal House inquests but once again, the policy of deregulation appears to have stood in the way of amending the Order to provide the necessary clarity. Despite a further request for clarification from the London Fire Commissioner, the government shelved the matter and no action was taken until the passing of the Fire Safety Act 2021, some years after the Grenfell Tower fire.

### **The Building Research Establishment**

- 29.25** BRE held a trusted position within the construction industry and more widely. Having begun life as a government agency it was privatised in 1997, after which it was engaged to advise the department from time to time on a broad range of matters relating to fire safety under contracts for research, investigations, reports and experimental work. Senior staff, including Dr Debbie Smith and Dr Sarah Colwell, were members of a range of committees working on fire safety standards at both European and national level, sometimes acting on behalf of the government. BRE was responsible for managing public consultations on, and drafting amendments to, Approved Document B and for advising working groups formed by the department on the introduction of new classifications such as Euroclass standards in 2002. Informally, BRE staff corresponded with the department, principally Mr Martin,

on inquiries relating to fire safety received both by the department and by BRE itself. Their correspondence covered a range of matters, including the interpretation of parts of Approved Document B and international cladding fires.

- 29.26** BRE was widely recognised both nationally and internationally as a leader in fire safety. For many years before the fire at Grenfell Tower it was the only organisation in the UK capable of carrying out large-scale testing in accordance with BS 8414. BRE developed that test and published all three versions of BR 135, which set out the criteria against which data from tests carried out in accordance with BS 8414 should be assessed.
- 29.27** However, as our findings in earlier chapters demonstrate, much of the work carried out by BRE was marred by unprofessional conduct, inadequate practices, a lack of effective oversight, poor reporting and a lack of scientific rigour. In some cases we saw evidence of a desire to accommodate existing customers at the expense of maintaining the rigour of its processes. Despite its close association with the department over a long period of time and the opportunities that association provided for the informal exchange of views, BRE appears to have been reluctant to alert the department to developments of potential importance in the construction industry of which it became aware.

#### Testing in accordance with BS 8414

- 29.28** There were weaknesses in the way BRE carried out tests in accordance with BS 8414. It did not identify carefully the materials delivered to the burn hall for individual tests, it did not ensure that they corresponded to the drawings of the system to be tested and did not ensure that the rig as constructed and tested accurately reflected the drawings that had been provided. The periodic checks that Dr Smith told us BRE staff were expected to make on systems under construction were vague and did not contain any clear direction in relation to frequency, timing or purpose. She told us that BRE staff in the burn hall were not trained to understand architectural drawings,<sup>2168</sup> so it is difficult to see why BRE required drawings to be provided or why its staff were expected to check systems under construction against them. Mr Clark, who managed the BRE burn hall between 2005 and 2015 and was responsible for compiling BRE's standards and procedures for testing in accordance with BS 8414 in 2013,<sup>2169</sup> told us that he thought the drawings submitted by test sponsors were not intended to represent the system tested but the system as it was intended to be constructed as part of a building.<sup>2170</sup> He also told us that drawings had sometimes not been provided until after the test had taken place,<sup>2171</sup> as happened with the second test carried out for Celotex in May 2014. In that case Mr Clark prepared a draft report using drawings from the previous test in February 2014.<sup>2172</sup> As a result of those defects in the system, reports of tests did not always correctly describe the system tested.
- 29.29** BRE took the position, repeated in all test reports, that the configuration of the system to be tested was entirely a matter for the sponsor of the test, but that did not prevent it from carrying out proper checks to ensure that the system tested matched the description in the test reports and that the components were correctly identified and accurately recorded. We see no reason why BRE could not have kept comprehensive records of all materials delivered to the burn hall for every test, examined the drawings in advance and decided at what stage of construction checks should be made by BRE staff. Since the description of the system tested was fundamental to any subsequent report, close monitoring of the

<sup>2168</sup> Smith {Day237/167:17-25}.

<sup>2169</sup> {BRE00005769/295-305}; Clark {Day95/60:20-21}.

<sup>2170</sup> Clark {Day97/72:14-18}.

<sup>2171</sup> Clark {BRE00005768/9} page 9, paragraph 41.

<sup>2172</sup> Clark {Day96/81:3-13}.

system in the course of construction was essential to ensure that the report was accurate. Nothing in BS EN ISO EIC 17025 prevented BRE from doing that. The absence of such arrangements represented a serious failure in its systems.

- 29.30** Shortcomings of that kind enabled Celotex to manipulate the testing process by introducing materials other than those described in the report. Moreover, although BRE was aware that commercial organisations were liable to manipulate their relationship with it to gain commercial advantage,<sup>2173</sup> it did not take adequate steps to ensure that those of its employees who came into direct contact with clients in the course of carrying out tests understood the need to maintain their distance and avoid undue familiarity. As a result, its employees were liable to be drawn into relationships with customers that undermined the independence, objectivity and rigour of their work.
- 29.31** In 2004 Dr Colwell discussed testing with Kingspan in a way that went some way beyond providing general information about the process and amounted to giving advice on the best way to satisfy the criteria in BR 135.<sup>2174</sup> In December 2007, BRE staff offered unofficial comments and observations to Kingspan about the performance of K15 following the disastrous result of a test on a system of which it had formed part.<sup>2175</sup> In keeping with Kingspan's strongly expressed wishes,<sup>2176</sup> BRE agreed to say no more in its report than that the system as a whole had not met the criteria in BR 135, despite having commented privately to Kingspan that the insulation had been fully involved and had continued to burn even after the flame source had been extinguished.
- 29.32** Despite his denials, we have found that Mr Clark advised Celotex on more than one occasion on ways in which it could improve its system for a second test after a failed test in February 2014. We have also found that he was aware of the inclusion of additional magnesium oxide boards during the second Celotex test that were not referred to in the test report or the classification report. We also saw for ourselves a recording of Mr Clark engaging in discussions with Mr Meredith during the test of a system incorporating Kingspan K15 in March 2014 in the course of which he gave advice on the performance of the system and how to argue about what the results showed.<sup>2177</sup>
- 29.33** The unprofessional behaviour of some of BRE's staff was in part the result of a failure to provide them with adequate training in the performance of their responsibilities. We have been critical of Mr Clark for advising Celotex on ways in which it might improve its system following the test in February 2014, for failing to draw attention to the use by Celotex of magnesium oxide boards in the system tested in May 2014 and for giving advice to Kingspan during the test conducted for it in March 2014. However, he had received no training from BRE of any kind on what was required by way of independence and impartiality,<sup>2178</sup> nor had he had any discussion at any time with any of his managers about what might constitute impermissible advice and consultancy services.<sup>2179</sup> There was no mandatory training<sup>2180</sup> or centralised record of training within BRE and its staff were

<sup>2173</sup> {BRE00014770/6}; {BRE00041887/12}; Smith {Day235/67:8-24}; {Day236/155:18}-{Day236/156:23}; {Day238/44:21-23}.

<sup>2174</sup> {KIN00021657} ninth and twelfth paragraphs; {BRE00047572/1}; Meredith {Day75/20:14}-{Day75/21:1}; Heath {Day78/204:17-22}; {Day78/207:9-12}; {Day78/208:18}-{Day78/209:7}; Meredith {Day75/130:23-25}. See Chapter 22.

<sup>2175</sup> {KIN00008847/3}; Meredith {Day75/160:3-13}. See Chapter 22.

<sup>2176</sup> {KIN00003693/1}

<sup>2177</sup> {BRE00035418}.

<sup>2178</sup> Clark {Day97/88:23}-{Day97/89:3}.

<sup>2179</sup> Clark {Day97/89:19}-{Day97/90:2}.

<sup>2180</sup> Smith {Day237/153:11-16}.

responsible for their own training records.<sup>2181</sup> Quite simply, Mr Clark did not know where to draw the line and he crossed it on various occasions. The failure to provide training of that kind represents a failure to establish proper management systems.

### Commercial interests

- 29.34** When invited to a meeting of the CWCT's Fire Group in July 2014 to discuss fire and facades, including the use of combustibile insulation on high-rise residential buildings, Dr Smith's alarm at what she saw as a potential threat to BRE's pre-eminent position as an adviser on such matters betrayed a desire to put BRE's status in the industry and commercial position ahead of considerations of public safety.<sup>2182</sup>

### Investigation of Real Fires project

- 29.35** We recognise that BRE's fire investigations for the department were constrained by limited resources and time and also by the restrictive terms of its contracts, particularly after 2012. Nonetheless, the investigations it carried out for the department were characterised by a lack of analysis and were at best superficial.<sup>2183</sup> Most reports revealed very little that would enable one to discern patterns or trends or even understand what had caused or contributed to any particular fire. The reports repeatedly confirmed the overall effectiveness of the regulations and guidance without any proper basis for that conclusion. As a result they gave false comfort to the department for many years and served only to increase the danger that important matters would be missed. BRE's reports into the major fires at Knowsley Heights (1991), Garnock Court (1999) and The Edge (2005) and its preliminary report into the fire at Lakanal House (2009) were far from comprehensive and in each case failed to identify or assess important contributory factors. Most significantly, although each of those fires was often referred to as providing important lessons for the future, no one at BRE was able to describe what those lessons actually were.

### Relationship with the government

- 29.36** The status of BRE, its origins and historical links with the department, as well as the fact that for many years Brian Martin, while employed by BRE, had been seconded to the department might reasonably have been expected to foster a relationship under which BRE would alert the department to significant developments in matters affecting the safety of life that might call for amendments to the Building Regulations or statutory guidance. However, the relationship did not work in that way, to the detriment of the department and the public at large. Although BRE recognised from as early as 1991 following the fire at Knowsley Heights that small-scale testing, in particular of the kind that provided the basis for national Class 0, was inadequate to enable a proper assessment to be made of the reaction of external cladding systems to fire, we found nothing to indicate that BRE had drawn that to the department's attention, formally or informally.
- 29.37** Similarly, following its large-scale test of a system incorporating aluminium composite panels with polyethylene cores in 2001 under contract cc1924, BRE failed to draw the department's attention in clear terms, either in its report or informally, to the way in which the material had behaved and the dangers it presented, particularly if used on high-rise buildings. The department did not have access to its own scientific advice on

<sup>2181</sup> Smith {Day237/154:19-25}.

<sup>2182</sup> {BRE00047459/1}; Smith {Day237/59:2-8}; Smith {Day237/61:25}-{Day237/62:8}; Smith {Day237/62:24}-{Day237/63:6}.  
See Chapter 11.

<sup>2183</sup> See Chapter 8.

matters affecting fire safety, as we think BRE must have been aware, and so depended to a significant extent on information of the kind that BRE was able to provide. The failure of that relationship represented a significant gap in the arrangements intended to protect the safety of the public.

### The quality of BRE's work

- 29.38** BRE was engaged regularly by the department to carry out research and provide reports, but the quality of the work it produced was in many cases poor. For example, reports produced under the cc1924 project conflated Class 0 and limited combustibility when describing the regulatory requirements and guidance.<sup>2184</sup> That was a fundamental error that was repeated by BRE when reporting on the fire at Lakanal House<sup>2185</sup> and in the work done for the department by the BRE on external fire spread in 2015.<sup>2186</sup> That particular piece of work, which involved experimental testing and a background research paper, was seriously inadequate. It was deeply flawed in almost every respect, lacked any scientific value and purported to draw positive conclusions about the effectiveness of the regulations and guidance that could not sensibly have been reached on the basis of the work that had been carried out.<sup>2187</sup>

### Certification bodies

- 29.39** Our investigations also uncovered serious weaknesses in two important certification bodies, the British Board of Agrément (BBA) and Local Authority Building Control (LABC).

### The British Board of Agrément

- 29.40** As an organisation claiming to be one of the leading certification bodies the British Board of Agrément should have ensured that its procedures for investigating the claims made by manufacturers for their products were by nature both wholly independent and rigorous and that they were followed with equal independence and rigour. In fact, however, as our investigation of the circumstances surrounding the issue of its certificates in respect of Reynobond and Kingspan K15 have shown, there were failings of a kind which undermined their value and rendered them misleading. Moreover, we have no reason to think that the shortcomings we discovered in those certificates and the way in which they had been issued were confined to those particular cases.
- 29.41** In the case of the BBA the root of the problem lay in the conflict between the need to act as a commercial organisation, and therefore to attract customers in order to generate profits, and the need to maintain a high degree of independence and rigorous investigation in order to satisfy those who might be considering using the products in question that the contents of their certificates could safely be relied on. The BBA failed to manage effectively the conflict between the commercial and (for want of a better word) regulatory aspects of its operations in the two cases we investigated and, because that conflict was inherent in its operations, we think it likely that it failed to manage it appropriately in other cases too.
- 29.42** The BBA's scrutiny of the evidence relating to the fire performance of Reynobond was superficial. Although some within the BBA knew that the performance in a fire of a product of that kind might be affected by its configuration and method of fixing, the BBA failed to ask for any test evidence relating to the product when used in cassette form. It also

<sup>2184</sup> {BRE00001353/14} first paragraph; See Chapter 10.

<sup>2185</sup> {BRE00005881/14} fourth paragraph. See Chapter 9.

<sup>2186</sup> {CLG00019445/3} fifth paragraph; Crowder {Day230/160:22}-{Day230/162:21}. See Chapter 10.

<sup>2187</sup> Chapter 10.

failed to obtain any evidence to support the claim that the version of the product with an unmodified polyethylene core had satisfied the requirements of Class 0. Despite those important omissions, it issued a certificate for Reynobond which stated that the panels “could be regarded as having a Class 0 surface” and failed to draw any distinction between the way in which different methods of fixing affected the way in which it reacted to fire.

- 29.43** The lack of rigour in the BBA’s investigations was also exemplified by its approach to the certification of Kingspan’s K15 in October 2008. No aspect of the product’s manufacture, testing or fire performance was assessed by the BBA before it issued the certificate. It did not obtain any test data relating to K15 before it issued a certificate that contained a statement that the product had been classified as national Class 0, since none existed. In July 2013 the BBA issued a revised certificate stating that K15 met the requirements of paragraph 12.7 of Approved Document B, although it ought to have known that that claim was false because K15, as a phenolic product, was not a material of limited combustibility. It is clear that for some years no-one at the BBA had any real expertise in assessing the fire performance of materials or understood the need for it. Until 2016, any recourse to outside expert bodies (such as BRE) was haphazard at best.<sup>2188</sup>
- 29.44** Until December 2013, when it issued its third certificate for K15, the BBA effectively allowed the contents of the certificates relating to the fire performance of K15 to be dictated by Kingspan itself, accepting the text it put forward without checking its accuracy. At the suggestion of Kingspan, the first and second versions of the certificate advised designers to consult Kingspan if they were considering its use on buildings over 18 metres in height. That was a singularly foolish thing to include, as should have been obvious, because it effectively allowed Kingspan to approve the use of the product itself and bypass the certificate as independent verification of the product’s compliance with the guidance in Approved Document B.
- 29.45** We accept that in the case of Arconic and Kingspan the BBA was the victim of dishonest behaviour on the part of unscrupulous manufacturers, but if it had maintained robust processes that could not have happened.
- 29.46** In these different ways the BBA demonstrated an inappropriate desire to please its customers and in order to do so accepted forms of wording proposed by them for inclusion in certificates that were wrong and misleading. It failed to recognise that the way in which Arconic described the product deliberately blurred the distinction between the form in which the product left the factory and the two forms in which it would inevitably be used. Moreover, despite imposing on customers terms of contract that required them to provide information when called upon to do so, the BBA failed to enforce them and allowed Arconic to ignore them without any sanction.<sup>2189</sup> In our view all those failures reflected an ingrained willingness to cultivate customers, certainly those of any commercial value, rather than insist on high standards and compliance with a contract that was intended to maintain them. The first two certificates issued by the BBA in relation to K15 lent substantial support to Kingspan’s efforts to create a market for combustible insulation material for use on high-rise buildings.

<sup>2188</sup> Amoroso {Day106/17:19}-{Day106/18:8}; Albon {Day109/92:18-23}; {Day109/110:7}-{Day109/111:22}; Gregorian {Day105/25:12}-{Day105/27:2}; {Day105/157:19}-{Day105/160:4}.

<sup>2189</sup> Chapter 21.

## Local Authority Building Control

- 29.47** Over a period of some years the LABC's certificates relating to Kingspan K15 and Celotex RS5000 contained misleading statements about the fire performance and suitability of both products for use in the external walls of buildings over 18 metres in height. They also misrepresented the nature of the BS 8414 test and classification in accordance with BR 135.
- 29.48** The LABC had received, and effectively ignored, several warnings from various organisations and individuals about the contents of the certificates it had issued for K15. In the case of K15 and RS5000, it failed to scrutinise properly the claims made for the products by the manufacturers; instead, it adopted uncritically the language they suggested. In short, it was willing to accommodate the customer at the expense of those who relied on the certificates.
- 29.49** Drafts were prepared for the certificate relating to RS5000 without sight of important documents. For much of the time those involved in producing the draft certificates did not understand the nature or purpose of the BS 8414 test or classification by reference to the criteria in BR 135. Nor did they understand the difference between a material with a Class 0 surface and a material of limited combustibility, which was an important distinction for the purposes of Approved Document B. As a result, they were under the misapprehension that if an external wall system containing a particular material or product satisfied the criteria in BR 135 when tested in accordance with BS 8414, that material or product was suitable for use in the external walls of buildings over 18 metres in height generally.<sup>2190</sup>
- 29.50** Although the LABC was not a testing house and did not ultimately determine whether a product could be used safely on any particular development, and although local authority building control officers were not obliged to accept its certificates, it remains the case that one of the main purposes of an LABC certificate was to enable the product or system in question to gain approval from building control easily and quickly. As a body that issued certificates, the LABC was necessarily aware that its certificates were relied on by manufacturers to demonstrate that their products complied with the Building Regulations<sup>2191</sup> and by building control officers to satisfy themselves that they were suitable for the use to which it was proposed to put them. It should therefore have been aware that it was of the utmost importance that its processes were robust and the technical contents of its certificates accurate.
- 29.51** Like the BBA, the LABC was the victim of dishonest behaviour on the part of unscrupulous manufacturers. Kingspan and Celotex outmanoeuvred and took advantage of the LABC throughout the process of certification. Each of them set out to mislead those who were responsible for assessing the claims made in respect of their products. Like the BBA, however, the LABC should have been aware of the risk that manufacturers eager to obtain certificates for their products might be tempted to present them in an unduly favourable light, if not worse, but it did little to ensure that its processes were sufficiently rigorous to avoid its being misled, so far as that was possible.
- 29.52** The LABC was vulnerable to deception because its processes were not rigorous enough and those who were responsible for the process of certification, including those who carried out the peer review, did not take them as seriously as was required. The task of producing the initial assessment should not have been given to building control officers

<sup>2190</sup> Ewing {Day218/165:23-25}-{Day218/166:1-7}.

<sup>2191</sup> Brennan {LABC0020135/12} page 12, paragraph 21.3; Turner {Day216/23:16-20}.

who did not have the degree of knowledge and experience required to make an informed assessment of the product in question. It should have been given to someone who, at the very least, was capable of understanding the properties of the product and the nature of any tests to which the certificate was expected to refer. Its procedures should have ensured that appropriate test evidence existed to support the use of the products described in its certificates.

**29.53** The LABC accepted that in the case of Kingspan K15 and Celotex RS5000 the approval scheme had, at least at first, failed in all respects.<sup>2192</sup> We agree but would go further. The LABC failed to scrutinise rigorously the information provided by Kingspan or Celotex at any stage and initial errors were repeated in later certificates. The fact that the original assessments were carried out by LABC member authorities rather than by the LABC itself does not excuse the absence of proper reviews, robust second checks or, in the case of K15, the failure to respond to warnings given by reputable organisations about the inaccurate terms of a previous certificate.

**29.54** In the final analysis, there was a complete failure on the part of the LABC over a number of years to take basic steps to ensure that the certificates it issued for K15 and RS5000 were technically accurate. We have not examined its certification of any other products and therefore cannot tell whether those were exceptions to an otherwise satisfactory process, but having seen evidence of the system in operation, we think that unlikely. We are therefore concerned by the serious deficiencies in the operation of the certification scheme that have come to light in the course of our investigations. The way in which the Type Approval and Registered Details schemes were operated in the two cases we have examined rendered them incapable of providing the construction industry, including local authority building control departments, with the objective and reliable information they required.

### United Kingdom Accreditation Service

**29.55** The role of UKAS was to assess organisations providing testing and certification services. It accredited both the BBA and BRE for many years before the Grenfell Tower fire. However, as we have concluded in Chapter 28, it did not always follow its own policies and its assessment processes were lacking in rigour and comprehensiveness. Even when failings were identified they were not properly explored and opportunities to improve were not always taken. The assessment process relied too much on the candour and co-operation of the bodies it was assessing and too much was left to trust. UKAS should have taken a more searching, even sceptical, attitude to the bodies it accredited. The powers it had to address concerns were surprisingly limited, with no powers of enforcement; the most it could do to address unsatisfactory conduct was suspend or withdraw accreditation. That was an unsatisfactory state of affairs.

### The National House Building Council

**29.56** In this chapter we have sought to identify shortcomings that had a wider significance because of their systemic nature. NHBC, whose involvement in the approval of Kingspan K15 and the publication of guidance to the construction industry on the construction of the external walls of high-rise buildings we have described in Chapter 26, played no direct part in the refurbishment of Grenfell Tower. However, as an organisation employing a large number of Approved Inspectors through whom it provided building control services

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<sup>2192</sup> {LABC0019740/4} paragraph 11.



to a large part of the housing market, it was very influential. It also wielded considerable influence on the housebuilding industry through its membership of the Building Control Alliance and its publication of guidance notes. It was therefore well-placed to ensure that the requirements of the Building Regulations and Approved Document B were known about and acted upon.

- 29.57** As we have observed elsewhere, building control is essentially a regulatory function exercised in the public interest free of commercial pressure. However, as we have described in Chapter 26, there were repeated occasions on which NHBC failed to demonstrate sufficient independence and showed itself willing to accommodate the wishes of Kingspan for commercial reasons. It also showed itself unwilling to upset its own customers and the wider construction industry by revealing the scale of the problem caused by the use of combustible insulation in the external walls of high-rise buildings and the likelihood that they did therefore not comply with the Building Regulations. Those failures struck at the heart of the system of building control. The incentive to act in that way had been created by the introduction of Approved Inspectors, who were able to operate as commercial providers of building control services. In our view there is an irreconcilable tension between the requirements of regulation and the pressures of commerce that prevents a system of that kind from effectively serving the public interest.

### An overall view

- 29.58** In this chapter we have sought to look beyond the individual shortcomings to identify failings of a more systemic nature in various organisations responsible in one way or another for protecting public safety. Each of them had a part to play in a larger system that was intended to achieve that end. Unfortunately, that system lacked the degree of integration required to ensure that it operated as effectively as it should. The government made the regulations and provided the guidance but was not actively involved in monitoring their effectiveness or developments in the construction industry. BRE and other similar organisations provided information and advice to the government, but only as and when it asked for it. Certification bodies provided assurance to the market that products had certain properties and were suitable for use in certain ways but were subject to conflicting interests which in some cases they failed to manage properly. Building control was meant to exercise an important regulatory function, but local authority building control departments did not have adequate resources and the competence of their employees was variable. Moreover, following the introduction of approved inspectors, building control was exposed to the conflict between commercial interests and the regulatory function. The government did not see it as part of its function to oversee its activities in a way that would ensure that the system was discharging its intended purpose of protecting the public.
- 29.59** In our view, there was a lack of effective co-ordination between what were in substance different aspects of a single system, the purpose of which was to ensure that the built environment was safe for those who lived and worked in it and for those who might be affected by it as visitors or just passers-by. That is a task that only the government can undertake. The department responsible for making the Building Regulations and publishing guidance should also be responsible for ensuring that there is effective monitoring of the working of the system as a whole. Only if there is a greater degree of integration of the different parts of the system will the public obtain the benefits that the system as a whole is intended to provide.





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