



Neutral Citation Number: [2023] EWHC 183 (TCC)

Case No: HT-2018-000344

IN THE HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
TECHNOLOGY AND CONSTRUCTION COURT (KBD)

Royal Courts of Justice, Rolls Building
Fetter Lane, London, EC4A 1NL

Date: 03/02/2023

Before :

MRS JUSTICE JEFFORD DBE

Between :

BDW TRADING LIMITED

Claimant

- and -

LANTOOM LIMITED

Defendant

Rupert Choat (instructed by **Ashfords LLP**) for the **Claimant**
Jennifer Jones (instructed by **Stephens Scown LLP**) for the **Defendant**

Hearing dates: 14 January, 18 to 21 January, 2 February, 26 to 28 April, 12 August 2021

Judgment Approved by the court
for handing down

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MRS JUSTICE JEFFORD DBE:

Introduction

1. This litigation arises out of the construction of a housing development known as Penndrumm Fields in St Martin, Looe, Cornwall (“the Site”). The dispute is concerned with Phase 1 which was constructed between 2012 and 2015.
2. The claimant, BDW Trading Limited (“BDW”), is a national housebuilder and undertook this development under the Barratt Homes brand. The defendant, Lantoom Limited (“Lantoom”), is a local quarrying business and supplier of stone.
3. 40 of the houses in Phase 1 were built to a number of standard designs which to a greater or lesser extent used stone as the external leaf of cavity walls.
4. From 2014, householders noted stone cracking, spalling and falling away. It is BDW’s case that from November 2015, after customer reports were made, it recognised that there was a problem and began to investigate. Those investigations included the instruction of Hydrock Consultants Ltd. who inspected and reported on the houses, and the instruction of Mr Richardson, who acted as BDW’s expert in this litigation. BDW concluded that the stone itself was the cause of the problems and proceeded to replace all of the stone with stone from a different quarry, Yennadon. Proceedings were issued in 2018.

The trial

5. Prior to the trial, the parties agreed a list of issues for trial. This was a lengthy and detailed document which sought to address all possible alternative cases. 32 issues were identified with numerous sub-issues and the document ran to 7 pages. Despite its agreement, there was some dispute as to the extent to which the issues raised under issue no. 19 were, in fact, pleaded and a supplemental document was produced by Lantoom to clarify what allegations were pleaded and pursued. The list of issues is appended to this judgment with my decisions, as necessary, on the issues, but I have not found it particularly helpful to follow the structure of the list of issues for the purposes of this judgment and nor has it been necessary to answer every question raised.
6. The trial commenced in January 2021 as a hybrid hearing, with counsel present in court at all times and witnesses giving their evidence either in person or by video-link. The experts all gave their evidence in person. The progress of the trial was disrupted, and in the event it spread over 8 months, as a consequence of the Covid pandemic, other illnesses and bereavements and, sadly, the death of the defendant’s quantum expert. As a result, I directed that a decision on liability should be made first.

Witnesses

7. BDW called the following witnesses:
 - (i) Brian Avery, who was employed as a buyer by BDW with primary responsibility for the Plymouth and Cornwall area. He retired in 2013.
 - (ii) Philip Havenhand, who was employed by BDW as a forklift truck driver and had worked for the Exeter Division between 2010 and 2012.

- (iii) Stephen Kent who is a Director of KCC Builders Ltd. (“KCC”). KCC were engaged by BDW on the Site and carried out, amongst other things, the construction of the stonework in issue in this dispute. Mr Kent’s evidence was that KCC employs about 30 staff all of whom are qualified bricklayers with experience in stone work.
- (iv) Timothy Davies who has been BDW’s Construction Director for the South West Region since 2015.
- (v) David Wallace who is the joint owner of Yennadon Stone Ltd. which operates the Yennadon Quarry in Yelverton, Devon. Stone from this quarry was used in the carrying out of remedial works.
- (vi) Kate Smallwood, Head of Customer Care for BDW.
- (vii) Daniel Mountstevens, a Quantity Surveyor employed by BDW since 2016.

8. Lantoom called three witnesses:

- (i) Simon Bright. Mr Bright had been involved in the construction industry for over 35 years. He is a qualified bricklayer. He had moved to Cornwall over 25 years ago and learnt how to build with natural stone. For 20 years he owned and managed a construction company in Cornwall, building residential and commercial buildings. The examples of projects that he gave in his witness statement included the construction of 103 homes in Penryn for Taylor Wimpey, almost all of which had natural stone on them. He is now a part-time lecturer at Truro-Penwith College. His evidence was in the nature of expert evidence about the construction of a natural stone wall but no objection was taken to the admission of this evidence.
- (ii) Richard Crocker. Mr Crocker is the Managing Director of the defendant and has held that role since 2007. He described himself as a third-generation quarryman. He has a degree in engineering and then qualified as a chartered accountant, working at Ernst & Young until 1996. From 1996 to 2002 he was company secretary for the Roseland Group of Companies, a family group undertaking various quarrying operations. After those businesses were sold in 2002, he was involved in a number of start-ups outside the quarrying industry, although he remained company secretary of Lantoom and eventually took over as Managing Director.
- (iii) William Hugh is the Financial Controller of the defendant, having joined the company in 2010. He holds various qualifications in accounting.

Experts

9. Both parties called two expert witnesses in geology and engineering.

David Richardson

10. On geology, BDW's expert was David Richardson. He produced a first Report and a Responsive Report. Mr Richardson was first instructed by BDW in 2016 to investigate issues with the stone and in February 2018 was instructed to act as their geology expert. He holds a BSc in Geology/Geography and an MSc in Geomaterials. He is a Chartered Geologist and a Fellow of the Geological Society of London. Following on from his academic qualifications, Mr Richardson has worked as a geologist since 1985 and specialised in construction materials, including dimension stone, since 1987. For 10 years he was a director at the Building Research Establishment and head of the Building Technology Group. He left to set up his own consultancy, Diagenesis Consulting Ltd.
11. Mr Richardson gave his evidence in an assured and measured way and was prepared to make appropriate concessions. On occasion he may have appeared a little over-confident in his evidence but I took that as an indication that he was confident in the views he expressed and the manner in which he had reached his conclusions and, as a reaction to Mr Hunt's criticisms which Mr Richardson regarded as wholly unfounded.
12. Ms Jones identified a number of matters arising from Mr Richardson's report which she submitted ought to at least make the court wary of accepting his evidence:
13. Firstly, within Mr Richardson's Responsive Report, there was a paragraph (paragraph 3.2.9) which addressed concerns expressed by Mr Hunt that the natural fissility of the Lantoom stone – that is its propensity to split along planes in the stone – had been impacted by the treatment of the stone when removed from the properties. Mr Richardson noted that during the process of deconstruction in December 2020, a very high proportion of the stone was retrieved damaged or broken, adding "*not because of rough handling but either due to the nature of removing such stone or the weaknesses in the stone itself, now no longer held together within the structure of the walls*". Following this sentence, there was, in square brackets, the question "David – could we say this?". I note that it was not otherwise highlighted – for example by being in bold or some different colour type. This appeared to be a question from the legal team and seemed to suggest that some part of the sentence had been drafted by a member of the legal team although there was nothing to indicate which part. When asked about this in cross-examination, however, Mr Richardson said that he had drafted this paragraph. Given the nature of the query, he was pressed on this and said that there was a need to clarify whether the weakness was present in or out of the wall. He said he had not noticed the comment. He was asked if there were "any other sections" of his report that he did not write and his short answer was "No".
14. Ms Jones rightly recognised that there may be nothing objectionable in lawyers commenting on reports. However, she submitted, it should be of concern that an expert had not noticed a drafting suggestion and that carelessness was not acceptable in this context.
15. In my view, the real question was whether or not this sentence represented Mr Richardson's true opinion. I have no doubt that it did and that, if any part of the sentence was a drafting suggestion from others, it was one that accorded with Mr Richardson's opinion. Ms Jones' cross-examination was intended to raise the prospect that there were other aspects of Mr Richardson's report which had been written by others and did not reflect his true opinion. I can see no basis for that suggestion. Pointing out this error was shooting at an open goal but this slip does not cause me to doubt the veracity of Mr

Richardson's evidence or have any less regard for the content of what was overall a clear and coherent report.

16. The second matter was a more serious error. I will refer in due course to the salt crystallisation tests that were carried out, albeit not in connection with this dispute, on both Lantoom stone and Yennadon stone by John Grimes Partnership. In his report (at paragraph 4.7.4), Mr Richardson included two photographs side by side which were said to show a number of specimens of Yennadon stone post-testing and Lantoom stone post-testing. In paragraph 4.7.7, Mr Richardson referred to the assessment of durability based on these tests: the Yennadon stone lost 9% of weight over 15 cycles; the Lantoom stone lost 44% over 12 cycles. In opening submissions Mr Choat referred to these test results and this particular photograph of the very poor condition of the Lantoom stone post-testing. The corresponding photograph of Yennadon stone appeared to show virtually no deterioration as a result of the testing.
17. On 1 February 2021, Mr Richardson produced an Errata Sheet. It transpired that the photograph the court had been taken to was, in fact, of Yennadon stone (in very poor condition). The court was told that the photograph of Yennadon stone in good condition in the report was the stone before testing. In the Errata Sheet, Mr Richardson added a photograph of Lantoom stone post-testing and in a similarly poor condition. He added that his comments on the results of the testing remained unchanged. That was evidence he repeated in cross-examination.
18. Ms Jones was justifiably critical of the error in identification of the photographs. She submitted that Mr Richardson had failed to notice the error because it fitted with his previously formed ideas. That seems to me to go too far and the material evidence was, as Mr Richardson said, the test results which were unaffected by this error.
19. Lastly, Ms Jones pointed out that both BDW's experts had criticised the Lantoom website for showing a cavity wall construction without a Surecav backing. This issue is addressed below but the context of the experts' comments was Mr Crocker's evidence in his witness statement that a common factor in the reported issues with the Lantoom stone used in the development was the absence of a backing. Ms Jones pointed out, and explored in cross-examination, that that drawing was not included in the version of the website current at the time the supply of stone to BDW started. It only appeared in a later version of the website. That version of the website also included a link to an Example Construction detail which did show a masonry wall with Surecav backing. Both experts had only seen the documents provided to them and had not seen this drawing. Ms Jones submitted that failing to give all of the relevant drawings to the experts was another example of carelessness. It was not, however, the carelessness of the experts and it is not apparent to me why it might be suggested that they ought to have identified that a drawing was missing.
20. The conclusion of these submissions on errors in the expert evidence (and specifically that of Mr Richardson) was that, whilst individually they might not be significant, collectively they were the consequence of a reasoning process that "started with a misapprehension, failed to proceed with the necessary degree of distance and objectivity and then caused a failed analysis and a refusal to recognise that the wrong party was being blamed". That was a strongly worded submission and it is not one I accept. The errors identified came nowhere close to evidencing such a misguided approach and one

lacking in objectivity. As will be seen, my view is that if this criticism could be levelled at anyone it is the defendant's expert, Mr Hunt, and generally where there is a difference in the views of Mr Richardson and Mr Hunt – and they agreed on very little – I prefer the evidence of Mr Richardson.

Barry J Hunt

21. On geology, Lantoom's expert was Barry Hunt who is the director of his firm, Independent Building Investigation Services Ltd. (or IBIS Ltd.). He is a Chartered Surveyor. In his Career Summary, which was an Appendix to his report, he said that he was chartered as a geologist, surveyor and scientist. He is designated as a European Geologist and is a Corporate Building, Conservation and Specialist Surveyor. He worked for 14 years for two well known materials consultancies, Sandberg and STATS, and whilst at Sandberg obtained a Masters degree in construction materials science or geomaterials. He left in 2001 to found his own firm. He said that he had developed petrographic capabilities at IBIS and is one of a very few geomaterials experts who routinely undertake their own petrographic examinations.
22. He provided a first Report and a Rebuttal Report. The first report comprised 4 sub-reports under the headings: (i) Traditional Random Rubble Walling, Site Design and Installation Mistakes; (ii) Low Quality Mortar and its Consequences; (iii) Masonry Performance Assessment Mistakes; (iv) Lantoom Stone is Classified as Slate. For each sub-report he provided an Executive Summary. However, the report itself was extraordinarily lengthy running to over 350 pages without Appendices. The total page count was around 750 pages. The Rebuttal Report ran to more than 50 pages of substantive text.
23. In cross-examination and at the close of the case, Mr Choat launched a searing attack on Mr Hunt's approach to his expert evidence and his independence. I do not set out all those criticisms in full but, in short, many of them were well-founded and accorded with the view I had formed of Mr Hunt when he gave evidence.
24. Firstly, Mr Choat submitted that there were patent breaches of the CPR. That submission was well-founded. The Report did not set out the substance of Mr Hunt's instructions as it should have done pursuant to CPR Part 35.10(3). He said in cross-examination that he thought he had covered this in the Introduction to his report but, as I read it, the Introduction comprised firstly a brief statement that he had carried out extensive investigations into the issues arising, during which it had become clear to him that BDW's allegations were misguided, and then an explanation of the structure of his report. The report did not summarise the range of opinion on issues (contrary to paragraph 3.2(5)) of the Practice Direction, even where Mr Hunt's opinion was a minority one.
25. That a report is lengthy is not necessarily a criticism but in this case it made it particularly challenging for the claimant and the court to navigate and to digest the substance of Mr Hunt's opinions and, in the case of BDW's experts, respond to these. This was unhelpful to say the least but more importantly it made it difficult to relate his opinions to the issues in the case and, on a number of occasions, they ranged outside the pleaded issues.
26. It emerged at trial that Mr Hunt had taken a particular and unusual approach to his task. As he said in his report, as an expert for the defendant, he saw his role as testing the

evidence presented by the claimant “assuming the claimant had undertaken a rigorous investigation in the first instance”. In his view, in this case, the claimant had not and only “minimal tangible evidence” had been presented by the claimant and its experts. Although that approach reflects the burden of proof on BDW, it does not reflect the duty of an expert to the court - the defendant’s expert should not only test the claimant’s evidence but should weigh all of the available evidence. It was perhaps this approach that led to some notable omissions from the Reports. I address below the report prepared by Petrolab and disclosed by Lantoom and the tests carried out for Lantoom by two firms, RSK and ACS. Mr Hunt only referred to the Petrolab report in his Rebuttal Report and did not refer to the tests at all even though they were relied on and discussed in BDW’s expert evidence. Ms Jones sought to explain this omission on the basis that Mr Hunt had focussed on what he considered relevant and that he did not consider these tests important to assessing the cause of failure. Thus it seems that Mr Hunt’s approach to testing the evidence of the claimant was not to refer to it all if he did not think it relevant.

27. Further, this approach to testing the claimant’s evidence seems to me to have led Mr Hunt into believing that it was sufficient for him to raise numerous possibilities as to causes of the issues experienced on this development without any evidential basis for a positive case. Mr Hunt then claimed that his own investigations had been undertaken in “difficult and restrictive circumstances” and that he had been hampered by the defendant’s limited resources. There was no evidence that Mr Hunt had been acting in difficult and restrictive circumstances. The particular example that he appeared to give was that he had been denied access to or had difficulty accessing the Site. BDW provided as part of a Chronology a list of 10 visits to Site, between October 2018 and August 2019, by either Mr Hunt or Enigma, his then instructing solicitors, who collected samples on Site on his behalf. Apart from one occasion when the visit was at short notice, there was no complaint in any correspondence about any difficulties with access. The defendant’s updated costs budget in April 2021 gave a total of nearly £1.3 million for experts. Neither of Mr Hunt’s excuses was well-founded.
28. Mr Hunt also expressed himself both in writing and in the witness box in trenchant language. Ms Jones submitted that, where he held strong views, it would have been wrong of him not to express himself firmly and that nothing he had said was offensive or involved accusations that threatened the careers of others. That is not the point. The point, to my mind, was that Mr Hunt repeatedly gave the impression that he knew better than everyone else – even when his position was a minority view or against the weight of the evidence. The lack of reflection and consideration of the weight of contrary evidence gave me no confidence in Mr Hunt however forcefully he expressed himself. When he was challenged on some of these views, his answers in cross-examination were prolix and rambling, bordering on incomprehensible, despite Mr Choat’s best efforts to disentangle the answers. Reinforcing the view I have already expressed about Mr Hunt’s evidence, it seemed to me that his approach was that the issues he was being asked about were so complex that only he understood them properly and that it was too difficult for him to give a simple answer to the court. In consequence he did not give a simple or coherent answer and did nothing to build my confidence in his evidence.
29. I shall address specific aspects of the geological evidence in due course. However, I set out my general impression of these two experts at this stage and at some length because both parties placed great reliance on their evidence and both parties made serious

criticisms of the other party's expert. I repeat that for the reasons I have given - and will give – I generally prefer the evidence of Mr Richardson.

Barry Dowle

30. Mr Dowle give evidence for BDW in relation to engineering matters. He is an engineer and a director of Jenkins and Potter, consulting engineers. He is a Chartered Engineer and a Member of the Institution of Structural Engineers. He said in his report that he had been responsible for the design, construction or assessment of masonry in many types of buildings.
31. He provided a first Report and a Responsive Report. The focus of his evidence was, therefore, on the impact of the construction of walls in the development on the performance of the stone. He also gave evidence as to the appropriate remedial works.
32. Mr Dowle gave his evidence in a calm and thoughtful manner. He accepted reasonable propositions put to him but was clear in his own views on the evidence. He was a credible witness.

Nicholas Huband

33. Mr Huband gave evidence for Lantoom on engineering matters. He is a Senior Associate with William J Marshall & Partners, consulting engineers. He is a Chartered Engineer, a Member of the Institution of Civil Engineers and a Fellow of the Geological Society.
34. Mr Huband also gave his evidence in a clear and coherent manner, answering the questions he was asked and making reasonable concessions. He too was a credible witness.

The parties' cases

BDW

35. Before I turn to the issues and the substance of the evidence, it is helpful to look at how the parties put their cases in order to see how the various issues arose.
36. BDW's primary case is that there was a contract with Lantoom which was formed by BDW's Purchase Order sent on and dated 6 February 2012 in respect of 500 tonnes stone, accepted by Lantoom by the delivery, in the first instance, of 25t stone to site on 7 February 2012. That contract incorporated BDW's standard terms – its Standard Conditions for Purchase Orders - referred to in the Purchase Order. In the alternative, there was a simple contract between the parties for the supply of 500t of stone.
37. If there was a contract on BDW's standard terms, those included terms that the stone would comply with "the Specification", would be fit for the purpose notified to Lantoom, and would be as safe as persons are generally entitled to expect.
38. The first limb of BDW's case – as to which I consider the evidence further below - was that from 18 October 2011 onwards Lantoom, and in particular Mr Crocker, had represented the Lantoom stone to be slate or, as it was put in the list of issues, slate stone. That was therefore "the Specification" of the stone referred to in the standard terms.

39. In this context, BDW’s case is that slate meant “true slate” or stone which met the characteristics of slate set out in BS EN 12670:2002. Putting the geology in very simple terms, slate is a metamorphosed material and to be contrasted with a sedimentary rock, such as mudstone, although it is common ground that such a sedimentary rock may have “slatey characteristics”. The British Standard contains a lengthier description of characteristics referred to below.
40. The very fact that a distinction might be drawn between true slate and some other stone referred to as slate indicates that the term slate without more might be capable of multiple meanings. In this judgment, however, I intend to use “slate” to mean true slate unless the context otherwise requires.
41. The issue of whether or not the stone was represented to be slate and whether or not it was, in fact, slate bulked large in BDW’s case. Whether or not the stone was slate was the subject of a substantial amount of the expert evidence including examination of the stone and testing of the stone. At the outset of the trial, I raised the question of why this was such a central plank of BDW’s case and whether the real focus of the dispute should be on the properties or qualities of the stone. It may have been that the emphasis arose from the simple point, on BDW’s case, that if the stone was not slate there was a breach of contract or an actionable misrepresentation which would sound in damages. But that would leave open the issue of the basis of assessment of those damages and, if the stone performed satisfactorily - whether or not it was slate - those damages might be very limited. Mr Choat’s answer, on behalf of BDW, was that both cases – as to slate and performance – ended up in the same place.
42. The second limb of BDW’s case was that from 18 October 2011 onwards, Lantoom had represented that the stone was suitable for forming the external walling leaf of a cavity wall, alternatively was suitable for use as external walling. There was, therefore, a further or alternative basis for BDW’s claim for misrepresentation and this was also said to be the purpose notified by BDW to Lantoom.
43. Whether the contract was on BDW’s standard terms or Lantoom’s terms or was a simple contract, BDW’s case was (i) that there was an express term that Lantoom would deliver walling stone and (ii) that there were implied terms that the stone would be of satisfactory quality and fit for a particular purpose (similar to the express terms that applied if BDW’s standard terms were incorporated).
44. It is not in issue that pursuant to section 14(2) of the Sale of Goods Act 1979, there would be an implied term of the contract that the stone supplied would be of satisfactory quality. Pursuant to sub-section 14(2A), satisfactory quality means the standard that a reasonable person would regard as satisfactory, taking account of any description, the price (if relevant) and all other relevant circumstances. Sub-section (2B) further provides that:

“ For the purposes of this Act, the quality of goods includes their state and condition and the following (among others) are in appropriate cases aspects of the quality of goods—

- (a) fitness for all the purposes for which goods of the kind in question are commonly supplied,

.....

- (d) safety, and
- (e) durability.”

45. BDW’s position is that the stone supplied was not of satisfactory quality. It was described as walling stone but not satisfactory for that purpose and it was lacking in quality in terms both of safety and durability.
46. Alternatively, or additionally, and however the contract was formed, on BDW’s case there was an implied term of the contract that the stone was fit for the purpose of use as the external leaf of a cavity wall and/or external walling. The same factual matrix was relied upon.
47. In the Particulars of Claim, BDW’s primary case was it was entitled to an indemnity against loss and damage under clause 10.5 of its standard terms, alternatively under clause 10.2. Alternatively, BDW claimed damages for breach of the express or implied terms of the contract or for misrepresentation. In the list of issues, these bases of claim appeared in reverse order. At this stage at least, nothing turns on this.

Lantoom

48. Lantoom denied that the contract between BDW and Lantoom was on BDW’s standard terms. Lantoom’s case was that the contract was on its standard terms or, in the alternative, there was a simple contract that did not incorporate either party’s standard terms.
49. The case pleaded in Lantoom’s Amended Defence dated 16 October 2020 denied that the express representation that the stone was slate had been made. However, later in that pleading, Lantoom averred that the stone supplied by Lantoom is commonly referred to as slate and that Mr Crocker may have used the term at some point. The case was opened on a similar basis – as Ms Jones said, the Lantoom website called it slate; Mr Crocker believed and believes it to be slate; but he could not remember what he said to Mr Avery, BDW’s buyer.
50. Similarly, Lantoom pleaded that the description of the stone as slate was not a misrepresentation. That case was put in a number of ways but a central point was that there was a “local accepted tradition” of calling stones such as Lantoom’s stone either slate or slatestone.
51. So far as the use of the stone was concerned, Lantoom’s case (at paragraph 6.1 as amended) was as follows:

“It is admitted and averred that on or around 18 October 2011, Lantoom represented that its rustic faced and blue-gray faced stone was suitable for external or internal walling. For the avoidance of doubt it is so suitable and has been so used in Cornwall for many years: there are historic buildings using this stone dating back well into the 18th century and also numerous surviving housing stock from the 19th century. The use of the word cladding in the email of 18 October at 12:40 implies that the stone would be clad against something, which Barratt did not do (instead using only wall ties), but in circumstances where Lantoom had not been provided with any, alternatively materially any, of Barratt’s design information at the time of pleading this defence it did not and does not seek to rely on that word alone artificially to limit the use to which its stone

could properly be put. Paragraph 15 below is repeated for examples of how Lantoom stone may be used. This includes but is not limited to being used with a backing block or Surecav in a cavity wall.”

52. At a later point in the pleading (Paragraph 15), Lantoom said this:

“Lantoom knew that the stone would be used for houses at the Site, and that it would be used for external or internal walling. It did not know which. “100mm on bed” is Lantoom’s standard product and can be used for a wide range of facing stone.” (my emphasis)

53. The Amended Defence also continued (at paragraph 6.4):

“It is denied, for the avoidance of doubt, that the use of “slate” as a general descriptor is sufficiently specific to constitute any representation as to the material qualities of the stone, or slate, save that it was suitable for external or internal walling.”

54. I refer to these paragraphs of the pleaded case further below. It seems to me that there was, in the course of the trial, some shift in Lantoom’s case as to the use of the stone. Whilst the pleaded position was positively that the stone was suitable for internal or external walling and that no point was being taken on the use of the word “cladding”, it was also referred to as “facing stone” and a distinction between the construction of the structure of the wall and the cladding of the wall did emerge and Mr Crocker drew particular attention to his use of these terms. Further, Mr Crocker adopted a position that he did not know whether the stone was to be used in the walls of the houses at all and that it could have been destined only for boundary or garden walls. Even if such a shift in position is open to Lantoom, the fact that its case had been set out in detail in the first instance, and carefully reviewed a few months from trial, must place a question mark over any change in position.

55. As to implied terms, Lantoom’s pleaded case was that there was an implied term that the stone would comply with the description in the 6 February 2012 Purchase Order (as set out below) and that the stone would be of satisfactory quality as defined by section 14 of the Sale of Good Act. Any other implied term was denied.

56. On Lantoom’s case there was no misrepresentation and no breach of contract.

57. So far as any failure of the stone – in cracking, spalling and falling away – was concerned, Lantoom’s case was that that was caused by one or more of a list of design or workmanship defects. Some of these have now fallen away and are not pursued. Others are summarised in issue no. 19. Prominent amongst them were the contention that the stone had been installed in a manner that went against “historical local use” and the contention that various aspects of the mortar used had caused or contributed to cracking and spalling.

Contract formation and representations: factual background

18 October 2011

58. As relevant to this case, the contact between BDW and Lantoom about supply of stone for the development began on 18 October 2011.

59. Mr Crocker's evidence was that he became aware that BDW had a site under development, he made inquiries about who he should contact in connection with supplies to the site, and he obtained contact details for Mr Avery. Mr Avery was less certain but thought that was probably right. It is not significant. What is significant is the phone call between Mr Crocker and Mr Avery on 18 October and there is no dispute that that took place.
60. Neither Mr Avery nor Mr Crocker took any notes of the phone call and it was not otherwise recorded. It was followed, however, by an email from Mr Crocker to Mr Avery. The e-mail was sent the same day but to an incorrect e-mail address, and subsequently re-sent on 21 October 2011.
61. I set out that e-mail in full:
"We can supply both rustic faced and blue-grey faced stone in 100mm bed suitable for external or internal wall cladding.
We normally supply the stone on 1.5 tonne pallets shrink wrapped. This provides for safe and tidy storage on site and reduces wastage.
Our stone produces approximately 4m² per tonne of coverage.
I have attached pictures from a site we are currently supplying with a 60:40 mix of grey blue:rustic elsewhere in Cornwall.
You can also see examples of our rustic faced and blue-grey used in projects by clicking the links which will take you to our website.
There are many other examples of our stone products on our website www.lantoom.co.uk so please have a browse
Prices for your new site as St Martins, Looe are as follows:
...
If you need samples supplied for approval or to build a test panel on site, please let me know.
...
I hope that we can supply you on this site and look forward to hearing from you soon.
Kind regards,
Richard Crocker"
62. What was said and what was meant and/or understood in that telephone call and in that e-mail was in issue in two important respects.
63. The first is that in this call (or alternatively some time thereafter) Mr Crocker represented that the Lantoom stone to be supplied was slate. BDW's case was not wedded to the representation having been made in this call but it was the first of a number of occasions on which Mr Crocker spoke to Mr Avery and BDW's case was that by the time the stone was supplied, that term had been used and that representation made. As I have said, BDW's case is that "slate", as the term used by Mr Crocker, had a specific meaning, namely that the stone was true slate, that that was a misrepresentation and one that was

relied upon by BDW in contracting with Lantoom. Lantoom's pleaded case and the basis on which the case was opened was that Mr Crocker may have used that term at some point because it was how he describes the stone and was a common term for the Lantoom stone.

64. The second factual issue in dispute was what Mr Avery told Mr Crocker about the proposed use of the stone.
65. So far as the first call on 18 October is concerned, Mr Crocker's evidence in his witness statement was that he did not recall anything discussed. His statement recited his further contact with Mr Avery by telephone and e-mail up to 5 January. He said that no requirement was made regarding the petrography of the stone and that he did not refer to the stone as slate in correspondence prior to the order being placed and nor did Mr Avery. This evidence, however, has to be seen in the context of earlier passages in his statement in which he said that he believed the product of the Lantoom quarry was correctly designated as slate and that:

"34. I believe that the product produced by Lantoom Quarry is correctly designated as slate for many reasons.

...

38. In Cornwall people refer to this type of stone as slate irrespective of the English use of the word, and its use is much wider than roof tiles. Consequently Lantoom would not be properly describing its products in the terms customers understand, if it were not to describe it as slate."

66. The second aspect of this call is that Mr Avery's evidence, in his witness statement, was that in this first conversation with Mr Crocker he told him that BDW required natural and sawn slate stone for the external cavity walls. Mr Crocker said that Lantoom could supply a slate stone that would be suitable. Mr Avery consistently referred to "slate stone" in his statement. I shall return to this evidence and what was said in cross-examination.

Further communications

67. On 1 December 2011, Mr Avery called Mr Hugh who took a note of the conversation. Mr Hugh's evidence was that Mr Avery had lost the e-mail sent to him by Mr Crocker. He mentioned that Yennadon stone had been specified for Penndrumm Fields but that he was looking to substitute Lantoom stone. They spoke about price and the number of plots and, according to Mr Hugh, *"We spoke about 100mm rustic cut stone, not slate. There was no mention of the intended use of the stone, or any further specification of it."*
68. Mr Crocker forwarded the 18 October e-mail to Mr Avery again. They then spoke by telephone. Mr Crocker followed that up with a further e-mail offering two options for a 70:30 or 50:50 mix of grey-blue and rustic stone.
69. Both Mr Avery and Mr Crocker agreed that they had spoken again about a visit to the quarry and samples of the stone. On 6 December 2011, Mr Crocker again e-mailed Mr Avery. The e-mail said:
"Hi Brian,

Please find attached:

1. Directions to Lantoom Quarry

2. Better pictures of Trevenson Meadows - the Taylor Wimpey site in Newquay where we supplied a mix of sawn face and natural faced stone.

The site has sold really well with the first phase selling out. The sales staff told us when we visited that the stone was a big selling point, which we were pleased to hear.

3. I have made enquiries here and while we know we have supplied have supplied (sic) Barratt Homes in the past, no-one can recall when.

Our stone is used extensively throughout Cornwall and Devon and Lantoom stone has been used on some recent important building projects in the area including St Mellion Hotel and St Austell Town Centre regeneration scheme and the Dobwalls by-pass, all of which are featured in the portfolio section of our website. If you click the links it will take you to these projects.

If you need anything else, let me know.

Kind regards,

Richard"

70. The attached pictures of Trevenson Meadows included photographs of the stone in use both in free-standing walls and in houses.
71. On the evidence, it seems to me probable that this e-mail was followed by a visit by Mr Avery to the Lantoom quarry. In this witness statement, Mr Avery said that he attended the quarry to meet with Mr Crocker in early December 2011 although he could not recall the date and had not taken any notes. The meeting was informal and only lasted about 30 minutes. In his first statement, Mr Crocker made reference to the e-mail of 6 December 2011 giving Mr Avery directions to the quarry. That was consistent with Mr Avery's recollection, although, in cross-examination, Mr Avery said that he thought the visit took place shortly before the order was placed. In his second statement, Mr Crocker did not suggest that Mr Avery's visit to the quarry had taken place at any later date.
72. In cross-examination, Mr Avery was taken to an e-mail from Mr Crocker to Nick Rance at BDW. The e-mail was sent on 6 February 2014 and started with the words: "*It's been a while since yourself and Brian Avery came to Lantoom*". It was suggested to Mr Avery that that meant that he had visited the quarry together with Nick Rance and the implication was that that must have been some time later after Mr Rance was involved. Mr Avery did not accept that he had visited the quarry with Mr Rance. He explained that Mr Rance took over from him in late 2012 or early 2013 and Mr Avery retired.
73. Mr Avery gave his evidence in a straightforward manner and there was nothing in this that persuades me that he was wrong in his recollection of visiting the quarry to meet Mr Crocker in early December 2011. It is improbable that during a visit to the quarry, however brief, Mr Crocker would not have referred to the stone being quarried as slate. It was also an obvious occasion on which the intended use of the stone would have been discussed however informally that may have been.

74. Around this time also the planning authority appears to have become involved in terms of the decision as to whether or not Lantoom stone could be used. On 7 December 2011, Patrick James of Cornwall Council's Planning Department called Mr Hugh with questions about the appearance of the stone. He also e-mailed Mr Crocker:

"Dear Richard,

Hello,

I work in Cornwall Council's planning department, and following a chat with your colleague William I have query about your slate stone when used for wall facings.

I see from your website that your slate stone presents with two different appearances; the rustic, ruddy natural face; and then the sawn, blue-grey face.

To me, each of these looks very attractive when used consistently. However, as incorporated as a mix into the buildings as attached, it looks rather poor – with its sultanas-in-rice-pudding effect.

So my question is: over time and with the effects of weathering, do the two faces converge in appearance? Does the sawn go more ruddy, and/or does the rustic bleach out? Will the buildings in the pictures look better with time, or is it more the case that attention has to be given during the construction process to using the stone in a consistent manner?

I'd be very grateful if you could come back to me asap on this.

Regards,

Patrick"

75. Mr James' e-mail must, at the least, have made it apparent to Mr Crocker that what was being considered from a planning perspective was the use of the stone in the walls of the houses. The attached photos were those of Trevenson Meadows. Mr Crocker replied the same day and his response raised no issue about the proposed use of the stone in the walls of the houses on the development.
76. On 5 January Mr Avery called Mr Crocker to arrange the delivery of samples to site for the approval of the planning authority. There was then an e-mail exchange between them about the delivery of the samples in which Mr Avery identified the site manager as Adam Bishop. The sample stone was delivered the following day.
77. Mr Hugh's evidence was that on 20 January he received a call from Mr Bishop who told him that BDW was waiting for planning approval before BDW could place an order with Lantoom and that he would then want a 25t load of stone to begin with and 3 such loads over a 6 week period. Mr Hugh e-mailed Mr Crocker to inform him of that call.
78. Mr Avery's evidence was that following the review of the test wall/panel, the planning committee approved the sample and he informed Mr Crocker that BDW wanted Lantoom to supply the stone for the development. Mr Crocker did not recall speaking to Mr Avery but nothing turns on that.

79. Mr Hugh's evidence was that he then received a phone call on 6 February 2012 from Adam Bishop, BDW's site manager, who ordered 25t of Lantoom stone for delivery the next day. Following the call, Mr Hugh arranged delivery with DG Carew and Son. Mr Hugh said that Mr Bishop also told him that he would need to obtain an order number from Mr Avery.

80. At 4.14pm on 6 February 2012, Mr Hugh then e-mailed Mr Avery as follows:

"Good afternoon Brian

I have been advised by Adam, the site manager at St Martin's in Looe, to e-mail you requesting an order number for the delivery of 100mm nominal mixed cut stone booked in for tomorrow (7/02/12).

If you could please forward me any relevant paper work for the order to my e-mail address I would be most grateful.

...."

81. Objectively, this was a clear request for the paperwork relevant to the order. It was put to Mr Hugh in cross-examination that it was likely that Mr Bishop had told him he needed paperwork or a purchase order from Mr Avery and not merely an order number. He did not accept that but the terms of the e-mail to my mind make it clear that Mr Hugh at least anticipated that there might be more paperwork than merely an order number. In cross-examination, his evidence was that the intention was to get the documents Lantoom would need in order to get paid and he agreed that the document or documents could have "all sorts of things on them" and that might have included provision for delivery terms. It is also, of course, the case that the "order" placed by Mr Bishop was for the immediate delivery of one load and not for supply of the stone for the site more generally.

82. A Purchase Order with the number HM-5917/0062 was then raised and e-mailed to Mr Hugh at 6.44pm on 6 February 2012.

83. The Purchase Order was titled Committed Material Purchase Order. As well as an Order number, the Purchase Order gave address and contact details for "Barratt Exeter", named Mr Avery as BDW's contact, and was marked as approved by him.

84. In the upper part of the Purchase Order, below boxes giving details of the Supplier and the Site, the Purchase Order contained a box with the following text (in relatively small print):

"This Order is subject to the company's Standard Conditions for Purchase Orders Rev 1 13/05/11 which can be viewed at www.barrattcommercialsupport.co.uk in "Terms & conditions" and the Contract Documents referred to therein unless there is a Group Deal in place with you in which case the terms of the Group Deal apply. Invoices must be sent to the Divisional Office address given above and will not be accepted unless our Order Number ... is quoted on Delivery Notes and attached. Such Delivery Notes must be clearly legible and signed to acknowledge delivery by our Site Manager. Our site

operatives are not authorised to sign for materials delivered. Only the signature of our Site Manager is valid.”

85. Below that in another box and relatively larger print, the item to be supplied was described as:

“100mm on bed Lantoom Natural Rustic Walling Stone in ratio mix of 80% Natural face/ 20% Sawn face. Supplied in 25 tonne loads. Deliveries only between 9.15am and 3.00pm”

86. Mr Hugh’s evidence in his first witness statement was that he saw the Purchase Order after he arrived at work on 7 February 2012. I note that Mr Hugh was cross-examined as to the extent to which he had read or noted the writing in the box relating to the terms and conditions and, in summary, said that he thought it probable that he had not noticed or noted it.

87. The 25t load was then delivered to site with a delivery note (“the Delivery Note”), which itself was in a standard Lantoom form. The Delivery Note was filled out with the Purchase Order number and the invoice address of Barratt Exeter consistently with the terms of the Purchase Order.

88. There was nothing on the face of the Delivery Note to indicate that it contained terms and conditions. On the face of the Delivery Note the quantity of stone (25t) delivered was recorded and it was stated that:

“I/ We have inspected the load, ordered it to be tipped or offloaded and accept delivery of the contents. I/We accept totally the Conditions of Sale printed overleaf. It is accepted that stone can vary in colour, texture and dimension from any samples previously provided due to natural variations or other reasons.”

89. At the bottom right of the Delivery Note there was a box which contained space for a “Customer Signature” under the words “Received and approved by”.

90. It is not in issue that on the reverse of the Delivery Note there were “Lantoom Ltd – Conditions of Sale”.

91. The delivery was taken by Philip Havenhand, a forklift truck driver, who commonly took site deliveries. He described what usually happened when he did so – namely that he would unload the pallets of stone and, once safely unloaded, he would sign the paperwork that the delivery driver required to confirm receipt of the specified number of pallets. Mr Havenhand signed for this particular delivery and his signature appears on the Delivery Note. I note that a further copy of the Delivery Note was later signed by Mr Bishop (and dated 21 February 2012) presumably to comply with the requirements in BDW’s Purchase Order.

92. Mr Havenhand’s evidence, when cross-examined, was that he checked the delivery against the Delivery Note for the quantity and type of stone. He did not know whether there were terms and conditions attached to the Delivery Note and my impression of his evidence was that he simply did not understand questions that were put to him about his authority to enter into a contract.

93. In summary, what followed as the works progressed was the call off of further quantities for delivery each accompanied by a similar Delivery Note.

Standard terms and conditions?

94. I start with the issue of which, if any, terms and conditions were incorporated into the contract between the parties.
95. It is clear from the evidence that any exchanges about the contract which might amount to contract negotiations took place between Mr Avery, as BDW's buyer, and Mr Crocker and/or Mr Hugh. That is not least evidenced by the fact that although it was Mr Bishop, the site manager, who told Mr Hugh that BDW wanted 25t delivered, he at least told Mr Hugh that he needed to contact Mr Avery for an order number and, as I have said, Mr Hugh, in fact, also sought any relevant paperwork from Mr Avery.
96. The Purchase Order was BDW's offer to purchase the total quantity of stone and it was made on the basis of BDW's terms and conditions.
97. It is right that these terms and conditions were not set out in the Purchase Order and were incorporated by reference. It is now well-established that that can be sufficient incorporation. Chitty on Contracts, 33rd ed. paragraphs 13-013 to 13-015 summarises the authorities as follows:

"13-013 It is not necessary that the conditions contained in the standard form document should have been read by the person receiving it, or that he should have been made subjectively aware of their import or effect. The rules which have been laid down by the courts regarding notice in such circumstances are three in number:

(1) if the person receiving the document did not know that there was writing or printing on it, he is not bound;

(2) if he knew that the writing or printing contained or referred to conditions, he is bound;

(3) if the party tendering the document did what was reasonably sufficient to give the other party notice of the conditions, and if the other party knew that there was writing or printing on the document, but did not know it contained conditions, then the conditions will become the terms of the contract between them.

13-014 It is the third of these rules which has most often to be considered by the courts. The question whether the party tendering the document has done all that was reasonably sufficient to give the other notice of the conditions is a question of fact in each case, in answering which the tribunal must look at all the circumstances and the situation of the parties. Cases in which the notice has been held to be insufficient have been those where the conditions were printed on the back of the document, without any reference, or any adequate reference, on its face It is not necessary that the conditions themselves should be set out in the document tendered: they may be incorporated by reference, provided that reasonable notice of them has been given. Reference to standard terms to be found on a website may be sufficient to incorporate the terms on the website into the contract."

98. The authority cited for that last proposition is *Impala Warehousing and Logistics (Shanghai) Co Ltd. v Wanxiang Resources (Singapore) Pte Ltd.* [2015] EWHC 25

(Comm). In that case, the claims were based on the terms of warehouse certificates. The first page of the warehouse certificate stated that the “warehouse certificate and all disputes arising from it shall be subject to the Terms and Conditions of IMPALA”. At the base of the page there was added “please note additional conditions of the warehouse certificate printed at the back of this page”. On the reverse, the certificate then said:

“The Goods are received and stored under the Terms and Conditions of Impala – which updated by Impala from time to time. The latest version of the Terms and Conditions of Impala is posted on the official website of Impala at www.impalaterminals.com.”

99. At [16], Teare J referred to the passages in Chitty (in an earlier edition) which I have set out above. He continued:

“... Here, the first page refers to the warehouse certificate as being subject to the Terms and Conditions of Impala. At the base of the page the reader is invited to refer to the reverse of the page for additional conditions. On the reverse the reader is referred to Impala’s web-site for its Terms and Conditions. Thus the holder of the warehouse certificate knows that the certificate is subject to Impala’s Terms and Conditions. He is referred to the reverse of the certificate. On the reverse he is told where to find the Terms and Conditions. I consider these steps are reasonably sufficient to give the holder notice of the conditions. In this day and age when standard terms are frequently to be found on web-sites I consider that reference to the web-site is a sufficient incorporation of the warehousing terms to be found on the web-site.”

100. In the present case, the relevant facts and circumstances include the fact that Mr Hugh had asked for the relevant paperwork. Prior to this, although there had been exchanges about quantities, type and price of stone, there had not been any document encapsulating the agreement. The order placed by Mr Bishop was only for an initial 25t but there was more to come. The total order was for 500t and there was clear evidence that that was a significant size of order for Lantoom. That was not the order placed over the phone on 6 February and even that initial order required an order number. It is improbable that a national housebuilder would simply have continued to order stone on an ad hoc basis or would have placed the full order over the phone with no more than an order number. Mr Hugh’s request for paperwork seems to me consistent with that understanding.
101. The paperwork was promptly sent before any delivery. It was obviously not just a formality and was relied on by Lantoom to complete the terms of the Delivery Note.
102. The reference to BDW’s standard terms was towards the top of the Purchase Order and, despite the relatively small font, it was, therefore, still prominent on the face of the document. The reference to standard terms on the BDW website was more prominent than in the *Impala* case where the reader would have to follow the reference to “additional conditions” and turn over to the reverse of the page to see the reference to the website.
103. Looked at objectively, and if there were nothing more, there could be no doubt that in despatching the first call-off of 25t stone for delivery, Lantoom accepted that offer and that there was a contract on BDW’s standard terms.
104. The counter-argument, and Lantoom’s case, is that dispatching the stone for delivery with a delivery note which sought to incorporate its own terms and conditions was not

an unequivocal acceptance of BDW's offer but rather a counter-offer. Its primary case is that that counter-offer was accepted; its alternative case is that, if that counter-offer was not accepted, there could nonetheless not be a contract on BDW's terms and there was only a simple contract. I regard that case as divorced from the reality of the situation.

105. Firstly, as I have said, the Purchase Order was for the supply of the whole 500t. The wording in the box was sufficient to draw to Lantoom's attention that that order was made on the basis of BDW's Standard Conditions. It is not material whether Mr Hugh, in fact, noted these words or not.
106. Lantoom's case is in marked contrast. On Lantoom's case, its counter-offer was made in a document expressly called a Delivery Note. There was no communication to Mr Avery, the person at BDW with whom Lantoom had been dealing, of Lantoom's conditions of sale or about a counter-offer. The Delivery Note was intended to be handed by a delivery driver to someone on site – in the event Mr Havenhand. There is no possible basis on which it could have been anticipated that someone on site, whether the site manager or some other operative, would have authority to contract with Lantoom on any basis, let alone on some basis other than BDW's standard terms.
107. Further, on its face the Delivery Note related only to the 25t delivered on that occasion. It was not a counter-offer to supply 500t stone on Lantoom's terms. Lantoom's case must, therefore, be that on each occasion when a further quantity was called-off for delivery, there was a further counter-offer in respect of that quantity which was accepted by BDW. That case is barely articulated and makes no sense.
108. Looked at in context, it seems to me that the Delivery Note was exactly what it said it was – a delivery note in respect of the first 25t – and despite the reference to Lantoom's Conditions of Sale on the reverse, it was not intended to be a counter-offer.
109. BDW drew my attention to a decision in which Christopher Clarke J had reached a similar conclusion. In *Balmoral Group Limited v Borealis (UK) Ltd.* [2005] EWHC 1900 (Comm) at [355] he cited with approval the Scottish case of *Continental Tyre & Rubber Co. Ltd. v Trunk Trailer Ltd.* [1987] SLT 58 saying in respect of that case:

“... manufacturers of trailers ordered a quantity of tyres from a tyre supplier on their printed purchase order which purported to incorporate their conditions of purchase. The sellers claimed that their terms applied because when the first batch of tyres was delivered one of the purchasers' employees signed a delivery note with the words “All offers and sales are subject to the [seller's] current terms and conditions, a copy of which will be supplied on request”. The Inner House of the Court of session rejected this contention on the basis that the contract was complete as soon as the first batch of tyres was delivered. The signature of the purchaser's employee on the delivery note had no contractual effect; it was not a contractual document and was only required for the purpose of confirming the quantity and description of the goods delivered.”
110. It follows, in my judgment, that the contract between BDW and Lantoom was made on the terms and conditions incorporated by reference in the Purchase Order, which Lantoom accepted by commencing the supply of the stone ordered.

111. Before I leave this aspect of the dispute, I deal with two further arguments raised by the parties.
112. In opening submissions, Lantoom advanced a case that a contract was formed before the Purchase Order was sent and that that was a contract on neither parties' standard terms. Mr Choat rightly submitted that that case was not pleaded but rather seemed to reflect a pleaded position - namely that an agreement "in principle" had been reached, as recorded in Mr Hugh's e-mail on 6 February 2012, such that the stone would have been delivered even without the Purchase Order – and elevated it to an alternative case on contract formation. It seems to me that this amounts to no more than a case that there was an understanding that there would be a contract for the supply of 500t stone. Whether or not some stone would have been delivered in anticipation of that contract being concluded is immaterial.
113. For BDW, Mr Choat also advanced an argument that BDW's offer was accepted by conduct by Lantoom in performing what he referred to as "the delivery part" of the BDW's offer. He cited the summary in Benjamin on Sale of Goods, 11th ed, at para. 2-011 as follows:
- "In order to make a valid contract an offer must be accepted; the acceptance must be unqualified; and, as a general rule, it must be communicated to the offeror. These principles apply to a contract for the sale of goods. But acceptance may be inferred from conduct, for example, by sending goods which have been ordered. In these circumstances, the normal requirement that acceptance should be communicated may be taken to have been waived by the offeror, but whether the offer can be so construed is a question for the court to determine."*
114. Mr Choat further submitted that BDW's terms and conditions expressly waived communication of acceptance relying on clause 3.3 (set out below) which provided that a contract would come into effect incorporating the BDW terms and conditions on the earlier of the date of acceptance of the Purchase Order or after 5 Working Days from delivery, where the Supplier has not notified the Purchase in writing that it rejects the Purchase Order.
115. I would not have accepted that submission if I had concluded that the Delivery Note was a counter-offer. It does not seem to me that the acts of arranging and making delivery and the Delivery Note can be compartmentalised in this way. If Lantoom had arranged and made delivery but at the same time as making a counter-offer, I could not have concluded that they had accepted BDW's offer and the question of communication of acceptance would not have arisen. Alternatively, the counter-offer would have amounted to notification in writing that the Supplier rejected the Purchase Order. As it is, in my judgment, these issues simply do not arise.

BDW's terms and conditions

116. Having concluded that the contract incorporated these terms and conditions, it is necessary to set out a number that are relied upon by BDW
- "1. Definitions and Interpretation***
- 1.1 In these terms and conditions the following words have the following meanings unless the context otherwise requires:*

...
“*Authorised Representative*” means any employee of a Group Company;
“*Barratt*” means BDW Trading Limited (trading as David Wilson Homes, Barratt Homes and Ward Homes).

...
“*Build Unit*” means any unit built at the Site to which the Goods are to be delivered or installed;

...
“*Company*” where used on the Purchase Order means Purchaser

...
“*Contract*” where used means this contract between a Purchaser and the Supplier resulting from the submission of a Purchase Order;

...
“*Goods*” means the goods described on the Purchase Order (and if a Specification has been agreed between the parties, as specified in the Specification);

“*Group Company*” means Barratt Developments Plc, any direct or indirect holding company or parent undertaking of Barratt Developments Plc and any direct or indirect subsidiary or subsidiary undertaking of Barratt Developments Plc or any such holding company or parent undertaking (as all such terms are defined in the Companies Act 2006);

...

“*Liability*” means actions, awards, costs, claims, damages, losses (including without limitation any direct or indirect consequential losses), demands, expenses, loss of profits, loss of reputation, judgments, penalties and proceedings and any other losses and/or liabilities;

...

“*Purchase Order*” means the request for the supply of Goods by a Purchaser set out as the front sheet to these terms and conditions;

“*Purchaser*” means Barratt and/or any of Barratt’s Group Companies;

...

“*Specification*” means the specification for the Goods agreed between the parties (if any);

...

“*Supplier*” means the entity contracting to supply Goods to Barratt;

...

3. Contract Formation

3.1 This Contract governs the overall relationship between Barratt and the Supplier with respect to this Contract for the supply of Goods to a Purchaser at a Site and at a Price except where there is a Group Deal where the terms of the Group Deal will prevail.

3.2 For the purpose of this Contract, except where explicitly stated, any reference to Barratt shall be interpreted as including the Purchaser.

3.3 A Contract between the Supplier and the Purchaser will come into effect incorporating these terms and conditions on the earlier of the Supplier accepting the Purchaser’s Purchase Order or after 5 Working Days from the delivery to the Supplier

of the Purchase Order where the Supplier has not notified the Purchaser in writing that it rejects the Purchase Order.

...

5. Goods

5.1 The Goods must comply with the warranties set out in clause 6.1. The Supplier will not make changes to the supply of and/or to the Goods (including but not limited to upgrades and substitutions) without giving notice to the Purchaser and receiving the prior written agreement of a Barratt Contact.

5.2 The Purchaser may from time to time by sending an amended Purchase Order to the Supplier unilaterally make changes to any Purchase Order that it has placed with the Supplier or to this Contract including but not limited to any change that would have the effect of terminating this Contract or reducing the quantity of Goods to be delivered or the time for delivery of the Goods or any part of them provided that the Purchaser may not unilaterally increase the quantity of or decrease the time for delivery of Goods or change the Price per Unit. Any change to a Purchase Order by the Purchaser shall have immediate effect.

6. Quality of Goods

6.1 The Supplier warrants and represents to Barratt that:

6.1.1 the Goods will comply with the Specification;

6.1.2 the specification, quality and quantity of the Goods to be delivered shall be as set out in this Contract or as appended to the Purchase Order or as otherwise agreed in writing by an Authorised Representative of the Purchaser;

6.1.3 the Goods will be fit for the purpose notified to the Supplier;

6.1.4 the Goods will comply in all respects including, without limitation, design, manufacture, construction and quality with all legal requirements, relevant laws, codes of practice, requirements and regulations affecting the same including but not limited to British Standards, EU Directives, codes of practice, good building practice and manufacturers' recommendations;

6.1.5 the Goods will be as safe as persons generally are entitled to expect and be accompanied by instructions as to use, handling, storage, maintenance and safety and where necessary erection/assembly; and

6.1.6 it will at all times fully and properly comply with the Customer Charter and the Code of Conduct.

...

8. Delivery

...

8.2 Delivery of Goods must be accompanied by a delivery note detailing the specific Purchase Order number to which the Goods relate. Delivery shall be effected when the Goods have been properly unloaded and located at the Site in accordance with the Purchaser's directions and all accompanying delivery notes have been signed by an Authorised Representative of the Purchaser.

...

8.12 If the Goods are to be delivered by instalments, the Contract will be treated as a single contract and not be severable.

...

10. Warranties & Guarantees & Indemnities

...

10.2 *In respect of Goods the Supplier warrants and guarantees to Barratt that in accordance with NHBC and Zurich requirements, all workmanship and/or materials are guaranteed by the Supplier and that the Goods will be free from defects in designs for a minimum period of 2 years from the date of the legal completion of the sale to a customer of any particular Build Unit in which the Goods are installed.*

...

10.5 *Without prejudice to any other right or remedy Barratt may have, the Supplier agrees to indemnify the Purchaser and keep it indemnified against any and all Liabilities and increased administration and professional and legal costs on a full indemnity basis suffered by the Purchaser (without set-off, counterclaim and/or reduction), whether or not such losses were foreseeable or foreseen at the date of this Contract and arising out of or in connection with the Goods and/or this Contract and which arise from:*

10.5.1 *any act and/or omission by the Supplier or its employees, agents and/or subcontractors (including distributors) which is in breach of this Contract, or in breach of any tortious (sic) duty of care and/or in breach of any statutory duty; and/or...*

10.5.3 *any defect in the materials used in and/or the manufacture of the Goods or any defect in the design, processing, storage or transport of the Goods; ...”*

Clause 6

117. As I indicated briefly above, clause 6 then brings into play the two issues as to “the Specification” of the stone (which also overlaps with the case on misrepresentation) and the purpose notified to Lantoom.

The Specification: slate?

118. As set out in the clause 1 Definitions, the Specification is that “agreed between the parties”. That leaves open the possibility that that agreement is one in writing or oral or both. In the present case, BDW relies on what must be an oral agreement that what would be supplied would be (i) slate stone (which must in context mean true slate) and (ii) “*suitable for forming the external walling leaf, alternatively external walling, of houses, and, in particular, houses at the Site and the Development*” (Amended Particulars of Claim, paragraph 26A). Lantoom’s position is that the only Specification can be that in the Purchase Order – “100mm on bed Lantoom Natural Rustic Walling Stone.” Lantoom’s position as to the notified purpose is less clear as considered above.

119. As I have said, Mr Crocker’s evidence in his statement did not directly address the issue of whether he had used the term slate in his telephone calls with Mr Avery or when he met Mr Avery at the quarry. His statement avoided the issue by focussing on petrography and what was written rather than said. When he was cross-examined, he was on many occasions defensive and argumentative and his answers were evasive or inconsistent. On this issue, he was insistent that the Lantoom stone was slate but he accepted that, for the purposes of describing it petrographically, the opinion of an expert was required. He was then asked whether in a commercial context, such as dealing with a national housebuilder, he thought it was likely that the term would be understood in its geological sense rather than its customary sense. His answer was this:

“Well, again, it is likely, probable. I don’t know the answer to that. It is possible that they could have done. So likely, no; possible, yes.”

120. He conceded that it was possible that by 6 February he had said the Lantoom stone was slate but that he could not attribute a likelihood to it.
121. I am satisfied that Mr Crocker did use the term slate precisely because it is how he sees the stone and what he calls it.
122. The following also support that conclusion:
 - (i) The versions of Lantoom’s website current in January 2011 and April 2011 (and later archived) stated that Lantoom supplied “a number of slate products suitable for building or facing a masonry wall.”
 - (ii) The Planning Department e-mail dated 7 December 2011 referred to Lantoom’s “slate stone”. In his reply Mr Crocker took no issue with this.
 - (iii) The answer in cross-examination which I quoted above also indicates that there was no reason why Mr Crocker would not have used his usual term to refer to the stone just because he was dealing with a national housebuilder rather than a local builder and, in any event, he was dealing with a local representative in Mr Avery.
123. I would have reached that conclusion without any reliance on the later evidence but the fact that in an email to BDW dated 20 March 2012 Mr Crocker referred to Lantoom as supplying “Cornish walling slate” is also supportive. Similarly, there is later evidence of the steps which he took to have the stone classified as slate which I address below.
124. Mr Avery’s evidence was positively that Mr Crocker referred to slate stone and he did not depart from that in cross-examination but his evidence does not, in my judgment, assist BDW’s case.
125. In cross-examination, there was the following exchange between counsel and Mr Avery:

Q: Now, Mr Crocker has always thought that his stone was slate and so it’s not entirely clear what was discussed. Have you seen in all of the documentation I have shown you the references were always to “stone” when it came to the Lantoom product and not to slate?

A: Yes.

Q: I just suggest that in those circumstances presumably you can’t really be sure whether you talked about slate or not?

A: Well, yes, it would have been slate you know, but it’s a slate stone.

Q: What do you mean by that?

A: Well, it’s a way of just determining, defining that it is a slate stone, you know, a natural slate stone, a rustic slate stone with a sawn face or a rustic face.

Q: And the Yennadon stone, presumably you also think of that as being a slate stone, do you?

A: Yes."

126. It seems to me, therefore, that there is really very little between BDW and Lantoom on the evidence. Lantoom is right to say that there is an accepted local usage and it was one with which Mr Avery was familiar and was how he understood "slate". That is plain from the fact that he would have used the same term to describe the Yennadon stone. So would Mr Wallace of Yennadon. In his witness statement, Mr Wallace did not provide any particular explanation of the terms used but he did refer to the Yennadon stone as "slate stone". In cross-examination, Mr Wallace agreed that the Yennadon website referred to Yennadon stone as a slate stone and that it was regionally known as slate. But no witness or expert suggested that Yennadon was true slate and it was variously identified as a mudstone or a Hornfels.
127. In my judgment, in terms of any specification agreed between Mr Crocker and Mr Avery, they agreed that the stone supplied was slate or slate stone but neither of them meant that term to mean true slate. It cannot be said that there was objectively an agreement to supply true slate where the term had a different and regional meaning. In terms of any representation that was made, the same follows. In any event, any representation that the stone was true slate was not relied upon by Mr Avery in making the offer contained within the Purchase Order. On the contrary, Mr Avery was placing an order for an alternative to Yennadon stone (which is not true slate) and not for a superior product in reliance on any representation that it was true slate.
128. In terms of geological description of the stone, the best that can be said is that the agreed specification was that the stone was what was known locally as slate.
129. That conclusion does not seem to me, however, to render all of the evidence and argument about the nature of the stone wholly irrelevant as it remains relevant to the performance of the stone and it is considered below.
130. BDW's alternative or additional case on the agreed specification was that relating to the suitability of the stone for the external leaf of a cavity wall, alternatively external walling. I note also that in closing submissions, BDW advanced the slightly different case that, in accordance with the Purchase Order, Lantoom contracted to deliver "walling stone". On the face of the Purchase Order that is right and Lantoom's own case was that it contracted to supply what was described in the Purchase Order.
131. All of those alternatives seem to me to be variations on the theme of the suitability of the stone for the use to which it was put and I consider that below both in the context of the agreed Specification and express (clause 6) or implied terms as to fitness for purpose.

Fitness for purpose

132. On BDW's case, Lantoom was notified that the stone was to be used to form the external leaf of a cavity wall. There was, therefore, an express term that the stone would be fit for that purpose by virtue of clause 6.1.3 as this was the notified purpose and in the alternative, there was an implied term that the stone would be fit for that purpose.

133. As already indicated, Lantoom's pleaded case in the Amended Defence, signed with a statement of truth by Mr Crocker, was that Lantoom knew that the stone would be used for the houses on the Site as either external or internal walling. Lantoom's pleaded case in paragraph 6 of the Amended Defence was (i) that it was admitted and averred that on or about 18 October 2011 Lantoom represented that its rustic faced and blue gray stone was suitable for external and internal walling and (ii) that Lantoom denied that it was made aware of the purpose for which the stone was intended to be used "save that it was intended to be used as external or internal walling at the Site".
134. Mr Avery's evidence was that he was tasked with sourcing stone for the external cavity walls of the houses. He said that the vast majority of the time the external wall would be 100mm wide (described as 100mm on bed). His evidence was that when he spoke to Mr Crocker on 18 October 2011, he told Mr Crocker that BDW required natural and sawn slate stone for the external cavity walls in a housing development. In cross-examination, he was less certain – he first said he would probably have said that the stone was for the external leaf of a cavity wall and then that he was 99% certain he would have said that. Part of his explanation was that 95% of the time 100mm on bed would refer to use in a cavity wall.
135. Mr Crocker in his statement disputed that the description 100mm on bed provided any explanation as to the particular use of the stone. He added that most customers using this product to clad a house would do so using Surecav or a backing block. Up to the point when the supply of the stone commenced, Mr Crocker's evidence in his witness statement was that he did not know for what purpose the stone was to be used on the site:
"... other than that it would be used as a cladding material to meet the requirements of the Planning Authority Brian Avery did not tell me that the stone would be used for the outer leaf of a cavity wall. There was no reason for me to assume it would be. At this time I believed that the stone was not to be used in that way. I thought it would be used against a backing block or not on the walls of the houses themselves, but used for garden walls."
136. Mr Crocker relied on his reference to cladding in his e-mail of 18 October 2011 and the heading of e-mails as "Looe site – facing stone supply".
137. There were thus at least two passages in Mr Crocker's evidence in which he appeared to rely on having referred to the use of the stone for cladding and appeared to draw a distinction between cladding or facing and walling or the construction of a wall.
138. Mr Crocker further claimed that he first became aware of the particular use of the stone for the external leaf when he attended site on 22 March 2012.
139. That visit was followed by an e-mail in which Mr Crocker said this:
"On a positive note the stonework is looking superb and I have every confidence that by choosing Lantoom Stone you will be able to sell more homes at better prices on this site. Its this extra value that our stone brings to buildings that we think it the best reason for choosing Lantoom."

Notably, Mr Crocker expressed no surprise or concern at the use of the stone which, on his own case, had only just come to his knowledge.

140. Mr Crocker was cross-examined at length on this aspect of his evidence. My reference to the length of that cross-examination is no criticism of the cross-examination but rather a reflection of the defensive and unpersuasive responses that Mr Crocker gave. Inconsistently with the pleaded case and his own statement, and indeed his own reference to “cladding”, he sought to maintain that he had not known at all to what use BDW intended to put the Lantoom stone and that it might have been only for freestanding walls (such as garden or boundary walls). That is not only improbable but completely inconsistent with his sending BDW photographs of the stone used in houses and the correspondence with the Council’s planning department.
141. Although this seemed to be a prominent issue, it is, with respect to the parties, a rather odd one. At first blush, it appeared that there might be a meaningful dispute as to whether BDW had informed Lantoom that the stone was to be used as external walling stone (generally) or specifically as the outer leaf of a cavity wall or, perhaps, as in Mr Crocker’s e-mail of 18 October 2011, as cladding. That seemed to suggest a distinction between the use of the stone for external walling, as the outer leaf of a cavity wall and as cladding. I say that because that was the distinction that seemed to be made in Mr Crocker’s evidence and perhaps intended by the passages from the Amended Defence that I have referred to above.
142. However, as I have also quoted above, Lantoom then referred to the use of the term “cladding” but said that it did not rely on that for any artificial distinction as to the use to which the stone could be put. To my mind, what that must mean is that it was Lantoom’s positive case that the stone was fit for use as external walling and that that was not limited to external walling of a particular nature - whether freestanding, as cladding, or as an external leaf. In oral closing submissions, Ms Jones further submitted that what was communicated at the time of contract formation would not end up being particularly significant to my findings on breach because “Lantoom has always said that its stone could be used for the external leaf of a cavity wall and its website always said so”. She suggested, which I do not accept, that Mr Crocker had been told the stone supplied would be used for cladding - because that is what the Purchase Order says. It is a matter of detail but the Purchase Order does not say that and I assume the reference was intended to be to the e-mail of 18 October 2011. However, it was submitted that the distinction may not matter much in terms of liability.
143. In my judgment, the real issue between the parties was indeed whether the stone was fit for any of those purposes and that raised somewhat different issues both contractual and factual which I address below.
144. To the extent that it is relevant, however, and for the reasons below, I am satisfied that Mr Avery did tell Mr Crocker that the stone was to be used to form the external leaf of a cavity wall, albeit I also accept that he gave no further information as to the design.
145. I have no doubt that any discussions about the stone were on the basis that it was to be used in the walls of the houses. That was the intended use and Mr Avery had no reason not to say so. Mr Avery was a straightforward and honest witness – he was willing to give ground when challenged in cross-examination but came back to the firm view that he would have said so because that is how most 100mm on bed stone is used. In my view, Mr Crocker’s attempts to suggest the contrary were the product of defensiveness on this issue and a reluctance to accept the obvious.

146. That Mr Avery said something about the use of the stone in the external walls of the houses is evident from Mr Crocker's reference to cladding. It would be surprising if Mr Avery had referred to cladding and it seems to me more likely that that reflects an assumption on Mr Crocker's part of a common method of construction which involved a backing to the stone.
147. Mr Avery's view that most stone described as 100mm on bed was used for the external leaf of a cavity wall was not one in which he was alone.
148. Lantoom called the evidence of Mr Bright. In cross-examination, he was taken to the Lantoom website current as at 2 April 2011, which expressly referred to the Lantoom stone being used to form the outer or inner leaf of a cavity wall. He agreed that when stone was sold as 100mm on bed, what was bought was a product that could form a 100mm wide leaf of a cavity wall, and that there was a widespread practice in the construction industry of building cavity walls with 100mm wide walls, especially the case in Cornwall. Whether or not a backing such as Surecav was used was down to the specification and he was not aware of any problem if it was not used. I set out the relevant part of this evidence:

“Q: ... To help you with this, Mr Bright, this is an extract from Lantoom's website as on 2 April 2011. You can see here the heading “Slate stone walls”.

A: Yes

*Q: ... “We supply a number of slate products suitable for building or facing a masonry wall.”
... If we go to the next page, please ... You see here the types of stone and types of purpose listed ... If we can go down further, please. We see now a heading “100mm (4 inch) cut stone.*

A: Yes

Q: “This is suitable for building a wall with a cement or lime mortar or for facing a blockwork wall. I can also be used for forming the outer or inner leaf of a cavity wall. ...” ... Just continuing the text it then goes on: “A bed width of 100mm nominal size (4 inch). A building face.” ... You can see it is carried over at the top of the page “this material will build approximately 4 – 4.5 square metres of wall per tonne.” My first question on this 100 millimetre construction point is, it is a widespread form of construction in the housing industry isn't it to ...

A: Yes

Q: - build – can I finish the question? It is widespread to build cavity walls, 100 millimetre wide external walls.

A: Yes

Q: And those –

A: In Cornwall especially. In Cornwall, yes.

Q: Those walls being made of natural stone?

A: Yes

Q: So when the stone is sold as a 100 millimetres on bed, in essence one is buying a product that will form the 100 millimetre wide external cavity wall.

A: Yes.

Q: And that's been widespread practice for, gosh, 30 odd years, would you say?

A: Probably

Q: Are you aware of any particular problems with following that approach, of having a 100 millimetre wide cavity wall as we can see on Lantoom's website?

A: A lot of developers and contractor tend to use Surecav behind it to support it. There is also other people that don't/ They use it, you know, as a single leaf, with an open cavity

MR CHOAT: And you say in your witness statement, Mr Bright, that you would endeavour to use Surecav but there is no right or wrong answer, is there? As you have indicated, one might use it or one might not with 100 millimetre wall.

A: Yes, of course. It's down to the specification of the builder or the designer or the architect.

Q: But you are not aware of any particular problem if, for example, one chose the option of not having the Surecav backing?

A: No."

149. It was similarly Mr Wallace's evidence that the stone that Yennadon supplies as 100mm on bed is suitable for use as the external leaf of a cavity wall and as cladding or other walling material.

150. Lastly, there is Mr Crocker's e-mail of 22 March 2012. The e-mail was mainly concerned with the quantities of stone supplied apparently because of issues with wastage. As I highlighted, in his concluding sentences quoted above, there was no adverse comment from Mr Crocker or expression of surprise that the stone was being used to construct cavity walls.

151. Drawing the threads together, my conclusion on the evidence is that Mr Crocker was clearly told that the stone was to be used in the external walls of the houses – indeed as much was admitted in the Amended Defence - and, on the balance of probabilities, that he was told and understood that that meant as the external leaf of a cavity wall. So far as the contractual position is concerned, the notified purpose was use as the external leaf of a cavity wall and/or that was part of the agreed specification and/or there was an implied term as to fitness for that purpose. In the alternative and by definition, I would also

accept BDW's case that Lantoom was told that the stone would be used in the external walling of the houses.

The contractual alternatives

152. If I am wrong about the formation of the contract on BDW's terms, then in my view there could only be a simple contract and not a contract on Lantoom's terms.
153. The only basis for the argument that the terms on the reverse of the delivery order were accepted is the taking of delivery by Mr Havenhand, his signature of the Delivery Note and, perhaps, the later signature of Mr Bishop. Neither of these men had actual authority to enter into a contract with Lantoom and there is no foundation for any case that they had ostensible authority. Further, as I have observed, the first Delivery Note was only concerned with the supply of the first 25t and there has been no evidence about the later deliveries in terms of acceptance of the deliveries and delivery notes.
154. If there were such a simple contract, there would, in my judgment, be an implied term of that contract pursuant to section 14(3) of the Sale of Goods Act 1979 that the stone would be reasonably fit for the purpose of forming the external leaf of a cavity wall and/or for use as walling stone for the houses at the Site and BDW's case would proceed on the same basis.
155. BDW also advanced an alternative case based on subsequent variations to the Purchase Order. It is not necessary for me to set out this case in detail and I address it in summary only.
156. On 22 March 2012 (and after Mr Crocker's e-mail of the same date), Mr Avery sent to Mr Hugh an Amended Committed Material Purchase Order Number HM-5917/0062/001. This repeated the Order for the 500t of Lantoom stone but added an order of 100mm on bed Lantoom Natural Rustic Walling Stone in 100% Natural Face. The order was headed "This Amendment Order replaces the Original Order". On 8 March 2013, there was a further order number HM/5917/0062/004 which was similarly headed and added to the previous quantities an order for a further 50t stone with 50% quoins.
157. As I understood it, the relevance of reliance on these further Orders was that these amended orders were placed after Mr Crocker had visited the site and seen the stone being used to form the external leaf. So, the argument ran, if I had found that that use had not previously been made known, it had been by this time and there would be a relevant express or implied term as to the fitness for this purpose. Given the conclusion I have reached, this issue does not arise.
158. For completeness, however, I add that I would not have accepted the argument that the variations created a retrospectively varied contract. It seems to me that the natural reading of the amended order, in so far as it was stated to replace the original order, was that it varied the quantities of stone to be supplied subject to the terms of the existing contract. It would be a surprising result if the ordering of further stone could have the effect of varying the terms of the original contract with retrospective effect by the use of no more than the statement that the amended order replaced the original order.

159. Clause 5.2 of BDW's standard terms does not change that position. The clause provides that BDW may from time to time by sending an amended Purchase Order unilaterally make changes to the Purchase Order including but not limited to changes that would terminate the Contract or reduce the quantity to be supplied. However, the purchaser is not permitted unilaterally to increase the quantity or change the price. Despite the "including but not limited to" wording, this clause is clearly directed at the terms of the Purchase Order relating to quantity and price. As a matter both of commercial common sense and construction, it seems to me that the effect of the clause must be limited to this type of change and cannot extend to the quality of the goods to be supplied.

Slate revisited

160. Because of the conclusion I have reached about the relevance of whether or not the stone was true slate, I shall deal with the evidence on this issue relatively briefly at least so far as the evidence from petrographic examination is concerned.

161. It is convenient to approach this evidence in the same way that Mr Richardson did and that was the subject of his cross-examination.

162. As I have said, to put the geology at its simplest mudstone is sedimentary and slate is metamorphosed.

163. BS-EN 12670/2002 is the relevant standard for Natural Stone – Terminology.

164. The definition of mudstone at clause 2.1.168 was given as "*Fine sediments like clay, silt, siltstone, claystone, shale, and argillite.*"

165. The definition of slate at clause 2.1.389 is:

"(a) Scientifically, fine-grained very low- to low- grade metamorphic rock possessing a well-developed fissility parallel to the planes of slaty cleavage ...

(b) Commercially, rocks which are easily split into thin sheets along a plane of cleavage resulting from a schistosity flux, caused by very low or low grade metamorphism due to tectonic compression. They are distinguished from sedimentary (stone) slates which invariably split along a bedding or sedimentary plane."

166. Clause 2.3.390 provides:

"slaty cleavage: A variety of foliation, typical for fine-grained metamorphic rocks such the (sic) slates, consisting of a continuous and homogenous preferred orientation of the mineral grains, especially the platy crystals of mica show a plane texture visible in polarizing microscope."

167. Fissility is described as "*The property of splitting easily along closely spaced parallel planes*".

168. Cleavage is defined as:

"(a) Tendency of a rock to split along closely spaced planar surfaces, originated by recrystallization and strain during metamorphism and tectonic deformation;

(b) The splitting of a mineral along its crystallographic planes, thus reflecting crystal structure.”

169. These definitions amongst others were put to Mr Richardson who did not take issue with any of this. He agreed that in sedimentary rocks the planes between different layers of sediment might be described as bedding planes, sedimentary banding or laminations. He further agreed that the process of formation of a slate involved the mudstone being subject to sufficient temperature or pressure that it re-crystallised or metamorphosed, forming new planes (being cleavage planes) which might be at the same angles as the existing planes or at different angles, known as crenulated cleavage. Relict bedding planes might also be present. I quote Mr Richardson’s explanation:

“So we’re talking about a stone that has bedding planes and we’re talking about it changing and because it’s changing, sometimes there will be the remainder of some of those bedding planes still – because they haven’t fully changed – present within the general fabric and texture of the rock.

So they would be sometimes referred to as relict structures. But equally they could also be present because the stone hasn’t fully changed from what it originally was. It goes on a journey.”

170. As he had said in his own report at paragraph 3.5.9: “It will be the degree of metamorphism, the process that alters sedimentary rocks like mudstone into metamorphic rocks like slate, that ultimately will impact upon the correct geological name for the rock”. He accepted that visible textures in the stone reflecting lower or higher degrees of metamorphism might impact on the stone and be reflected in the name. As he said “It may be suggested that the stone has “slatey” characteristics”. But he maintained that it was properties like water absorption, along with the petrographic examination, that confirmed in this case that the stone was mudstone.

171. Thus Mr Richardson’s view in his Report was that the Lantoom stone generally and the stone supplied for the development was properly described as a mudstone. His view was derived from an examination of a number of sources.

172. These included the reports which had been commissioned by Lantoom from Scott Wilson and Professor Peter Scott of the Camborne School of Mines. Scott Wilson’s first report in 2008 was entitled “Assessing the Potential Uses of Slate Waste from Lantoom Quarry in Construction Products”. It contained at section 2 the observations that “The geology composes slate with varying proportions of siltstone and sandstone” and that “The quality of the “slate” is variable within the site; the main sought material is the bedded slate which is processed for building stone.” Appendix A was the detailed field report. Observations were of mainly bedded planes and some cleavage and at paragraph 15 it was recorded that:

“Material observed in the production face and stockpiles comprised: Moderately strong to strong thinly bedded grey and light grey locally with bedding parallel cleaved fine grained silty SLATE, locally with very thin beds of light brown SILTSTONE.”

The purpose of the report was not to provide a definitive geological assessment of the stone but it was at best equivocal as to whether what was described as “slate” was, in fact, slate, the word appearing on more than one occasion in quotations marks and the description largely being of bedded material.

173. Professor Peter Scott also reported to Mr Crocker on possible uses of waste product. His report was in the form of “Notes on possible uses for quarry use from Lantoom Quarry” and was dated 13 September 2011. His terms of reference, as set out in the Notes, were to research from a literature and internet search, possible uses. Under the heading “Composition of quarry rock”, he said:

“The rock at Lantoom Quarry is silty mudstone. The mudstone at Lantoom Quarry is of variable composition, Much is slaty with a variably developed cleavage giving rise to excavated stone varying in size, shape and degree of coherence before further processing. It appears to be variable in strength. The mineralogy of the mudstone is unknown”

174. The report thereafter consistently referred to the stone as mudstone and never as slate, despite the recognition of some developed cleavage.
175. On 1 December 2011, Professor Scott provided a further report entitled “Chemistry and mineralogy of samples from Lantoom and Westwood Quarries”. Professor Scott continued to refer to the stone as mudstone.
176. In 2014, Mr Crocker commissioned the Building Research Establishment to carry out a number of tests on the Lantoom stone. The purpose of the testing related to the Declaration of Performance for the stone and its CE marking. The tests included water absorption tests, compressive strength tests (including freeze thaw tests) and a petrographic examination. The petrographic examination included a macroscopic examination – “in hand specimen” – and a microscopic examination. The conclusion of that examination was, in short, that the stone was mudstone.
177. The BRE’s report was provided to Lantoom in August 2014 and was followed by efforts on the part of Mr Crocker to persuade the BRE (Geoff Ashall) that the stone should be classified as slate. Mr Ashall responded at length setting out why the stone had been classified as mudstone including that the specimens showed bedding planes rather than planes of slaty cleavage. Mr Ashall said that the fact that the stone was mudstone did not preclude its use as a building material or its commercial description as slate so long as the Declaration of Performance clearly stated it was a mudstone.
178. When Mr Richardson became involved in 2016, he instructed the BRE to carry out the characterisation tests which resulted in what was referred to as the first BRE report and which I address further below. He then advised on and commissioned further testing including a further petrographic examination. The BRE examined six specimens from plots completed between June 2013 and January 2015 and one specimen supplied to site but not used. The BRE classified all these specimens as mudstone, again reporting the presence of bedding planes, although noting in some instances the early stages of cleavage development. The BRE also variously noted the presence in fine bedding of organic material, “probably organic material” or “possible organic material” which, as Mr Choat submitted, was inconsistent with the metamorphic nature of slate.
179. There was, therefore, a body of evidence from reputable sources both before and after any dispute arose that, on the basis of petrographic examination, the Lantoom stone was properly classified as mudstone and not true slate.

180. The evidence to the contrary came firstly from the tests and report of Petrolab Ltd. This report was properly disclosed by Lantoom having been provided, in July 2020, in the context of a claim or potential claim against it by Baker Estates in respect of stone supplied for a residential development in Totnes known as Great Court Farm.
181. The Petrolab report recorded that Petrolab had examined in hand specimen and microscopically 2 samples of Lantoom stone taken in 2020. Strong crenulated cleavage was observed in one sample and somewhat less in the other. The report classified the Lantoom stone as slate.
182. In relation to the both samples, however, Petrolab reported “Constituents of Concern”. In respect of the first sample, the report said:

“The most particular cause for concern within the sample is the several fracture networks which have created inherent planes of weakness within the sample, this is coupled with its high clay/mica content. Strength and water field based tests were conducted on a small portion of the hand specimens and this resulted in the rock readily splitting along planes of foliation and also along limonitized quartz veins which tend to crumble with addition of moisture. This strong foliation which induces internal cracking along with abundant limonitized veins is a cause for concern and further physical testing (e.g. water absorption, slake durability, frost resistance) should be conducted before considering this material for use as building stone.” (emphasis added).

The report contained similar constituents of concern in relation to the second sample.

183. Although the geological classification of the stone was consistent with the views of Mr Hunt, he surprisingly made no reference to the Petrolab report in his lengthy first report in September 2020. He did, however, refer to it in his Rebuttal Report in December 2020. He described it as “extremely expert work” and relied on the Petrolab classification. He made no reference at all to the concerns expressed by Petrolab.
184. Petrolab’s conclusions that the stone was slate are, to my mind, difficult to reconcile with their concerns about the use of the stone as a building material. In any event, Petrolab specifically identified further testing that could and should be carried out before concluding that the stone was suitable for use as a building material and the tests suggested were the very types of tests which were carried out by others and from which they concluded that the stone was not slate in the sense that it did not have the characteristics of true slate, as considered below.
185. Mr Richardson’s view was that the samples provided to Petrolab were likely to have been taken in or about 2020 and, therefore, from a different part of the quarry from the stone supplied to BDW. He suggested that an area of the quarry had been reached where the stone could properly be classified as slate as some variability in the characteristics and classification of the stone was to be anticipated. Up to a point that must be speculation but it goes some way to explaining the differing classifications.
186. Before I leave the Petrolab report, I would add that a number of other matters arise out of this report. Firstly, Mr Hunt claimed in oral evidence that he had not seen this report before he produced his first report. As BDW submitted, that is wholly improbable – Mr Hunt had already been engaged by Lantoom; he had visited Great Court Farm; and he

was working on a joint statement with the other experts in this litigation, that Joint Statement being concluded in August 2020. When he did refer to the Petrolab report in his Rebuttal report, he gave no explanation for the previous lack of reference and he then referred to it selectively. In the course of his evidence, Mr Hunt accused others of cherry picking, yet this was a prime example of his cherry picking the evidence. He made no reference to the concerns expressed by Petrolab about the use of the stone as a building material. When cross-examined on this omission, Mr Hunt gave the response that:

“... this is referring to the joint structures which are being exploited in the production of the stone; and these are outside fracture planes. Generally speaking, you do get them running through the material but in the context of building a masonry wall, it’s ... the way that these will perform, it’s going to be of lower relevance.”

That response did not reflect what the report said and in no way addressed the concerns expressed by Petrolab as to use as a building material.

187. It is also apparent from the Petrolab report that they regarded further testing – including absorption and freeze/thaw – as something that should be carried out and that would be informative as to the performance of the stone. That itself ran contrary to Mr Hunt’s dismissal of the relevance of all such testing which I shall come to.
188. Mr Hunt also asserted in his first report that he had visited many sites including those alleged by BDW to have issues with the Lantoom stone and could *“categorically state that there are no issues with the Lantoom Stone performance at those sites”*. That was a remarkable statement given the complaint made by Baker Estates and the content of the Petrolab report.
189. None of these matters go to the substance of BDW’s case but they reflect poorly on Mr Hunt’s approach to his task as an expert witness and undermine the credibility of his evidence.
190. Mr Hunt’s report put forward his own petrographic examination of samples of Lantoom stone taken from walls on the site and Ms Jones urged the court to place particular weight on this evidence because Mr Hunt was the only expert to have carried out his own examination. She went as far as to submit that Mr Hunt was the only witness who could assist the court on this issue since he was the only expert to have carried out his own petrographic examination.
191. In his report, Mr Hunt set out three elements to his petrographic examination: first a visual and low power microscopical examination; then a high power microscopical examination of 10 thin sections; and lastly some samples subjected to an elemental analysis employing a X-ray fluorescence techniques. He then provided photographs of his high power microscopic examination with commentary identifying the visible characteristics of the slate and, in particular, his observation of cleavage and crenulated cleavage.
192. For example, in relation to the first sample (2610-X/M), he summarised his findings as follows:
“Cleavage developed independent of relict bedding traces

Development of crenulated cleavage

Evidence of chlorite micro-lensing or porphyroblasts

Extremely finely crystalline, mostly phyllosilicates

Evidence of strong foliation and alternating layers of phyllosilicates

Occasional siliceous lenses elongated relative to original bedding

Major minerals probably include illite, muscovite, and chlorite

Reidel type shearing apparent.”

He then classified the sample as slate.

193. The summary of findings in respect of the further samples was similar with cleavage observed in all and the development of crenulated cleavage in many. All were classified as slate.
194. Mr Hunt also set out a number of photographs from the BRE's reports which, he claimed, demonstrated obvious errors in the BRE's identification or description of characteristics of the stone samples examined. They were errors he said which were "relatively obvious to the trained eye".
195. He further opined that the organic material commented on by the BRE was not organic material at all and was an optical effect caused by a combination of various factors. Mr Hunt quoted from the BRE reports a statement that "*Due to the fine grain size the mineralogy was problematic to identify accurately, but consisted principally of quartz, mica and clay minerals, with discrete ore mineral grains visible throughout the sample.*" From that he inferred that the equipment used was not of sufficient quality to look at very fine-grained rocks such as slate and mudstone so that they had had to rely on macroscopic features to classify the stone. He then argued that the use of the insufficient equipment had led the BRE wrongly to identify the presence of organic material – because that would be a reasonable assumption if the material was mudstone. However, he contended that these were in fact dark bands only visible at the very high magnification his equipment provided.
196. In his Rebuttal Report, Mr Hunt also reproduced 12 photographs from the Hydrock reports which he said helped "to demonstrate how widespread and obvious the cleavage versus bedding structure is in the Lantoom stone". He described the main cleavage plane as "sub-parallel to the horizontal" and the sedimentary banding at about 30 degrees to the cleavage plane.
197. In cross-examination, Mr Richardson was taken to both the annotated Hydrock photographs and Mr Hunt's photographs of his microscopical examination.
198. So far as the Hydrock photographs were concerned, it was put to Mr Richardson that relict banding could be seen. He agreed at best that that was possible:

"MS JONES: Now I am going to suggest to you that you can see the relict banding on some but not all of the photographs and we're going to take them in turn and see

what you can see and whether or not you agree with me about what these photographs show.

So first of all, this is the first photograph that we have expanded, there is a crack marked by a black arrow about halfway up the stone on the left-hand side, isn't there?

A. It would appear to be there, yes.

Q. And that would mark what I would describe as a cleavage plane or what you would describe as the bedding plane, wouldn't it?

A. It would.

....

Q: Can we have the photograph for plot 2 -- it's the one immediately to the right -- maximised, please? This is the one that I think you said you could clearly see was a rustic face, yes?

A. Yes, it appears to be a rustic face, yes.

Q. And you see there that the stone face closest to us in the picture is stepped back from the rest of the stone face, do you see that?

A. I do.

Q. Now, Hydrock say that that is because a piece of stone has delaminated?

A. Hmm-hmm.

Q. I'm going to suggest to you that because of the discolouration which means that iron must have got in there so as to cause the reddy orange colour, this must always have been two parallel joint planes, mustn't it, rather than delamination after installation?

A. I would agree with you that it could be two parallel joint planes but it doesn't necessarily mean the delamination hasn't occurred.

I think your description earlier, when you talked about joint planes existing in a rock, which they do, and minerals, iron rich, being able to percolate into the rock, it's quite feasible that a fracture, a joint plane was present, that materials have got down and into but that the stone was actually there in front of it.

Q. If it had moved after installation, you would expect to see some cracking in the mortar, wouldn't you? You would expect to see some indication --

A. Not necessarily, no. Why?

Q. You wouldn't expect to see mortar cracking?

A. No, not necessarily.

...

Q. If we look at the black arrow pointing at the very obvious planes, we have there, whether cleavage or bedding, obvious planes that can't really be missed, don't we?

- A. *We do.*
- Q. *Then in the blown-up picture, if you look at the orange line, it's not the best example, we will come to others, but you start to see lines at a slightly different angle. Can you see that, just above the orange line?*
- A. *Not easily but the resolution of the picture isn't great.*
- Q. *So you're not sure about that one?*
- A. *Again, if you can be more specific about where you're talking -- I can see the orange line.*
- Q. *I'm talking about what appears to be a slight line just above it, running parallel with the orange line?*
- A. *Okay. I can see a colour difference. Whether that's truly a line or just an artefact of the photograph, I couldn't tell you but I think I can see what you're trying to describe but I can just see it as a colour change.*
- Q. *You don't see that as any indication that there would be a bedding plane -- a separate bedding plane?*
- A. *No. No.*
- Q. *Could we please now have the photograph for plot 30, which I think is directly underneath the one we are looking at. I'm just going to open up my hard copy to make sure we have the right one. Yes. That's the right one, thank you.*
- So in that one, first of all, you can see the horizontal planes, can't you? They're pretty clear.*
- A. *They appear to be, yes.*
- Q. *And then if we look at the orange line, can you see that broadly parallel to the orange line, both above and below, there seems to be some other formation in the rock?*
- A. *Yes, again, I can see some colour differentiation which could be.*
- Q. *And that could be leftover sedimentary bedding marking, couldn't it?*
- A. *It could be. I think that the bedding is in the horizontal orientation in this stone.*
- ...”

199. Mr Richardson pointed out that conventional practice was for samples to be visually examined “in hand specimen” and to be able to relate the thin sections examined macroscopically to the large sample. Mr Hunt had not provided that information. Mr Richardson was then taken to the photographs of a number of Mr Hunt’s specimens in various degrees of magnification and this exchange followed:
 “Q: *And if we look at this sample, you see there that what he's been able to see through the microscope is what he is describing as "horizontal cleavage planes". I know you would describe them as "bedding planes" but you see*

the horizontal planes there? And then you see the red line?

A. Hmm-hmm, I do.

Q. The red line is akin to the orange line in the other photographs and can you see that there appear to be lines running parallel to the red line?

A. Again, I can see some colour variation.

Q. And would you agree with me that one potential reason for that could be that these are relict sedimentary bedding planes?

A. One possible explanation could be that but it could be potential cleavage planes.

Q. So those could potentially be two different sets of cleavage planes?

A. It's possible.

Q. With no relict sedimentary bedding planes?

A. No, I think you would have a dominant sedimentary bedding in the sample.

Q. we see at the highest level of magnification, which is the picture at the top of the extract that we have, you see there Mr Hunt's commentary on what he's seen under the microscope and he talks about:

"The wavy nature of the crenulation cleavage..."

Are you able to see what he's talking about?

A. I think I can see what he's talking about, yes.

.....

Q. So, what Mr Hunt is doing as he goes through these samples and you will agree with this, I think, because I'm sure you've read them, he consistently is able to identify a clear cleavage, what he calls a cleavage, isn't he?

A. Yes, certainly a developing cleavage, yes.

Q. And he also identifies relict bedding planes, doesn't he, or what he calls "relict bedding planes"?

A. Yes.

Q. And then he sometimes identifies some additional crenulation cleavage?

A. Yes.

....

MS JONES: If we go on to the next example,

What he says there, he hasn't given us the red line but if you read the first paragraph of his conclusion, he identifies the cleavage as running left-right which I understand to mean the horizontal lines and then says -- identifies there's banding, top left to bottom right --

A. What would be really helpful here is to look at the hand specimen and see an image of the hand specimen because

that would help you put whatever you're seeing here into context. We don't appear to have that.

Q. He will perhaps be asked about it in due course but for now let's focus on what we do have.

If we go to the bottom half of the page, please, again you see there a similar conclusion. So he's identified cleavage separate from the relict bedding and the development of a second crenulation cleavage, do you see that?

A. I do see that, yes.

Q. And he always classifies this as slate which obviously is an area where you disagree?

A. It is, yes.

Q. But I think we've established that you'll agree with me that one explanation of the angle shadings that Mr Hunt is observing could be that they are relict bedding planes?

A. And an alternative explanation could be that the existing bedding is present and that the -- as BRE identified, there is the start and the development of a cleavage and so you can see some of that as well.

So I'm not suggesting there isn't any evidence of a cleavage in there but I'm just saying it can be the other way around, that the bedding exists but the cleavage is not fully developed and is developing. So you can see some evidence of it and that would vary between samples because this is a variable deposit. So in some it might be a little bit stronger than in others.

But, yes, there are various explanations that you can put to it, especially when you're only looking at this tiny window on the sample. What you need to see is the biggest sample to be able to put it all into context."

200. What I take from this evidence is that Mr Richardson was seeking to assist the court as much as he could by acknowledging that the features or characteristics, which Mr Hunt asserted could clearly be seen, were observable. But these features were by no means clear and at best what could be seen was slaty characteristics. Further his reservation was that he would want to see the bigger sample to give context.
201. Ms Jones submitted that, allowing for the fact that Mr Richardson was working from copies of photographs, that was a good indication that Mr Hunt's analysis of what the photographs showed was right. That is not a submission I accept.
202. Drawing the threads together, I do not accept that Mr Hunt's petrographic examination establishes that the Lantoom stone was true slate.
203. Mr Hunt's classification is very much against the weight of the evidence. His report is very much premised on the belief that the stone is slate and it is quite clear that he claims

that the characteristics of slate can be observed in the photographs included in the Hydrock reports and the BRE reports. Despite that assertion and the brief reference in his report to a visual examination, Mr Hunt did not report the outcome of his visual examination or examination “in hand specimen”. As I understand Mr Richardson’s evidence, the benefit of examination in hand specimen is, to put it in layman’s terms, that the bigger picture can be seen. In the publication *Stone Specialist*, Mr Hunt had authored a series of articles entitled “The time of tests”. His introductory article in 2011 expressed reservations about tests as a source of information out of context, adding that his favourite test was a visual examination. Mr Choat submitted that it could be inferred from the omission of any examination or reference to examination in hand specimen by Mr Hunt was explicable only by the fact that it would contradict the opinions Mr Hunt otherwise expressed. Given what Mr Hunt claims to be able to see in the photographs of others that submission goes too far but the omission from Mr Hunt’s report is remarkable and casts doubt on his conclusions.

204. Mr Hunt criticises others for making assumptions about the nature of the stone and then seeing what fits that description but it seems to me that that is exactly what he has done. Mr Richardson’s concession that he thought he could see what Mr Hunt was talking about does not take matters further – the other sources I have referred to all recognised some evidence of cleavage.
205. On balance, I consider that the evidence of the petrographic examination of the stone carried out by others is to be preferred and that the stone could not on this basis be classified as true slate.
206. Further, in terms of the potential performance of the Lantoom stone, rather than what might be expected from a classification, what Mr Richardson emphasised was the presence of fine bedding, highlighted by the presence of opaque minerals, possibly including organic material, and small-scale cross-bedding. The stone showed evidence of splitting along the bedding planes. Although Yennadon stone showed similar bedding planes, the opaque minerals were not observed, so he inferred that these were related to the splitting. All of this supported the view that the stone is mudstone and not slate and is also relevant to its fitness for purpose.

The waste product case

207. At the other extreme, by the time of closing submissions and as a result of the evidence of Mr Hunt, BDW advanced a case which was at the opposite end of the spectrum, namely that the Lantoom stone was no more than a waste product or one with “extremely limited capabilities and use” and did not, therefore, meet the specification or description of “walling stone”.
208. The relevant cross-examination arose out of questioning about the water absorption characteristics of the stone (which I come to below). I quote this in full and in fairness to Mr Hunt.

Q. So despite the article of yours we just looked at, you think the water absorption has little bearing on whether the Lantoom stone is a slate or not?

A. Absolutely. It doesn't have any bearing on the geology

of the material. The water absorption may potentially tell you various things about how the product is performing. So when you cut a material such as slate, you have such a huge range in its variation, in relation to -- the Welsh would reject almost 99% of a material quarried just to get that 1% of roofing slate that they have, which is the highest quality; and we used to have an absorption, a maximum absorption, of about 0.3%.

But everything else which is waste, which is really the type of material that is given way to use for rubble walling, is very much completely out of that quality band. It really is a waste material. At the end of the day, this is a product that comes out of the quarry in small broken blocks, this is why it's a random rubble material. It has very minimal use beyond the greater realm of -- sent around the country and used as a product, because that's how these random rubbles are; that's how these materials behave.

Q. Am I right in saying you just described the Lantoom stone as being equivalent to a waste product?

A. Well, this is basically random rubbles, all the time, are the materials of the quarry which you would normally call as the waste from the main product that's being created.

Q. Yes, Mr Hunt. If I can press you on that point. It's quite important. You referred to the Lantoom stone as a waste product.

A. Well, effectively, when you look at the random rubble, that is nearly always the product that comes out of the quarry or a local quarry; it's not always going to be just a waste product if it's from a quarry where you're not quarrying anything else. Therefore it's not classed as a waste product in that quarry. But that's the sort of grade of material that these materials all over the country, wherever they're used locally, are used for just this small random building stone. This is where the vernacular architecture builds from.

Q. You can see how the quarry might view it differently when they're trying to sell their "waste product", as you call it, but if you're a house builder and you're buying the material, don't you think it's relevant to know that it's a waste product, as you would call it, in the wider marketplace?

A. Well, maybe I'll change my term, then; because --

Q. No, please don't. I'm asking you about --

A. No, because --

Q. -- why you have used Lantoom stone --

A. -- I'm talking about when you're quarrying --

Q. -- referred to Lantoom stone as a waste product?

A. -- wherever you're quarrying, you've got a material

where you might be taking out a high-value material, such as any stone, but there's always a range of materials that come which are used for a whole range of different things, and often what's left, because it's -- you can't cut it into six sides, you can't cut it into sheets big enough for normal use, for all of those purposes, for cladding, flooring, all of these other types of use of stone; so that's what you're left with is are these random rubble blocks. And that -- unless you've got a particular resource to that product, it often will just sit there, but hopefully, if there's local building going on, people will come and use that material.

And it used to be commonly classified really as a waste product because of the quarrying of all these other materials that are there, and this is the stuff that's put to one side. But if you can change it from not being a waste product, the moment you use it then it's not a waste product anymore.

Q. Can we have a look at --

A. It's just it's difficult to use. It's got very restricted use. So really, rather than saying a waste product, I'll say a product with extremely limited capabilities and use. It's very specific to a type of use that's --"

209. I do not accept BDW's high level point that it can be concluded that the Lantoom stone was not fit for purpose from Mr Hunt's description of it as "a waste product". His use of that term was in the context of the quarrying of high quality roofing slate with very low absorption characteristics. The point he was making was that, if that was what you were seeking to obtain from the quarrying operation, the vast majority of what was quarried would then be termed "waste". But, as he said, it depended on what you were quarrying and, if that was what you intended to produce, then it was not waste.
210. The more significant point was that his description of the Lantoom stone as random rubble with "minimal use" or "limited capabilities" – "*used for just this small random building stone. This is where the vernacular architecture builds from*" – and a material that was difficult to use. In other words, this point relates back directly to the case that the Lantoom stone is fit for the purpose of walling stone if it is used in a particular vernacular style of architecture and construction. I consider this case further below.

BDW's case on fitness for purpose

211. Leaving to one side the two ends of the spectrum – that is slate versus waste – I turn to BDW's case on whether the Lantoom stone was fit for the purpose of use as the external leaf of a cavity wall.
212. It is convenient to approach that by reference to some of the matters relied on in BDW's closing submissions (although I address them below in a different order and refer to the other matters relied on elsewhere):

- (i) The 3 types of durability tests on the Lantoom stone which confirmed its inherent weaknesses – wetting/drying tests; freeze/thaw tests; salt crystallisation tests.
- (ii) The 3 characteristics values that confirm its weaknesses and variability – compressive strength, water absorption and porosity.
- (iii) 20-30% of the delivered stone was discarded because of cracks.
- (iv) The poor performance of the Lantoom stone at the development.
- (v) The delivered Lantoom stone was not as safe as persons generally are entitled to expect.

Testing

213. I start with the evidence which BDW says supports its case before turning to Lantoom's response. As indicated by the categorisation of tests above, to some extent the tests are relied upon as relevant to the characteristics of the stone and the argument as to whether or not the stone is slate but those tests are also relevant to the likely performance of the stone in particular in terms of a propensity to split and spall. Other tests are relied on, as Mr Richardson put it, as a proxy for durability. In short, it is BDW's case that the stone has failed at an excessive rate to date and that if it lacked durability that would have been likely to continue unless the stone was replaced.
214. Mr Richardson's first report set out as part of the background that, following reports that the stone was cracking, spalling and falling away, BDW had instructed investigations which included the Hydrock surveys and the BRE had carried out testing of the stone, falling within the category of characterisation tests. His instructions were to analyse the results and comment objectively on the cause of the issues being experienced.
215. Mr Richardson's report set out a table of results from the BRE testing in respect of the Declaration of Performance and as reported in the first BRE report:
- (i) The results from 2014 included (a) open porosity 9.9%; (b) water absorption at atmospheric pressure 2.8%; (c) compressive strength 65Mpa; (d) compressive strength after 56 cycles of freeze/thaw test 62 MPa.
 - (ii) The comparable results from 2017 were (a) open porosity 8%; (b) water absorption at atmospheric pressure 2.1%; (c) compressive strength 81.5 Mpa; (d) compressive strength after 56 cycles of freeze/ thaw test 79 Mpa.
216. Mr Richardson's view was that the table showed that the material tested in 2017 was of generally better quality but expressed reservations about how representative that testing was given the discarding of material in preparation for testing (which implied that only better quality material had been tested) and highlighted that there was significant variation in compressive strength results.
217. Mr Richardson then advised on and commissioned further testing to include petrographic examination, a wetting and drying test, a splitting test and a pull-apart test. He advised that Yennadon stone should be used as a comparator. He said that "The testing

specifically aimed to explore how the Lantoom Stone responded following exposure to water and to some degree sought to replicate the conditions on site but within a laboratory setting so the effect could be measured.”

218. Mr Richardson gave further detail of the testing regime and how it was developed in his Responsive Report to respond to Mr Hunt’s criticisms (which I also address further below). In particular, Mr Hunt appeared to criticise an ad hoc testing regime and one that he saw as intended to prove the cause of the issues on site as being the stone – in other words a biased testing regime. For the reasons Mr Richardson gave, I do not regard that criticism as fair or well-founded. The testing regime was specifically developed, in conjunction with Dr Tim Yates, an acknowledged expert at the BRE, to examine the stone’s characteristics and durability. Other testing (that is testing carried out by others) was relied on in his report and indeed by BDW.
219. Other tests were also carried out or had been carried out for Lantoom and others. They were not part of any testing developed in connection with this dispute but were relied upon by BDW. All of this testing was also supportive of Mr Richardson’s views. It was obviously not directed by him and could not have been carried out to prove his point. Further, as Mr Richardson made clear in his evidence, his views were not based on a single type of test or set of test results but on the story that they told as a whole.

Wetting/drying tests

220. These formed part of the so-called durability tests carried out by the BRE.
221. Initially unused Lantoom stone was tested. Any obviously damaged or split stone was discarded before the specimens were selected. Specimens of Yennadon stone were also tested.
222. 20 cycles of the wetting and drying test were carried out. The testing involved placing the samples in an oven at 50°C for 18 hours, then allowing them to cool for 2 hours at ambient temperature, then submerging them for 4 hours in water also at ambient temperature. Mr Richardson explained in his Responsive Report that this process was slightly amended from that set out in BS EN 14066 (Natural stone test methods. Determination of resistance to ageing by thermal shock). A lower temperature was used (50°C rather than 70°C) which ought, as BDW submitted, to have favoured the stone. The method to determine changes in performance was also changed from flexural strength to a tension test to measure changes in strength along the planes in the stone. It is not suggested that anything turns on this.
223. After 20 cycles, the stone was classified as (i) condition 1: intact – no cracking visible, no opening along lines (eg. of bedding or joints); (ii) condition 2: cracking – visible cracking beginning on one or more layers; (iii) condition 3: cracked – visible open cracks; (iv) condition 4: spalled/split – spalling and fracturing of specimen occurred.
224. 100% of the Yennadon stone was classified as condition 1 compared with 16.7% of the Lantoom stone. 50% of the Lantoom stone was classified as condition 2; 26.7% as condition 3; and 6.7% as condition 4. The BRE noted that the majority of the Lantoom specimens which cracked and spalled started to fail after 1 or 2 cycles which, in Mr

Richardson's opinion, was a very rapid failure indicative of durability issues when used in an external wall where the stone was likely to become wet, if not saturated.

225. Mr Richardson concluded (at paragraph 4.3.25):

“Considering the results obtained from the wetting and drying test, it is apparent that the Lantoom Stone appears to have an inherent weakness making it prone to fracturing and splitting and confirming the suspicions drawn from the petrographic examinations. This mechanism of failure appears to be exacerbated by an exposure of the stone to wetting and drying cycles (not totally dissimilar to those which it would be exposed to on site or in any external setting in Cornwall or elsewhere in the UK).”

226. This last point demonstrates that the tests may mimic the conditions that the stone experiences in use but it seems to me clear that the tests are not, as such, intended to precisely mimic site conditions. They are nonetheless recognised tests for durability – a proxy as Mr Richardson put it – and indicative of the performance of the stone.

227. The wetting/ drying tests were followed by splitting tests and pull-apart tests which were carried out on both “unconditioned” and “conditioned” samples, the latter being ones that had already been through the wetting/drying tests. No particular reliance was placed on these tests by BDW in its closing submissions and I do not set out the evidence in relation to them out further.

228. In 2019, Mr Richardson recommended additional testing on stone taken from properties that that been deconstructed. 60 specimens from 8 different plots (plot nos. 28, 31-33, 41 and 45-47) which had been constructed between June 2013 and early 2015 were tested. The wetting and drying tests showed that on average 60% of the stone was cracked (which I understand to refer to conditions 2 to 4) at the end of 20 cycles.

Freeze/thaw

229. BS EN 12371:2010 (Natural stone test methods – Determination of frost resistance) specifies a method to assess the effect of freeze/ thaw cycles on natural stone, the test comprising cycles of freezing in air and thawing in water.

(i) Clause 7.3.2.2 of the Standard provides:

“Visual inspection

After the freeze-thaw cycles, the specimens are examined on all faces and sides and their behaviour is scored using the following scale:

- | | |
|----------|---|
| <i>0</i> | <i>specimen intact.</i> |
| <i>1</i> | <i>very minor damage (minor rounding of corners and edges) which does not compromise the integrity of the specimen.</i> |
| <i>2</i> | <i>one or several minor cracks ($\leq 0.1\text{mm}$ width) or detachment of small fragments ($\leq 30\text{mm}^2$ per fragment)</i> |
| <i>3</i> | <i>one or several cracks, holes or detachment of fragments larger than those defined for "2" rating, or alteration of material in veins, or the specimen shows important signs of crumble or dissolution.</i> |
| <i>4</i> | <i>specimen with major cracks or broken in two or more disintegrated.”</i> |

(ii) Clause 7.2.3.5 states:

“Deterioration

The test continues until two or more of the specimens are classed as failed using either of the following criteria

- *score of the visual inspection attains 3*
- *decrease of dynamic elastic modulus reached 30%”*

230. It was not BDW’s case that freeze/thaw tests were intended to replicate site conditions but rather that they would expose stones prone to damage. They were once again a proxy for or indicative of durability. This was the answer, in my view, to Mr Crocker’s point that Cornwall rarely has deep frosts, and, in any event, it was Lantoom who had commissioned a number of the freeze/ thaw tests without any apparent reservations as to their utility. In addition this was one of the range of tests suggested by Petrolab to meet their concerns.

231. Mr Choat helpfully drew together the results of the various freeze/ thaw tests as follows:

- (i) In 2014, 10 specimens were selected by Lantoom and tested by the BRE. After 56 cycles, the samples had a mean average strength of 62Mpa in a range of 34-72 Mpa.
- (ii) In 2017, 10 specimens of unused Lantoom stone supplied to the site were tested. After 56 cycles, they had a mean average compressive strength of 79 Mpa in a range of 54.9 to 121.7 Mpa.
- (iii) In 2019, Lantoom commissioned ACS Testing to test 20 specimens. 56 cycles were to be carried out but for 10 of the samples by the time of the 18th cycle the specimens showed full thickness cracks and as a result no compressive strength tests were carried out on them. All the specimens showed full thickness cracks after testing.
- (iv) Between November 2019 and January 2020, Lantoom commissioned RSK Environment Ltd. to carry out further testing. Three of the specimens had reached condition 3 after 6 cycles. Testing was stopped after 25 cycles. Compressive strength tests were not carried out.

232. All these tests, and particularly the later tests, were indicative of a lack of durability.

Salt crystallisation

233. Salt crystallisation tests were carried out on 6 specimens of Lantoom stone by ACS in March 2015. The tests were commissioned by the John Grimes Partnership and formed part of a report prepared for Yennadon by the John Grimes Partnership in the context of proposals to expand the areas of operation of the Yennadon Quarry.

234. I note that at paragraph 2.1.4 of that report, it was commented that: *“The term “slate” is loosely applied throughout the southwest to the more or less fissile mudstone or siltstone (which have undergone more or less various grades of metamorphism)”*. That is, of course, consistent with the conclusion I have reached. John Grimes identified the

formation of the Lantoom Quarry as a dark grey silty mudstone. Testing was carried out to compare stone from the Yennadon and Lantoom quarries to consider whether the Lantoom stone was a possible alternative source of stone for building and walling.

235. The test certificate recorded that: (i) the tests on the Lantoom stone were stopped after 12 cycles instead of the required 15 cycles because the samples were extensively disintegrated; and (ii) the Lantoom stone lost a mean average of 44.2% of its mass over 12 cycles with a range between 26.5% and 62.2%.
236. It was put to Mr Richardson – and he agreed - that no published material or British Standard put forward salt crystallisation tests to identify slate or in connection with slate and that the reason was that they did not represent reality. His answer was again that the tests were a proxy for durability. They had been used for limestone and sandstone and become common as a general proxy. He was at pains to point out that that did not mean that the test was related to the mechanism of failure but was a more general indicator of durability, albeit not one to be relied on in isolation. That seems to me to have been a fair and realistic approach and militates in favour of considering these test results as part of the overall picture of the stone. It is also relevant to my mind that this was not a test that Mr Richardson advised should be carried out and his reliance on the results was entirely in accordance with that approach.
237. I address further below Mr Hunt’s position in relation to salt crystallisation testing but as I have already noted, Mr Hunt chose in his reports to make no reference at all the ACS and RSK tests. He had no sensible explanation for that omission and it is another factor that casts doubt on his consideration of the evidence and his opinions.

Water absorption testing

238. A key point for Mr Richardson in terms of the suitability of the stone for building was properties like water absorption which is also relevant to the type of stone. As he put it in his report (at paragraph 3.5.19):

“There may be detailed discussion offered about the visible texture that suggest higher or lower levels of metamorphism that may have impacted upon this stone and thereby should be reflected in the name of the stone. It may also be suggested that the stone has “slatey” characteristics. However, it is fundamental and basic characteristics of properties like water absorption that dictate its properties as a dimension or building stone and these confirm, as did the petrographic examination of the material supplied to the Development, that the stone was a mudstone.”

239. The emphasis in BDW’s case on these tests arose from the relevance of water absorption to the classification of the stone as slate.
240. Lantoom itself pleaded that slates are expected to exhibit low permeability characteristics and Mr Huband’s evidence in this report was that slates have low water absorption and are therefore unlikely to suffer significant movement as a result of wetting and drying.
241. There is no British Standard for water absorption for slate. Mr Richardson noted that historically true slate was used for roofing purposes and that the standard, BS680 (Specification for Roofing Slates), which is now withdrawn, gave a maximum water

absorption value of 0.3%. In the e-mail to Mr Crocker, explaining the BRE's classification of the Lantoom stone as mudstone, Mr Ashall made the same point and said that the new standard EN12326 required a water absorption of less than 0.6%.

242. There is a published American Standard, ASTM C629, which “*covers the material characteristics, physical requirements, and sampling appropriate to the selection of slate for general building and structural purposes*” (Clause 1.1). At clause 1.2 it provides that dimension slate includes cut stone. Roofing slate is specifically excluded. The maximum water absorption value is given as 0.25%.

243. Responding to Mr Richardson's evidence on this standard, Mr Hunt in his Rebuttal Report at paragraph 10.4.1.16 said this:

“Another point that needs to be made concerns the use of ASTM C629 by the Claimant's stone expert to imply that the Lantoom Stone is not slate due to the water absorption figure stated in the Standard. This needs to be put into context as the American Standard is for dimension stone and specifically for cladding purposes where exceptionally high standards are required, and there is no way Lantoom stone would ever be put to such use. It is a rubble stone principally used for building walls. I would point out that most British slates would not meet the ASTM requirements.... The Claimant's stone expert has presented a skewed argument in this particular instance.”

244. In a footnote, he adds that dimension stone is natural stone that has been cut on all sides to achieve a specific size and shape and that the most common use of dimension stone is as external claddings to buildings.

245. This is another confusing aspect of Mr Hunt's evidence. The American Standard is expressly concerned with cut stone which the stone supplied is - if the distinction is simply between cut stone and stone cut to particular dimensions that cannot be relevant to water absorption. Further, although Lantoom does not rely on the distinction, Mr Crocker was at pains to point out that he always referred to the Lantoom stone as being supplied to BDW for external wall cladding.

246. It is unclear to me whether Mr Hunt accepts that “slate” is expected to have low water absorption characteristics irrespective of any standard. His comment that most British slates would not meet the American Standard appears to reflect the looser use of the term slate to refer to stones that would not be classified as true slate but have slaty characteristics and are commonly or locally referred to as slate. But that does not assist with any view of what water absorption a “slate” might be expected to exhibit.

247. Accepting that low water absorption is a characteristic of true slate, it seems to me that the precise maximum figure (if indeed there is one) does not matter. So far as the water absorption tests that were carried out are concerned, the results can be summarised as follows:

- (i) 6 specimens of Lantoom stone were tested by the BRE in 2014 and the mean average for water absorption was 2.82% with a range of 2.3 to 3.4%.
- (ii) 6 specimens – unused but from the site were tested by the BRE in 2017 and the mean average was 2.1% with a range of 1.0 to 3.1%.

- (iii) 36 specimens used on site were tested in 2019-2020 and gave mean averages of 3.5%, 2%, 3.2%, 3.9%, 3.8% and 3% (in various testing batches).
 - (iv) 6 specimens of Lantoom stone were supplied to ACS by Yennadon for the testing in 2015 and gave a mean average of 6.7% (and a range of 2.6 to 9.9%).
248. On any view, these percentages of water absorption are significantly higher than would be expected of true slate and I accept Mr Richardson's evidence that this level of water absorption is a clear indicator that the stone is not properly to be classified as true slate.
249. However, the water absorption characteristics of the stone are also relevant to its durability not least because of its performance in wetting and drying tests.

Porosity

250. I shall deal briefly with the open porosity tests. These were carried out on the same specimens referred to above and, in summary, produced mean averages between 9% and 11.5%. In addition:
- (i) Tests were carried out in 2017 on 6 samples provided by Lantoom to the BRE. The mean average was 9.3%.
 - (ii) In 2018, ACS tested 6 samples for Lantoom and the mean average was 13%.
251. Mr Richardson principally regarded these test results as evidencing the variability of the stone. The variability of the stone is relevant to why a proportion of the stone only has suffered cracking and delamination and goes some way to explaining why stone from the Lantoom quarry has been used locally without such failures.

Compressive strength

252. Numerous tests for compressive strength have been carried out on Lantoom stone but I do not regard them as having provided particularly relevant evidence on the quality of the stone with which I am concerned in this case.
253. In summary the test results were as follows:
- (i) The BRE tested 10 specimens in 2014, giving a mean average of 65 Mpa and a range of 27-89 Mpa.
 - (ii) In 2017, the BRE tested 10 specimens of Lantoom stone, with a mean average of 81.5 MPa and a ranged of 43.6 to 113.9 Mpa.
 - (iii) 10 specimens of Lantoom stone were tested by ACS in 2015 in the context of the John Grimes Partnership report for Yennadon. The mean average was 22 Mpa and the range 12-32 Mpa.

- (iv) In 2019-2020, the BRE tested 60 specimens of stone used in the development from 8 plots (nos. 28, 31-33, 41 and 45-47). The mean averages themselves varied between 44 and 64 MPa.
 - (v) In 2018, ACS tested 10 specimens for Lantoom. These specimens had a mean average of 17 to 23 Mpa.
 - (vi) In the course of 2019, ACS tested further specimens for Lantoom: (a) in early 2019 a further 10 specimens for Lantoom with a range of 46.4 to 106.6 Mpa; (b) in March 2019, 10 specimens with a range of 46.5 to 94.8 Mpa; (c) in July 2019, 10 specimens with a range of 37.4 to 66.1 Mpa; (d) in August 2019, 10 specimens with a range of 35.4 to 59.9 Mpa; (e) in October 2019, 10 specimens with a mean average of 63 Mpa and a range of 59-92 Mpa.
 - (vii) 11 specimens were tested for Lantoom by RSK in November 2019, giving a mean average of 62 Mpa and a range of 14-95 Mpa.
254. In closing submissions, BDW submitted that it was Mr Richardson's opinion that the results of the compressive strength tests corroborated the "inherent weaknesses" of the Lantoom stone and demonstrated its variability. Having reviewed the passages of Mr Richardson's reports relied upon, in my view, Mr Richardson's principal point is that relating to variability and that was similarly his main point when cross-examined on this topic.
255. Although the tests may be relevant to the broad issue of the durability of the stone, no particular relationship is identified between the compressive strength tests and the performance of the Lantoom stone in this development and the test results do not assist me in my conclusions on the issues in this case, other than in terms of its variability.

Lantoom's case on testing

256. So far as the various test results are concerned, Lantoom's position is that the key, or at least a key, difference between the parties is the reliance that can be placed on the testing. That is because Lantoom sees the test results as central to Mr Richardson's conclusions. Lantoom's position is that the test results do not advance matters or at least not in BDW's favour.
257. As I have said above, Lantoom's first line of attack was on the testing regime generally.
258. In closing submissions, Ms Jones set out Mr Hunt's position helpfully summarising it from different sections of this report. He first identified the inherent difficulties with testing of materials which are variable in their properties and the risk of bias in sample selection. In his opinion the testing of slate is particularly difficult due to the presence of cleavage which causes samples to split. He postulated that the splitting observed may be explained by the fact that the stone had been misidentified as mudstone such that splitting was not expected as it would have been if the stone were properly regarded as slate. The fact that the converse would also be true was not apparent to him. He then made multiple criticisms of the investigative work carried out by Hydrock; identified testing of structures which could be carried out; and criticised an ad hoc testing regime with no established pass/fail criteria. Finally, he identified "What should have been

carried out?” namely a research programme assessing different sections of wall with different mortar types and other variations. The forceful nature of the manner in which Mr Hunt expressed his opinions is shown in the paragraphs that follow:

“5.2.4.2 More and more variations could be introduced, and suddenly the extent of the problem facing the Claimant and their experts is all too clear: how can you prove without doubt what has gone wrong with the masonry walls at the Site? This is without having introduced variables such as different types and spacing of wall ties and insulation and cavity size.

5.2.4.3 This is why the obvious alternative to undertaking this process of research is assessing what has already been carried out elsewhere and how did it perform. This is why I have spent time looking at the local vernacular architecture along with more recent constructions and sought to understand what has or has not worked. This is why the British Standards recommend such a course of action be taken when entering into situations where there may be minimal or inappropriate advice within the Standard to follow for a very particular situation. This is why the Claimant was in my opinion so wrong to not undertake any such investigation into local vernacular practices. This is why the Claimant was so wrong in my opinion not to carry out trial mortar mixes and assess their appropriateness for use with the local stone.”

259. These passages reflect Mr Hunt’s general approach to testing, which became very clear during his cross-examination, and which was to reject all relevance because it did not reflect real life conditions. The only tests which he would have considered relevant were tests on sections reflecting variables in construction. His conclusions as to what the claimant ought to have done were directed at the claimant’s design and not the testing regime.
260. I infer that it was these views, in any event, that led him to ignore many of the tests that had been carried out both for by BDW and for others including Lantoom, even when the results of those tests had been relied upon by BDW’s expert. In his reports he gave no explanation for these omissions. Nor could it be discerned from the Joint Statement. His explanation emerged in cross-examination and it was essentially that each of the types of test carried out was either inappropriate for the material (because he had characterised it as slate) or that it did not represent real life conditions. It seemed to me that his view was that only tests which reconstructed real life conditions would be of evidential value and that no inferences could be drawn from the tests carried out.
261. That was so even though the tests were established industry tests, some had been carried out on behalf of Lantoom whether as part of their own quality control processes or otherwise, and the purpose of some of the tests was to simulate and/or accelerate the effect of conditions to which the stone would be exposed over its lifetime or to act as a proxy for durability, such that inferences could properly be drawn from the tests as to how the stone would perform over its lifetime.
262. Having dismissed the tests as of no evidential value, Mr Hunt turned instead to the available evidence of how the stone does perform over a lifetime relying on the fact that this type of stone has been used as a building material locally for many years. His report contained a section headed “Local Vernacular Construction” which listed and contained photographs of numerous buildings (including Barn Street, Liskeard) using “slatestone”

– which may or may not have been from the Lantoom quarry. This section of his report concluded:

“5.3.1.8 Lantoom Stone is a material of limited properties and range, as is typical of so many local stones used for vernacular work. The stone never stood a chance when it was placed into an inappropriate design with sub-standard mortar and numerous other construction issues exacerbating the situation. ...

5.3.1.12 The fundamental point is that the Lantoom stone is of a very particular quality that needs to be recognised and dealt with accordingly. ...”

263. The following section of his report was headed “Review of More Recent Construction”. Mr Hunt introduced this section by stating that he had visited 23 sites where Lantoom stone was used, some of them more than once, to look at how it had been installed, the apparent design, any obvious issues with design and installation, and how it had performed. He provided photographs with commentary. Despite the introduction to this section, the commentary did not identify any relevant design. It also did not grapple with the manner in which the stone had been used in construction in this case and it added, frankly, little in the way of expertise.
264. As I have said before, Mr Hunt was immensely critical of the approach of the claimant and its experts. As he saw it they had decided there was a problem and then focussed on carrying out tests to prove that there was a problem rather than embarking on a broader consideration of what was going on on site.
265. As Mr Choat pointed out, it was difficult to know the scope of Mr Hunt’s instructions as they were not disclosed in his reports (in breach of the CPR). However, I was left with the impression from his oral evidence, and consistently with the written evidence set out above, that nothing less than a full research project would have satisfied Mr Hunt. That is unrealistic and, in my judgment, there can be no criticism of the claimant’s experts for commissioning and relying on standard types of tests – and indeed ones that Mr Hunt had opined on the utility of in published articles that were put to him in cross-examination – to investigate the durability of the stone.
266. There are two further aspects of Mr Hunt’s evidence which merit general comment and which reflect poorly on his evidence.
267. His report contained a section which addressed his issues with testing in which he started by asserting that the testing carried out by BDW and its experts was “wholly inappropriate”. He pointed to the tendency of slate to split on testing and relied on the absence of performance standards in any British or European standard for random rubble. He also made criticisms of the manner in which samples had been collected for testing – with a photograph of a wall being dismantled for test samples, he asserted that the stones had been thrown on to one another casting doubts on any subsequent testing. He further referred to the fact that the 2017 samples had been on site for a further 8 months potentially being saturated and exposed to nine frost events. Nonetheless, by 2017 (although the report mistakenly referred to samples collected in 2018), he concluded (at paragraph 8.3.1.9) that:

“There is more than enough evidence provided of a satisfactory performance exhibited by the Lantoom Stone in consideration of the results of a number of tests that have been

carried out. Most importantly those tests carried out during the actual supply of the Lantoom Stone to the site demonstrated suitable performance according to the Claimant's experts own criteria. It is my considered opinion that the findings of various tests have apparently not been given equal weight by the Claimant and their experts when formulating their Claim,"

268. Mr Hunt set out the same table as in Mr Richardson's report which I have referred to above that compared the BRE results in 2014 (for the CE marking) and in 2017. He concluded that the comparison showed little difference and that that ought to have been an end to the matter but that further testing had then been carried out to produce failures in the Lantoom stone. It is difficult to understand why Mr Hunt considered these tests should have been an end to the matter. The 2014 tests were part of those carried out for the purposes of the Declaration of Performance in relation to which the BRE concluded that the stone was mudstone not slate. The 2017 tests indicated better quality stone but also the likely variability of the stone. In any case, there is again an inherent inconsistency between Mr Hunt's reliance on test results when he perceives them to assist him and his rejection of them when he does not.
269. Secondly, part of his explanation for making no reference, in the first instance, to the tests that had been carried out was that some of the tests were irrelevant because they were tests on stone quarried after the period when stone was supplied to BDW and did not, therefore, provide relevant information in respect of what was supplied to site (between February 2012 and June 2015). There was then an inherent contradiction in his approach because he also relied on the performance over time of Lantoom stone in other properties.
270. To the extent that the test results are taken into consideration, it is argued by Lantoom that they evidence variability of the stone, and that, says Mr Hunt, is a characteristic of slate. Further the tests show the stone performing in the same or similar manner to slate.
271. The wetting drying tests: Mr Hunt did not deal expressly with the relevance of these tests in his report. When he was cross-examined, he was asked whether he rejected these test results out of hand. His response was an exposition of his concerns about ad hoc testing. In answer to subsequent questions, he referred to the issues raised in his report about the gathering of the test samples and paid no attention to the evidence that the BRE had checked samples for damage before testing. Nothing in this evidence diminished the potential relevance of wetting drying tests as an indicator of durability.
272. In submissions, Ms Jones instead relied principally on the fact that the wetting drying tests would, as she put it, emphasise the cleavage planes in slate, as Mr Richardson had accepted. The exchange with Mr Richardson was this:

"Q: And to go back to the point I made in relation to the salt crystallisation test, one of the difficulties with doing this test on a material with planes is that, again, the water will go into the planes and it is a test that, in effect, is likely to provoke a quick failure in the material with planes, isn't it?"

A: If the test were to provoke that response, then the likelihood is that's what's going to happen in service as well. So the inherent planes of weakness within a stone are likely

to be a problem. The testing will potentially highlight if those planes of weakness are truly planes of weakness, then, yes, that will happen.”

273. Mr Richardson’s evidence was not, therefore, and as might be suggested, that the wetting/drying tests somehow exaggerated the weakness of the stone but rather that it would identify the weakness created by planes of inherent weakness – not necessarily cleavage planes. The reference to cleavage planes is, however, relevant to the case Lantoom and Mr Hunt advance that this sort of test exposes the very characteristics of slate.
274. In respect of the freeze/thaw tests, Lantoom similarly submits that these expose and exploit the cleavage planes and Mr Richardson gave a similar response about the tests exposing inherent planes of weakness. But it was also argued, and was indeed Mr Crocker’s position, that there is no particular expectation of comparable freezing conditions (or deep frosts) in the Looe area.
275. There is again some inconsistency in Lantoom’s case. Firstly, Mr Hunt in his report (at paragraph 8.3.1.8) sought to cast doubt on the relevance of the BRE’s testing on stone not used in construction but taken from the site in 2018 (although this seems to have been an error for 2017). He said this:

“However, what is important is that this material had been sitting on Site for around eight months, potentially remaining saturated and subjected to potentially nine frost events whilst saturated, something that is a serious problem for most natural stone materials. The nine frost events is extrapolated from local weather data during that time frame I have consulted. There is no evidence that this Lantoom stone was protected from frost and it would be expected that this material would suffer like so many other walling stones would if left in such a condition for so long a time.”

Although that opinion is expressed in relation to stone not yet incorporated into any structure, and therefore more prone to saturation, it is quite inconsistent with the view that the freeze/thaw tests are of no relevance.

276. Secondly, Mr Huband’s evidence (in his Report at paragraph 8.16) was this:

“Because of the way the Lantoom stone was formed ..., it is jointed in the vertical plane and will naturally crack or split along these pre-existing planes. If the face of the stone containing such planes is exposed to the weather water will penetrate these planes and natural freeze/thaw effects will tend to split the stone. It is important therefore to protect the stone from these effects.”

277. Both these matters support the position that there is relevance in the freeze/thaw tests as evidencing the extent and likely impact of the planes of weakness in the stone.
278. In his report (at paragraph 5.3.8.1), Mr Hunt described salt crystallisation tests as “one of the most controversial tests carried out over the years”. He gave little further explanation for why the tests were controversial.
279. Mr Hunt explained that the test had been developed by the BRE and:

“Whilst it is not a direct measure of frost resistance, it does probe potential weaknesses and helps to highlight them. What the results of this test do is demonstrate that even apparent abject failure in a test when material falls apart very rapidly does not necessarily preclude that material from potential use.”

He repeated that stone test results are a guide and should not be used in isolation.

280. In cross-examination, his evidence was that the test was not suitable for use on slate because it exploited the fissile nature of the material and *“the expansion from that big hydration reaction pops the slate”*. In his series of articles “The time of tests” he had said of the salt crystallisation test that it was an aggressive test and *“... any stone that gets through it without suffering any significant changes should offer good resistance to salt weathering effects This is an extremely useful test but one the results of which must be interpreted with extreme caution.”* Taking these matters together, Mr Hunt’s view about the controversial nature of the test seemed to be founded on his view that it was inappropriate for slate and that the test results should not be relied upon in isolation.

281. The issues, to put it more neutrally, with salt crystallisation tests were explored in the cross-examination of Mr Richardson. As put to him and/or accepted by him, the nature of the test involved immersing the specimens in a salt solution – on drying the salt crystals would expand and it was the stone’s reaction to these expansive forces that was measured by reference to loss of weight. The weight loss indicated that the stone had lost integrity and bits of the stone. This was not a real life condition but the test was, to use the expression Mr Richardson used repeatedly, a proxy for durability:

“It’s not that anybody in this particular instance is saying that it’s going to be exposed specifically to those salts but what you can normally take from it is that if the stone performs well in it, it has a very good chance of being durable. If it performs badly in it, then you would want to try and understand further why it might be performing badly.”

282. Then this:

“Q: ... So you had agreed with me that the damage mechanism by this test is expansion from the inside?”

A: Yes, it has to be.

Q: And it follows, does it not, that that mechanism will be more pronounced if you are using a stone with a cleavage plane because there are planes in the stone that will obviously let in the salt solution, would you agree with that?”

A: Yes, as I said before, any stone that contains any form of potentially inherent weakness in it will have those explained by the salts.

Q: And the presence of the cleavage planes explains, doesn’t it, why this test has not historically been used for slate?”

A: The presence of bedding and potential cleavage in some stones may give you a reason for how a stone will perform in that test”

283. In his report (paragraph 5.3.5), Mr Hunt appeared to take the view that water absorption tests were wholly irrelevant and to take a similar view of the porosity tests. In relation to water absorption, he said that the water absorption value was all about where water is able to get to within a natural stone material when it is fully immersed in water but that that told you nothing about how it gets there or about the size, shape and distribution of

pores, voids and other types of space that might be present. In his usual dismissive manner he then criticised the claimant and its experts for missing the opportunity to provide “a proper analysis of the space characteristics of the Lantoom Stone” which he said was unfortunate as it might have been a more useful prediction of potential performance. He had not, of course, provided such an analysis himself.

284. Further, despite his dismissal of the relevance of these tests, his own article “The time of tests: Absorption” (written in June 2011), he described this as one of the simplest and most versatile tests available. The article continued:

“In stones with low absorptions the test values tend not to vary much, but as the values increase so does the variation – because features forming the void spaces introduce greater natural variation.

...

The results can be applied to all stones to provides a simple measure of quality when comparing similar stones. The test may also be used as an indicator of potential durability, especially to spot variations within a given stone.

...”

285. So far as the compressive strength tests are concerned, there was no issue that the walls themselves did not achieve the compressive strength specified by the NHBC and I have already said that I do not find the compressive strength tests of much assistance other than as evidence of the variability of the stone.

Discussion and conclusions on test results

286. Drawing the threads together, the main thrust of much of Mr Hunt’s evidence in relation to the tests and the questioning of Mr Richardson was directed towards the thesis that, if the stone was slate, it would tend to crack along cleavage planes and the nature of the testing (particularly the wetting/drying tests, freeze/ thaw tests and salt crystallisation tests) exploited or exposed those very cleavage planes. Therefore, it was said, it is unfair or irrelevant to criticise the Lantoom stone for exhibiting the same characteristics as slate – which is what BDW says it wanted and, on its case, contracted for.
287. There is some attraction in that argument but it seems to me to downplay – and wrongly to downplay – the relevance of the test results. The point that Mr Richardson made repeatedly and validly was that the tests would expose any inherent plane of weakness and, therefore, formed part of the evidence of the durability of the Lantoom stone. The tests neither established that the stone was “true slate” nor how a true slate would perform. If the stone was not a true slate, as I have found, then the tests were still indicative of the weaknesses in the stone. Further no test was looked at in isolation and any assessment of the quality of the stone involved consideration of the whole of the evidence. It is notable that Mr Hunt’s report, and Lantoom’s submissions, concentrated on the test results which were said to be most influenced by the presence of cleavage (as one would expect in slate) and where it seems Mr Hunt considered there was the most to criticise – as for example the salt crystallisation tests which were not themselves part of Mr Richardson and the BRE’s testing regime. At the same time, little was said about the tests for water absorption and porosity despite these characteristic being prominent both in Mr Richardson’s view of the stone as not being slate and in his views as to durability.

288. Summarising his assessment of the properties of the Lantoom stone, Mr Richardson says in section 4.10 of his Report, that the relevant qualities of stone that make it suitable for use in wall construction are (a) durability and (b) resistance to cracking, spalling and falling away. In his opinion the Lantoom stone did not meet those requirements. That opinion is based on the issues observed with the stone on the Site and on other sites combined with the test data.
289. In particular, in his report, addressing what caused the stone supplied to “fail”, Mr Richardson makes the point that a material advertised as “slate” would be expected to have low water absorption characteristics. More importantly, as he says (at paragraph 6.1.4): *“Those properties typically impart the durability qualities so important for use externally as walling where the stone is typically exposed to cycles of wetting and drying and often freezing and thawing.”*
290. He continues:
- “6.1.5 When the Lantoom stone remains dry there appears to be little evidence of it cracking and falling apart, although there is still evidence that simply transporting the stone can lead to significant quantities of some deliveries failing and resulting levels of wastage in the region of 25% or more.*
- 6.1.6 Laboratory testing and the simple wetting and drying test has mimicked the mode of failure seen in the installed Lantoom Stone at the Development. Laboratory samples would be independent of the impact of mortar or other possible construction related defects that may be suggested, yet the material still fails. The material still fails in testing irrespective of whether it has been previously used for the construction of properties or not. The stone supplied by Lantoom to BDW between 2012 and 2015 is fundamentally a poor-quality material.*
- 6.1.7 It is possible, based on available test data, that freezing and thawing cycles (should they occur at the site) could also contribute to the failure of the Lantoom Stone observed. Testing has shown that the Lantoom Stone can fail the freezing and thawing test.”*
291. This is a measured approach to the test results. It does not overstate their significance but relates the performance in testing to the reported performance on site and strongly supports the view that the performance on site is a product of the stone’s water absorption characteristics coupled with or related to its performance when subjected to wetting and drying.
292. Contrary to Lantoom’s submission, I do not consider the results of testing to be the key issue between the parties but rather part of the overall picture. The tests do provide strong evidence of the lack of durability of the stone supplied and Lantoom’s case fails to grapple with the weight of evidence from the test results as a whole and rather seeks to minimise the relevance of individual tests.
293. The test results also provided a comparison with the Yennadon stone which BDW had previously used and which was used for remedial works. The BRE reports and Mr Richardson’s report, therefore, set out the performance of Yennadon stone under the same testing regime. In the case of the water absorption tests, they remained wholly intact. In the case of the splitting tests and pull apart tests, the Yennadon stone appeared significantly stronger.

294. Lantoom has submitted “much of BDW’s case” is based around a comparison between Lantoom and Yennadon stone – the Yennadon stone is described as “a totally different stone” which is a mudstone on BDW’s case and which Yennadon classes as a hornfels. It is, therefore, submitted that since the stones are different with different physical characteristics there is no justification for expecting them to behave in the same way (on testing or otherwise).
295. Although this is apparently Lantoom’s perception of BDW’s case, it is not my understanding that a comparison with Yennadon stone is any significant part of BDW’s case. It is, of course, right that both stones have been tested and comparison made. Indeed, in one instance – that of the misidentified photograph - the Yennadon stone was the poorer of the two. But BDW’s case is not that Lantoom stone was not of the quality of Yennadon stone and the tests were intended to, and do, demonstrate a lack of durability of the Lantoom stone. Once again there is also a contradiction in Lantoom’s case. As I have considered above, Lantoom’s case on this particular test – salt crystallisation – is that it is particularly unsuitable or uninformative for slate as it exploits and exposes the cleavage planes in slate. Yet Lantoom’s case is also that the stones are very different and that the Lantoom and Yennadon stones are very different and that the Yennadon stone does not have the same physical properties, such as cleavages, as the Lantoom stone.
296. In conclusion, I reject Mr Hunt’s wholesale criticism of the testing carried out on the Lantoom stone and his general dismissal of the relevance of the test results. I prefer Mr Richardson’s views as to what can be taken from the test results in respect of what BDW termed the inherent weaknesses of the stone.

Cracking and discarded stone

297. There was a body of evidence that between 5% and 10% of stone delivered to site could be expected to be discarded as cracked or otherwise damaged. Mr Bright’s evidence was that between 5 and 10% was the “industry standard”. Mr Richardson took a similar view and Mr Wallace said that he would expect up to 10% wastage of the Yennadon stone.
298. A total of 786.75 tonnes of Lantoom stone was delivered to site. Mr Huband’s report indicated that he has calculated that 250 tonnes of stone was delivered to site over and above that used in construction. He said that he could see no reason for the apparent disappearance of 250 tonnes of stone. BDW calculated that that equates to 31.8% of the delivered stone. In his second statement, Mr Mountstevens provided a calculation based on square meterage and which gave a wastage of 25.7% of the stone supplied.
299. Mr Choat submitted – and it is a submission I accept - that the explanation for the wastage was to be found in the witness evidence. Mr Havenhand’s evidence was that “a significant amount of stone was piled up by the bricklayers who said it was unusable”. Mr Kent, gave evidence that KCC discarded “an awful lot of stone” which he estimated at 20-30%. That was an estimate given before Mr Huband’s report or Mr Mountstevens’ statement. He explained that:
“The initial sorting methods would usually filter out any cracked stone. However it was not uncommon for us to come across stones that were starting to crack when we began to lay them or for a stone to crack when we tapped it into the line. These stones were also discarded.”

300. Mr Choat also submitted that this high percentage of discarded stone in itself demonstrated that the stone was not fit for purpose or of satisfactory quality. The fact that there was a comparatively high percentage of stone rejected before installation does not, however, in itself demonstrate that the stone was not fit for purpose – only that the discarded quantity was not and since it was not used the consequent claim for damages could only be for the wasted cost and no such claim is made.
301. The evidence is, however, of some relevance as part of the overall picture in so far as it is indicative of a poor quality material supplied and of a tendency of the stone to crack.

The performance of the stone on the Site

302. The first reported incidence of issues with the stone as used in construction appears to have come in the spring of 2014 from Mr Glass, the owner and occupier of Plot 37, which had been purchased only a few months earlier. In an e-mail to Ms Smallwood dated 11 August 2016 setting out the history of the matter, Mr Glass said that in the spring of 2014 he had noticed lumps of mortar and “Cornish stone splinters” appearing around the front of the house and particularly on the flat roof above the lounge bay window. By the summer of 2014 there was an increase in the “deposits”.
303. In July 2015, Hydrock, consulting engineers, who had designed the foundation and retaining walls but not the superstructures, were asked to visit Plot 96 where cracking to the external leaf had occurred. They reported, in particular, two cracks at high level and recommended the addition of movement joints.
304. In September 2015, the owners of Plot 97, Mr and Mrs Richardson updated their list of remedial/snagging works. They reported holes in the mortar. They also reported that there was a significant crack running diagonally across the front elevation of the house and that:
“Since the house was pressure washed today we have observed that several of the stones on the side of the window frames have been broken. Large chunks of stone have fallen off and some remain badly cracked which look as though they will break away soon.”
- The annotations on this document, which were unattributed, indicate that BDW initially thought these were issues for KCC rather than jumping to the conclusion that there was any issue with the stone itself. Hydrock was again instructed to report.
305. In February 2016, BDW agreed to replace “defective stone and mortar” at plots 96 and 97, although I note from the various e-mail exchanges at the time that the issue at plot 96 was with water ingress rather than further cracking. Such evidence as there was relating to this period was given by Ms Smallwood whose evidence was that she was not aware of the specific problems with the stone.
306. On 15 April 2016, Mr Crocker was asked to provide evidence that the Lantoom stone was suitable for use as a walling stone in a residential situation, in the light of remedial works on plots 96 and 97 during which the stone appeared to be crumbling on removal. In responding, Mr Crocker provided the Declaration of Performance and the BRE report of 2014. He was then invited to attend the Site. His own notes of that visit describe the issue as being with properties completed in mid-2015 and as fissures in the stone, and he recorded that there was *“clearly a problem with the stone but also the mortar cracking means Lantoom not entirely at fault.”* Lantoom offered to supply 20t of stone for

remedial works free of charge. That was done but it was rejected for use by BDW apparently on the basis that it did not match and was of poor quality.

307. Mr Davies' evidence was that in March 2016, Hydrock had been further instructed to report on Plots 94 and 95 again because of reports of cracking. A report was produced in June 2016 and recorded cracking (at ground floor level) similar to that at Plots 96 and 97.

308. As mentioned above, in August 2016, the owner of Plot 37 reported the issues with the stone at his property. A further report from Hydrock was commissioned. Ms Smallwood's evidence was that from around June 2016, similar reports were received in relation to Plot 36. Hydrock's reports in respect of both properties were issued in September 2016:

(i) The report on Plot 36 was a wider-ranging structural report but identified cracking to external walls as a defect and recommended the taking down and reconstruction of the masonry walls. On the external front elevation which was wholly in stone, Hydrock observed widespread cracking mostly in the mortar bed but several stones had also cracked or lost a section. In section 4.2 (Walls), the said:

“4.2.1 Cracking within the stone masonry

The stone masonry exhibits widespread cracking, primarily in the mortar and occasionally within the stones. The mortar is friable and easily removed with a fingernail or a key. Sampling and testing work has categorised the mortar on this site as class M4. Whilst this is acceptable from a design point of view, the mortar is clearly underperforming and defective. The cracking appears to be symptomatic of a progressive failure mechanism, which could lead to instability and stonework loss. The stone masonry is unfit for purpose and remedial action is required.

4.2.2 Stone deterioration

The stone units within the masonry are of mixed condition. The majority of the stones display few signs of significant distress/ weathering/ deterioration. However, many of the stone quoins have split, spalled or fallen away. The cracked quoins will likely permit water ingress into the centre of the stone which will lead to further deterioration over time. ...”

(ii) The report on Plot 37 was in similar terms.

309. On the basis of these reports, there was no assumption on the part of Hydrock that the issue was with the stone and the emphasis was rather on cracking in the mortar. However, Ms Smallwood's evidence was that the repeated references to cracking and splitting of the stone and the recommendation to replace the stonework caused BDW to think that the issue was with the stone itself. Mr Davies' evidence was that BDW considered that it would be necessary to examine the stone and mortar issues further because, even if the mortar was weak, that did not explain stone cracking and falling away. Mr Davies further said that because M4 mortar had been used elsewhere with Yennadon stone without any issue, it was becoming clear to BDW that the issue was with the stone.

310. That led to the investigations starting with the testing by the BRE which are relied upon in this litigation. In June 2017, and following the first BRE report, Ms Smallwood informed all owners that the stonework would be replaced.

311. The first witness statement of Mr Davies set out further instructions from July 2017 onwards to Hydrock to carry out further inspections. The first of these was Plot 28. The report observed that the groundfloor stonework had cracked sporadically at the interface between the stonework and the mortar; that the mortar was friable; and that the stone had also deteriorated in several locations, with small sections of stone having fallen away from the larger one. In the Discussion section of the report, remedial works were recommended to the cracks around the perimeter of stones and to the mortar. Further, under the heading Stone Deterioration, the report said this:

“There are many individual stones within the walls that have cracked or the faces have delaminated. These failures are most likely due to the natural weathering and freeze-thaw actions acting upon naturally occurring failure planes within the stones. Given the relatively young age of the walls, we believe that the stone is of insufficient quality for its purpose and we expect that the damage that is already present will worsen over time. This will need to be rectified.....” (emphasis added)

312. This opinion was repeated in the Hydrock report on Plot 30. Subsequent reports on Plots 43 and 44 (in March 2018) and Plot 46 (January 2019) were in similar terms.

313. These are the Hydrock reports specifically referred to in the evidence of Mr Davies. However, the documents available to the court and the experts also include Hydrock reports on most, if not all, of the properties which have external stone walls and all make the like observations.

314. No one from Hydrock was called to give evidence and the weight to be attached to the Hydrock reports and what can be taken from them became, therefore a matter for the expert evidence. In his Responsive Report, Mr Richardson said that he had visited the site 4 times, on 2 occasions with Mr Dowle. During a visit in 2020, where still possible they compared their observations with those of Hydrock and had no significant issues to raise with the quality or accuracy of Hydrock’s work.

315. Mr Hunt, on the other hand provided in his report 34 pages of commentary including commentary on many of the photographs from the Hydrock reports. Mr Hunt claimed that Hydrock had misidentified many of the features that could be seen in the reports – amongst other things he described any delamination as minor “shaling”; he reclassified cracks as natural joints; and he expressed the view that cracks must have been present in the stone on installation. His view was that the misidentifications in the Hydrock reports had been magnified to the extent that it had created the belief that there was an endemic problem with the Lantoom stone.

316. Mr Richardson responded to this section of Mr Hunt’s report specifically the commentary on the photographs. Amongst other things, he makes the points that a natural fissure in the stone is still a split in the stone which will allow the penetration of water; that “shaling” still involves detached stone falling away; and that it is not possible to know whether any stone was installed with a crack.

317. This dispute on the interpretation of the photographs did not feature in cross-examination and barely featured in submissions.

318. For the reasons I have already indicated, I prefer the evidence of Mr Richardson and prefer his view that the Hydrock reports can be relied upon. Mr Hunt, once again, seems determined to assert that everyone else is wrong and he is right. It is not tenable that Hydrock repeatedly made the same errors in observation and description of what they observed. Their reports demonstrate that there was widespread cracking and delamination of the stone on the site within relatively short periods after the properties were complete.
319. That view is also supported by the percentage assessments of cracked stone which were made by the experts and drawn together by Ms Jones at the conclusion of her cross-examination of Mr Dowle:

“Q: There are various figures. Mr Hunt says 1%. Mr Huband says 3%. Mr Richardson yesterday said a little but more than that; he put it between 10 and 20%. Can I invite you to agree that the correct figure would be somewhere below 10% ?

A: I have calculated from the evidence I have that – which is the Hydrock reports – that 4% or just above of those stones built into the walls and reported upon by Hydrock have suffered detachment. But I think it was higher than that, because there were a number of examples, in fact many examples that I saw of stone becoming detached which were not recorded in the Hydrock reports ...”

Mr Dowle had visited the Site in January 2020 and July 2020.

320. Mr Hunt’s percentage was, as Mr Choat put it, at an extremity of his own making. Mr Richardson’s figure might also have appeared at an extremity but it was one given in cross-examination conditioned on his view that the stone was getting worse. On that basis he said that *“it’s at least in the 10% plus area”* and when pressed said that because of the progressive nature of the cracking it would be closer *“to 10% to 20%”*.
321. One of the observations made by Hydrock was that the stone was cracking and delaminating within a very short space of time. There is no standard design life for walls of this construction or for natural stone but the design lives suggested by Mr Richardson and Mr Huband were 50 – 60 years.
322. In his first report, Mr Huband’s evidence was that the delamination of 2% of the stone would be considered normal. In his Responsive Report, he estimated that up to 3% of the stone in Plot 94 exhibited delamination. He agreed with a calculation put to him that about 3-4% of the stone across the Site exhibited delamination which would give about 1700 affected stones. It was put to him in cross-examination that if that extent of delamination was experienced early in the life of the properties it could not be said that that was an end to the matter. His response was that in the long term you would expect to lose faces or pieces of the surface and that a lot of these would fall off early because they were surface features. Such stones prone to delamination could be identified by tapping. Some might lose surface pieces but be sound underneath.
323. I regarded Mr Huband as a straightforward and independent expert who tried to give clear answers to the questions put to him. However, I found this aspect of his evidence difficult to accept. Delamination of the stone was observed repeatedly by Hydrock but there was limited evidence of pieces of stone having already fallen off. That left a position where, rather than Mr Huband’s anticipated early falling away, a percentage of what was

supplied and installed would fall off at some later date of its own accord unless remedial works were undertaken.

324. Taking these matters together, I have no doubt that BDW is right to submit that the performance of the stone is persuasive evidence that it was not fit for the intended purpose. Its performance is consistent with the lack of durability evidenced by the testing and the particular characteristics of the stone, not least in terms of water absorption, go some way to explaining its performance.

Stone not as safe as persons generally are entitled to expect

325. The issue as to the safety of the stone was relevant to the express term at clause 6.1.5, BDW's case as to satisfactory quality and fitness for purpose, and to the reasonableness of the remedial works carried out.

326. I referred above to the limited evidence of stone that had in fact fallen from the walls. The principal evidence on this issue was given by Mr Davies:

- (i) Mr Davies first became aware of issues with the stone when he noticed on Ms Smallwood's desk a piece of stone about the size of a regular Mars bar – approximately 95mm x 30mm x 20mm. Ms Smallwood told him it had fallen on to the canopy of a customer's home.
- (ii) He attended Site to investigate – he did not say exactly when – and saw big chunks of stone about the length of his hand which had obviously fallen from properties. He particularly noted on one plot a piece of a shape and size that could have caused injury if it had fallen on someone. On another plot he put his finger into a crack, not applying too much pressure, and a wedge shaped piece of stone fell away. He exhibited photographs from Lantoom's disclosure which were similar to what he had seen on Site.
- (iii) In cross-examination, Mr Davies said that when he first looked at this he was asking himself whether he would be happy for his children to play on the grass below the stone. His answer to himself was that there was a risk and it worried him.
- (iv) Mr Davies also exhibited a video taken on a visit to the Site with Mr Hunt on 26 February 2019. The video was played in court and a short transcript provided in the trial bundle. Mr Davies dropped a piece of stone commenting "look someone's head". There was an exchange with a Mr Nethercot of BDW to the effect that individual stones could not be replaced, that the homeowner would expect them all to be replaced, and that after the meeting the homeowner would be forgotten about. Mr Hunt responded: "I hadn't forgotten about them, I deal regularly with deaths from falling masonry."

327. Mr Huband, in cross-examination, agreed that the stone was not as safe as might reasonably be expected without action being taken but, he said, no action to mitigate risk was taken.

328. Mr Hunt said in his Report that minor losses of material did not pose a threat to health and safety and that "in the few locations where the material was detaching this occurred

very slowly” and could be dealt with in a number of ways. In cross-examination, he added that with natural stone would expect it to weather and for pieces to come away. He similarly said that various simple measures were available to safeguard residents and workers.

329. The suggestion put to Mr Davies in cross-examination reflected that and was, in effect, that he had not thought there to be a real safety issue since no steps had been taken to mitigate any risk, for example, by placing netting over the stone. That may be a criticism of BDW’s response to the situation it faced but it does not detract from the evidence of falling stone and the risk of falling stone.
330. The design of the properties varied but, on those with a stone element, the stone was generally either at ground floor level or over two storeys. In either instance, I find it difficult to see how stone falling away was as safe as persons generally would expect and that was the expert opinion of Mr Richardson and Mr Dowle.

Lantoom’s case on use, fitness for purpose and safety

331. Whatever the test results may demonstrate, Lantoom maintains that its stone is fit for the purpose of walling stone and/or of satisfactory quality and/or safe; that it has been used this way for decades if not centuries; and that any failure is caused by poor design or workmanship on the part of BDW as summarised in issue no. 19.

Proper use

332. There have been two main limbs to Lantoom’s case as to the performance of the stone and thus as to its suitability as a walling stone and as to fitness for purpose (in so far as that case is different).
333. The first is that the stone is fit for use and safe “if used properly”. The point is summarised in Lantoom’s closing submissions in this way:

“It is submitted that Mr Hunt identified the key point: slate, including Lantoom stone, varies in its composition. That is a part of its natural features. However, if used properly, it is fit for use. That is why the majority of Lantoom’s stone in the period 2012-2015 was used without complaint, and it is the reason the stone itself as been used in the area for decades.”

334. The same point is made in respect of the safety of the stone in use where it is submitted that it is “perfectly safe so long as it is used properly”. This was Mr Hunt’s evidence in cross-examination in which he concluded:

“And I believe that that stone is perfectly acceptable if constructed well and not subjected to a whole range of potentially outside of the normal factors.”

335. The “proper use” of the Lantoom stone is, therefore, central to Lantoom’s case on breach. Lantoom’s pleaded case did not articulate a clear case as to what “proper use” entailed. The pleaded position was that BDW was responsible for the defects that occurred because it had installed the stone in a manner which went against historical local use. Three matters were relied upon in the original Defence dated 3 May 2019:

- (i) inappropriate highly recessed joints which were not weather-struck;

- (ii) low quality mortar was used; and
- (iii) the stone did not appear to have been washed prior to use which would have reduced bonding.
336. There was then a sweep up allegation that the designer ought to have considered the historical local use of the stone as part of its design and that the builder ought to have considered historical and local use as part of construction. I call that a sweep up allegation because it adds nothing to the three specific matters.
337. By amendment in October 2020, the following was added to this paragraph of the Defence (which I have split into numbered parts):
- “(1) it has become apparent that neither backing nor Surecav ... were used as part of the cavity wall construction on the Site such that walls were too thin. (2) Absent backing or Surecav (or other suitable design measures), walls should have had a minimum thickness of 250mm not 100mm.”*
338. Taking these together, it, therefore, appeared to be Lantoom’s case that “proper” use in accordance with local practice involved:
- (i) Weatherstuck joints
- (ii) A higher quality (or strength) mortar. In a following paragraph, Lantoom said that the mortar used was M2 and ought not to have been used on a site of moderate to severe exposure. The Penndrumm Fields site it was said was one of very severe exposure. Lantoom did not say what strength mortar ought to have been used.
- (iii) Washing the stone before installation
- (iv) The use of Surecav (or similar backing) or a minimum thickness of wall of 250mm.
339. The amendment followed Mr Hunt’s first report. The report gave an Executive Summary for each of his sub-reports. This included the following passages:
- “6.2.1.6 The Claimant undertook the design and construction of the external walls, or outer leaf masonry, without proper consideration of the development of local vernacular architecture and use of the Lantoom Stone within it. Either the Claimant failed to employ stone at sufficient thickness or in deploying it more thinly as part of a cavity wall design failed to employ a backing block or other means of adequate support.*
- 6.2.1.7 Regardless of the local requirements, the Claimant failed to properly design and build random rubble walls employing local stone that were to be used as part of a cavity wall construction. Notably the following appears to have been carried out:*
- *Construction of random rubble walls to a nominal thickness of 100mm when a minimum thickness of 250mm is given in British Standards.*
 - *Other available advice provides a minimum thickness that may be reduced down to a minimum thickness of 150mm, which the Claimant still did not achieve.*

- *Thus the outer leaf walls at the Site are non-complaint with this basic thickness requirement and their strength and durability are much reduced as a consequence.*
- *As part of the cavity wall construction the Claimant failed to provide the required backing to the stone when they used it at the thickness below the British Standard requirements.*
- *Application of installation processes that did not follow the local vernacular traditions and which have resulted in the masonry being further compromised.*
- *The use of a mortar that is wholly inappropriate for the type of natural stone being used. The mortar has also been proven to be sub-standard and has put into jeopardy not just the external leaf walls but all parts of the construction where it has been used, including internal blockwork walls and all areas of brick masonry.”*

340. It, therefore, appeared that the amended case as to 250mm and the need for a Surecav backing had come from Mr Hunt’s report and, indeed, that it was the principal cause of failure relied upon.

341. Mr Choat submitted that Lantoom’s case had now shifted in three respects:

- (i) firstly he said that Lantoom’s experts did not support the case that the joints should have been weatherstruck (that is convex with the top edge pressed in further). Mr Hunt accepted in the Joint Statement that the term weatherstruck was not the right term and that ironed was a more appropriate term. Mr Choat submitted that Lantoom’s case now appeared to be that the joints should be flush or bucket handle as set out in its Technical Note of August 2020. I shall address Lantoom’s case on the joints further but it seems to me that Mr Choat is right to submit that there has been at least some shift from the pleaded case.
- (ii) There is a more obvious shift or development in the case as to the necessary mortar strength which is now said to be M6. The basis for this assertion would appear to principally to be the recommendation of Hydrock for the purposes of the remedial works.
- (iii) The case that the minimum thickness should have been 250mm if there is no Surecav backing has all but been abandoned. Despite the terms of his report, when asked about this in cross-examination, Mr Hunt said that he did not contend for anything and had simply been reviewing standards. He deferred to Mr Huband. Mr Huband in his supplemental report agreed that a 250mm external leaf would be unlikely for a volume housebuilder and that he did not suggest it.

342. In addition, I would note that the case that the stone should have been washed barely featured at trial.

343. These shifts in Lantoom’s case are indicative of the difficulty with the case that there is some “proper” use of the stone which could and should have been ascertained and followed by BDW. Even Lantoom is unable to identify that proper use.

344. It is also inherent in this case that responsibility for identifying the “proper use” lay with BDW. That is reflected in the sweep up allegation referred to above. It is convenient to take this with a further issue in the agreed list.
345. This further issue is no. 19(b) which raises, as a potential cause of the stone cracking, spalling and falling away, “Failure properly or at all to consider design”. Lantoom’s pleaded case was that there was no evidence that BDW had considered the stone in the context of the design of the homes or the exposed location of the site before the stone was incorporated into BDW’s design. Lantoom pleaded that that ought to have been done by a desktop study “or other appropriate method” and served in an Appendix a desktop study prepared by its expert – and it is not clear who that referred to - concluding that, if BDW had undertaken such a study, it would have identified materially similar points.
346. It is fair to say that this case on a desktop study also barely featured, if at all, at trial and it is unclear to me who carried out the desktop study. Without reproducing this Appendix, I would summarise it as producing extracts from numerous publications and sources which refer to Cornish stone (including specifically the Lantoom quarry) and its use. There is reference to the Lantoom stone both as slate and as a slaty mudstone; there is reference to the use of Lantoom stone for decorative, walling, landscaping and paving purposes; and to local slates (also known as killas) being used for walling and roofing. Within the Liskeard Conservation Area Character Appraisal and Management Plan 2012, there is a reference to many buildings in Liskeard being of local slatestone construction and that stone work must be pointed using lime mortar “that flexes with the walls and allows them to breathe”.
347. The conclusions drawn in this desktop study in Section 4 are as follows:
- “Slates of all types have been quarried for many years in many locations in Cornwall and have been employed in structural and decorative uses on a wider variety of buildings including churches, castles, fortifications, bridges, farm buildings and houses in the area local to Lantoom.*
- It is clear that the local authorities are keen on the use of local stones wherever possible in both new build and restoration projects, for reasons of sustainability, local economics and the maintenance of local character and visual harmony.*
- Unfortunately it has not been possible to date via this study to identify or gain confirmation of specific examples where Lantoom stone has been used for buildings in the local area. This would now be a matter for expert visual observation*”
348. It is difficult to see from this desktop study what “materially similar points” of any relevance it is said that BDW ought to have identified and it would certainly not have led to the identification of any of the aspects of local or historic use apparently relied upon apart perhaps for flush joints.
349. The point was then developed by Mr Huband in this report. He expressed the view that having decided to use Lantoom stone, BDW ought to have carried out a desktop study. He referred to various sources of guidance (not reflecting the pleaded position) and that a desktop study would have revealed that:

“ (a) The use of stone should reflect local practice.

(b) The need to consider the use of a backing to the stone outer leaf or alternatively an increased wall thickness.

(c) Careful consideration should be given to the choice of mortar ...

(d) The mortar should contain lime to allow some accommodation of movement, help to control shrinkage and improve adhesion to the stones.

(e) The need to use stonemasons experienced in the type of walling required.”

350. A review, he said, of other properties should also be made. These together would have led an engineer to consider the use of a backing skin of blockwork or Surecav and a more suitable mortar incorporating lime or coarse aggregate. This was by no means a prescriptive view of “proper use”. I consider the particular aspects of that opinion below.
351. In closing submissions, Ms Jones suggested that it may now be common ground that there was a failure on the part of BDW to consider design. She relied on Mr Dowle’s agreement in cross-examination that if, as a designer, he had changed from brick outer face to a stone outer face, he would have considered the performance of the stone, and the fact that there was no evidence that BDW used anything other than its generic housebuilding designs.
352. Firstly, to my mind, that submission and that evidence adds nothing. Lantoom relies on a positive case as to the cause of the cracking and delaminating. The absence of specific design consideration by BDW is only material if it is also Lantoom’s case that that would have led BDW to install the stone differently and that if it had done so the stone would not have cracked and spalled. Lantoom either advances no such case or the case that it advances in that respect is the case as to proper historic use.
353. It may be that what is being argued is that Mr Dowle’s evidence amounts to an acceptance that BDW bore the responsibility for assessing the performance of the stone and related aspects of design because that is what he would expect a designer to do. But that is a mixed question of law and fact and not a matter to be determined by expert evidence. I have already concluded that Lantoom supplied the stone for use as the external leaf of a cavity wall and/or in external walling and that it was a term of the contract that the stone would be fit for that purpose. There were no qualifications to that fitness for that purpose such as the qualification that the material would be fit for its purpose if, but only if, it was used “properly”.
354. As a matter of common sense, there will in many instances be an assumption that the material supplied will be used properly but that will always be an issue of fact and degree. To take an absurd example, bricks are fit for the purpose of building walls but only if bonded together with mortar. It would be absurd to suggest that the seller of bricks had to specify that basic fact or would be taken to have supplied bricks on the basis that they were fit for the purpose of building a wall without bonding. On the other hand, the choice of mortar and type of joints will generally be a matter for the builder or designer depending on the type of construction, exposure conditions, etc. That reflects the fact that there is published guidance from a variety of sources on those matters.

355. That is not the case here and it seems to me that, if the stone was only suitable for use as walling stone, if installed in a particular manner, that was a qualification which needed to be made contractually by Lantoom and that the contractual burden of identifying the “proper use”, in the sense of the local vernacular, does not pass to BDW.
356. The issue that arises in this case is not what one would expect a designer generally to do but whether it can be said that the Lantoom stone was suitable for the purpose of walling stone and/or for the particular purpose of forming the external leaf of a cavity wall without qualification, contractually leaving the responsibility to ascertain how “properly” to use it so that it would be suitable with the purchaser. On Lantoom’s own case, the stone requires particular construction methods in order to be suitable and fit for purpose and, even on Lantoom’s own case, what those specific requirements are is not a matter of general knowledge or readily ascertained. That can be seen both from the desktop study that was originally relied on in the Defence, from Mr Huband’s evidence and from the variation in Lantoom’s case as to what the historic local construction practice is.
357. In my judgment, if Lantoom stone was suitable for use as walling stone and fit for that purpose with particular construction techniques which were a matter of local usage, then the burden of placing that qualification on the use of the stone lay with the supplier and not the purchaser. As I have said, this is in part a question of fact and degree. In this case, the position is made clearer by the fact that even Lantoom has failed to identify where, in published design data, BDW could have obtained this information about “proper use”, other than rather generally from Mr Huband’s desktop study and inspection of other properties, and that Lantoom’s own case on this detail has changed.
358. Ms Jones also submitted that Mr Dowle had been proceeding on the basis of erroneous information. In summary, that submission was made on the basis that Mr Dowle had thought advice had been sought from and provided by the quarry on the use of the stone. It was submitted, although not clear from his evidence, that the advice he had in mind was a drawing on the Lantoom website showing the stone used as the outer leaf of a cavity wall (which was not in fact on the website at the start of the supply for this development). Against the background that Mr Dowle agreed that one would look at local use and seek advice from the quarry, it was submitted that the failure was, therefore, BDW’s failure to seek advice and not Lantoom’s failure to give it – Lantoom, it was stressed, was not the designer.
359. This case is a variation on a theme. Recognising perhaps that there was no published design data from which BDW could have ascertained the proper use of the stone, this variation of the argument was that BDW ought to have sought that information from Lantoom. But, in my view, the answer to that point is that Lantoom knew the intended use of the stone and if the stone was only suitable for that use with specific construction techniques, it was Lantoom’s responsibility to make that qualification.
360. There is a final aspect of the evidence which points in BDW’s favour. In his witness statement, Mr Crocker referred to a number of other sites where Lantoom stone had been used in housebuilding, complaint had been made (but not necessarily a claim), and Mr Crocker identified common features with the Penndrumm Fields development. I do not set all of these out but they included the following:

- (i) Taylor Wimpey development at Drover’s Way, St Agnes: common factors were said to include use of a standardised national house design, low strength mortar and use of a single skin with no backing or Surecav.
 - (ii) Wain Homes development at Nansleddan, Newquay: common factors were said to include low strength mortar; use of a single skin of stone with no backing block or Surecav; deeply recessed joints.
 - (iii) Redrow Homes development at Mellior Park, Pool: common factors were said to include low strength mortar; use of standardised national house designs; use of single skin of stone with no backing block or Surecav; and deeply recessed mortar joints.
 - (iv) Kier Living development at Plym View, Plymouth: common factors were said to include use of a single skin of stone with no backing block or Surecav and weak mortar.
 - (v) Kier Living development at Wheal Harmony, Redruth: common factors were said to be use of a single skin of stone with no backing block or Surecav; weak mortar; deeply recessed mortar joints.
 - (vi) Persimmon Homes – Copperfields, Truro: common factors were said to be use of a single skin of stone with no backing block or Surecav and deeply recessed mortar joints.
361. Thus it appears on Mr Crocker’s own assessment that not one of these housebuilders has identified these aspects of proper local use that Lantoom relies on or incorporated them into their house design and constructed accordingly. That is inconsistent with a general understanding that the builder would need to consider local methods of construction and/or with the ability of these housebuilders to identify and follow such practice. It goes without saying that these other developments are not the subject of this dispute and that the evidence in relation to them is limited but I can place this limited reliance on this evidence.
362. In any event, the evidence as to “proper use” was, to a large extent not supportive of Lantoom’s case in the sense either that there was no evidence of this proper use and/or that the absence of this proper use had a causative effect.

Weatherstruck joints

363. As I have said, the case as to the weatherstruck joints was not supported by Mr Hunt and in the Joint Statement the position of both Mr Hunt and Mr Huband was that the joints should have been flush. Mr Hunt was the source of the evidence that the joints were, in fact, recessed stating in his Report that recessed joints could be seen in half of Hydrock’s photographs – his table of observations identified 81 instances. No comment adverse or otherwise was made by Hydrock on the joints.
364. The relevance of the nature of the joint is the ability of water to get into the stone and exploit any planes of weakness.

365. The view of BDW's experts was that the joints were bucket handled (that is concave). Mr Kent described them as ironed and brushed, which Mr Huband agreed meant the same thing. Mr Huband agreed that bucket handle joints were acceptable. Mr Bright's evidence was that bucket handle joints were acceptable if properly formed. Given my views on the credibility of the evidence of Mr Hunt, I prefer the evidence of BDW's experts as to the nature of the joints.
366. In any event, as Mr Choat submitted, both Mr Hunt and Mr Huband agreed that the joints might acceptably be set back by about 5mm, although Mr Huband's preference was as little as possible – 2, 3 or 4 mm. As he submitted, there was little evidence that the joints were set back more than 5mm. Mr Huband accepted that this was not easy to see from the photographs although he identified one location where that was the case. Further, Mr Huband accepted that if joints were set back more than 5mm the difference was a matter of gradation. In other words, the greater the set back the more water might be permitted to penetrate the stone but that was a matter of gradation.
367. This line of cross-examination led to the following exchange which I set out in full. It started with the question of the difference which setting back of the joint 5mm or 10mm would make:

A: No, all I can say is that the – for example this detail has been proved historically to work; that detail we have issues with. Where Lantoom lies in the spectrum, we can't unfortunately – some of these things aren't amenable to a yes/no answer. All we can say is that we have tried our best to use every trick possible to produce a wall that is resistant long term: by selection of stone, by choice of mortar, by installation of mortar etc. etc.

Q: But what we are talking about is particularly the stone delaminating, cracking, spalling, bits falling away. Now can you help us as to why we keep talking about the mortar, when it's the stone itself that is cracking, spalling and falling away?

A: Because we have got the stone and the mortar; we've got them together. They are a system. They both contribute to the stability of the wall and the integrity of the structure.

The mortar actually contributes to the stone: it holds it in place, it keeps the rain away from it, the proper mortar. That's its role. It helps the thing resist flexure. It's no longer the stone on its own once it's incorporated into the wall. It's the system. It's the sum of all the things.

Q: Yes. But the primary cause of the stone cracking, spalling and falling away is the stone itself, isn't it?

A: The primary cause is the stone itself, and the mortar doesn't cause the stone to crack; what ... the mortar does is help provide an environment in which the stone can exist durably, shall we say.

Q: Yes. Your point is that the mortar, on your view, contributes to the stone cracking, and that is all isn't it?

A: *It contributes to the longevity As built, the mortar contributes to the stone cracking because it provides water paths.*"
(emphasis added)

368. In closing submissions, Mr Choat placed particular reliance on the concession from Mr Huband that the primary cause of cracking was the stone itself. That was an important aspect of the evidence but it has to be seen in context. What Mr Huband was seeking to convey was that there was a risk of cracking which was exacerbated by the penetration of water. The mortar acted to mitigate that risk. That was not, in my view, a concession that the stone itself was not fit for the purpose of walling stone but rather another aspect of the "proper use" case. However, Mr Huband's evidence was that the "proper" mortar joints should or would contribute to the longevity of the stone.

369. When he was asked further about the difference that a flush or bucket handle joint would make compared with a joint set back 5mm or even 10mm, his answer was this:

"A: ... I'm saying it's less likely, because with a bucket handle or a flush joint, you're reducing the amount of water getting in and you're also providing a greater width of support at the top of the stone holding the stone in place; and you're also blocking those water paths into the stone. So ... you're contributing to the longevity of the stone shall we say.

Q: Yes but not in a particularly material way?

A: Well I would say it's – they're incremental, but they end up as a material change."

370. It is necessarily a matter of impression rather than measurement but the effect of Mr Huband's evidence seems to me to be that, even if the mortar joints were recessed to the extent of 5mm, that would only have an incremental effect on either or both of the passage of water into the stone and the longevity of the stone. On the facts, a significant percentage of the stone started to crack and delaminate within a short period, measured in months or a few years, which is indicative of weakness in the stone and not the gradual effect of recessed joints.

371. I have, of course, said that I prefer the evidence of BDW's experts that the joints were bucket-handled. In that case, the point about recessed joints falls away as does the proffered explanation for failure.

Mortar mix

372. I repeat that Lantoom's pleaded case was that the mortar was of M2 strength and ought to have been greater but the mix that should properly have been used was not identified. There was, in fact, no evidence that an M2 mix was used. Mr Hunt accepted twice in his report that the mortar passed the strength requirements for an M4 mix and further that the mortar supply company had demonstrated M4 strength. However, Hydrock recommended for the remedial works a stronger M6 mortar.

373. The only witness who gave evidence as to local practice was Mr Bright. In his witness statement, he did not identify the mortar strength that he would use but described it as 6 parts sand to one part cement. That he said in his oral evidence was an M4 mix. That was clearly his preference and he explained that the reason was that if the mortar is harder than the material you are laying that can be a problem. He was then asked:

“Q: And so your preference is throughout Cornwall, throughout the various Cornish projects you have worked upon, and as a matter of good practice in Cornwall, your preference is to use an M4 mortar ...

A: That would be my preference but like I say it’s not down to me”

374. In light of that evidence, I cannot see how Lantoom can maintain the case that “proper use” required the use of an M6 mix.

375. The submission made on behalf of Lantoom nonetheless was that there was substantial evidence that the mortar was weak and that the Hydrock reports repeatedly described it as friable and capable of being scraped out with a key. Mr Huband’s evidence was that he had run his key over the mortar and that it was weak in places and strong in places. Mr Dowle did not regard the mortar as friable but, taking the evidence as a whole, there is in my view a substantial body of evidence that there was friable mortar – although the extent cannot be determined. It was submitted that it was unrealistic to suggest that this condition of the mortar had no relevance and no causative impact.

376. Before addressing that submission, it seems to me convenient to deal with a number of other issues raised by Lantoom in respect of the mortar mix. In closing submissions, and from Mr Hunt’s sub-report no. 2, Lantoom suggested that the court might feel the most significant issues in respect of mortar were: (i) excess air voids; (ii) mortar strength lost at site; (iii) recessed joints; (iv) the evidence that the mortar was friable; (v) Mr Hunt’s microscopic analysis; (vi) Mr Hunt’s conclusion that the mortar was weak although he cannot say precisely why.

377. Despite numerous pleaded issues in respect of the mortar mix the focus came to be on fine air voids. As pleaded at paragraph 56.3.2 of the Amended Defence, Lantoom’s case was that the mortar contains very fine air voids “suggesting the use of an air-entraining agent and/or plasticising agents with air-entraining properties”. Despite the apparent emphasis on this point there was little cross-examination of Mr Dowle on this issue. Mr Dowle agreed that too much air in a mortar would weaken it but also said that some air was advantageous in making the mortar easier to work with and giving some protection against the freeze/thaw cycle. He was then asked if he understood the approach Mr Hunt had taken to the calculation of air voids. He went only so far as to accept that he could understand that a reason for taking Mr Hunt’s approach might be to allow for air voids in the cement paste. He did not agree that there were voids in the mortar; he did not agree that voids would have any impact on the strength of the mortar; and he did not agree that they had done.

378. Mr Dowle had indicated in his Responsive Report that the usually recommended figure for air content was 20-25%. He set out that the mix supplied by CPI Euromix was one that contained an air entraining agent. There was nothing exceptional in that. Mr Dowle reported that CPI had told him that the mix design aimed for 18-22% and he exhibited

the quality control data from CPI for the period of mortar supply to the site which showed a mean average percentage of 20.5% air.

379. Tests were carried out by Sandberg on mortar from Plot 46. They found an air content of 22% which they did not consider unusually high.

380. Mr Hunt in his report referred to expected percentages of 18% and 20% air. Based on his analysis, he described the air content as “exceptionally high” and said (at paragraph 7.2.4.6):

“I accept that the methods employed for determining the air content rely on a certain amount of supposition, and therefore will have an element of error. Where possible, values employed by myself in the calculation have been conservative. It must however be noted that the results are so far beyond acceptable limits that such questions of (potentially minor) accuracy are effectively irrelevant.”

381. Mr Hunt said that the excessive air entrainment had encouraged the flow of moisture through the mortar “due to the obvious presence of enhanced carbonate formation” and (at paragraph 7.2.4.9) that: *“The excessive air-entrainment has considerably weakened the mortar and is more than likely responsible for the widespread disaggregation of the masonry.”*

382. This was another bold statement on Mr Hunt’s part. It was not supported by any of the evidence referred to by Mr Dowle but based on Mr Hunt’s own calculations based on the results from mortar samples he had personally tested. What Mr Hunt had done is make an addition for what he referred to as “pore” air (giving him air contents of 33 to 48%) even though that is not a normal or accepted addition to the measured entrained or entrapped air. It follows that the normal or design percentages would always be exceeded because of this addition and, as Mr Choat put to him, that he was not comparing apples with apples.

383. Mr Hunt was cross-examined on the approach that he had taken and I set much of this passage of his cross-examination out despite its length:

A: Basically because you're looking in thin-sections, many of the air entrained voids are less than 30 microns thick. So you have quite a proportion of these small voids; the proper air entrained voids sit in the paste, and you can't count them, because you always have cement paste around them. So they'll appear as part of the paste and they are visible within that paste.

So you've got pores and very, very small voids. So this is all in there. There's a lot of air in there which you are counting and there's basically extra air as well.

Q. Are we possibly at cross purposes, Mr Hunt, because I was just approaching this to start with as a matter of maths, because you say the total air is 37.6%, and then a few lines up you say the visible voids are 19.9%. So I've taken it from that, whilst you don't record the

- value, that the difference between 37.6 and 19.9 would be how much you have allowed for pores; but you're telling the court that's not how you've done it?*
- A. Because it's cement paste and pores, I've said, yes.*
- Q. Okay. Well, I'm afraid you have lost me already. But the point I wanted to get at is this: if you allow only for visible voids, the 19.9% --*
- A. Yes.*
- Q. -- that is within the recommended allowances and also within what CPI designed to, isn't it?*
- A. Um ...*
- Q. You can have a range of 18 to 20% in your report and CPI designed to a range of 18 to 22%?*
- A. The thing is, we're doing a volumetric analysis, so on the raw data, you have to take into account the density of the aggregate there and also the density of the paste; the paste is always slightly different density, on the basis of how much voidage is in there, has been input into there, both on the amount of moisture there.*
- So we've got voidage in relation to the pores that have been there in cement paste as part of the water that's been included in there, and then the water goes away and leaves this pore structure. This is something that Mr Dowle commented on yesterday and said there were no -- there wasn't a pore structure here, but ...*
- There are different types of voids. There are entrapped voids, which just get entrapped into the mix as you are using it in various ways; you can add more air into the mix in a variety of ways as well. So there's entrapped air.*
- But the actual entrained air that you have starts off as spaced voids through that mix, and they are usually of a size and shape and they will spread out, so that they're not connecting, they're not causing a problem with each other. The moment they start to connect, there's a problem which reduces the strength of the mix. And this is what we see in these mixes.*
- In a way, the void content is an irrelevance; the problem with this is mix is all these voids starting to connect. I mean, the calculations are there from the point of view of giving a guide, but there appears to be an awful lot of air, whether it's voids, pores or anything. And it doesn't matter what any standard actually says; the question is: this mix, with regards to the air content, yes, that's a starting point, that's what it says it should be, but something has happened to these voids. So they are the wrong shape, in the wrong place, and this mortar was able to be taken out with a fingernail.*
- Q. Okay, Mr Hunt, I was trying to focus, if we could*

together, on really how you come up with your percentages. Perhaps we can approach it from a different direction. Could we go back, please, in your report -- sorry, go forwards to {F8/1/215}.

A. Yes.

Q. Because the reason I'm asking this is: much work has been done on this side of the room simply to try to understand what you have done, and that includes consulting with your previous employer, Sandberg --

A. Okay, yes.

Q. -- and various other experts in the mortar field to try to understand how you have done what you have done, and how you have come up with the figures you have come up with; hence these questions, albeit under time constraints.

A. Okay.

Q. So if we can go, please, to {F8/1/215}. At 7.2.4.6, you say that you:

"... accept that the methods employed for determining the air content rely on a certain amount of supposition, and therefore will have an element of error."

Now, the understanding on this side of the room is that the way that you have carried out your calculations to allow for air content in pores, as distinct from entrapped or entrained air, the way you have calculated pores, first of all, the first proposition is: we simply can't fathom out how you've done it. So can you briefly tell us how you've done it?

A. Well, I've basically worked it out on the basis of these mixes were meant to be around about 6 to 1, and then -- so you're looking at the -- an assumption of what the paste density should be versus what the aggregate density should be.

I have a spreadsheet which I got together, which looked at effectively calculating everything out from those densities, from the volumetric data, to try and convert it into mass data.

Q. Okay. These spreadsheets, you haven't exhibited them, have you, to your reports?

A. No, no. I mean, I though just exhibiting the values, sorry, would be sort of sufficient. They were there for people to look at. But if people haven't been able to work them out, then ...

Q. Now, the second proposition is: you've got to compare apples with apples. What I mean by that is, there are benchmark percentages, so there's the CPI design percentages of 18 to 22%; and then there's what you regard, I think, as the recommended 18 to 20% figure; and then Mr Dowle, in his report, his first report at

paragraph 5.1.3, refers to a usually recommended percentage of 20 to 25%.

Now, those benchmark figures don't include for pore air, do they? That's pore air, as in P-O-R-E.

A. They are the entrained air content, but I think when you do the tests it takes all air into account. But ...

Q. Well, you think, and you've said what you have said on the transcript about standards --

A. No, just this particular --

Q. What exactly -- (inaudible) we need to move on -- what exactly have you done? Can you tell us?

A. What I have done, the main thing is that -- I've not said that there's -- well, the simplest way of putting it is that there's a problem with the size, shape and texture with these voids. It's as simple as that. They are so close together; there's very thin walls between them; there's no great structure to this mortar.

And part of the process of trying to investigate the mortar was looking at the distribution of those voids, how much is there. And, as I've said, it's a very, very rough method that I've done, because it's post the fact. It's not a method where you take a sample and shake it in a whole load of liquid and look how much air has evolved from that sample to tell you the air content, as it is done on site. This is post the fact. And we are trying very hard to work out what's going on.

But the principal observation, other than this whole thing -- there's an impression that there's an awful lot of air there, is that the air voids are in -- they're too large, they are the wrong shape, size, and they just coalesce in ways more like a foam which just shouldn't be present, and that's the cause of this apparent very, very low strength.

Q. Okay. Well, you say that, but that presupposes first of all your calculations are correct, doesn't it?

A. Well, actually the calculations themselves are just a guide; the evidence is from the visual observation of looking down the microscope at the pore structure and how the voids and everything else all come together.

Q. And the strength of the mortar has also been tested, hasn't it, and about 90% of it came out as being M5 mortar, M5 Arabic?

A. Well, that's the laboratory testing of the mortar as it was from the silo, but not as it's been taken out to site. Whatever's happened to it on site, we don't know, and things have clearly happened to this mortar.

384. Mr Choat generously described that explanation as confused and confusing. Mr Hunt once again regarded himself as being in possession of superior knowledge and a superior approach to established methods of measurement. In closing submissions, BDW

presented a table which excluded Mr Hunt's pore air from his results and the mean average was then 22.4% - that is very close to the Sandberg figure.

385. I can see no basis for finding that the mortar, in fact, contained excess air voids or that that has anything to do with the performance of the stone.
386. There were other aspects of the mortar mix case which appeared to fall away or at least into the background.
387. One of the aspects of the proper use that Mr Huband identified was the use of a lime based mortar. Mr Hunt gave similar evidence in his report where he said that the construction of local vernacular walls typically involved the use of lime-based mortar. That did not form any part of the pleaded case. That is not simply a pleading point but relevant to the point I have made that Lantoom has itself been unable to articulate its case as to proper use. Lime was referred to in the Joint Statement against paragraph 56.3.1 of the Amended Defence which avers that the mortar was of the wrong type for the apparent site conditions and is the paragraph that then avers that an M2 mortar was used. Mr Hunt and Mr Huband state that local mortars contain a proportion of lime.
388. The evidence of Mr Bright did not support the view of the experts as to local practice. Mr Bright's evidence was that whether to add lime was a matter for the specification. It served the same purpose as an admixture to make the mortar mix "creamier" and more consistent to use. Then:
- Q: This purely goes to the application of the mortar, it doesn't affect its performance.*
- A: No, it shouldn't do.*
- Q: And as a result it shouldn't affect the performance of anything around it either, such as the stone.*
- A: Not to my knowledge."*
389. To the extent that Lantoom's case has ever been that the mortar mix ought to have contained lime and that that absence of lime was causative of the cracking and delamination of the stone, that case is simply unsustainable.
390. Mr Hunt also made extensive criticism of the use of a silo-mixed mortar, claiming that this was now a widespread local issue. In simple terms, silo mixed mortar is supplied to site ready mixed as opposed to mortar hand mixed on site. It is widely used and, other than the assertions in Mr Hunt's report, there is no evidence of substantial or widespread issues with silo mixed mortar.
391. In his witness statement, Mr Bright had said that he would use a 6 part sand to 1 part cement mix rather than a silo mix. He said that local building sand tended to adhere to the natural stone as it was not as fine as a silo mortar and that it cured more quickly. When cross-examined about this preference he repeated that it was because silo mixed mortar was quite fine and he had seen it not sticking very well. However, he had had no problems with it – his evidence rather was that when taking stonework down he had found it came down fairly easily.

392. If it had ever been part of Lantoom's case that "proper use" would involve the use of a hand mixed mortar or that the use of a silo mixed mortar has had any causative effect, I cannot see that case is sustainable.
393. Lantoom's pleaded case included an allegation of possible poor workmanship in the re-mixing of mortar. In his report and in the Joint Statement, Mr Hunt suggested that the excessive air entrainment (which I have addressed above) could be explained by inappropriate mixing or re-mixing. He also relied on a disclosed document in which he said that the Claimant had admitted that uncontrolled additions of water had been occurring on site. The document was unattributed but appeared to be an internal BDW document headed St Martin's Update As at 15th October 2018. It contained the following passage:
- "In addition to this, we also obtained extensive testing results from the mortar supplier to understand the exact make-up of the mix. We are confident that the information supplied by the manufacturer confirms the mix was compliant to the specification required, albeit local factors during construction may have altered the composition of this element eg weather, mixing in water to work with the mortar at the time of application, etc."*
394. It is indicative of the approach of Mr Hunt that he interpreted this general remark as a significant admission. Perhaps for once recognising the extremity of this position, when he came to give evidence, Mr Hunt in cross-examination said he had changed his opinion "in that there's some water has been added somehow" and the addition of water remained a possibility. This change of position had not been advertised in any report or in any corrections to his report.
395. Mr Dowle's evidence was that there was no evidence of anything having been done to the mortar and I prefer that evidence.
396. Under the heading of issue 19(d) ("Use of mortar of insufficient quality), Ms Jones also made reference to a series of further pleaded issues including: (i) the use of too fine sand aggregate which was, it was submitted, another aspect of the local usage case, and it is in line with the criticism of the use of silo mixed mortar; (ii) the allegation that the mortar was not sticking well to the stone; (iii) the allegation that mortar bed reinforcement should have been considered. I do no more than reference these further allegations which were not explored further at trial. The first two points depended on the evidence of Mr Hunt's report which I generally regard as unsatisfactory. The last point was a possibility raised by Mr Huband that might have been considered to control movement and cracking.

Washing of stone

397. A further aspect of local usage which was pleaded was that the stone should be washed before use. It was pleaded that the stone appeared not to have been washed before use which will have reduced the bonding. As I understand BDW's submissions, it is accepted that washing or brushing the stone to clean it is good practice. There was no direct evidence that KCC had failed to do so and nothing from which an obvious inference could be drawn that they had failed to do so. It seems more to be the case that this was

a factor that could cause lack of bond but that there is no evidence in the present case it did.

Surecav or other backing

398. Given the way in which Lantoom's case had developed, in closing submissions, BDW addressed the court on the basis of (i) an unpleaded case that there should have been a minimum 150mm thickness and (ii) alternatively that a backing such as Surecav should have been used with 100mm thick external walls.

399. The only relevant British Standard is BS 5628. Under the heading, Scope, Part 1 states that it gives recommendations for structural design of unreinforced masonry units of bricks, blocks, manufactured stone, square dressed natural stone and random rubble masonry. The last of these is the description that has been applied, not least by Lantoom's experts, to a wall built of the Lantoom stone. In clause 25.2.2, the recommendation for leaves of a cavity wall is not less than 75mm thick. Part 3 of the standard makes recommendations for the design, construction and workmanship of masonry, other than structural design, which is covered in Part 1. Part 3 states:

"No specific recommendations for the use of random rubble walling are given, the methods of construction and appearance of which vary locally according to traditional practice and the type of stone available."

400. It followed that the only relevant structural recommendation and recommendation in terms of thickness is not less than 75mm. The British Standard, therefore gives no support to either of the cases referred to above.

401. The only evidence of such local methods of construction was from Mr Bright which I have already set out above. Although the use of a backing was common practice, it was clear that he regarded it as a matter of specification rather than as a necessary requirement.

402. Mr Huband's evidence, in any event, was that he dismissed the Surecav – he did not know why it seemed to work best, although he had seen evidence that it did. The best he could say was that it acted as "rearward reinforcement". When asked about the case on 150mm thick wall, his evidence was, in my view, at best equivocal. His evidence was that it would not, in the short term, affect the face material. But he considered that in the long term it would improve the overall robustness of the wall: *"The more mass it has, the more it will survive these movements and avoid disturbing the stone."*

403. There was, therefore, no evidence to support Lantoom's case that there was some "proper use" (which BDW ought to have become aware of and followed) that required the cavity wall leaf to be 150mm thick or to be backed with Surecav or otherwise. In any event, there was no evidence that the absence of the thicker wall or the Surecav had in any way contributed to the cracking and spalling which this case concerns.

Causation and Mr Huband's three predominant factors

404. Despite the manner in which Lantoom's case was pleaded and the statement of a list of factors causing the cracking and spalling of the stone set out in issue no. 19, Mr Huband's

report approached the causation case somewhat differently, albeit the causes of cracking and spalling that he identified could broadly fall under the pleaded allegations in respect of defective workmanship and issues relating to the mortar.

405. Central, however, to this case was also the mechanism by which the “defects” in terms of mortar mix, lack of bond and joints were said to have been the probable cause of cracking and spalling of the stone (which would not otherwise have occurred).
406. The first cause of cracking which Mr Huband identified was *“Poor quality of mortar and lack of bond with the stone caused cracks to appear between the stone and mortar which allowed water to penetrate joint planes of the stone.”* I have addressed the specific allegations of poor quality mortar above. It remains the case that Hydrock did repeatedly report both that cracks had appeared at the joints of stone and mortar and that the mortar was friable and easily removed. The case that there was some lack of bond and that there was, in a general sense, poor quality mortar cannot, therefore simply be dismissed out of hand.
407. The material question, however, is whether these factors allowed water to penetrate joint planes of the stone and whether that was causative of the cracking and delamination in the stone itself. It is the relatively rapid cracking of stone which militates against the conclusion that it was caused by water penetration from either of these causes and far more likely that that was the product of the nature of the stone and the inherent lack of durability of the stone identified by the testing
408. Mr Huband’s second cause of cracking was the use of a recessed joint which allowed water to penetrate into the joint planes of the stone. I have addressed this issue above.
409. His third cause was *“The lack of robustness in the outer leaf resulting from the use of 100mm thick stone without adequate support and/or backing combined with poor quality mortar.”* Again I have addressed this case above.

Other aspects of issue no. 19

410. There were a number of other issues raised by Lantoom and encompassed by issue no. 19. These were addressed briefly in evidence and submissions and I take the same approach.
 - (i) The first issue was inconsistent incorporation of movement joints. It was agreed in the Joint Statement that not all of the movement joints were correctly installed. Lantoom submits, relying on Mr Huband’s evidence, that there is a potential impact on thermal movement. There is, however, no evidence of such impact or a relationship between this and the cracking and spalling that has occurred. This seems to me to be no more than the identification of something that might have caused a problem but no more.
 - (ii) There appeared to be an issue as to the performance of the stone below dpc level – where it would not pose any risk to safety. If anything now turns on that issue, it will be dealt with in the context of the scope of the remedial works.

- (iii) Poor alignment of stone. As Lantoom said in closing submissions, this is a minor issue. It is agreed that there are some examples of poor alignment but the issue goes no further.
411. The last relevant allegation is that there was a failure to sort and grade stone resulting in stone being installed with cracks – such stone ought to have been rejected.
412. Mr Hunt said in his Report that, from the Hydrock photographs, he had identified 44 instances of “a separating joint face” in the stone as installed. Lantoom’s position must be that BDW (by its sub-contractors), KCC, either knowingly or inadvertently installed damaged stone. Knowingly, if the damage was visible and observed and inadvertently if it was not observed.
413. The Hydrock photos relied upon show damage but there was no evidence as to whether and how it could be said that the stone was installed damaged or was subsequently damaged or suffered damage. That was the view of both Mr Richardson and Mr Dowle, whose evidence I prefer. Mr Huband was at best able to say that there was a reasonable indication of prior damage when looking at the discolouration of the surfaces but when pressed agreed that it was necessary to read a lot into the photographs to reach Mr Hunt’s view.
414. There was, in addition, the evidence that about 20-30% of the Lantoom stone was discarded because of cracking. This militates against the inference that the KCC operatives were likely to have failed to observe damage to the stone or to install damaged stone.
415. I accept BDW’s submission that it is more likely that the damage observed to the face of the stone was damage that occurred after installation. I do not consider it possible on the photographic evidence to be satisfied that stone that is cracked was installed with that crack already present. Given the evidence of the extent to which stone was discarded and not used because it was already cracked, the inference which I draw is that KCC took care over this aspect of the works and are unlikely to have installed damaged stone. If there were isolated instances that slipped through the net, that might be some evidence of poor workmanship but it is not an explanation for the extent of cracking and spalling that has occurred.

Other aspects of the evidence

416. Lantoom also placed considerable reliance on its case that contemporaneously the Lantoom stone had performed satisfactorily elsewhere and that there had been relatively few complaints or replacements.
417. That evidence was produced by Mr Hugh. He had looked at records of stone quarried between 2012 and 2015. He calculated that the Penndrumm Fields development had accounted for about 15% of all the stone produced in this period. Mr Hugh produced two Excel spreadsheets in support of his calculation but not, as BDW pointed out, the underlying evidence or material relied on, so that BDW was unable to verify the spreadsheets. I take the calculation, however, at face value.

418. The point made by Mr Hugh's evidence was that 85% of the stone produced in this period had been supplied to 220 sites; that only six credit notes had been issued where stone was returned; and only a total of 40.75t stone was returned and replaced with stone acceptable to the customer.
419. As calculated by BDW, the analysis itself showed another 1,918t stone was supplied to 6 sites where it is BDW's case there was a complaint about the stone and/or evidence of cracking and spalling. These were:
- (i) The Tannery at Grampound to which 586 and 56 tonnes of stone was supplied. Mr Richardson visited the Tannery in December 2020 and recorded visible evidence of stone cracking, spalling and falling away.
 - (ii) The Taylor Wimpey developments at Drover's Way, St Agnes (to which 575 and 84 tonnes was supplied) and Trevenson Meadows (to which 224 tonnes was supplied). Drover's Way is the subject of a claim against Lantoom.
 - (iii) A Kier development at Quintrell Downs to which 168t was supplied. Mr Richardson also visited in December 2020 and noted some evidence of cracking, spalling and falling away, tending to be at corners.
 - (iv) The Kier development at Plym View to which 58t was supplied. Mr Crocker visited this site in September 2019 and his notes of the visit recorded that he immediately noticed large cracks and some stone cracking. Mr Richardson visited in December 2020 and notes "*Clear evidence visible of multiple instances of stone cracking, spalling and falling away.*"
 - (v) A Kier development at Bodmin to which 167t was supplied. Such evidence as there was about this development was that of Mr Wallace who said that Yennadon had been asked to provide prices for remedial works as the stone was cracking and spalling.
420. BDW, therefore, argues that, adding the two quantities together demonstrates that 52.2% of the stone supplied during the period of Mr Hugh's analysis had, in fact, been the subject of complaint.
421. Mr Hugh's evidence was also that since he had performed this analysis in 2019, further complaints had been received by Lantoom which were addressed in Mr Crocker's statement, where commonalities with the issues at Penndrumm Fields were identified. This is the evidence I have referred to above and which encompasses the Drover's Way and Plym View developments. As I said, the commonalities which Mr Crocker identified included matters which I have concluded are not the cause of the failure of the Lantoom stone at Penndrumm Fields.
422. BDW's approach to this evidence is to rely on it as evidence for the contrary proposition, that is that it supports its case as to the lack of satisfactory quality or fitness for purpose of the Lantoom stone on the present development.
423. The difficulty with all this evidence is that it seeks to bring in to play a number of other developments where the evidence before the court as to their construction is limited.

Ms Jones rightly says that the evidence should be treated with some circumspection because these developments are not in evidence before this court. Approaching the evidence with that circumspection, in my judgement, it provides some support for BDW's case rather than that of Lantoom but it goes no further than that.

Conclusions on contractual liability

424. I will set out my conclusion on the individual issues, so far as necessary, in the Appendix to this judgment but I set out here my primary conclusions on liability.
425. It was an express or implied term of the contract between BDW and Lantoom for the supply of stone to the Site that the stone would be of satisfactory quality as external walling stone and that it would be fit for the purpose of use as external walling stone and/or the external leaf of a cavity wall.
426. The stone supplied was not of satisfactory quality or fit for those purposes. It is important that that is a conclusion on the stone supplied to BDW and on the evidence in this case and not a general statement about all Lantoom stone or stone supplied to any other developments that have been referred to in this litigation.
427. Lantoom was in breach of the warranties and representations in clause 6.1.1, clause 6.1.2, clause 6.1.3 and clause 6.1.5 of BDW's standard terms.
428. BDW is, therefore, entitled to damages for breach of contract.
429. Since BDW's standard terms were incorporated into the contract, BDW is also entitled to the indemnity in clause 10.5. The terms of clause 10.2 are not relevant or applicable. It is not a warranty of compliance with NHBC requirements, as BDW appeared to contend, but a warranty that goods are guaranteed in accordance with such requirements. Those requirements do not apply to Lantoom and would make no sense in the context of a supplier rather than a builder. Nor is there an allegation against Lantoom of a defect in design.
430. There is an alternative basis for BDW's claim in damages for misrepresentation, the misrepresentation being that as to the use of the stone and not that the stone was slate.

Issue 25

431. It was agreed between the parties that, although quantum was to be determined at a later date, if necessary, issue no. 25 would remain part of the liability hearing. That issue is whether it is or was reasonable and proportionate for BDW to replace all of the Lantoom stonework. When it came to closing submissions, however, Mr Choat said that the court might wish to revisit this issue after the quantum evidence. Similarly Ms Jones flagged up three issues so that they could be considered in submissions on quantum.
432. I raised with counsel at the hearing of oral submissions my concern as to where the dividing line between liability and quantum lay and, in particular, the potential relationship between the answer to issue no. 25 and the cost of remedial works. I indicated that I would take a cautious approach. I do take that approach and it seems to me that this issue ought to be revisited, as it was put, when the quantum evidence is addressed.

Appendix: Agreed List of Issues

(A) The original contract and its terms [APOC, paras 6-15 and 23-26C; ADefence, paras 4-6 and 12-38A; AReply, paras 2-19; Further Info 1, #1 and #3; Further Info 2]

(1) Did the contract between BDW and Lantoom formed for the first delivery (on 7 February 2012) of Lantoom's stone:

- (a) incorporate BDW's Terms;
- (b) incorporate Lantoom's Terms; or
- (c) incorporate neither?

Answer

The contract incorporated BDW's Terms.

(2) If the contract incorporated BDW's Terms:

(a) What was the Specification for the purposes of clauses 1.1 and 6.1.1 of BDW's Terms; or the specification and/or quality for the purposes of clause 6.1.2 of the BDW's Terms? Was it that the stone supplied by Lantoom would be:

- (i) slate stone; and /or
- (ii) suitable for forming the external walling leaf, alternatively external walling, of houses and, in particular, houses at the Site; and/or
- (iii) suitable for external or internal wall cladding; and/or
- (iv) was no Specification agreed?

Answer

The agreed Specification for the purposes of clause 6.1.1 and the specification for the purposes of clause 6.1.2 was that at (ii) above.

(b) What was the purpose notified to Lantoom for the purposes of clause 6.1.3 of BDW's Terms? Was it forming the external walling leaf, alternatively external walling, alternatively external or internal wall cladding, of houses and, in particular, houses at the Site?

Answer

The purpose notified was forming the external walling leaf and/or external walling of houses at the Site.

(3) Did the contract incorporate any of the following implied terms:

- (a) That the delivered stone would correspond with its description and specification?
- (b) That the delivered stone would correspond to the description set out in the 6 February Purchase Order and subsequent variations, subject to natural variation, the stone being delivered as extracted from the quarry?

Answer to (a) and (b)

The stone was to comply with the agreed specification as above and with its description as walling stone.

(c) That the delivered stone would be reasonably fit for its purpose of forming the external walling leaf, alternatively external walling, alternatively external or internal wall cladding, of houses and, in particular, the houses at the Site? In particular:

- (i) Did BDW, expressly or by implication, make known to Lantoom that purpose as a purpose for which Lantoom's stone was being bought?
- (ii) Do the circumstances show that BDW did not rely, or that it was unreasonable for BDW to rely, on the skill or judgment of Lantoom?

Answer

BDW made known to Lantoom that the stone was to be used as the external leaf of a cavity wall and/or as external walling of houses at the site. In so far as relevant, BDW relied on Lantoom in that respect and it was not unreasonable for BDW to do so.

(d) For the avoidance of doubt it is agreed that it was an implied term that the delivered stone would be of satisfactory quality as defined by section 14 of the Sale of Goods Act 1979.

(4) If (a), and in relation to (d), what was the relevant description and/or specification? Was it that the stone supplied by Lantoom would be:

(a) slate stone; and/or

(b) suitable for forming the external walling leaf, alternatively external walling, of houses and, in particular, houses at the Site; and/or

(c) suitable for external or internal wall cladding?

Answer

See above

(B) The contractual position and contractual terms for deliveries after 7 February 2012 [APOC, paras 16-26C; ADefence, paras 4-6 and 12-38A; AReply, paras 2-19; Further Info 1, #1]

(5) For deliveries after 7 February 2012 was the contract any different from (1)-(4) above? In particular, did Order Number HM-5917/0062/001 dated 22 March 2012 and/or Order Number HM-5917/0062/004 dated 8 March 2013:

(a) vary the contract;

(b) replace the contract; or

(c) neither?

Answer

Neither, other than to vary the quantities of stone to be supplied subject to the terms of the existing contract.

(6) Did any contract/s formed after 7 February 2012 or any contract/s as varied after 7 February 2012 apply:

(a) retrospectively to the stone delivered by Lantoom to BDW on 7 February 2012 and subsequently; and

(b) prospectively to deliveries of stone yet to be made by Lantoom to BDW?

Answer

No and, in any event, no issue arises

(C) Misrepresentation [APOC, paras 3-5 and 38-40; ADefence, paras 4-11 and 49-52; AReply paras 2-19 and 24-38]

(7) Before Lantoom contracted with BDW, did Lantoom represent that its stone was:

(a) slate stone; and/or

(b) suitable for forming the external walling leaf, alternatively external walling, alternatively external or internal wall cladding¹, of houses and, in particular, houses at the Site?

Answer

As to (a), yes but that did not mean and/or was not understood to mean “true slate”. As to (b), suitable for forming the external walling leaf, alternatively external walling, of the houses.

(8) If so:

¹ Lantoom has added, by way of a footnote at this point in the List of Issues, the following “*Lantoom reserves its position as to whether or not this sub-clause of this issue (“alternatively external or internal wall cladding”) is pleaded and as to the consequences of the same*”. BDW considers it is pleaded, not least given that Lantoom does not distinguish between the external walling leaf and cladding (see above).

- (a) Was/were the representation/s incorrect?
- (b) Did the representation/s induce BDW to enter into the contract?
- (c) Did Lantoom have reasonable ground to believe and did Lantoom believe up to the time the contract was made that the representation/s was/were true?

Answer

As to (a) and (b), the representation as to use as an external walling leaf or for external walling of the houses was incorrect and the representation was relied upon by BDW. So far as (c) is concerned, the issue and answer is more nuanced. Mr Crocker had reasonable grounds for the belief that stone from the Lantoom quarry could be used for external walling – Lantoom is right to say that the stone had been used for this purpose for many years. He did not, however, have reasonable grounds for the belief that the stone supplied, was suitable for the external leaf of a cavity wall or external walling of houses on the Site. This was not an issue which Lantoom had ever specifically addressed. If Lantoom considered that the stone was suitable for this use if, but only if, specific local construction practices were followed then, in the circumstances of this case, the burden lay on Lantoom to qualify any representation as to the stone’s suitability for use.

(D) Exclusions of liability, section 3 of the Misrepresentation Act 1967 and sections 3, 6 and 11 of the Unfair Contract Terms Act 1977 [ADefence, paras 36-37, 50 and 63.1-63.2; Reply, paras 15-16 and 25]

(9) If clause 34.1 of BDW’s Terms or clauses 17, 20 and 26 of Lantoom’s Terms applied, on the proper interpretation of such clause/s, did it/they exclude any liability of Lantoom for misrepresentation?

Answer

In opening submissions, Lantoom said that this issue was no longer pursued.

(10) If Lantoom’s Terms applied, is clause 17 relevant and, if so, how?

Answer

In opening submissions, Lantoom said that this issue was no longer pursued.

(11) If Lantoom’s Terms applied, is BDW claiming for “consequential losses” for the purposes of clause 20?

Answer

The issue does not arise.

(12) If Lantoom’s Terms applied, should any (or any part) of clauses 17, 20 and 26 be struck down as unreasonable pursuant to section 3 of the Misrepresentation Act 1967 (subject to issue (9) above) or sections 3, 6 and 11 of the Unfair Contract Terms Act 1977 (it being common ground that Lantoom’s Terms were Lantoom’s “written standard terms of business”)?

Answer

The issue does not arise

(E) Breach of contract as well as, under BDW’s Terms, the indemnity and the warranty/“guarantee” [APOC, paras 41-48; ADefence, paras 53-62; AReply, paras 20-38; Further Info 1, #3; Further Info 2]

(13) Which, if any, of the express terms were breached?

Answer

See below

(14) If BDW's Terms applied:

(i) Was the delivered stone not as safe as persons generally are entitled to expect (in breach of clause 6.1.5 of BDW's Terms)?

(ii) Did the delivered stone not comply with the Specification; and/or the specification and/or quality for the stone that Lantoom was to deliver (in breach of clauses 6.1.1 and 6.1.2 of BDW's Terms)? That is, was it not slate stone and/or not suitable (further to issue (2)(a) above)?

(iii) Was the delivered stone not fit for the purpose of forming the external walling leaf, alternatively external walling, alternatively external or internal wall cladding, of houses or the houses at the Site (in breach of clause 6.1.3 of BDW's Terms)?

Answer

In respect of the stone supplied, Lantoom was in breach of each of the clauses referred to in this issue.

(iv) Did the delivered stone not comply with good building practice (in breach of clause 6.1.4 of BDW's Terms)?

Answer

It is not necessary to address this issue.

(v) Is BDW entitled to the indemnity under clause 10.5?

Answer

Yes

(vi) Is BDW entitled pursuant to the warranty/"guarantee" in clause 10.2?

Answer

No

(15) Which, if any, of any implied terms were breached?

(a) Did the delivered stone not correspond with its description and specification? That is, was it not slate stone and/or not suitable (further to issues (3)(a) and (4) above)?

(b) Did the delivered stone fail to correspond to the description set out in the 6 February Purchase Order and subsequent variations, subject to natural variation, the stone being delivered as extracted from the quarry?

Answer

The stone delivered did not comply with the implied terms as identified in answer to issue no. 3 above.

(c) Was the delivered stone not reasonably fit for the purpose of forming the external walling leaf, alternatively external walling, alternatively external or internal wall cladding, of houses or the houses at the Site?

Answer

The delivered stone was not reasonably fit for the purposes identified in answer to issue no. 3 above.

(d) Was the delivered stone not of satisfactory quality?

Answer

Yes

(F) Discovery of the issues with Lantoom's stone [APOC, paras 30-32; ADefence, paras 42-43; Further Info 1, #2]

(16) When did it come to BDW's attention that Lantoom's stone was cracking, spalling and falling away?

Answer

In or about September 2015.

(G) Replacement of Lantoom's stone [APOC, para 35; ADefence, para 46; AReply, para 23; Further Info 1, #4]

(17) Was and is BDW's plan to replace the Lantoom stone using Yennadon stone?

Answer

Yes. That is now common ground.

(H) Causation (of the Lantoom stone cracking, spalling and falling away) [APOC paras 41-46; ADefence paras 39-48 and 55-57; AReply paras 20-22B and 29-38]

(18) What caused the Lantoom stone to crack, spall and fall away? Was this caused by Lantoom's alleged breach or breaches of contract (issues (13) – (15) above refer) or by some other factor or factors (or a combination)?

(19) If the latter (causation by some other factor or factors), was the cracking, spalling and falling away caused by any, some or all of the following which are listed by Lantoom for the purposes of this List of Issues (BDW reserving its position as to the factors which Lantoom's pleaded case has relied upon, but which Lantoom no longer appears to rely upon for its case on causation):

- (a) Defective workmanship;
- (b) BDW's alleged failure either properly or at all to consider the use of the stone in its design of the houses at the Site;
- (c) A failure to install in accordance with historical, local use;
- (d) The use of mortar of insufficient quality;
- (e) Inconsistent incorporation of movement joints;
- (f) A failure to sort and grade stone prior to use;
- (g) Issues with the damp-proofing course and/or use of stone below damp proof level;
- (h) Poor alignment of stone;
- (i) Setting stones on edge;
- (j) Thin mortar joints;
- (k) Partially filled joints.

(20) Insofar as other factors are relevant, to what extent are they also relevant to or reflective of any susceptibility to moisture, lack of durability and/or propensity to crack, spall and fall away of the Lantoom stone (i.e. Lantoom's alleged breach/es of contract, to which issues (13) – (15) above refer)?

Answers

The cause of the stone cracking, spalling and falling away was the breaches of contract by Lantoom and not the matters set out in issue no. 19 which are addressed in the body of this judgment.

(I) Causation (misrepresentation) [APOC paras 15 and 22; ADefence, paras 4-11, 24, 33; AReply para 29]

(21) But for either or both of the alleged misrepresentations, would BDW have sourced its stone from Yennadon Stone Limited instead of Lantoom?

(22) Would stone from Yennadon not have suffered from the cracking, spalling and falling away experienced by Lantoom's stone?

Answers

As to issue no. 21, BDW would have sourced Yennadon stone. On issue no. 22, Lantoom's primary position is that this is irrelevant and I agree. BDW's case was that the replacement

stone was performing well. There was some evidence, which I have not recited above, of the replacement stone also suffering from cracking but not that it was as widespread as the issues with the Lantoom stone.

(J) Quantum [APOC paras 49-53; ADefence, paras 43, 62-64; AReply 39-40]

- (23) What are and will be BDW's losses and liabilities as a result of any Lantoom stone defects or non-compliances or any misrepresentation
- (24) Did BDW mitigate and is BDW mitigating its loss?
- (25) Was it and is it reasonable and proportionate for BDW to replace all of the Lantoom stonework?
- (26) Is BDW seeking betterment and, if so, what credit (if any) should be given for it?
- (27) What (if any) part of the sums claimed relate to remedying defects other than those (if any) in the Lantoom stone, and what credit (if any) should be given for these items?
- (28) To what extent is BDW entitled to recover for its losses and liabilities:
 - (a) as damages for Lantoom breaching any express term;
 - (b) as damages for Lantoom breaching any implied term;
 - (c) pursuant to the indemnity in clause 10.5 of BDW's Terms;
 - (d) pursuant to the warranty/"guarantee" in clause 10.2 of BDW's Terms; and/or
 - (e) as damages pursuant to section 2(1) of the Misrepresentation Act 1967?
- (29) To what extent is BDW's entitlement to recovery limited (if at all) by clauses 17 or 20 of Lantoom's Terms? [No longer pursued]

(K) Interest [APOC para 54; ADefence para 65]

- (30) What is/are the applicable rate/s for any interest?
- (31) What is/are the applicable duration/s for any interest?

(L) Costs

- (32) What is the correct costs order?