KINGSPAN INSULATION LIMITED

CLOSING STATEMENT, PHASE 2, MODULE 2

CONTENTS

A. OVERVIEW

1 The purpose of these submissions is to address the evidence heard by the Inquiry in Phase 2 Module 2 concerning issues 4(b), 4(d), 4(g)-(j) and 4(m) (Modifications to the exterior of the building 2012-16 (including cladding and insulation)) and 4A (Testing, certification and classification - exterior wall materials).

Kingspan Insulation had no role in the refurbishment of Grenfell Tower

2 Kingspan Insulation Limited ("**Kingspan Insulation**")[1]:

2.1 Had no direct involvement in the refurbishment of Grenfell Tower;

2.2 Had no role in the design or installation of the cladding system;

2.3 Provided no specific advice or technical guidance to those responsible for the design or the implementation of the Grenfell Tower refurbishment[2];

2.4 Had no contractual relationship with the Council, or the TMO, or any of the designers or any of the contractors engaged on the refurbishment project;

2.5 Did not provide any products directly to those refurbishing Grenfell Tower;

2.6 Was not informed that K15 was to be used on Grenfell Tower, and was not aware of its use until after the fire.

K15 accounted for only 5% of the rainscreen insulation:

3 Approximately 95% of the rainscreen insulation purchased for use in the refurbishment of Grenfell Tower was Celotex RS 5000. Only approximately 5% was K15.

4 K15 was only used on Grenfell Tower as a substitute for Celotex RS5000 when supplies of the Celotex product could not be obtained for a short period.[3] Those responsible for the design of the refurbishment had not intended that K15 would be used at all.

[1] Kingspan Insulation Limited (company number 1882722) is the company within Kingspan Group responsible for sales of K15 in Great Britain. There are other companies within Kingspan Group with similar names which undertake similar operations in other jurisdictions and are not involved in the Grenfell Tower Inquiry.
[2] As explained more fully at footnote 37 of Kingspan Insulation's Opening Statement for Phase 2 Module 2 {KIN00023794/9}, a generic u-value calculation was provided at a very early design stage.
[3] See Kingspan Insulation's Opening Statement for Phase 2 Module 2 {KIN00023794/7-9} paras 18, 20-21.

K15 is safe when incorporated in rainscreen cladding systems that pass BS 8414

5 The K15 product currently produced (which we refer to as "current K15"[4]) is a product with excellent insulation properties that is fit for purpose and safe when used in compliant rainscreen cladding systems (e.g. that pass a large-scale BS 8414 test).

6 K15 has been a component of an extensive variety of different cladding systems that have been successfully tested in large-scale tests to BS 8414:

6.1 In total, 14 different cladding systems incorporating current K15 have successfully passed large-scale BS 8414 tests.[5] These are the tests in which Kingspan Insulation has been involved. There have also been other successful tests of systems incorporating K15 with which Kingspan Insulation has had no involvement.

6.2 Kingspan Insulation is not aware of any other rainscreen insulation that has been used in so many cladding systems which have passed BS 8414 tests.

[4] There are no material differences between the K15 product used on Grenfell Tower and the product currently manufactured.

[5] BRE Global Test Report BS 8414-2 test (Report number 303930 Issue 3) on 21 April 2015 (Taylor Maxwell Tampa terracotta tiles): {KIN00000593}; and BRE Global Classification Report (Report number: 297211 Issue 2) dated 3 July 2018: {KIN00000578} (originally issued in September 2015 and subsequently reissued); BRE Global Test Report BS 8414-2 test (Report number: 303931 Issue 1) on 7 July 2015 (brick slip panels): {KIN00000150} and BRE Global Classification Report (Report number: P100576-1000) dated 13 November 2015: {KIN00014435}; BRE Global Test Report BS 8414-2 test (Report number P100838-1000 Issue 2) on 15 July 2015 (Gebrik panels): {KIN000001481} and BRE Global Classification Report (Report number P100838-1001 issue 2) dated 21 September 2015: {KIN00018577}; BRE Global Test Report BS 8414-2 test (Report number: P100184-1000 Issue 3) on 26 January 2016 (ArGeTon Tampa terracotta tiles): {KIN00000139} and BRE Global Classification Report (Report number P100184-1001 Issue 3) dated 2 December 2016: {KIN000159141}; BRE Global Test Report BS 8414-1 test (Report number P107017-1000 Issue 1) on 9 October 2017 (Mitsubishi Alpolic/fr ACM) {KIN00000141} and BRE Global Classification Report (Report number P107017-1001 Issue 2) dated 11 January 2017: {KIN00008578}; BRE Global Test Report BS 8414-1 test (Report number P109971-1000 Issue 1.0) on 9 October 2017 (Mitsubishi Al polio A2 ACM): {KIN00000149} and BRE Global Classification Report (Report number P109971-1001 Issue 1.0) dated 4 April 2018: {K1N00000473}; BRE Global Test Report BS 8414-1 test (Report number P109973-1000 Issue 1.0) on 27 October 2017 (Mitsubishi Alpolic A2 ACM): {KIN00000472} and BRE Global Classification Report (Report number P109973-1001 Issue 1.0) dated 4 April 2018: {KIN00000470}; BRE Global Test Report BS 8414-1 test (Report number P109939-1000 Issue 1) on 7 November 2017 (Mitsubishi Alpolic/fr ACM): {KIN00000142} and BRE Global Classification Report (Report number P109939-1001 Issue 1) dated 11 January 2018: {KIN00008577}; Exova Test Report BS 8414-1 test (Report number DLR1448 Rev.0) on 3 December 2017 (3mm Aluminium Panels): {KIN00000477} and Exova Classification Report (Report number 580810 Rev 0) dated 15 March 2018: {KIN000203271}; Exova Test Report BS 8414-1 test (Report number DLR1453 Rev.0) on 12 December 2017 (Mitsubishi Alpolic/fr ACM): {KIN00000465} and Exova Classification Report (Report number SR0811 Rev.0) dated 30 May 2018: {KIN00000464}; BRE Global Test Report BS 8414-2 test (Report number P109938-1000 Issue 2) on 5 February 2018 (Mitsubishi Alpolic A2 ACM): {KIN00000594} and BRE Global Classification Report (Report number P109938-1001 Issue 1) dated 14 August 2018:{KIN000005621}; BRE Global Test Report BS 8414-2 test (Report number P112065-1000 Issue 1) on 2 May 2018 (102.5mm Facing Brickwork): {KIN00020833} and BRE Global Classification Report (Report number P112065-1001 Issue 1) dated 31 October 2018: {KIN00001773}; BRE Global Test Report BS 8414-1 test (Report number P114679-1000 Issue 1) on 6 June 2019 (8mm Eternit Equitone Nature fibre cement tiles): {KIN00022315} and BRE Global Classification Report (Report number P114679-1001 Issue 1) dated 5 March 2020: {KIN000223171}; Efectis Reaction to Fire BS 8414 -2 Test Report (Report number EUI-18-FF-000131) on 27 June 2019 (40mm Granite panels): {KIN00022638} and Efectis Fire Performance of External Thermal Insulation Classification Report (Report number EUI-18-000131 Issue 1) dated 25 June 2020: {KIN00022642}.

7 The only realistic way to test the safety of a whole cladding system is via a large-scale BS 8414 test[6]. Ultimately, it is only by testing the whole cladding system that safety can be assured; the testing of individual component products cannot always be relied upon to demonstrate that the cladding system as a whole is safe.

The PE-cored ACM cladding was the reason for the speed of spread of the fire

8 In its Phase 1 Report the Inquiry found that the "principal reason" for the rapid flame spread on Grenfell Tower was the presence of the Arconic Reynobond PE-cored ACM cladding on the Tower[7]. Kingspan Insulation agrees.

Systems incorporating PE-cored ACM failed to pass two Government BS 8414 tests

9 Following the fire, the Government (DCLG) carried out two large-scale BS 8414 tests on systems incorporating the type of PE-cored ACM used at Grenfell Tower: one system incorporated PIR insulation and one incorporated non-combustible synthetic mineral fibre insulation[8]. Both systems failed rapidly – within 8 minutes. Further:

9.1 In fact, the system combining PE-cored ACM with non-combustible synthetic mineral fibre insulation failed marginally quicker than that combining PE-cored ACM with PIR insulation. Following those tests, the independent Expert Panel concluded that: *"ACM cladding (and other metal composite material cladding) with unmodified polyethylene filler (category 3) presents* ***a significant fire hazard*** *on residential buildings at any height* ***with any form of insulation****"*[9]*.*

9.2 So far as Kingspan Insulation is aware, systems incorporating PE-cored ACM cladding have never passed a large-scale BS 8414 test, regardless of the insulation type (combustible or non-combustible) used in the system.

[6] This was the conclusion also drawn by Dr Raymond Connolly in his 1994 report, as referred to by the Inquiry's expert Dr Barbara Lane in her presentation to the Inquiry on testing materials; see Transcript 10 November 2020, Day 68, pp 100-102 – "*Finally, he concluded the clear need for full-scale testing of performance for fire for what he termed rational design of cladding systems.*"
[7] Phase 1 Report, para 2.13a.
[8] https://www.gov.uk/government/publications/fire-test-report-dclg-bs-8414-test-no1; https://www.gov.uk/government/publications/fire-test-report-dclg-bs-8414-test-no2.
[9] *Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings* – Ministry of Housing, Communities and Local Government, January 2020, page 6, para 1.15 (emphasis added).

The type of insulation made no difference to the speed of the spread of the fire

10 The Phase 1 Report concluded that *"the presence of polyisocyanurate (PIR) 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"*[10]. That may be correct to a certain degree. But *any* rainscreen insulation, including non-combustible insulation, will play some part in a cladding fire, not least because its insulating properties act to retain heat from combustion of the cladding system. The evidence heard in Module 2 has not touched on any contribution of insulation to the fire.

11 No one doubts that residential buildings should be insulated. No one doubts that rainscreen cladding systems should contain insulation. The relevant question in so far as insulation is concerned, therefore, is not what would have happened if there had been *no* insulation at Grenfell Tower, but whether the nature or speed of the spread of the fire would have been different had a *different type* of insulation been used.

12 Extensive peer-reviewed scientific research has demonstrated that the fire at Grenfell Tower would have spread in materially the same way had non-combustible (i.e. synthetic mineral fibre) insulation been used behind the PE-cored cladding instead of combustible (i.e. PIR) insulation[11]. It also demonstrates that if the PE-cored ACM had been replaced with an ACM with a rating of Euroclass A2 (in tandem with PIR insulation), no façade fire would have developed.[12] In other words, the nature and speed of the spread of the fire across the exterior of the tower was a result of the PE-cored ACM cladding[13] and would not have been materially different if non-combustible insulation had been used.

Non-compliance of the Grenfell Tower refurbishment with the Building Regulations

13 In the Phase 1 Closing Submissions, Kingspan Insulation noted that *"it appears to be clear from the expert evidence heard by the Inquiry to date that the rainscreen cladding system installed during the refurbishment did not comply with the Building Regulations 2010 (the*

[10] Phase 1 Report, para 2.13(b).
[11] See Kingspan Insulation's Opening Statement for Phase 2 Module 2 {KIN00023794/25-28} para 67-75 and in particular the following Efectis papers: "Reconstruction of Grenfell Tower fire. Part 3—Numerical simulation of the Grenfell Tower disaster: Contribution to the understanding of the fire propagation and behaviour during the vertical fire spread." Fire and Materials 2020; 44; 35-57; Reconstruction of the Grenfell Tower Fire — Part 4: Contribution to the Understanding of fire propagation and behaviour during horizontal fire spread' Fire and Materials, 2020; 1-27.
[12] See *ibid.*
[13] See *ibid.*

*"**Building Regulations**")"*[14]. This conclusion was reached at paragraph 26.4 of the Phase 1 Report where the Chairman concluded *" I accept that the construction of the Building Regulations is ultimately a question of law and there is compelling evidence that requirement B4(1) was not met in this case"*[15].

14 The cladding system which was used should never have been proposed, specified or constructed. It was unsafe. Had the system been subjected to a BS 8414 test it would almost certainly have failed, regardless of whether the PE-cored ACM cladding was combined with combustible or non-combustible insulation.

15 Kingspan Insulation was not responsible **in any way** for the fact that PE-cored ACM cladding was used on Grenfell Tower, nor for the fact that the relevant Regulations were not complied with when designing and implementing the cladding system.

Mistakes made by Kingspan Insulation

16 In its opening submissions to Module 2 Kingspan Insulation acknowledged certain historical process shortcomings during the period of 2005 to 2014. Those shortcomings were set out and acknowledged in its written openings and Kingspan Insulation apologised for those matters.[16]

17 Kingspan Insulation has learned from those mistakes and has taken steps to ensure that its processes and procedures are improved to prevent such mistakes occurring again.[17]

Untrue allegations or assertions made against Kingspan Insulation and in respect of K15

18 Whilst Kingspan Insulation has openly acknowledged its own shortcomings where appropriate, many other allegations and assertions have been made against the company and its employees which are, quite simply, untrue.

19 It is part of the role of counsel to the Inquiry to put allegations to witnesses in order to elicit an answer in evidence. There is, though, an inherent risk within that process that those observing the questioning process may mistakenly believe that an assertion put to

[14] Kingspan Insulation's Closing Submission for Phase 1, para 1.6(a) {INQ00000565/2}.
[15] Phase 1 Report para 26.4.
[16] {KIN00023794/3} para12.
[17] {KIN00023794/4-5} para 14; {KIN00023794/29-34} paras 81-101.

a witness must be true, when it may not be. That risk is all the greater if a media report then refers to an assertion made during questioning as if it were an established fact. Where an incorrect assertion is repeated time and time again there is a particular risk that it may wrongly be thought to be an established fact.

20 These types of risk are increased when assertions are put to witnesses in an adversarial manner, but without any of the usual protections inherent in an adversarial trial process. Much of the questioning of Kingspan Insulation witnesses during Module 2 was highly adversarial in nature. However, in an adversarial trial process (i) the claimant must set out its case in pleadings so that the defendant has advance notice of the case that will be put; (ii) the defendant will then have the right to call the appropriate witnesses and expert evidence to meet those pleaded allegations; (iii) the defendant will be afforded the opportunity to correct any misleading or misconceived cross-examination by way of re-examination of a witness; and (iv) a defendant will have a right to cross-examine witnesses called by other parties. No such similar protections exist in a public inquiry of the present type: the Inquiry does not give advance notice of "the case" that it will be putting to witnesses, the relevant core participant has no right to call any witness, including any expert witnesses, and the relevant core participant has no right to ask any questions (whether by way of re-examination or otherwise) of any witness (it can propose questions but has no control over whether what questions are asked).

21 The Chairman and the Panel members must therefore be particularly careful, when considering the evidence, to ensure that the process followed does not result in an incorrect understanding of the true factual position and/or incorrect conclusions being drawn from the evidence. When reviewing the evidence, it will be essential for the Chairman and Panel members to: distinguish questions/comment from evidence; to identify questions which were put to witnesses on an incorrect factual basis; to identify questions which were based on unsubstantiated assertion; to identify questions which were not appropriate questions for that witness; and to consider and weigh the evidence given in response to those questions accordingly, mindful of the absence of the types of safeguards which would exist in a trial process.

22 In the 50 page limit available to Kingspan Insulation in these written submissions, it is not possible to identify each and every example of questions falling in these categories. A few examples must suffice:

22.1 ***That "new technology" K15 has a worse fire performance than "old technology" K15:*** This assertion is not true and not supported by the evidence**.** A number of questions were put to witnesses on the basis that "new technology" K15 had a worse fire performance than "old technology" K15[18], and on one occasion a witness was told that the fire performance was "much" worse.[19] This is, of course, an allegation which would have to be established by expert evidence. There is absolutely no scientific or expert evidence to support the assertion that "new technology" K15 had a worse fire performance than "old technology" K15.

22.2 ***That "new technology" K15 failed a BS 8414 test and failed "spectacularly" demonstrating its poorer fire performance than "old technology" K15*;** Again, these allegations are not true and not supported by the evidence. It was asserted during questioning that K15 failed a BS 8414 test in December 2007, and indeed that it failed "spectacularly". That is wrong. K15 has never failed a BS 8414 test for the simple reason that BS 8414 is not a test of a product, but of an entire cladding system. It is therefore untrue and misleading to state that K15 has failed a BS 8414 test, worse still to describe it as failing "spectacularly".[20] Indeed, the December 2007 system test was repeated in January 2008 using non-combustible synthetic mineral fibre insulation and it too failed; the problem was with the system as a

[18] For example: Transcript 2 December 2020, Day 81, p 56 (Mr Millichap): *" So we were discussing whether you knew about the worse fire performance of the new tech K15 while you were head of technical ….Just a few more questions on that"*; Transcript 23 November 2020, Day 75, p 143 (Mr Meredith): *"And would you agree that this was despite the test not being representative of a rainscreen cladding system and only being on a masonry substrate, and, even more fundamentally, Kingspan changing its product so that what was sold to market actually performed worse in fire, didn't it ?"*; Transcript, 24 November 2020, Day 76 pp 20, 34, 71 (Mr Meredith): *" Did you ever tell the BBA about the failed tests in 2007 and 2008 and the worse fire performance of the new technology K15 that you saw in those tests ?"; " But even if you did think that that was an appropriate route, by this time, you had changed the product that was being sold and it performed worse in fire, so isn't that a fundamental problem here?"; "But you also knew, more fundamentally, by this point that the K15 that's being sold performs even worse in a test situation than the old K15 in that 2005 report, didn't you?".*

[19] Transcript 30 November 2020, Day 79, p 66 (Mr Heath):*" Did it ever occur to you at the time that that might be something you ought to give consideration to? You're seeing your product perform much worse in fire testing. This is about life safety. Did that not ever occur to you?".*

[20] For example: Transcript 25 November 2020, Day 77, p 80 (Mr Mills): "*Well, we know that because there were tests in 2007 and 2008 to BS 8414-2 that K15 failed spectacularly*"; Transcript 24 November 2020, Day 76, p 78 (Mr Meredith): "*You had encountered tests in 2007 and 2008 on steel frame structures where it failed spectacularly , didn't it?*".

whole and not with the type of insulation. No one would contend that the January 2008 test demonstrates that non-combustible insulation is unsafe or that it performs less well than "old technology" K15. The systems being tested in 2007/8 were completely different to that tested with "old technology" K15 and no comparison can be made between them.

22.3 **That Kingspan Insulation sought to pervert science[21] and mislead parliament**;[22] As explained in section H below, neither of these allegations is true and neither is supported by the evidence.

23 The core purpose of a public inquiry is to ascertain the truth. It should not only answer questions but also, where appropriate, allay concerns that may be in the minds of the public. For example, observers of the Inquiry process may, quite wrongly, have been left with the impression that a cladding system which incorporates K15 will necessarily be unsafe merely because of the presence of K15. This is demonstrably untrue, as evidenced by the extensive testing of cladding systems incorporating K15 which have passed BS 8414. The members of the Panel will need to ensure that any such false impressions are corrected in the Phase 2 report; the true facts must be distinguished from incorrect assertions, not least so that trust and confidence in the wider housing stock can properly be restored in respect of those cladding systems which are safe. This is an important part of the role of this Inquiry.

[21] For example: Transcript 9 December 2020, Day 85, p 91 (Mr Pargeter); the same question was also put to Richard Burnley, see Transcript, 25 March 2021, Day 113 p 55: "*Is it true that Kingspan's position, even in 2018, in the face of a Government investigation into fire safety following the Grenfell Tower fire, was to do its best to ensure that science was secretly perverted for financial gain? A. No. Q. Do you accept that? A. I don't accept that at all*".

[22] For example: Transcript 9 December 2020, Day 85, p 90 (Mr Pargeter): "*Q. I'm going to suggest to you that, on what we've looked at, Kingspan was engaged in a wholesale attempt to mislead Clive Betts and the select committee into having doubts about the linear route to compliance because of the threat of the ban on combustibles based on a deliberately manipulated test; that's right, isn't it? A. No, it's not, it's to challenge the level of safety, and the level of safety for us should be the BR 135/BS 8414 test, rather than the linear route."*

PART 1 – THE CLADDING SYSTEM AT GRENFELL TOWER

B. RESPONSIBILITY FOR THE CLADDING SYSTEM AT GRENFELL TOWER

24 The cladding system used on Grenfell Tower ought never to have been proposed, specified or installed. It did not comply with Building Regulations[23] and it was unsafe. Kingspan Insulation was not responsible in any way for its design or installation.

Non-compliance of the cladding system with the Building Regulations

25 The Building Regulations at the time of the refurbishment permitted the use of K15, and other combustible insulation materials, on tall buildings provided that such insulation was used as part of a cladding system which, as a system, was compliant with Building Regulations. To be compliant, the collective guidance in Approved Document B ("ADB") and BCA Technical Guidance Note 18 ("TGN18") stated that any system needed to be assessed under one of four available routes to compliance:

25.1 the "Linear Route", as addressed further in Section F;

25.2 the "Performance-based Route", by which the system would need to meet the criteria set out in BR 135, when tested to BS 8414 test;

25.3 the "Fire Safety Engineering Route", which required functional fire safety to be demonstrated by alternative means; and

25.4 the "Desktop Study Route", which allowed, in the absence of actual fire data, for the compliance of a proposed system to be demonstrated through submission of a desktop study report from an accredited fire engineer.

26 None of these routes was satisfied in respect of the Grenfell Tower refurbishment, nor was any alternative compliance justification provided. The system was therefore not compliant with the relevant requirements of the Building Regulations and should not have been specified or installed. It should not have been approved by Building Control.

[23] See paras 5 to 6 of Kingspan Insulation's Opening Statement for Module 2 {KIN00023794/1-2}, Phase 1 Report para 26.4, and paras 15 to 16 Kingspan Insulation's Closing Statement for Phase 2 Module 1.

27 Even if the Arconic Reynobond PE-cored ACM cassettes had genuinely been Euroclass B (as opposed to the reality of Euroclass E, as explained at paragraph 33 below), those cassettes could still not have been combined with PIR or phenolic insulation under the "Linear Route". This is because, in addition, any insulation would have had to have been non-combustible or of limited combustibility to meet the "Linear Route" requirements. Neither Celotex RS 5000 nor K15 was non-combustible or of limited combustibility.

28 No adequate attempt was made by the designers of the cladding system to ensure that the system satisfied any of the other routes to compliance. It is apparent from the DCLG testing following the fire (as referred to above) that a cladding system incorporating Arconic Reynobond PE-cored ACM was highly unlikely to ever pass a BS 8414 test regardless of whether it was used with combustible or non-combustible insulation. Thus the "Performance-based Route" to compliance could not have been satisfied. As there was a complete absence of any evidence that a system incorporating Arconic Reynobond PE-cored ACM cassettes could pass a BS 8414 test, no reasonably competent fire engineer would have been likely to certify such a system as compliant under the "Fire Safety Engineering Route", or the "Desktop Study Route".

29 Responsibility for the failure to design a cladding system for the refurbishment of Grenfell Tower which complied with the relevant requirements of the Building Regulations lies with the parties responsible for the design, construction and approval of those works. Responsibility does not, and cannot, lie with Kingspan Insulation for the failures of others to discharge their duties to comply with Building Regulations; Kingspan Insulation had no knowledge of any intention to use K15 on Grenfell Tower as part of such a system and was not involved in the design or installation of the system.

K15's marketing literature and certification at the time of supply

30 The use of K15 in a particular cladding system was (and has always been) a matter for designers and architects working on a particular cladding project. None of those involved in the design or installation of the Grenfell Tower refurbishment project sought advice from Kingspan Insulation as to whether K15 could be used with Arconic Reynobond PE-cored ACM cladding.

31 Similarly, it is clear from the evidence that none of the parties involved in the design, construction and approval of the works (or SIG or CCF who supplied the K15 from stock) relied on the testing, certification or marketing materials relating to fire performance of K15 current at the time of its supply to the Grenfell refurbishment project; and to the extent that materials or certification were considered at all, that investigation was insufficient for determining whether K15 was suitable for use in the cladding system on Grenfell Tower.[24] The K15 marketing materials and certification were thus irrelevant to the decision to use K15 (as a substitute for the Celotex product) in the refurbishment.

32 Had those involved in the process of designing or installing the cladding system sought to consult the testing, certification or marketing literature which was current at the time when the K15 was purchased for Grenfell Tower, then they would have seen that none of that testing, certification or literature represented K15 to be of non-combustible or limited combustibility. K15 should therefore never have been specified for use with Arconic's Reynobond PE-cored ACM cladding even if it had genuinely been Euroclass B, which it was not.

The false certification of Arconic's Reynobond PE-cored ACM

33 Arconic Reynobond PE-cored ACM cladding was incorrectly certified and marketed. The BBA Certificate at the time stated that *"A standard sample of the product, with a grey / green Duragloss 5000 coating, when tested for reaction to fire, achieved a classification of B-s2, d0 in accordance with EN 13501-1:2002",* also known as a Euroclass B classification[25] . However, tests undertaken by Arconic in 2013 evidenced that in the form of hook-on cassettes, as used on Grenfell Tower, it only achieved Euroclass E.

34 Where Arconic had actual knowledge that their product was Euroclass E in hook-on cassette form (well before Arconic Reynobond PE-cored ACM cassettes were specified for use on Grenfell Tower and/or purchased or supplied for installation), it should never have

[24] For example: Transcript 9 September 2020, Day 33, p 103 (Mr Bailey, Harley): *"Given the contractual obligations we looked at yesterday in some detail , Mr Bailey, do you accept that in order to comply with them, Harley should have made further investigations in respect of the combustibility of K15 before ordering it and applying it to the building? (Pause) A. Yes, I think there should have been a check on it, yes.".*
[25] {BBA00000047/5}

knowingly permitted the product to be placed on the market with a Euroclass B classification. But it did so, despite apparently knowing that this was dangerously wrong.

35 Had the Reynobond PE-cored ACM cassettes been properly certified and marketed as Euroclass E then they would not have been permitted to be used on Grenfell Tower via the "Linear Route" of compliance with the Building Regulations. A BS 8414 test, Desktop Study or holistic fire engineering analysis would have had to be conducted, and it seems highly improbable that it would have been deemed compliant via any of those routes.

36 As set out in Section C, the nature and speed of the spread of the fire at Grenfell Tower would not have been materially different if non-combustible insulation had been used. The speed and spread of the fire was dictated by the presence of Euroclass E Arconic Reynobond PE-cored ACM cassettes.

C. THE PE-CORED ACM CLADDING WAS RESPONSIBLE FOR THE NATURE AND SPEED OF SPREAD OF THE FIRE

37 The Inquiry has already concluded that the presence of Arconic Reynobond PE-cored ACM cladding was the principal reason why the flames spread so rapidly up, down, and around Grenfell Tower during the tragedy. As recorded in the Phase 1 Report, *"the external walls of the building did not resist, and indeed actively promoted, the spread of fire. That was principally due to the presence of ACM panels with a polyethylene core but other materials and other features, including the design and geometry of the façade, also played a role"*[26].

38 All of the relevant scientific evidence available wholly supports the findings in the Inquiry's Phase 1 Report about the primacy of the PE-cored ACM cladding as the cause of the rapid fire spread:

38.1 Testing commissioned by the DCLG following the Grenfell Tower fire showed that systems incorporating PE-cored ACM cladding failed the large-scale BS 8414 test, with both synthetic mineral fibre and PIR insulation; both systems failing very quickly (in under 8 minutes);

[26] Phase 1 Report para 26.1.

38.2 Independent testing and modelling undertaken by Efectis demonstrates that the PE-cored ACM was so dominant in the fire spread that there would have been no material difference in the rate of fire spread on Grenfell Tower if PIR insulation had been replaced with non-combustible (i.e. synthetic mineral fibre) insulation[27];

38.3 In addition, the Efectis research has demonstrated that: (1) the fire at Grenfell Tower would not have spread onto and over the façade at all had Euroclass A2-ACM been used with PIR insulation instead of PE-cored ACM; (2) the cavity barriers were working until they were bypassed by the burning PE-cored ACM; and (3) burning building contents (as facilitated by a weak window specification) had a significant role to play in accelerating the fire spread over the facade.

39 The scientific evidence is therefore clear and unequivocal: the presence of combustible (PIR) insulation within the cladding system on Grenfell Tower made no material difference to the nature and speed of the spread of the fire, when compared to non-combustible insulation. Further, it would obviously have made no difference whatsoever if non-combustible insulation had been used instead of the 5% of K15 that was used.

40 Kingspan Insulation welcomes the work currently being undertaken by Professors Bisby and Torero to further consider the manner and extent to which each component of the cladding system contributed to the rate and extent of the fire spread; such work should further support the analysis summarised above.

PART 2 – KINGSPAN INSULATION AND K15

D. DEVELOPMENT, TESTING, CERTIFICATION AND PROMOTION OF K15: 2005 TO 2014

41 At the outset of Module 2 Kingspan Insulation made it clear in its written and oral submissions that it accepted that there had been process shortcomings in respect of testing, certification and promotion of K15 during the period of 2005 to 2014. Kingspan Insulation continues to accept the fact of those shortcomings. It has taken appropriate

[27] See further Kingspan Insulation's Opening Statement for Phase 2 Module 2 {KIN00023794/24-28} paras 66-75 which sets out in detail the independent ISO 13785-1 medium scale testing and modelling using Computational Fluid Dynamics carried out by Efectis.

steps to ensure any historical shortcomings are not repeated, as detailed at paragraphs 13 to 14 and 81 to 101 of its Opening Statement for Module 2[28].

(i) TESTING

Overview

42 Kingspan Insulation did not 'manipulate' any of its BS 8414 (or indeed other) tests to achieve misleading results, contrary to the allegations made by some others[29]. This allegation is simply not true.

43 Significant criticism was directed towards Kingspan Insulation and Kingspan Insulation's witnesses during the course of the evidence in respect of four points. Each is addressed below in greater detail, but can be summarised as follows:

43.1 First, criticism was made of the design of the system tested in the 2005 BS8414 test[30]. That criticism is misplaced and seemingly made with hindsight bias. This was one of the very first BS 8414 tests undertaken and it was undertaken following advice from the BRE[31]. At that time, it was reasonably believed and understood by those involved that the most useful test (for fire engineering professionals) would be of a build-up that could be taken to simulate the performance of a system with generic non-combustible cladding, rather than a specific type of cladding. It was therefore never intended to be, nor held out as being, representative of any particular system. The test was a *bona fide* test of a generic cladding system.[32] It was an entirely appropriate test for its day.

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[28]{KIN00023794/4-5} and {KIN00023794/29-34}.

[29] BSR Team 1 Opening Submissions for Phase 2 Module 2: {BSR00000063/12} para 4.3(1*): "Kingspan…manipulated the BS8414 test to obtain a misleading assessment (under BR 135) of their product*"; BSR Team 1 oral openings: Transcript 5 November 2020, Day 66, pp 27-28 (Oral Opening Submissions): *"Each of these manufacturers fully appreciated the inherent flammability of their products, and its unsuitability for use over 18 metres, as illustrated by events. The only reason to manipulate a test by secret modifications to the rig and/or by using materials or products which are unrepresentative of ordinary construction products is that you know the product will not pass unless you do"*

[30] See for example BSR Team 1 Opening Submissions for Phase 2 Module 2 {BSR00000063/3} para 2.2

[31] See para 47 to 47 below.

[32] See for example Transcript 24 February 2021, Day 96 p 122 (Mr Clark, BRE): *"Q. Did you think this was going to be another indicative test as had been carried out in the November of 2004, or was this going to be a full BS 8414 test that anybody using it would seek to replicate when building their cladding system? A. I think at that time I wouldn't have been aware of what the ultimate end use would be. One of the things we would do, I suppose, is if the client said they wanted to do a test, if it passed, it may then turn into a full test, so we would essentially test it on the understanding that if it did pass, it could be used to.. as a full test. So it would be treated in such a way that it was a full test, yes. It wasn't an indicative test, if that's what you mean."*

43.2 Second, there has been criticism of the fact that the "old technology" K15 used in the successful 2005 test was replaced by "new technology" K15 in 2006[33] but that Kingspan Insulation continued to rely on the 2005 test. Kingspan Insulation reasonably believed that the limited changes in technology would make no meaningful difference[34]. In hindsight, however, Kingspan Insulation accepts that it should have carried out a replacement BS 8414 test with "new technology" K15, or had the 2005 test result otherwise validated by the test house for "new technology" K15. Kingspan Insulation has now successfully carried out a replacement BS 8414 test using current K15 in a system which is as similar as it is possible to the system tested in 2005. The replacement test achieved the same pass result as the 2005 test[35].

43.3 Third, there has been criticism of the fact that a non-standard version of K15 was also used in two 2014 tests[36] and that those tests were subsequently relied upon by Kingspan Insulation. Kingspan Insulation accepts that it should have made clear that those 2014 tests used non-standard K15. Nevertheless, replacement/ additional tests, using current K15, have also achieved the same pass result as the 2014 tests, supporting Kingspan Insulation's view that this non-standard K15 performed materially the same way as current K15 in the context of a large-scale BS8414 test.

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[33] See for example BSR Team 1 Opening Submissions for Phase 2 Module 2 {BSR00000063/14} para 5.1.1(1): *"The result of this was that, even had the 2005 test been validly carried out, it was in any case of no relevance after the technology changed, as K15 was from September 2006 onwards a significantly different product."*

[34] See for example, Transcript 7 December 2020, Day 83, p 54 (Mr Pargeter*): "Because from what I understood, and still do understand, the difference between the technologies is relatively small; it's not a big change in the chemistry, it was more of a change in the processing of the product to ensure we could make it more effectively and efficiently , and that's how I understood -- and still do, to quite a large extent -- the degree of the difference between old and new tech.";* Transcript 7 December 2020, Day 83, p 56 (Mr Pargeter) *"Yes, because, you know, I was advised by Gwyn Davies that the performance in fire would not have been any different , so I didn't have any concerns about its performance in fire , just that it was a processing change, and part of the process of development of the K15 product, so I wasn't concerned by it . So that's why I continued to rely on it*"; Transcript 26 November 2020, Day 78, p 227 (Mr Heath): *"Q. Yes, and when I say fundamentally different, I mean on fire performance. I should have clarified. Is the reason you're not surprised because you knew from 2006 that Kingspan was selling K15 which performed very differently in fire? A. No, I don't -- I don't believe that's the case, no."* See also para 62 below.

[35] BRE Global Test Report BS 8414-1 test (Report number P114679-1000 Issue 1) on 6 June 2019 (8mm Eternit Equitone Natura fibre cement tiles): {KIN00022315}; and BRE Global Classification Report (Report number P114679-1001 Issue 1) dated 5 March 2020: {KIN00022317}.

[36] BSR Team 2 Opening Submissions for Phase 2 Module 2 {BSR00000064/13} para 72 *"K15 passed a second test in July 2014 involving an R&D product, and not the publicly available version"* and {BSR00000064/15} para 81 *"Kingspan then thoroughly abused the BS 8414 system through the use of R&D products, failure to test publicly available products and claims of wider application of their BS 8414 tests than were accurate".*

43.4 Fourth, it has been wrongly asserted on numerous occasions that the failure of two cladding systems incorporating "new technology" K15 to pass BS 8414 tests in 2007 and 2008 somehow proves that “new technology” K15 had a worse fire performance than “old technology” K15[37]. It has even been asserted by Counsel to the Inquiry[38] that these tests showed that K15 (as opposed to the systems tested) failed BS 8414. These assertions are patently incorrect. The failure of the 2007 and 2008 system tests demonstrate that those cladding systems as a whole were not capable of passing the demanding requirements of a BS 8414 test, rather than "new technology" K15 as an individual product. Furthermore, as Kingspan Insulation has repeatedly explained, the cladding system tested in 2007 also failed when the K15 was replaced with non-combustible synthetic mineral fibre insulation; yet no one has suggested that the failure of that test means that synthetic mineral fibre insulation is unsafe or somehow less safe than “old technology” K15. The allegation is illustrative of the illogicality of so many of the allegations made against Kingspan Insulation in respect of K15 during the course of this Inquiry. The Panel is enjoined to consider the scientific basis of each and every allegation levelled against Kingspan Insulation; time and again, there is no scientific basis to support the allegations advanced.

The 2005 BS 8414 Test

44 ***Criticisms of the system tested in 2005:*** The system tested in the 2005 test was intended to be a generic proxy for systems comprising non-combustible cladding and K15.[39] The understanding at the time of the test was that fire engineering professionals would be able to utilise the test results when considering the suitability of K15 for use with a variety of other non-combustible outer layers.

[37] See para 22.1 above.
[38] See Transcript 25 November 2020, Day 77, p 80 (Mr Mills): *"We, we know that because there were tests in 2007 and 2008 to BS 8414-2 that K15 failed spectacularly".*
[39] For example: Transcript 23 November 2020, Day 75, pp 69-70 (Mr Meredith): *"Obviously this wasn't supposed to be a cladding system, this was just supposed to be representative of a non-combustible outer layer" and "… we were looking just to put a non-combustible layer on the outside, so it could be extrapolated by the BRE to apply to many non-combustible outer layers, or any non-combustible outer layer";* and Transcript 24 November 2020, Day 76, p62 (Mr Meredith): *"We were only looking to simulate the performance of a non-combustible cladding."*

45 The BS 8414 test standard was introduced in 2002. It was a new test for product manufacturers, test houses and the wider industry.[40] Mr Meredith explained that it *"was a new test method at the time"*[41] which the *"BRE were still learning about"*[42].

46 Before the 2005 test, Kingspan Insulation had sought and received guidance from BRE to try and understand the new testing regime[43]. In particular, advice was sought about the potential to extrapolate the results from a single BS 8414 test to other systems.

47 It was the BRE which proposed the build-up for the 2005 test. Mr Meredith explained that the BRE *"guided us down the route of testing with a non-combustible cladding board to represent non-combustible cladding systems"*[44] and they *"advised that if we tested behind a non-combustible building board they would give us scope to say that the system tested to could meet the BR 135 requirements when used behind all non-combustible cladding types"*[45]. Mr Heath confirmed that, *"it was the BRE who actually suggested we test using that construction or system"*[46]. It was only after the test was carried out that the BRE changed its advice about the extent to which the results of the test could be extrapolated and relied on in respect of other systems[47].

48 It is clear from the evidence that, at this time, the industry was still learning about the BS 8414 test. Mr Heath described this period as a *"huge learning curve"*[48] for both BRE and Kingspan Insulation and that the BRE was *"probably holding our hand a little bit"*[49].

49 The rationale behind this approach was entirely reasonable. Indeed, in 2014 the regulatory guidance was amended so as to allow evidence from a test on one system to be used by fire engineering experts to advise on the safety of a different system via desktop studies (the Desktop Study Route referred to above); thus the concept of

[40] As Mr Baker of the BRE commented, the BS 8414 testing regime was *"a relatively new test for us".* Transcript 3 March 2021, Day 100, p 46.
[41] Transcript 23 November 2020, Day 75, p8.
[42] Transcript 23 November 2020, Day 75, p44.
[43] Transcript 23 November 2020, Day 75, pp 26-27: Mr Meredith says *"I think we'd spoke to everyone and anyone we could that had a knowledge of this document. So we'd talked to the BRE, I think we spoke to Anthony Burd at the time, we would speak to insurers, architects, anyone - - fire engineers, that it was – you know, this was kind of a new area at the time, I think, utilising these products in this situation".*
[44] Transcript 23 November 2020, Day 75, p 93.
[45] Witness Statement of Ivor Meredith {KIN00022312/5} para 9(c).
[46] Transcript, 26 November 2020, Day 78 p 191.
[47] Transcript 26 November 2020, Day 78 (Mr Heath) pp192-193, 212-213.
[48] Transcript, 26 November 2020, Day 78 p 216.
[49] See *Ibid.*

extrapolation came to be accepted by the regulators as a legitimate route to compliance. Since 2019 the BS 9414 standard has been in place which allows for limited extrapolation of test results from one system to other systems.

50 As at 2005, however, the regulatory regime and the industry were still grappling with how BS 8414 tests should be utilised. No criticism can properly attach to Kingspan Insulation in respect of the design of the 2005 test; it was an early BS 8414 test which was designed in accordance with advice from the BRE and intended to provide useful guidance to the industry. Contrary to the assertions advanced by others, there was nothing dishonest or inappropriate about Kingspan Insulation's approach to the 2005 test. It was the product of both BRE and Kingspan Insulation trying to understand a new testing regime and how that regime was intended to be used by professionals within the industry.

51 ***Erroneous allegations of "rigging" of the 2005 test:*** Contrary to the suggestions set out in the opening statements of others[50] the 2005 test was not "manipulated" or "rigged" in any way. It was a valid successful test, conducted transparently and honestly. The only discrepancies that it has been possible to identify relate to the recording of timings in the test. Kingspan Insulation was not responsible for this recording error, and indeed was not even aware of it until the point was first raised at the Inquiry.

52 In any event, this recording error was of no significance to the outcome of the test. The system met the BR 135 criteria regardless of the error in recording of timings. As Mr Hoare explained in his witness statement *"I would have said (both in December 2005 and thereafter) that the data recorded in the test would satisfy the relevant criteria for compliance with BR 135…none of the temperatures recorded at level 2 of the test rig came close to exceeding 600 degrees C for at least 30 seconds (or indeed at all)*[51].

[50] BSR Team 1 Opening Submissions for Phase 2 Module 2: {BSR00000063/5} para 2.5: *"Arconic Kingspan and Celotex were aware of the flammability and unsuitability of their products for use at height. Kingspan and Arconic were aware from as early as 2005 hence in Kingspan's case having to manipulate the 2005 test to achieve a pass"* and {BSR00000063/15-16} p5.1.1 (2)(ii) *"The purpose of the exercise of time delay appears to be to make the test seem more realistic: without this manipulation, the flames would have reached 4 metres by five minutes into the test (rather than the ten minutes recorded in the BRE report). Absent the adjustment of the timing to show the flames reaching 4 metres at ten minutes not five, it would have been obvious that the cavity barriers must have been over-engineered in order to avoid the flames overtopping the rig within the remaining 55 minutes of the test".*

[51] Witness Statement of David Hoare: {BRE00005622/19-20} para 73.

53 There was also an attempt to allege that the 2005 test used *"unrepresentative"* fire barriers[52]. The basis of this allegation has never been understood and is not supported by any expert evidence. Kingspan Insulation understands that in fact the fire barriers used were 'off the shelf' purchases that were typical and "*on the market place at the time*"[53].

54 The allegations that the 2005 test was somehow "rigged" by Kingspan Insulation is one of numerous examples of very serious allegations of misconduct which have been made against Kingspan Insulation which have no basis in fact. The 2005 test was conducted honestly and transparently by Kingspan Insulation and the BRE.

55 ***Erroneous allegations about the requirement for a BR 135 Classification Report:*** It was repeatedly put to witnesses, in the context of the 2005 BS 8414 test, that a BR 135 Classification Report was somehow necessary in order to enable Kingspan Insulation to state that the test had met the criteria set out in BR 135[54]. However, it was never explained to any witness what legal or regulatory provision was alleged to have mandated this requirement[55] .

56 The true position is that at the time of the 2005 BS 8414 test there was no requirement to obtain a Classification Report; it was always an option available, but the relevant data were set out in the Test Report provided by the test house and competent professionals could satisfy themselves as to whether the data met the BR 135 criteria[56]. A BR 135 Classification Report does not provide any additional relevant information which is not contained in the respective Test Report itself. As Mr Howard of the BRE explained "*information within the BR 135 should be a mirror of what is in the test report*"[57]. This was

[52] See BSR Team 1 Opening Submissions for Phase 2 Module 2: {BSR00000063/3} para 2.2.
[53] Transcript 23 November 2020, Day 75 p 76: (Mr Meredith).
[54] For example: Transcript, 23 November 2020, Day 75, pp 112, 123 (Mr Meredith): *"Would you accept now that, when you're looking at the pass/ fail criteria in BR 135, it does require expert assessment by a body like the BRE as to whether it has in fact passed those criteria?" and "That does require some form of expert assessment, doesn't it , given that you've got to look at things like mechanical performance, the full test duration, has it reached the top of the rig? It isn't simply a question of reading off the thermocouple data, is it? It's more sophisticated than that.";* and Transcript 25 November 2020, Day 77, pp 72-73 (Mr Mills): *"But the pass/ fail criteria, as we've agreed, is only in the 135 classification report, isn't it?" and "So unless you've got that report, it's not clear whether there's been a pass or fail against the criteria, is there?".*
[55] See *Ibid*
[56] Mr Meredith explained in evidence his view at the time was "*any knowledgeable building engineer could extrapolate the 8414 results and just apply them to BR 135, and could see that the data that we had was representational of meeting the requirements*" Transcript 23 November 2020, Day 75, p111.
[57] Transcript 25 February 2021, Day 97, p133.

Kingspan Insulation's understanding at the time, as explained by the witnesses,[58] and it was a correct understanding. The wording from the BS 8414 Test Report is frequently copied directly into the BR 135 Classification Report (for example, paragraph 5.3 of the 2005 BS 8414 test report[59] is repeated in paragraph 4.3 of the BR 135 Classification Report, which was obtained in 2015)[60]. In addition, BS 8414 Test Reports contain significantly more information regarding observations relevant to ascertaining the mechanical performance of a system than the Classification Report.

57 Ten years after the 2005 test, however, there was a change in guidance. In June 2015 BCA TGN 18, for the first time, suggested that a Classification Report should be obtained[61]. In September 2015, following the publication of the Note, Kingspan Insulation sought a Classification Report for the 2005 test.[62]

58 All the relevant information relating to the 2005 test was set out in the original BS 8414 Test Report and so there was no difficulty for BRE to issue a Classification Report in 2015 for that 2005 test. This has also been confirmed by the BRE: in their Module 2 oral opening submission the BRE confirmed their position that "*there was nothing wrong contrary to what is said by other core participants with a classification report concerning that test being produced by BRE ten years later*"[63].

59 Furthermore, those competent to do so can look at the 2005 BS8414 Test Report and ascertain for themselves that the test met the BR 135 criteria and thus whether Kingspan

[58] For example, Mr Meredith confirmed that at the time the 2005 test was carried out he " *did not know that a classification report was required" (*Transcript 23 November 2020, Day 75, p 90) and "*the only reason a BRE classification report was not issued was because we didn't request that directly"* from the BRE (Transcript 23 November 2020, Day 75, p109). Similarly, Mr Heath confirmed that at the time the 2005 test was carried out he *"was under the impression that the report on the BS 8414 test was sufficient to determine the results under the BR 135" and therefore Kingspan Insulation didn't require a "published copy" of the BR 135 classification report" (*Transcript 26 November 2020, Day 78 pp 236-237).

[59] BRE Report BS 8414-1 test (Report Number: 220876) on 31 May 2005: {KIN00005356/10} para 5.1 and {KIN00005356/13} para 5.3.

[60] BR 135 Classification Report (Report Number: P101812-1000 Issue 1) dated 28 September 2015 {KIN00000134/10} para 4.3.

[61] {BCA00000002/2} *"The BS8414 tests do not give a PASS / FAIL answer because the data obtained is used by different bodies with different minimum requirements. Hence, for Building Regulation purposes, any test using this method needs to be supported with a Classification Report for the proposed specification confirming that the acceptance criteria of BR135 have been met".*

[62] Mr Pargeter explained *"for completeness"* the Classification report was commissioned in 2015 as Kingspan Insulation *"were obtaining them for other successful BS 8414 test"* Second Witness Statement of Adrian Pargeter: {KIN00020824/103} para 10.66.

[63] Transcript 9 November 2020, Day 67 p 103.

Insulation was correct to state that the criteria were met and/or whether it was right for the BRE to issue a Classification Report confirming that the criteria were satisfied.

60 There can be no valid criticism of Kingspan Insulation for not obtaining a Classification Report in 2005 when there was no legal or regulatory requirement to do so. Similarly, there can be no valid criticism of Kingspan Insulation for the fact that it did obtain a Classification Report in 2015 soon after the guidance was changed.

61 ***Reliance on the 2005 test following the change in technology***: Whilst Kingspan Insulation has fully accepted[64] that the change in technology means that it should have re-conducted the 2005 test with the "new technology" K15, its failure to do so was a mistake based on its honest belief that the change in technology would not make any material difference to the fire performance of the product in a BS 8414 test. Dr Malcolm Rochefort, the Technical Director at the relevant time, explained (based on his extensive experience of phenolics both at ICI and at Kingspan Insulation) that both "new technology" and "old technology" K15 used fundamentally the same phenol formaldehyde foams, that phenolics are *"inherently very good in fire situations"* as they are *"resistant to fire"*[65] and that there was no reason on a chemical level to expect any significant difference in terms of fire performance between the two technologies[66]. He explained that, if anything, the "new technology" benefited from a less flammable blowing agent.[67]

62 Most importantly, however, Kingspan Insulation's understanding that the change in technology would have made no material difference to the fire performance of the product when used as part of a system tested under BS 8414 is supported by subsequent testing. On 6 June 2019, Kingspan Insulation undertook a BS 8414 test of a system which was as close as possible to the system used in the 2005 test, but incorporating current

[64] See Kingspan Insulation's Opening Statement for Phase 2 Module 2 {KIN00023794/17-18} paras 44 and 45.
[65] Transcript, 1 December 2020, Day 80, p 65.
[66] Witness Statement of Malcolm Rochefort {KIN00008838/7}, para 3.10; He also explained in his oral evidence, in response to questions about the change in perforations that *"the product was very, very similar"* (p54) and there were only *"slight differences"* in the molecular weight of the resin used (p51); see Transcript 1 December 2020, Day 80.
[67] Transcript, 1 December 2020, Day 80, pp 51 and 65.

K15 instead of "old technology" K15. The system met the criteria given in BR 135 (it passed).[68]

63 This replacement test indicates that the failure to undertake a replacement for the 2005 test earlier in time has not given rise to any risks from fire safety or to health and safety more generally.

64 Whilst it should have been appreciated that the 2005 test needed to be repeated following the change in technology, or that the original test result should have been validated following that change, it was not a deliberate or fraudulent act committed with any intention to mislead or deceive anyone. Nor was anyone in fact misled or deceived; anyone who relied on the 2005 BS 8414 test in respect of “new technology” K15 can now similarly rely on the replacement test which has been conducted.

65 Over time, those in senior roles at Kingspan Insulation changed. Those who moved into the relevant senior posts did not know that the 2005 BS8414 test had been conducted on "old technology" K15 and/or that the test result had not been validated for use with "new technology" K15[69]. Kingspan Insulation has now put new systems in place to ensure that such core information about historical testing is not lost with personnel changes.[70]

The failed BS 8414 Tests in 2007/08

66 The first BS 8414 test carried out using "new technology" K15 took place in December 2007 and was a test of a system incorporating cladding comprising aluminium cassettes. That system failed when tested to BS 8414.

67 Mr Meredith produced a report of that December 2007 test which described the test rig fire in vivid language.

[68] See further para 45 of Kingspan Insulation's Opening Statement for Module 2 {KIN00023794/17-18} and paras 10.32 and 10.33 of Adrian Pargeter's Second Witness Statement for details: {KIN00020824/94-95}.
[69] For example, Mr Millichap explained that when he became Head of Technical in 2010 he *"absolutely"* understood the product tested in 2005 to represent the product being sold; see Transcript 2 December 2020, Day 81, p 53. Similarly, Mr Pargeter confirmed he only learnt that the 2005 test was carried out on "old technology" K15 in 2016; see Transcript 7 December 2020, Day 83, p 46.
[70] As explained at paras 85-86 of its Opening Statement {KIN00023794/30}, Kingspan Insulation has implemented fire testing protocols which requires that product batch numbers are recorded in all test reports and that test reports record clearly where non-standard product is being tested.

68 The 2007 BS 8414 test, and Mr Meredith's vivid description of it, was put to witnesses on the basis that it proved that "new technology" K15 failed ("spectacularly"[71]) when tested to BS 8414, and, further, witnesses were told[72] that this proved that "new technology" K15 had a worse fire performance than "old technology" K15 which had previously passed a BS 8414 test in 2005. These assertions were wrong, for numerous reasons:

68.1 ***First:*** Mr Meredith was not present when the test took place. He did not witness the test[73]. His report therefore does not provide first-hand evidence of the test. Nor is there any evidence that he saw a video recording of the test before writing his report[74]. By contrast, Mr Baker, a BRE Certification Scheme Manager for passive fire protection (a role which encompassed BS 8414 testing)[75] who did attend and witness the test, stated in his evidence that he found the language used in Mr Meredith's report, by which he described the fire as a "*raging inferno*"[76], as *"quite flowery"*[77]. He himself declined to call the failure "*spectacular*" when invited to do so by the Inquiry's Counsel[78] .

68.2 ***Second:*** The December 2007 BS 8414 test was a test of a whole system. It was not a product test of K15. The success or failure of the test is a consequence of the success or failure of the whole system being tested. This fact was understood by Counsel to the Inquiry.[79] This makes it all the more surprising that witnesses were told in cross-examination that K15 "*failed spectacularly*" in this December 2007 test.[80] That is a plainly erroneous assertion. K15 did not fail the test at all. The

[71] Transcript 25 November 2020, Day 77, p 80 (Mr Mills).
[72] See para 22.122.1 above.
[73] As confirmed in the list of test witnesses set out in Mr Meredith's internal report of the test: {KIN00008847/2} and Mr Meredith notes the following in the report: *""Test Date: originally the 14th of December then it moved to the 17th and then at the last minute they switched to the 20th December. I was on holiday from the 15th and then Mark Swift was to attend on the 17th however he did not make the 20th, but we will soon have the DVD of the test and we performed a full discetion on Tuesday so we are happy we know exactly what happened":* {KIN00008847/2}.
[74] See *Ibid.*
[75] Transcript, 3 March 2021, Day 100, p 7.
[76] See {KIN00008847/2}.
[77] Transcript 3 March 2021, Day 100, p 58.
[78] See *ibid.*
[79] For example: *"Did you understand at all times that a classification to BR 135 is applicable only to the particular tested system… Does it follow that you therefore understood that it's not intended as a guarantee of the fire performance of any individual component part of a tested system "* Transcript 25 November 2020, Day 77, p25 (Mr Mills); *"It's a system test, so it's the whole system that met the criteria, not that product, that's right, isn't it"* Transcript 23 November 2020, Day 75, p 205 (Mr Meredith); *"And it's right, isn't it, that you can't extrapolate away from a system test how one individual product has done in that test in that way"* Transcript 2 December 2020, Day 81, p 75 (Mr Millichap).
[80] See Transcript 25 November 2020, Day 77, p80 (Mr Mills): "*Well, we know that because there were tests in 2007 and 2008 to BS 8414-2 that K15 failed spectacularly*".

system failed. Unfortunately, as a result, it was an erroneous assertion that was repeated in the media many times as if it were fact[81].

68.3 ***Third:*** On 18 January 2008 the test was repeated using the same system save that K15 was replaced with non-combustible synthetic mineral fibre insulation. The system failed again: some of the level two thermocouples exceeded 600˚C in the first 15 minutes of the test for the prescribed length time.[82] Where a system using the same cladding fails when tested with both non-combustible insulation and combustible insulation, the clear conclusion is that the choice of insulation is not the dominant factor. Indeed, this was precisely the conclusion of the Expert Panel following the DCLG testing of PE-cored ACM cladding with PIR and synthetic mineral fibre insulation following the Grenfell Tower fire; the Expert Panel concluded that the PE-cored ACM panels were "***a significant fire hazard*** *on residential buildings at any height* ***with any form of insulation***"[83]. Unfortunately, the fact that the January 2008 test demonstrated that K15 was not the dominant factor in the failure of the December 2007 test was almost entirely ignored when witnesses were questioned during Module 2. This is despite Kingspan Insulation explaining the significance of the use of non-combustible synthetic mineral fibre insulation in the January 2008 test in its Opening Statement[84].

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[81] https://www.itv.com/news/london/2020-12-02/manager-did-not-know-grenfell-insulation-burnt-ferociously-in-failed-fire-test-inquiry-hears - *"But the inquiry has heard Kingspan, an insulation industry leader, changed the composition of the product after 2005 without amending marketing material. The outdated material stated that the insulation was suitable for use on buildings of more than 18 metres tall and had passed a relevant fire test. The new version of the insulation – referred to as "new technology" versus "old technology" in proceedings – failed several cladding fire tests, the first in December 2007."*
https://www.insidehousing.co.uk/insight/grenfell-tower-inquiry-diary-week-21-its-there-in-black-and-white-isnt-it-we-see-a-complete-absence-of-any-consideration-of-life-safety-68916 - *"In 2006, new technology had introduced a new chemical composition and perforations to the foil facing of the product. When retested in 2007 and 2008 it failed dramatically, with the tests described internally as a "raging inferno" and the insulation "burning on its own steam"."*
https://www.thetimes.co.uk/article/kingspan-criticised-at-grenfell-tower-inquiry-over-kooltherm-k15-deception-ghw23wf72 - *"Despite the product failing a series of fire-safety tests, Kingspan continued to market it on the basis of a 2005 test for a different product…The product was changed to cut costs, the inquiry heard last week. The new version, despite not passing fire safety tests, was cheaper and quicker to make."*

[82] Thermocouple data for Sotech and mineral fibre test on 18 January 2008 {PROD0021679}. This test was referred to by Mr Meredith (see Transcript, 23 November 2020, Day 75, p 147) and Mr Heath (see Transcript, 30 November 2020, Day 79, p 35) in their evidence, with Mr Meredith confirming that he should have included comparison pictures between the K15 and mineral fibre tests in his internal report as he believed that they *"failed in a similar manner…Although not quite as dramatic, it was still –- the cladding melted and the fire jumped up the side of the façade":* Transcript, 23 November 2020, Day 75, p 163.

[83] *Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings* – Ministry of Housing, Communities and Local Government, January 2020, page 6, para 1.15 (emphasis added).

[84] {KIN00023794/18} p 47 footnote 61.

68.4 ***Fourth:*** A further BS 8414 test was carried out on April 2008 with the same type of materials as the December 2007 test but with revisions to the design of the cladding; for example, the aluminium cassettes were narrowed to try and prevent the panels from buckling and creating the chimney-like feature that appeared to have been common to the two previous failures.[85] This system performed markedly better than the systems in the December 2007 test, albeit that it narrowly failed to meet the BR 135 criteria. Tests such as these are a vital part of research and development in which test failures are normal and expected.

68.5 ***Fifth:*** The aluminium cassette cladding used in the December 2007 and 2008 tests differed significantly from the cladding used in 2005. Therefore, it is not surprising that the systems tested in 2005 and 2007/8 performed very differently; they were very different systems, and no valid comparisons can be made.

69 It would be perverse and wholly wrong for the Inquiry to conclude that the difference between the 2005 BS 8414 test result and the 2007/8 test results could somehow be attributed to the slight technological differences in K15 technology as opposed to the gross differences in the cladding and system design, particularly when the latter system also failed when combined with non-combustible insulation. No competent expert would support such an assertion. Yet that was the assertion repeatedly put to witnesses of fact as it if were true[86], and then reported, as if it were established fact, in media reports[87].

70 For all of these reasons, the assertion that the 2007/8 tests somehow prove that the change in technology resulted in K15 having worse fire performance K15 was misconceived. The fire performance of "new technology" K15 cannot be assessed on the basis of a comment made by one person in respect of one test which he did not witness, and when he had limited experience of such tests.[88] Rather, the ability of current K15 to

[85] For example, Mr Meredith described how the aluminium cladding *panel "melted and it floated in front of the system… allowing the fire to leap up the fire barrier"*: Transcript 24 November 2020, Day 76, pp 20-21. He explained how the *"metalwork buckled, producing a chimney which kind of flapped in front of the cladding, allowing it to leap over the fire barriers, which allowed a large fire to develop, which allowed the phenolic to become fully involved in the test":* Transcript 23 November 2020, Day 75, p 152. Dr Rochefort also in evidence explained: *"what I'm doing is looking at possibilities that could have happened, and you've got effectively a chimney in the gap between the insulation and the cladding…":* Transcript 1 December 2020, Day 80, p 83.

[86] See para 22.1.

[87] See footnote 81 above

[88] Particularly when the same individual subsequently acknowledged in his evidence *"there was a great deal of difference in the performance of the test when utilising different cladding systems"*: Transcript 23 November 2020, Day

be used successfully in different cladding systems is demonstrated by the fact that at least 14 cladding systems using it have passed BS 8414 (Kingspan Insulation has been involved with 14, and there are others).

71 Notably, when a witness denied the assertion that the technology changes had resulted in K15 having a worse fire performance, it was asserted that the denial was "*based on no science, no independent assessment and no test"*[89]. In truth, it was the line of questioning that was wholly unsupported by any scientific or expert evidence. The denials by the witnesses[90] were grounded in fact and supported by the extensive testing of a variety of cladding systems incorporating current K15 that have been successfully tested to BS8414.

72 Kingspan Insulation employees and former employees were also asked questions about whether the introduction of perforations in the facer of K15 may have had an adverse impact on the fire performance of the product[91]. Again, this line of questioning was not supported by any expert evidence and Kingspan Insulation considers it highly unlikely that any competent expert would suggest that the perforations in the facer used on K15 would play any role in relation in the outcome of a BS 8414 test of a system in which it was incorporated. The reality is that in a large scale fire test like BS 8414 the heat is such that the entire facer is consumed very quickly in the areas impinged upon by the fire.[92]

75, p 185 (Mr Meredith) *and "when you're looking at different cladding systems… et cetera there are so many factors that become involved":* Transcript 23 November 2020, Day 75, p 191.

[89] Transcript 7 December 2020, Day 83, p 61(Mr Pargeter).

[90] In particular, Dr Rochefort, Technical Director during his time at Kingspan Insulation, provided his technical opinion at paras 3.10 and 11.22 of his witness statement in respect of the chemical similarities and differences between the products, and explained that, at a chemical level, his view was that there should not be a significant difference in fire performance between the products: (See Witness Statement of Malcolm Rochefort {KIN00008838/7} p 3.10 and {KIN00008838/50} p 11.22). He also noted in oral evidence that *"the basic constituents"* of the two products *"are the same"* Transcript, 1 December 2020, Day 80, p 50.

[91] Transcript 2 December 2020, Day 81, p58 (Mr Millichap*): "What about the perforations to the foil facer? Were you aware that the new technology had brought with it perforations to the foil facer, and that that was one of the reasons you were said to be struggling with getting BS 476-6?";* Transcript 3 December 2020, Day 82, p 30 (Mr Millichap): *"Yes, and it's most likely, isn't it, because concerns had been raised by Mr Meredith and others about what the perforations were doing to the fire performance? That's right, isn't it?".*

[92] As Mr Pargeter summarised: *"the demand from the fire from the test is so much greater in an 8414 test than it is an SBI test that the facer element offers, just, like I said yesterday, no protection to the product in that type of test, where you can get in excess of 1,000 degrees*": Transcript 8 December 2020, Day 84, p76; and "*when the crib is burning in excess of 1,000 degrees. If that touches the facer, the fact that it's 25-micron or 50-micron, it will just disappear, as we've seen with these tests"*: Transcript 7 December 2020, Day 83, p 210. Mr Pargeter also explained that the changes to the perforations in the product (in addition to any changes in respect of chemical composition and facer thickness) could affect *"small-scale fire performance, if you like, rather than large – scale"*: Transcript 7 December 2020, Day 83, p 90. Further, Dr Rochefort explained that the perforations on New Technology K15 would have comprised approximately 0.5% of the surface area of the product: Transcript 1 December 2020, Day 80, p 54; and he disputed the assertion that the perforations were a key difference in the product, noting that the perforations *"weren't actually changing the facing at all"*: Transcript, 1 December 2020. Day 80, p 54.

BS 8414 Testing in 2014

73 Kingspan Insulation conducted a BS 8414-2 test using a system incorporating K15 with Trespa HPL panels in March 2014 (the **"2014 Trespa Test"**)[93]; and a further test using Terracotta tiles in July 2014 (the **"2014 Terracotta Test"**)[94]. Both tests were undertaken using "non-standard" K15, which differed from current K15 in that (i) it used a 50 micron unperforated foil facer, rather than the standard 25 micron perforated foil facer, and (ii) the phenolic foam core was manufactured using an improved different blowing agent (Solstice). The first system failed the BS 8414 test and the second system passed.

74 These tests were carried out for the purposes of research and development as Kingspan Insulation was considering migrating K15 to this specification as part of its launch of a range of Kooltherm products with better insulating properties. The new range, utilising the improved blowing agent, became known as the K100-Range and was launched in 2018. The K100-Range version of K15 (K115) has not, to date, been launched.

75 It has been asserted that Kingspan Insulation acted dishonestly or fraudulently by referencing these 2014 tests[95]. This is incorrect. Kingspan Insulation has expressed its regret that the precise nature of the product should have been made clear on the face of the test reports[96] but there was no intention to mislead anyone[97].

76 Nor can it be suggested that the differences in composition between the "non-standard" and current K15 would have created material differences in system fire performance, in the context of the pass/fail criteria given in BR 135.[98] Furthermore:

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[93] BRE Global Test Report BS 8414-2 (Report number293940 Issue 1) dated 26 June 2014: {KIN00000140}.
[94] BRE Global Test Report BS 8414-2 (Report number 297099 Issue 2) dated 14 April 2015: {KIN00000143}.
[95] For example: Transcript 3 December 2020, Day 82, p 69(Mr Millichap): *"Q. Well, Mr Millichap, I would suggest to you that this is not just something that's been missed or overlooked. The way this is written, and there's other correspondence we'll come to, it was absolutely deliberate by Kingspan, wasn't it? A. It was absolutely our intention to transition to a new product at that time. I know that didn't happen, and, you know, that timescale got extended, but as far as I recall , at the point when I left Kingspan, I believe that was still the intention, that we would move to that new product and that would be the supplied product."* Transcript 3 December 2020, Day 82, p 110*: "Q. What I'm going to suggest to you is that actually it was a deliberate lie, all of this. It wasn't just inadvertent; it was a deliberate strategy on the part of Kingspan to deceive".*
[96] See Kingspan Insulation's Opening Statement for Phase 2 Module 2 {KIN00023794/21} para 55.
[97] As Mr Millichap (Head of Technical at the time both 2014 tests were carried out) explained to the Inquiry that it was "*never his intention*" to deceive third parties, including the NHBC, in respect of the 2014 testing: see Transcript 3 December 2020, Day 82, p110; Dr Rochefort also did not accept that reliance on the 2014 Terracotta Test was a deliberate attempt to deceive by Kingspan Insulation: see Transcript 1 December 2020, Day 80, p 224.
[98] As explained in detail in the Second Witness Statement of Adrian Pargeter: {KIN00020824/96-97}, paras 10.37 to 10.42.

76.1 Kingspan Insulation has commissioned independent small-scale testing to compare the fire performance of current Kooltherm foam with that of Kooltherm foam created with the improved blowing agent. These tests demonstrate that the improved blowing agent does not materially affect the foam's fire performance[99].

76.2 In relation to the foil facer: as set out above, the existence, or not, of perforations would not impact the performance of the product in full system testing. In respect of the increased thickness of the foil used in the 2014 tests, Mr Pargeter explained that, based on his experience of BS 8414 testing, his view was that the fact the facer was a "*40th of a millimetre thicker*"[100] will likely have no impact on the outcome of a BS 8414 test of a system in which it was incorporated. He stated "*when the crib is burning in excess of 1,000 degrees. If that touches the facer, the fact that it's 25-micron or 50-micron, it will just disappear, as we've seen with these tests*"[101]. As Mr Pargeter summarised: "*the demand from the fire from the test is so much greater in an 8414 test than it is an SBI test that the facer element offers, just, like I said yesterday, no protection to the product in that type of test, where you can get in excess of 1,000 degrees*"[102].

76.3 In addition, Kingspan Insulation carried out comparative ISO-13785-1 testing of the "non-standard" K15 used in the 2014 tests and current K15. These medium-scale tests indicated that there was a comparable level of performance between the two tested products, with the current K15 having a marginally lower overall heat release rate than that of the "non-standard" K15 used in the 2014 tests[103].

77 ***Replacement/alternative tests for the 2014 BS 8414-2 tests:*** As set out above, Kingspan Insulation has undertaken subsequent testing of current K15 which provide assurance that the 2014 tests, which may have previously been relied on, have suitable replacement testing fully representative of systems containing K15 as sold on the market[104]:

[99] Second Witness Statement of Adrian Pargeter: {KIN00020824/96}, para 10.39.
[100] Transcript 7 December 2020, Day 83, p 210.
[101] See *Ibid.*
[102] Transcript 8 December 2020, Day 84, p76.
[103] Report EUI-19-000211A {KIN00022318} and Report EUI-19-000211B {KIN00022319}.
[104] As explained in detail in the Second Witness Statement of Adrian Pargeter: {KIN00020824/96-97}, paras 10.37 to 10.42.

77.1 In respect of the 2014 Trespa Test, Kingspan Insulation undertook a replacement test (recreating the original system so far as possible) using current K15 on 24 July 2019[105], and an alternative second test (replicating the DCLG HPL tests using current K15) on 4 November 2019[106] which, like the original 2014 Trespa Test, both failed to meet the BR 135 criteria.

77.2 In April 2015[107] and in January 2016 [108] Kingspan Insulation conducted two other successful BS 8414 tests on systems comprising terracotta tile cladding and current K15. Whilst the systems used were not identical to that tested in the 2014 Terracotta Test, they nevertheless evidenced that systems combining current K15 with terracotta tiles have met the criteria of BR 135, thus supporting the safe use of K15 in those systems over 18 metres. Accordingly, if any fire engineer relied upon the 2014 Terracotta Test then they would similarly be able to rely upon the 2015 and 2016 tests as relevant alternatives using current K15.

78 In summary, the scientific and testing evidence confirms that if any fire engineer did place any reliance on either of these 2014 research and development test results then that reliance will not have given rise to any fire safety issues as there will have been no material difference between the performance of those products and current K15.

Withdrawal of BS 8414 tests

79 Kingspan Insulation removed the Test and Classification Reports for the 2005 test and the successful 2014 test from its website and all marketing literature in March 2019, to prevent new projects relying on them. Kingspan Insulation then also wrote to fire engineers (including the BRE[109]) on 23 October 2020 confirming that the Test and Classification Reports for the 2005 test and two 2014 tests (referred to at paragraphs 44 to 65 and 73 to 76) were being withdrawn by Kingspan Insulation.

[105] A test report relating to this test was commissioned at the time of testing but has not yet been received.
[106] Al Futtaim Exova BS 8414-1 Test Report (Report number DLR1709 Rev.0) dated 4 February 2020 {KIN00022314}.
[107] BRE Global Test Report BS 8414-2 (Report number 303930 Issue 3) dated 3 July 2018: {KIN00000593}; BRE Global Classification Report (Report number 297211 Issue 2) dated 3 July 2018: {KIN00020511}.
[108] BRE Global Test Report BS 8414-2 (Report number P100184-1000 Issue 3) dated 28 November 2016: {KIN00000139}; and BRE Global Classification (Report number P100184-1001 Issue 3) dated 2 December 2016: {KIN00000132}.
[109] {KIN00024104}.

80 As detailed at paragraphs 62 to 63 and 76 to 78 above, Kingspan Insulation has carried out extensive testing, including replacement BS 8414 tests and other smaller scale testing, to ensure that the differences between the products tested and the product as sold to the market were fully understood and to ensure that the company, and the wider market, could be confident that any reliance by any fire engineer on these three tests will not have given rise to any risks that could have any life safety or fire safety consequences. As set out in the letter to fire engineers, Kingspan Insulation's view is that this additional testing and information *"provide assurance that the withdrawn tests, which may have previously been relied on, have suitable replacement testing fully representative of systems containing K15 as sold on the market"*[110].

81 Kingspan Insulation's withdrawal of these three test, *"out of an abundance of caution",*[111] was a prudent step. Whilst the timing of the letter to fire engineers in particular has been criticised[112], Kingspan Insulation believes that it acted reasonably and responsibly in ensuring that it had conducted appropriate testing to enable all those within the industry to understand precisely why Kingspan Insulation was confident that the withdrawal of the three tests gave rise to no risks. The Test and Classification Reports for the replacement tests are now available to anyone who considers it appropriate to rely on them in place of any of the three original tests. Kingspan Insulation, and the wider industry, can have proper confidence based on test evidence.

Class 0 classification of K15

82 It was suggested to various witnesses that Kingspan Insulation should not have claimed Class 0 in respect of K15. This criticism is not accepted. There may be room for more than one interpretation of the relevant regulations and guidance in respect of the requirements for asserting Class 0, but Kingspan Insulation considers that its interpretation is a reasonable, valid, and legitimate interpretation of the relevant statutory guidance set out in ADB[113].

[110] {KIN00024104/5}.
[111] Transcript 7 December 2020, Day 83, p 159 (Mr Pargeter).
[112] For example: Transcript, 7 December 2020, Day 83, p 154-156 (Mr Pargeter).
[113] See paras 84 to 88below.

83 ***Class 0 classification of K15 prior to 2007:*** The basis of the Class 0 classification of K15 prior to 2007 is set out at paragraphs 39 to 43 of Kingspan Insulation's Opening Statement for Module 2. In summary, K15's original Class 0 classification was derived from the Class 0 testing of similar products manufactured by Kingspan Insulation's Dutch sister company at its factory in Kesteren. The BBA accepted these test reports as appropriate evidence of K15's Class 0 classification and this acceptance of equivalence has been explained further in the evidence of the BBA.[114]

84 ***Post 2007 classification:*** In May 2007, Kingspan Insulation tested the foil facer used on K15 to BS-476 Parts 6 and 7.

85 ADB requires either: "*the product or surface material of a composite product*" (emphasis added) to achieve the necessary fire propagation index and surface spread of flame results to BS-476 Parts 6 and 7. K15's facer achieved Class 0 and, since K15 is a composite product, of which the facer is the surface material, Kingspan Insulation rightly asserted that K15 was Class 0.

86 It has been suggested in questioning by Counsel to the Inquiry that Kingspan Insulation's reliance on the wording of ADB as the basis for its claim that K15 met Class 0 was somehow invalid. It has been contended that this was *"not an in-reality or common sense interpretation"* of ADB[115]. This line of questioning was not supported by any expert evidence, including expert evidence as to the wider industry's understanding of ADB. Indeed, this line of questioning appears to be directly contrary to the expert evidence from Dr Lane who explained that *"in 1985 the definition of class 0 was significantly changed"* in part because *"the requirement to consider the substrate with the surface was removed from the text in the statutory guidance document. This remained the definition to the time of the Grenfell fire"*[116] (emphasis added).

[114] For example, Mr Hunt noted in evidence that the BBA would expect to see test data evidencing Class 0 *"either directly on that product or possibly a related product":* Transcript 18 March 2021, Day 109 pp 19-20 and he would imagine that the test data on a related product could assist with the classification of a different product if *"looking at the facing material and the core of the board, and if those were essentially – now, you might want to define what "essentially" is, but they were either identical or similar enough to say that the same classification might be appropriate":* Transcript 18 March 2021, Day 109, p 21.
[115] Transcript 8 December 2020, Day 84, pp 81-84, 122-3 (Mr Pargeter).
[116] Transcript 10 November 2020, Day 68 p 58.

87 Thus, Dr Lane's evidence is consistent with Kingspan Insulation's interpretation of the requirements: there was a deliberate change to the statutory guidance to permit the testing of the surface material of a composite product, as opposed to the testing of the entirety of the product; the guidance expressly permitted the testing of the foil facer of K15. This clarification of the guidance also has to be understood in the context of Mr Pargeter's evidence that with a composite insulation product like K15, when you test the composite product, the facer can *"delaminate from the product and then touch the burner element"* which affects the test. On this basis, when only the facer is tested you get *"a more reliable result"*[117].

88 Kingspan Insulation cannot be properly criticised for interpreting ADB in the manner that it did following the regulatory change explained by Dr Lane. The repeated assertions made to witnesses that Kingspan Insulation somehow acted dishonestly and even fraudulently[118] in claiming that K15 met the requirements of Class 0 on the basis of the testing of the facer are not only unfounded, but are contrary to the expert evidence which the Inquiry has adduced.

89 It is not understood why Kingspan Insulation was accused of "seeking to *perpetrate a fraud on the market*" and "*deliberately misleading*"[119] the market by interpreting the testing requirement for Class 0 in the way it did, nor why a line of questioning was put to witnesses in respect of an allegation of fraud[120] which was inconsistent with the expert evidence adduced by the Inquiry's appointed expert. Kingspan Insulation cannot be criticised for testing K15 in accordance with the plain reading of the text of the statutory guidance following an express amendment to permit testing in this manner.

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[117] Transcript 8 December 2020, Day 84, p 106-107.
[118] For example: Transcript 8 December 2020, Day 84 p 145 (Mr Pargeter): *"Q And you were seeking to perpetrate a fraud on the market, and also to mislead customers into buying products that you knew had failed regulatory fire safety tests. A. No that's not the intention at all"*; and Transcript 8 December 2020, Day 84, p 109 *"Q "By selling Kingspan K15 having passed only a class 0 test successfully in relation to the foil, you were misleading, and deliberately misleading, the market. A. No, I don't agree with that".*
[119] See *Ibid.*
[120] Again, the position that would pertain in a trial is to be noted: it is generally recognised that allegations of fraud or dishonesty should not be advanced in the absence of reasonably credible material which establishes an arguable case of that fraud or dishonesty; see, for example, The Bar Standards Board guidance in respect of the Code of Conduct which provides that: *"you must not draft any statement of case, witness statement, affidavit or other document containing … any allegation of fraud, unless …you have clear instructions to allege fraud and you have* ***reasonably credible material which establishes an arguable case of fraud****."*

90 Kingspan Insulation notes that disclosure of emails has indicated that there was a difference of opinion between certain of its employees as to the proper approach to Class 0 testing[121]. Kingspan Insulation considers that those who suggested a different interpretation of the guidance on Class 0 testing may not have applied their minds to the proper meaning and effect of the relevant statutory guidance.

(ii) CERTIFICATION:

91 ***Certification:*** Kingspan Insulation has also been criticised for the certification that K15 has received. The relevant overarching point is that the responsibility for issuing certification rests with the bodies who provide it[122]. It is the responsibility of that body to ensure that they have all necessary evidence on which to base any certification[123].

92 ***BBA Certification:*** The BBA writes and/or authorises the content of the K15 BBA certificates. The BBA has responsibility for that certification. It is the BBA which is in charge of the drafting and publication process. The BBA is qualified to make judgments about the content of the certificates, and has the authority to change the wording of the certificates. The BBA also regularly audits Kingspan Insulation's manufacturing processes.

93 Kingspan Insulation received its first BBA certificate relating to K15 on 27 October 2008[124]. Further versions of the K15 BBA certificate were published on: 6 April 2010[125], 17 December 2013[126], 8 October 2015[127], 16 November 2015[128] and 24 November 2020[129].

94 As regards the content of K15's BBA certificates, John Albon of the BBA confirmed in his written evidence that "*The Certificate content has evolved over time, which is the case with most BBA Certificates, to reflect external changes and updates to the standard BBA wording for a particular product type. I believe that the wording has been clarified since*

[121] See, for example, an email from Mr Chalmers sent internally at Kingspan {KIN00004168/1} and the comments made by Mr Meredith in oral evidence: Transcript 24 November 2020, Day 76, p181.
[122] For example: Third Witness Statement of John Albon {BBA00010751/7} para 29.
[123] For example: Witness Statement of Barry Turner {LABC0011202/10} para 35.
[124] {KIN00009383}.
[125] {KIN00008358}.
[126] {KIN00009980}.
[127] {KIN00000490}.
[128] {KIN00008372}.
[129] A copy of this certificate was sent to the Inquiry on 26 November 2020. A copy can be found on Kingspan Insulation's website: https://www.kingspan.com/gb/en-gb/products/insulation-boards/insulation-boards/kooltherm/kooltherm-k15-rainscreen-board.

the issue of the Certificate, but I have no concerns as to the content of previous issues, if it is to be read by a suitably experienced and competent individual behaving ethically"[130].

95 In the course of questioning, four of Kingspan Insulation's witnesses were asked questions about a reference to paragraph 12.7 of ADB in the K15 BBA certificate dated April 2010[131], and in the course of that questioning it was repeatedly suggested that K15 could never comply with or be used in accordance with the requirements of paragraph 12.7 of ADB[132].

96 In each instance, the witness' attention was drawn only to the first part of paragraph 12.7 which says: "*In a building with a storey 18m or more above ground level any insulation product, filler material…used in the external wall construction should be of limited combustibility*".

97 Kingspan Insulation completely agrees that K15 is not a limited combustibility product and therefore not capable of use in accordance with the first part of paragraph 12.7. However, during questioning none of the witnesses were taken to the second part of paragraph 12.7 which states that: "*the restriction does not apply to masonry cavity wall construction which complies with Diagram 34 in Section 9*". The effect of this exemption permits the use of K15 in a masonry cavity wall construction which complies with Diagram 34 in section 9. This provision explains why paragraph 12.7 of ADB is referred to in the BBA certificate.

98 It is a matter of concern that none of these four witnesses was referred to the second part of paragraph 12.7 before being asked why the BBA certificate referenced that paragraph or whether K15 could be used in accordance with the requirements of paragraph 12.7 of ADB. One of the witnesses appeared to begin to refer to the second part of paragraph 12.7 in response[133], but was interrupted by Counsel and did not finish.

99 Counsel to the Inquiry omitted to refer the first 3 Kingspan Insulation witnesses questioned about this issue to the second part of paragraph 12.7. Therefore, on 3

[130] Third Witness Statement of John Albon {BBA00010751/45} p 177.
[131] {KIN00008358}.
[132] For example: Transcript 24 November 2020, Day 76 pp 3-5 (Mr Meredith); Transcript 25 November 2020, Day 77 p 111 (Mr Mills); Transcript 26 November 2020, Day 78 pp 180-181 (Mr Heath); Transcript 2 December 2020, Day 81 pp 79-80 (Mr Millichap).
[133] Transcript 25 November 2020, Day 77, pp 112-3 (Mr Mills).

December 2020 Kingspan Insulation's legal representatives expressly asked Counsel to the Inquiry to draw the attention of Mr Millichap (who was still giving evidence) to the full wording of paragraph 12.7, so as to ensure that he was aware of the full wording of the provision when questioned about it; but this did not happen. They then asked Counsel to the Inquiry to clarify the point with the next witness, Mr Pargeter (and also of course thereby to clarify the point for the benefit of the Inquiry)[134]; unfortunately, Counsel to the Inquiry declined to do so. This is an example of the type of situation in which the relevant information could easily have been drawn to the witness' attention in re-examination if this was a trial so that the witness could have given a properly informed answer to the questions asked.

100 Mr Albon of the BBA had already explained in his witness statement his view as to why the reference to paragraph 12.7 may have been included in the BBA certificate, namely because of the second part of paragraph 12.7. He explained that the reference "*related exclusively to its use in masonry construction. It did not cover the product's use as part of a rainscreen cladding system*"[135]. In addition, Mr Albon concluded that he believes "*the Certificate wording was technically correct and that a suitably competent reader would have no difficulty in understanding the meaning; this might not however be the case for a casual examination (which is not the intended readership)* [136]". It is therefore particularly surprising that Kingspan Insulation's witnesses were not taken to the second part of paragraph 12.7 when being asked to justify why that paragraph was referred to in the BBA certificate, given that the certificate was drafted by the BBA (and not any of them).

101 Despite the repeated assertions to the contrary, it was not erroneous for the BBA to refer to paragraph 12.7 in the 2010 BBA certificate for K15; the full text of paragraph 12.7 should have been brought to the attention of Kingspan Insulation witnesses during questioning so they could provide properly informed answers.

[134] The issue was also further raised orally, through a conversation between Kingspan Insulation's junior counsel Tim Green and the Inquiry's Leading Counsel Kate Grange QC on 3 December 2020, and in letters to the Inquiry dated 3 and 4 December 2020, where it was requested that Mr Pargeter be asked the following question: "Paragraph 12.7 of ADB reads as follows [read it in full], is it your understanding that paragraph 12.7 prohibits the use of K15 in all constructions over 18m or are there are any circumstances in which K15 could be installed over 18 metres in compliance with paragraph 12.7 of Approved Document B?".
[135] Third Witness Statement of John Albon {BBA00010751/49} para 191.
[136] See *Ibid.*

102 ***LABC certification:*** As with the BBA, the LABC is the body that provides the certification and is in charge of the drafting and publication process (with the assistance of Herefordshire Building Control for some K15 certificates). Wording will only be included in an LABC certificate if it has been written and / or authorised by the LABC.

103 Kingspan Insulation detailed in its Opening Statement (paragraphs 57 to 62)[137] the wording used in the 2009 LABC certificate for K15. The Inquiry has heard evidence from Mr Heath and Mr Pack of Kingspan Insulation and from Mr Jones from Herefordshire Building Control regarding the circumstances in which the 2009 LABC certificate came to be drafted and how the wording that K15 *"can be considered as a material of limited combustibility"* came to be included[138]. It has been suggested that Kingspan Insulation is somehow to blame for the wording which LABC chose to use in that certificate[139]. Kingspan Insulation is not to blame for LABC's choice of wording.

104 Prior to the issue of the certificate, there had been a meeting between Mr Jones of Herefordshire Building Control (on behalf of LABC) and Kingspan Insulation on 5 December 2008. Mr Heath confirmed that he did not tell Mr Jones that K15 was a material of limited combustibility nor that it was suitable for use over 18 metres without qualification[140] and Mr Pack noted he *"did not say the product was limited combustibility or infer that it was of limited combustibility"*[141] .

105 Furthermore, in his witness statement Mr Jones explained it was his judgment that K15 "*can be considered as a material of limited combustibility*"[142]. He also confirmed in his statement that it would be *"wrong of me to say that anybody used the specific phase 'limited combustibility'…"* albeit that he then claimed that he somehow left that meeting with the clear impression that K15 was limited combustibility, despite the fact Mr Jones cannot recall that anybody had used these words[143]. Mr Jones also admitted in oral

[137] {KIN00023794/22-23}.
[138] LABC System Approval — External Walls of Rainscreen Cladding Incorporating Kingspan Kooltherm K15 Insulation Board:{KIN00005561}.
[139] For example Transcript 8 February 2021, Day 86 p 188 (Mr Pack): "*Q. You didn't notice that in the draft? You didn't think to correct it? A. I guess we relied upon the advice of the LABC, Herefordshire Council.*"
[140] Transcript 30 November 2020, Day 79 pp 178-179: *Q "Did you ever tell Mr Jones during that meeting that K15 was a material of limited combustibility? A. Absolutely not" And "Did you ever give Mr Jones the impression that K15 was suitable for use over 18 metres without qualification. A. No, I didn't".*
[141] Transcript 8 February 2021, Day 86, pp148-149.
[142] {HBC00000029/33}.
[143] Witness Statement of David Jones {HBC00000029/37-38}.

evidence that generally he *"didn't have any experience in the testing and certification of materials" and "didn't have working knowledge of test standards"*[144]; it therefore seems possible that he may have confused himself following the meeting.

106 Kingspan Insulation agrees that the wording used by Herefordshire Building Control, and in particular the context to the reference to limited combustibility[145], was not as clear as it could or should have been. However, it must be emphasised that the wording used in the 2009 LABC Type Approval was not included in the LABC Registered Detail issued on 28 August 2013[146] (or the reissues of that certificate) or the version of that certificate dated 30 March 2015[147] which was valid at the time of supply of K15 for use on Grenfell Tower. The 2009 LABC Type Approval was not relevant to the use of K15 on Grenfell Tower. No certification or Kingspan Insulation marketing material of K15 at any stage has stated that K15 *was* a material of limited combustibility.

107 ***Promotion of the use of K15:*** Kingspan Insulation accepted before the start of Module 2 that certain statements made in early versions of K15 product literature and other information issued **prior to 2014** could and should have made it clearer that the 2005 BS 8414 Test related to a particular system and advised caution against applying the 2005 BS 8414 Test too broadly.

108 However, this has to be seen in the context of the newness of the BS 8414 test, and general uncertainty within the industry at that time, as to the extent to which it was appropriate to extrapolate the performance of one cladding system in a BS 8414 test to other systems. Ultimately the guidance on how to comply with the Regulations was changed with the introduction of BCA TGN18 so as to allow a BS 8414 test in respect of

[144] Transcript 4 March 2021, Day 101, p16.
[145] Kingspan Insulation addressed the context in which the phrase "limited combustibility" was used in the 2009 LABC Type Approval in its Opening Statement to Module 2: {KIN00023794/22-23} paras 59-62.
[146] K15 LABC Registered Detail certificate dated 28 August 2013: {KIN00010440}. Kingspan Insulation notes that in the course of his evidence Mr Pargeter was provided with a copy of document {NHB00000798}, appearing to be version of the LABC Registered Detail certificate dated 2013 (issued on 20 August 2014) which included the same limited combustibility wording use in the 2009 LABC Type Approval. Mr Pargeter confirmed in evidence that he had not seen this document previously: Transcript 9 December 2020, Day 85, p 177-179. In fact Kingspan Insulation has no record of this document or its provenance. Its understanding remains that neither the LABC Registered Detail issued on 28 August 2013 nor the August 2014 version of the certificate {KIN00006232} included the limited combustibility wording used in the 2009 LABC Type Approval.
[147] K15 LABC Certificate (Reference EWW165) dated 30 March 2015: {LABC0000916}.

one system to be relied upon by appropriate professionals when assessing the likely performance of other systems via desktop studies.

109 It is important to emphasise that the use of K15 in a particular cladding system was (and has always been) a matter for designers, cladding contractors and architects concerned with the cladding on a particular construction[148].

110 At the time of supply of K15 for use on Grenfell Tower, Kingspan Insulation's standard advice to clients correctly referred to ADB and BCA TGN 18 and explained that, for buildings with a storey above 18 metres, a cladding system using K15 would need to achieve compliance with Building Regulations through BS 8414 testing, the provision of a desktop study, or by means of a holistic fire engineering assessment (i.e. that the linear route to compliance could not be used).

E. THE ALLEGATION THAT KINGSPAN INSULATION IS INDIRECTLY RESPONSIBLE FOR THE ACTIONS OF OTHERS

111 It has been suggested by some in their opening statements that Kingspan Insulation *"set the precedent that combustible insulation could genuinely pass a BS 8414 test and so be used over 18 metres"*, and that, as a result, Kingspan Insulation's actions were *"seminally causative"*[149] of (it is inferred) the tragedy that occurred.

112 Kingspan Insulation did demonstrate, quite properly, that systems incorporating K15 could pass the BS 8414 test. The 2005 BS 8414 test first demonstrated that this was possible, and Kingspan Insulation has subsequently been involved in 14 successful BS 8414 tests of systems incorporating current K15. It is also correct that the fact that those systems were tested to BS 8414 and passed gives a very high level of confidence in their safety, and they were recognised as safe systems by the regulatory regime at the material times. Indeed, it gives a level of confidence which is not available in respect of systems which have not been tested to the exacting standards demanded by BS 8414 and BR 135.

113 The allegation appears to be that by successfully testing systems that incorporate K15 to BS 8414, and in particular by the successful 2005 BS 8414 test, Kingspan Insulation

[148] See for example the evidence of Mr Sakula: Transcript 5 May 2021, Day 125, p 165.
[149] See BSR Team 1 Oral Openings Transcript 5 November 2020, Day 66, p 25.

somehow prompted others to manipulate BS 8414 tests involving their own products to achieve passes[150]. But that allegation ignores the fact that the BS 8414 tests conducted by Kingspan Insulation involving K15 have all been proper tests in respect of which no wrongdoing has taken place. The fact that numerous systems incorporating K15 have successfully passed BS 8414 tests cannot be used as a reason (or excuse) for the actions of others who may have deliberately misrepresented tests and sought to have their products specified on the Grenfell Tower. Kingspan Insulation is not a proxy for the industry nor is it responsible for the actions of others in the industry, be that the insulation industry or the construction industry more widely. The testing, classification and certification of Celotex's products is entirely Celotex's responsibility. Kingspan Insulation cannot be blamed for the wrongdoing of Celotex[151]. Nor can it be blamed for the wrongdoing of Arconic (with whom it similarly has no relationship), or any other third party.

F. CORPORATE CULTURE

114 Kingspan Insulation's priority has always been about the safety of its products; Mr Burnley was quite right to emphasise this fact in his evidence[152]. Its culture is one of honesty and responsibility.

115 Kingspan Insulation acknowledges that the process of disclosure for this Inquiry has unearthed some emails and "chats", mainly involving three individual employees, which have revealed unacceptable conduct. This improper behaviour is not condoned by Kingspan Insulation or the wider Kingspan Group and it is not reflective of its core values.

116 The company has responded by introducing a new code of conduct based on three core principles of integrity, honesty and compliance, and the rollout of a training programme to all its staff. The Code of Conduct includes strengthened "Speak Out" arrangements

[150] See BSR Team 2 Opening Submissions Phase 2 Module 2: {BSR00000064/15} paras 81-82.
[151] See for example Transcript 9 November 2020, Day 67 p 16 (BSR Team 2 Oral Opening Submissions): *"These three companies – Arconic, Celotex and Kingspan – were in fierce competition, but also learned deadly tricks from one another".*
[152] See Transcript 25 March 2021, Day 113, p 32 (Mr Burnley): *"Kingspan was in no way trying to put commercial benefit ahead of public; safety";* Transcript 25 March 2021, Day 113, p 33: *"What I can answer is from a personal perspective, given the relatively small nature of the revenue that you've just talked about in relation to the rest of the business that I was responsible for , that's why I can confidently sit here and say that, from my personal view, it was of no significant commercial benefit. It was about public safety. It was about full scale testing to show that products and systems could be used in that application."*

provided by an independent third party, and features enhanced investigation processes, and a multi-lingual, 24/7 confidential phone line. Details of the numerous steps taken by Kingspan Insulation are set out at paragraphs 13 to 14 and 81 to 101[153] of its Module 2 Opening Submissions.

117 Out of over 23,000 documents disclosed by Kingspan Insulation to the Inquiry, there have been a handful of unacceptable communications written by three employees over approximately a 20 year period. These isolated communications are the exception and they should not condemn the behaviour of the many hundreds of employees that work at Kingspan Insulation, or indeed by association the approximately 16,000 employees who work for Kingspan Group worldwide.

118 ***Philip Heath***: Mr Heath gave evidence over two days. He was cross-examined about a handful of emails he had sent at a particular point in time during his 9 years as Kingspan Insulation's Technical Manager when he was experiencing considerable personal difficulties.[154] Mr Heath frankly accepted that his comments in some these emails were *"totally unprofessional[155]"* and should not have been made. Mr Heath was clearly remorseful for the comments made and explained that they did not reflect *"a culture in Kingspan at the time"[156]*.

119 **An exchange between *Arron Chalmers and Peter Moss*:** There has been considerable focus placed on the obviously flippant, sarcastic and private remarks of two employees made 12 years ago. Kingspan Insulation deeply regrets that these employees entered into this ill-judged exchange. But that single exchange is not representative of the company's culture or its ethos.

[153] {KIN00023794/3-4} and {KIN00023794/29-34}.
[154] Mr Heath explained the following about the circumstances at the time: *"Right, firstly, I can only apologise for the contents of this email at the time made in 2008. Keith was a dear friend of mine who was terminally ill at the time, and I was just forwarding him an email just to give him a snapshot of some of the work I was working on. You know, there's comments made in that email that were basically said because I was in a dark place with Keith being terminally ill, and addressing the issues of Bowmer Kirkland weren't top of my priority at that time."* And *"as I say, I was in a dark place, you know, as I say, Keith was terminally ill, and just trying to give him a snapshot of what was happening. It had no reflection on how I felt, it was just trying to lighten his load and lighten my load a bit at the time."* – Transcript 30 November 2020, Day 79 pp 117-118.
[155] Transcript 30 November 2020, Day 32, p124.
[156] Transcript 30 November 2020, Day 32, p124.

120 This is a view shared by senior Kingspan Insulation employees, for example Mr Pargeter, who, when shown a copy of the conversation, in respect of the content, attitude and tone of the discussion was very clear that it was *"not a culture that I endorse or foster at all"*[157]. In addition, Mr Burnley strongly denied that the content of the chat between these two employees was a summary of Kingspan Insulation's culture at the time and he stated that the exchange was *"very disappointing"*[158]

121 ***Ivor Meredith:*** The Inquiry has spent a considerable amount of time hearing questioning about Kingspan Insulation's corporate culture based on the witness evidence of Mr Meredith[159] and the comments he made in his dismissal and appeal hearings[160].

122 As the Inquiry knows, Mr Meredith had developed a serious drug addiction. Ultimately, his drug habit rendered him unable to discharge his professional duties to the requisite standard, leading to his dismissal.

123 Mr Meredith explained in evidence that he was *"very emotional"*[161]at the time of his disciplinary hearing and Mr Burnley who attended his appeal hearing also said that Mr Meredith was *"very emotional"*[162] at that meeting also and explained how Mr Meredith *"was just making a lot of spurious claims, and a lot of it I just felt was wrapped up in the emotion of, "If I say something, they might keep me"*[163] In addition, Mr Millichap, who was Mr Meredith's manager from 2010 to 2015 explained in evidence that the views expressed by Mr Meredith at his appeal hearing were not the views *"that he'd represented to me. As we said before, Ivor and myself did work very closely"*[164].

124 Kingspan Insulation is mindful of the views expressed by Mr Meredith in the course of his oral evidence. However, much of this evidence is contrary to the irrefutable scientific evidence in the form of the 14 successful BS8414 tests of cladding systems incorporating current K15, which demonstrate that those tested systems incorporating K15 are safe

[157] Transcript 8 December 2020, Day 84, p 129.
[158] Transcript 24 March 2021, Day 112 p 73.
[159] See Transcript 23 November 2020, Day 75, pp. 212-213 (Mr Meredith); Transcript 24 November 2020, Day 76, pp. 133 & 202(Mr Meredith).
[160] See {KIN00022322};{KIN00008681}.
[161] Transcript 24 November 2020, Day 76, p 193.
[162] Transcript 9 December 2020, Day 85, p 151.
[163] Transcript 9 December 2020, Day 85, p 154.
[164] Transcript 3 December 2020, Day 82, pp 157-158.

when tested in accordance with the relevant regulatory standards. Many of those tests were carried out following Mr Meredith's departure. When being questioned, he was not informed about testing carried out following his departure. It is therefore not known how he would have responded to questions put to him about issues of safety had he been aware of the full evidence demonstrating the safety of various cladding systems incorporating K15. Similarly, Kingspan Insulation submits that his views on the corporate culture do not properly reflect the reality, as explained above.

125 Kingspan Insulation is a business. It, of course, has a commercial interest in the success and sales of its various products. However, it has never pursued commercial interests at the risk of life or fire safety. In fact Kingspan Insulation has demonstrated an unequivocal commitment to fire safety for decades.

G. THE ERRONEOUS ALLEGATION THAT KINGPSAN INSULATION HAS MISLED PARLIAMENT

126 Following the fire, Kingspan Insulation was asked to attend and give evidence to the Housing Communities and Local Government Parliamentary Select Committee chaired by Mr Betts, which was carrying out an independent review of Building Regulations and fire safety. Mr Burnley attended the Select Committee to give evidence as requested.

127 Mr Burnley's evidence to the Select Committee included evidence relating to the Linear Route to Compliance. At that time (as now), the Linear Route to compliance under the Building Regulations permitted rainscreen cladding systems to be installed on buildings with a floor above 18m without further testing or scrutiny by an independent fire engineer provided that: the insulation (and some other) materials used in the system were rated as limited combustibility (or Euroclass A2) or better; and the external surface of the cladding was rated Class 0 (or Euroclass B) or better, based on small scale tests. This appears to be based on an assumption that if the relevant materials used in a cladding system met these standards then that system will automatically be safe and no actual testing of the system as a whole was necessary. Kingspan Insulation considers that this assumption is wrong and not based on scientific or empirical evidence. In particular, the testing required for this product by product approach takes no account of how those products will perform when combined in a cladding system.

128 As part of his evidence, Mr Burnley drew those concerns to the attention of the Select Committee.

129 Following that attendance, Kingspan Insulation was asked by the Select Committee to provide details of BS 8414 tests. Accordingly, Mr Burnley wrote to Mr Betts, the Chair of Select Committee by letter dated 6 July 2018 providing details of three tests of systems comprising Euroclass A1/A2 insulation and cladding that failed to meet the requirements of BR 135[165]. One of those three tests was of a cladding system that Kingspan Insulation had arranged to be tested for the purpose of obtaining empirical evidence of the proposition that not all systems which satisfy the Linear Route to Compliance are capable of meeting the safety benchmark set by BR 135 when subject to large-scale testing. The others already existed and had been independently commissioned by third parties.

130 To be clear, Kingspan Insulation's position is not, and has never been, that the Linear Route to Compliance will always produce an unsafe cladding system. Rather, its position is that the Linear Route is insufficient to ensure the safety of a cladding system; *some* systems which comply with the Linear Route may be incapable of passing a BS 8414 test, and thus unsafe. Kingspan Insulation's view, which Mr Burnley explained to the MHCLG Select Committee, is that the assumption that the Linear Route to Compliance will always result in safe cladding systems is scientifically invalid and is erroneous.

131 Kingspan Insulation considers this issue to be an important issue of public safety. It therefore drew it to the Inquiry's attention, in the context of the Inquiry's consideration of whether the regulatory regime is fit for purpose, by providing the Inquiry on 12 July 2018 with a copy of Mr Burnley's letter to Mr Betts Chair of the Housing, Communities and Local Government Select Committee of 6 July 2018[166]. The issue was also explained by both Mr Pargeter and Mr Burnley in their witness statements to the Inquiry.

[165] Letter from Richard Burnley to Clive Betts MP, Chair of the Housing, Communities and Local Government Select Committee dated 6 July 2018 {INQ00014076}.
[166] See *Ibid.*

132 Nevertheless, when Mr Pargeter came to give evidence on 9 December 2020 he was subjected to extensive cross-examination to the effect that Kingspan Insulation had deliberately misled the Parliament when providing evidence to the Select Committee.[167]

133 This is an allegation of the utmost seriousness. Yet it was an allegation advanced for the first time in cross-examination without any notice being given to either Mr Pargeter or Kingspan Insulation. It is also a particularly surprising line of cross-examination to spring on a witness without advance notice given that it is a cornerstone of parliamentary democracy that those addressing Parliament, including those giving evidence to Parliamentary Select Committees, are able to speak freely and are protected by law from allegations of misleading Parliament; such allegations are for Parliament alone to raise and determine[168]. Inevitably, these most serious allegations, put to witnesses without any notice, received very considerable media attention[169].

134 The allegation that Kingspan Insulation misled Parliament is wrong. The unheralded cross examination of Mr Pargeter on this issue was advanced on the basis of a misunderstanding of the true factual position; Mr Pargeter was unable to recall the relevant factual details when the issue was first sprung on him and so was unable to

[167] See for example Transcript 9 December 2020, Day 85, p 85, 87, 90(Mr Pargeter) *"Q. And therefore anybody reading this letter would be misled, wouldn't they, into thinking that the test had not been set up to fail but was a fairly representative test? A. No, they wouldn't have been misled. It was a system designed which would comply with the linear route. So that's not misleading anybody, that's what it was". And" Q. Come on, Mr Pargeter, this was a deliberate attempt to deceive Mr Betts and the select committee, wasn't it? A. No, it wasn't a deliberate attempt at all to –Q. There is no other way of explaining it is there? A. It was a system designed along -- potentially along the linear route. That's all it was. Q. And anybody reading this letter would have been misled deliberately by Kingspan into thinking that this test was a fairly representative test and that mineral wool had just as high a chance of failure as Kingspan in an 8414 test, and that was the purpose of it, wasn't it? A. No, I disagree. Q. There you are in mid-2018, in the aftermath of the Grenfell Tower fire, presenting evidence to the select committee which was gamed. A. That's not correct". And "Q. I'm going to suggest to you that, on what we've looked at, Kingspan was engaged in a wholesale attempt to mislead Clive Betts and the select committee into having doubts about the linear route to compliance because of the threat of the ban on combustibles based on a deliberately manipulated test; that's right isn't it ? A. No, it ' s not, it ' s to challenge the level of safety , and the level of safety for us should be the BR 135/BS 8414 test, rather than the linear route."*

[168] That fundamental protection is provided, in particular, by Article 9 of the Bill of Rights 1689: *"That the freedom of speech and debates or proceedings in Parliament ought not to be impeached or questioned in any court or place out of Parliament*". Kingspan Insulation's legal representatives wrote to the Inquiry on 21 January 2021 to note their understanding that questioning witnesses about the evidence given to the Select Committee (orally or in writing) is not appropriate or permissible under Article 9 and asked the Inquiry, if it was of a different view, to set out their reasoning for this; no substantive response to this question was received. Having brought this issue to the attention of the Inquiry, it is a matter for the Chairman to determine whether such questions contravene the prohibition provided by Article 9 and whether they should be struck from the record.

[169] https://www.thetimes.co.uk/article/building-firm-kingspan-gamed-fire-tests-in-aftermath-of-grenfell-blaze-n3f6smwqc#Echobox=1607534548 "*Building firm Kingspan 'gamed fire tests in aftermath of Grenfell blaze*'; https://www.theguardian.com/uk-news/2020/dec/09/firm-rigged-tests-of-rival-product-after-grenfell-blaze-inquiry-told?CMP=Share_iOSApp_Other - "*Firm rigged tests of rival product after Grenfell blaze, inquiry told*" https://www.insidehousing.co.uk/news/kingspan-director-denies-attempt-to-mislead-mps-by-concealing-cladding-tests-70142 – *"Kingspan director denies attempt to 'mislead' MPs by 'concealing' cladding tests".*

correct the erroneous basis upon which he was being questioned, until he submitted his Fifth Witness Statement and subsequently further oral evidence on 23 and 24 March 2021.

135 There are two obvious ways in which an system comprising non-combustible and limited combustibility (Euroclass A1/A2) insulation and cladding might be unsafe: (i) it might be designed in such a way as to lessen its fire performance (i.e. "value-engineered" as often happens in the real world) and/or (ii) it might comprise materials which, whilst rated Euroclass A1/A2 in small scale tests, perform less well when combined in a system and subjected to the far greater fire load of a BS 8414 test. Of course, any combination of those two factors (and other factors) might also be possible.

136 In 2018 Kingspan Insulation commissioned two BS 8414 tests of two different cladding systems, with the intention of demonstrating this important issue of public safety:

136.1 The first was undertaken in May 2018 and fell into category (i) above as a system which contained limited design imperfections of the type which, nonetheless, might reasonably be specified and built in the UK.[170] That system passed the BS 8414 test.

136.2 The second test was conducted in July 2018 and comprised a system which Kingspan Insulation thought *might* fall within the category (ii) above; namely a system (incorporating Euroclass A1/A2 insulation and cladding) which, nonetheless, might perform poorly in a large-scale test when subjected to a far greater fire load. The system was robustly designed and constructed, closely mirroring the approach adopted by the DCLG in the BS 8414 testing that it conducted after the Grenfell Tower fire; indeed the edges of the relevant Vitracore G2 panels were folded over to give more protection to the core of the panel. That system failed the BS 8414 test[171].

[170] {KIN00024926/1}.
[171] Al Futtaim Exova BS 8414 Test report reference DLR 1516 dated September 2018 {KIN00024971}; Al Futtaim Exova BR 135 Classification Report reference SR0984 Rev.0 dated 19 July 2018 {KIN00000480}.

137 Kingspan Insulation submitted details of the failed July 2018 test to the Parliamentary Select Committee as one of three examples of BS 8414 tests of systems which failed to meet BR 135 despite being a system which would automatically be deemed to be safe and permissible under the Linear Route in compliance with the Building Regulations. It did not submit details of the May 2018 test that passed because that test was irrelevant to the public safety issue: the issue was whether ***all*** A1/A2 systems would pass a BS 8414 test, and not whether some (or even the majority) would do so.

138 During the questioning of Mr Pargeter on 9 December 2020 it was wrongly suggested to him that the May 2018 test had been submitted to the Parliamentary Select Committee and that Kingspan Insulation had deliberately misled Parliament by failing to inform Parliament that that system had contained deliberate design imperfections. That assertion was wrong. It was the July 2018 test, and not the May 2018 test, that had been submitted to the Parliamentary Select Committee and that test had not contained any design imperfections. Mr Pargeter, working from memory and without notice of the line of questioning, was under the same misapprehension and was not able to correct the erroneous line of questioning at that time.

139 Following his evidence, Mr Pargeter was able to check the factual position and he submitted a Fifth Witness statement to the Inquiry explaining the error made in the questioning and setting out the correct position[172]. He was then re-called and cross-examined again, for two further days on 23 and 24 March 2021, during which different allegations of misleading the Select Committee were put to him[173]. Those allegations similarly lacked any valid basis. Mr Burnley was also subjected to intense cross-examination on 24 and 25 March 2021, in respect of similar unfounded allegations of deliberately misleading the Parliamentary Select Committee.[174]

140 Kingspan Insulation's evidence was given in good faith. Kingspan Insulation did not mislead the Select Committee, whether deliberately or otherwise. Mr Burnley provided the Select Committee, in writing, with three examples of systems comprising Euroclass

[172] Fifth Witness Statement of Adrian Pargeter {KIN00024975}.
[173] See for example Transcript 23 March 2021, Day 111, p 172; pp 170-171 (Mr Pargeter).
[174] For example: Transcript 25 March, Day 113, pp 42-43, 47 (Mr Burnley).

A1/A2 insulation and cladding that failed to meet the requirements of BR 135, each of which demonstrated the relevant issue of public safety and only one of which was commissioned by Kingspan Insulation. Kingspan Insulation does not understand why so much time and effort has been directed to attempting to attack the evidence it properly brought to the attention of both the Select Committee and the Inquiry on this important issue of public safety.

141 Kingspan Insulation quite correctly and properly drew the Parliamentary Select Committee's attention to an important issue of public safety and to empirical evidence demonstrating that some systems which satisfy the Linear Route to Compliance may nevertheless be unsafe. It is deeply concerning that Kingspan Insulation was not only criticised for doing so, but it was alleged that by doing so it has "*secretly perverted*" science "*for financial gain*"[175] . Kingspan Insulation was acting in good faith by attending the Select Committee as requested and properly drawing attention to three valid fire safety tests (including two independently commissioned) which demonstrate that unsafe cladding systems can still lawfully be built in the UK and thus that all cladding systems should be subject to BS 8414 tests in order to minimise the risks to public safety.

142 For the avoidance of doubt Kingspan Insulation has pressed, and will continue to press, for large-scale BS 8414 testing of all cladding systems intended for use on buildings over 18m as the best way of ensuring public safety.

143 The allegations levied against Kingspan Insulation on this issue are particularly difficult to understand in circumstances in which the Inquiry's expert, Dr Lane, has presented evidence on the importance of full scale testing. She referred to experiments undertaken by Rogowski et al in 1988 at the BRE and explained that, in respect of the external surface of walls of buildings, Rogowski noted that *"the overall fire performance of ventilated cladding systems could only be investigated under actual fire conditions on a full-scale building façade"*[176]*.* Dr Lane also referred to work at the BRE undertaken by Dr Raymond

[175] See Transcript 9 December 2020, Day 85, p 91 (Mr Pargeter); the same question was also put to, and the allegation also denied by, Richard Burnley on 25 March 2021: *"Is it true that Kingspan's position, even in 2018, in the face of a Government investigation into fire safety following the Grenfell Tower fire, was to do its best to ensure that science was secretly perverted for financial gain? A. No. Q. Do you accept that? A. I don't accept that at all":* Transcript, 25 March 2021, Day 113 p 55.
[176] Transcript 10 November 2020, Day 68, p 99.

Connolly in 1994 following the Knowsley Heights fire. She explained that the building had had an overcladding system incorporating a non-combustible insulation, but that *"one of the reasons for the rapid spread of the fire was an unusual construction detail which effectively created a flue that travelled up through the height of the building"*[177]. Dr Lane noted Dr Connolly's conclusions following his experiment that: *"small-scale reaction to fire properties of the cladding materials did not reflect the fire hazard associated with the full-scale cladding system"* and that there was a *"clear need for full-scale testing of performance in fire for what he termed rational design of cladding systems"*[178].

144 Similarly, the same issue has been identified by other witnesses who have given evidence to the Inquiry. For example, Dr Deborah Smith OBE, former Managing Director of the BRE explained in her witness statement that: *"The large-scale BS 8414 Parts 1 and 2 system tests are a significant improvement on the reliance on small-scale material tests, which were not suitable for controlling the risks of replicating the hazards associated with external fire spread"*[179]

145 Systems that comply with the Linear Route are rarely tested in a BS 8414 test because there is no need to do so, given the guidance in ADB and BCA TGN 18. As so few systems are tested, there is a lack of evidence as to how such systems would perform in a large-scale fire test. Kingspan Insulation now has details of five[180] cladding systems (although it would seem likely that there are more) comprising Euroclass A1/A2 insulation and cladding which have failed to meet the requirements given in BR 135:

(a) A system, tested to BS 8414 on 27 October 2016, comprising Alucopanel solid core Euroclass A2 ACM and Fujairah Rockwool foil faced synthetic mineral fibre insulation rated as Euroclass A1. The test was terminated early (failed) because of flame height[181].

[177] Transcript 10 November 2020, Day 68, p 101.
[178] Transcript 10 November 2020, Day 68, pp 100-102.
[179] Witness Statement of Deborah Smith {BRE00005624/12} para 39.
[180] In addition, Kingspan Insulation has seen reference to a sixth example of a test with A2 cladding and insulation which failed the BR 135 criteria at 7.5 minutes. Kingspan Insulation has no further details of this test {PROD0023498}.
[181] Second Witness Statement of Adrian Pargeter {KIN00020824/ 113-114} para 12.3(e).

(b) A system, tested to AS5113 (which is identical to the BS 8414 method but with pass / fail criteria that differ from those given in BR135) tested on 6 March 2018 comprising Alpolic solid core Euroclass A2 ACM and Rockwool synthetic mineral fibre insulation rated as Euroclass A1. The system failed to meet the BR135 criteria on the basis of thermocouple data[182].

(c) The system, tested to BS 8414 on 2 July 2018, commissioned by Kingspan Insulation, comprising Vitracore G2 (which was at the time rated Euroclass A2) and Rockwool DuoSlab synthetic mineral fibre insulation rated as Euroclass A1. The test failed on the basis of thermocouple data[183].

(d) A system, tested to BS 8414 on 18 January 2008, comprising aluminium cassette panels and synthetic mineral fibre insulation. The system failed on the basis of thermocouple data[184].

(e) A system, tested to BS 8414 on 17 July 2018, comprising Alucobond solid core Euroclass A2 ACM and Rockwool DuoSlab synthetic mineral fibre insulation rated as Euroclass A1. The test was terminated early (failed) because of flame height[185].

146 Kingspan Insulation strongly believes that it should be a requirement of the Building Regulations that every cladding system proposed for use on a building with a floor above 18 metres should pass a BS 8414 test in accordance with the criteria given in BR 135, regardless of the individual classifications of the products which the proposed system comprises. This is the best and most robust way to ensure that all cladding systems are safe. As Mr Pargeter summarised in this evidence, Kingspan Insulation's *"bar for safety is a BS 8414 test. It's the most rigorous test in the UK and possibly arguably in the large scale across the world".*[186]

[182] AS 5113 Test Report, reference FNW 7936 dated 4 June 2018 {KIN00004715}.
[183] Al Futtaim Exova BS 8414 Test report reference DLR 1516 dated September 2018 {KIN00024971}; Al Futtaim Exova BR 135 Classification Report reference SR0984 Rev.0 dated 19 July 2018 {KIN00000480}.
[184] Thermocouple data for Sotech and mineral fibre test on 18 January 2008 {PROD0021679}.
[185] Al Futtaim Exova BS 8414 Test report reference DLR1537 Rev. 0 dated September 2018 {KIN00020797}.
[186] Transcript 9 December 2020, Day 95, p 56.

H. NEXT STEPS

147 Kingspan Insulation notes the further work of the Inquiry in later Modules, and welcomes the intention to broaden the scope of the investigations in Module 6 into testing and certification and the role of the Government; for this analysis to be meaningful, it will be necessary for evidence to be heard from a wide range of manufacturers and industry bodies, not just insulation manufacturers

148 Kingspan Insulation also welcomes the Inquiry's work, through the experts it has appointed, to understand the science behind the cause and spread of the fire in Module 7. It is understood that the experts will be considering the relative contribution of the construction materials, including as between the ACM PE-cored cladding, the 95% PIR and the 5% phenolic insulation, and other components. In circumstances in which insulation is a required component of a rainscreen cladding system, it will be important for those experts to consider the issue as to whether the use of synthetic mineral fibre would have made any material difference to the nature and speed of the spread of the fire given the presence of the ACM PE-cored cladding.

149 Kingspan Insulation submits that it is important to understand the contributions to the fire made by not only the components of the cladding system, but also the contents of the building.

150 In examining the government regulations, Kingspan Insulation submits that the Inquiry should examine the merits of large scale testing as against the shortcomings of the small scale prescriptive Linear Route to compliance, including examples of large scale BS 8414 A1/A2 systems which have failed the BR135 criteria.

Gowling WLG (UK) LLP

Geraint Webb QC

Tim Green

28 June 2021