

OPUS 2

INTERNATIONAL

Horizons Issues - Alan Bates & Others v Post Office Limited

Day 18

June 11, 2019

Opus 2 International - Official Court Reporters

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1 Tuesday, 11 June 2019
 2 (10.30 am)
 3 MR GREEN: My Lord, my learned friend is about to call
 4 Dr Worden. Just before he does, your Lordship asked us
 5 about which days were which on the transcript.
 6 MR JUSTICE FRASER: Yes.
 7 MR GREEN: I have shown my learned friend this because
 8 accidentally we only got one copy, but it is Days 9, 10,
 9 11 and 13 that are not part of this trial, and we have
 10 set them out on --
 11 MR JUSTICE FRASER: I'm not sure that's necessarily correct
 12 in the sense that they are -- but that's fine. So which
 13 day is today?
 14 MR GREEN: Today is Day 18, my Lord.
 15 MR JUSTICE FRASER: Day 18, all right. That's excellent.
 16 Thank you very much. Are you going to give a copy of
 17 that to Mr de Garr Robinson?
 18 MR GREEN: Yes, I have shown him it already and we will give
 19 him a copy.
 20 MR JUSTICE FRASER: Thank you very much.
 21 MR DE GARR ROBINSON: My Lord, I call Dr Robert Worden.
 22 DR ROBERT PEEL WORDEN (affirmed)
 23 Examination-in-chief by MR DE GARR ROBINSON
 24 MR JUSTICE FRASER: Do have a seat, Dr Worden.
 25 A. Thank you.

1

1 MR DE GARR ROBINSON: Dr Worden, I see that you have
 2 a formidable box there which I believe contains hard
 3 copies of your reports. You may or may not want to put
 4 the box on the ground; that's a matter for you.
 5 What I'm going to do is take you to your reports and
 6 ask you a couple of questions about them. First of all,
 7 your first report on the trial bundle is {D3/1/1}. Is
 8 that your first report?
 9 A. Let me just go to the very beginning. That is.
 10 Q. If you could go to page {D3/1/260}.
 11 A. Could you tell me what tab that is?
 12 Q. It should be at the end of the first tab.
 13 A. I see, it is the affirmation bit. I'm sorry, the
 14 signature bit. Got it.
 15 Q. Is that your signature?
 16 A. That is my signature.
 17 Q. Then if I could ask you -- this may not be in the
 18 bundles -- to go to {D3/1.1/1}.
 19 A. Sorry, how do I correlate this thing with D3? I don't
 20 think I do.
 21 Q. It may not be in the hard copy bundles. I'm afraid I
 22 don't know what's in those bundles. But you will see
 23 a list of corrections there, yes?
 24 A. The list of corrections I think is at the front.
 25 Q. Are these some corrections to your first report that you

2

1 identified that needed to be made?
 2 A. Yes.
 3 Q. And this was added to the trial bundle back in April?
 4 A. Yes.
 5 Q. Now let's go to your second report. That's {D3/6/1}.
 6 A. Let me just find my way around.
 7 Q. I suspect it will be in a different bundle but it may
 8 not.
 9 A. I think it is right at the back of this one actually.
 10 Let's have a look.
 11 Q. Gosh, that's a very big bundle, isn't it?
 12 A. Sorry, my fault.
 13 Q. I wonder, my Lord, in due course whether it might be
 14 appropriate to split them up.
 15 A. I think it is a different bundle.
 16 Q. Yes. I see that there are other bundles in the box.
 17 A. Sorry, I will find my way around this soon.
 18 Supplemental report. Got it.
 19 Q. For the trial bundle it is {D3/6/1}. Is this your
 20 second report?
 21 A. This is my second report.
 22 Q. Dr Worden, I have not found your signature page or,
 23 indeed, an expert declaration. Do you give that expert
 24 declaration in relation to your second report?
 25 A. I do.

3

1 Q. And there are some appendices and financial calculations
 2 which add to or correct some of the points made, and
 3 calculations contained in your first report, aren't
 4 there?
 5 A. There's a series of corrections. I mean, the
 6 calculations made in the first report were first
 7 corrected in the second report and then a further
 8 correction was made with the second expert joint
 9 statement.
 10 Q. I see. So subject to the corrections we have just
 11 discussed, do you believe that these two reports, their
 12 appendices and their attached financial impact
 13 calculations to be true?
 14 A. I do. They are my opinion.
 15 Q. Joint statements. A point has arisen on the joint
 16 statements that you and Mr Coyne have agreed. I'm told
 17 there is an amendment that has been agreed to
 18 paragraph 11.1 of the fourth joint statement. Is that
 19 right?
 20 A. That is correct.
 21 Q. Do you have a copy of the amendment that has been
 22 agreed?
 23 A. Well, I had a few minutes ago when I signed it. I'm not
 24 sure where it is now. It is probably in one of these,
 25 isn't it? The problem is it is not amended in this one.

4

1 Q. Could you tell me what you did with the piece of paper
 2 you signed?
 3 A. I gave it to my assistant who gave it, I think, to
 4 somebody else.
 5 Q. Do we have a copy of the signed version of the amended
 6 JS4?
 7 MR GREEN: We have got copies if that helps.
 8 MR DE GARR ROBINSON: Thank you. If that could be handed to
 9 Dr Worden.
 10 MR JUSTICE FRASER: I would like a copy, please. Is there
 11 only one?
 12 MR GREEN: My Lord, I think this is the one that's signed.
 13 MR JUSTICE FRASER: Give it to the witness first .
 14 MR GREEN: We will produce copies.
 15 A. I think two were signed. I signed two.
 16 MR DE GARR ROBINSON: That's the fourth statement which --
 17 for the trial bundle, the current version of which is in
 18 {D1/5/1}. I believe the amendment may be at page
 19 {D1/5/10}. Is that right?
 20 A. The amendment is 11.1, which is at page 10.
 21 Q. Could you read out what the original version says and
 22 what the changed version now says.
 23 A. Do you want the full statement each time?
 24 Q. It's just a sentence, isn't it, in 11.1?
 25 A. Yes, it is a longish sentence. Start with the original :

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1 "Evidence from several Peaks indicates that whenever
 2 Fujitsu needed to make any change to data which impacted
 3 branch accounts, they were concerned to seek permission
 4 from PO to do so, and to ensure that PO took
 5 responsibility for the resulting change."
 6 {D1/5/10}
 7 Q. Right. And what is the change that you have agreed?
 8 A. The change that Mr Coyne and I agreed out there the
 9 other day was that the word "whenever" is replaced by
 10 "usually when".
 11 Q. Just to explain, could you explain what you mean -- I'm
 12 not asking you to delve into Mr Coyne's head -- by
 13 "usually when"?
 14 A. Yes. I mean, I agreed to the replacement of "whenever"
 15 because "whenever" implies that the opposite never
 16 happens, and I felt I didn't know strongly enough to say
 17 that categorical statement. So "usually when" to me
 18 means the great majority of cases, but I can't say with
 19 my hand on my heart all cases.
 20 MR DE GARR ROBINSON: Very good.
 21 My Lord, I have no further questions.
 22 MR JUSTICE FRASER: Just before -- and it might not be a big
 23 point but it might be, the note that I made of when this
 24 point was put to Mr Coyne was that the change was to
 25 "usually" rather than "usually when". But your

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1 understanding --
 2 A. I noted that problem. I didn't say anything about it at
 3 the time.
 4 MR JUSTICE FRASER: This is last week?
 5 A. Yes. I noted people said "usually" instead of
 6 "whenever". I thought that is a problem, but I didn't
 7 actually say anything.
 8 MR JUSTICE FRASER: Right. But the change that you consider
 9 should be made is that the single word "whenever" is
 10 changed to "usually when"?
 11 A. That I believe is the words we agreed.
 12 MR DE GARR ROBINSON: That has been agreed, my Lord.
 13 MR JUSTICE FRASER: The point that was put to Mr Coyne that
 14 was agreed though was that the change was from
 15 "whenever" to the word "usually".
 16 MR DE GARR ROBINSON: Well, your Lordship will remember that
 17 it was made clear that at that stage the actual wording
 18 hadn't been --
 19 MR JUSTICE FRASER: That's why I said it might not make
 20 a difference, but my note of what was put was that the
 21 change was to "usually". But there's now a signed
 22 statement that has "usually when" on it; is that right?
 23 MR DE GARR ROBINSON: Yes.
 24 MR JUSTICE FRASER: Is that what the witness has been given?
 25 MR DE GARR ROBINSON: Yes, my Lord.

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1 MR JUSTICE FRASER: Can I have either a copy of that or that
 2 at some point.
 3 MR DE GARR ROBINSON: Yes.
 4 MR JUSTICE FRASER: Thank you very much,
 5 Mr de Garr Robinson.
 6 Mr Green.
 7 Cross-examination by MR GREEN
 8 MR GREEN: Dr Worden, can we look at your CV, please. It
 9 will come up on the screen. So when I call
 10 a document --
 11 A. Fine.
 12 Q. It is {D3/4/1}.
 13 A. Is it in this bundle, by the way? It should be,
 14 I guess. Anyway, there we are.
 15 MR JUSTICE FRASER: Just for the cross-examination generally
 16 if you would like to see the hard copy in front of you
 17 of whatever is on the screen please just say so.
 18 A. Thank you, my Lord.
 19 MR JUSTICE FRASER: You will be given the reference.
 20 Right, Mr Green.
 21 A. Here we are.
 22 Q. So we have got your strong practical experience
 23 explained there?
 24 A. Yes.
 25 Q. You have a PhD in theoretical particle physics?

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1 A. Yes.
 2 Q. That is right. And you have listed a number of
 3 important and quite high value IT cases in which you
 4 have been an expert?
 5 A. That is right.
 6 Q. You have a wealth of experience of being an expert?
 7 A. I have. I have tried over the past 15 years to spend
 8 not more than half of my time being an expert.
 9 Q. I understand. Do you have any particular qualifications
 10 in statistical techniques?
 11 A. Well, I'm trained as a scientist and engineer, and as
 12 such I have been using mathematics all my life. And
 13 a part of that mathematics is probability theory and
 14 statistics. I have a PhD which applies that
 15 mathematical extensively. I have not any formal
 16 qualification in statistics, but I don't regard
 17 statistics as distinct from the other body of my
 18 mathematical knowledge.
 19 Q. Indeed if we look at page {D3/4/2} of that document --
 20 it is just coming up now. There will sometimes be
 21 a slight delay while the Opus operator loads the
 22 page up.
 23 A. Yes sure.
 24 Q. -- if you look at the middle of the page you will see
 25 July 1997 to July 2010 in bold. Do you see that?

9

1 A. Yes, right.
 2 Q. The first paragraph begins:
 3 "Acted for WPL ..."
 4 Do you see that?
 5 A. Yes.
 6 Q. If you go to the right-hand side of that paragraph which
 7 ends with "June 2010" and you come down two lines, you
 8 see:
 9 "Robert gave evidence on software development
 10 methods, advanced statistical techniques ..."
 11 Do you see that?
 12 A. Yes.
 13 Q. The phrase "advanced statistical techniques" reflects
 14 the application of the expertise that you have just been
 15 talking about?
 16 A. Absolutely. I believe that the statistics I have
 17 applied as a scientist particularly but also as
 18 an engineer goes to the point of advanced statistical
 19 techniques.
 20 Q. And in statistics there are some matters which are
 21 questions of approach, how should we go about looking at
 22 something?
 23 A. There are indeed.
 24 Q. And there are other matters which are maths, which are
 25 either right or wrong?

10

1 A. Yes, there is a lot of strain mathematics which dates
 2 back to a long time.
 3 Q. And you felt completely comfortable giving your evidence
 4 on statistics and probability in this case?
 5 A. Yes. I should say SAS is a statistics package, so it
 6 has an advanced statistical method built into it and
 7 I felt thoroughly comfortable examining those methods
 8 and so on.
 9 Q. Yes. And was it you who was doing the statistics
 10 mostly, or Mr Emery, or a team effort?
 11 A. No, Mr Emery was not involved in this dispute, it was
 12 just solely me. Sorry, in this dispute I did the maths.
 13 Q. You did the maths?
 14 A. In SAS v WPL it was only me.
 15 Q. I understand. But in this dispute, you and Mr Emery
 16 worked together?
 17 A. That is right.
 18 Q. You did the maths?
 19 A. Yes.
 20 Q. Did Mr Emery check the maths?
 21 A. No, he didn't actually. The maths is there in the
 22 spreadsheets for anybody to check. It is not advanced
 23 statistics, it is basic multiplication and division, and
 24 it is laid out in the spreadsheets.
 25 Q. Did you check it yourself?

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1 A. Absolutely.
 2 Q. Probably several times given you have checked for other
 3 errors and made a correction?
 4 A. Well, the correction was not a correction to the maths,
 5 the correction was adjustments to the input assumptions.
 6 Q. Let's just pause. I want to take you to one correction
 7 you have made. It is at {D3/1.1/1}. This is
 8 a corrections document to your report, isn't it?
 9 A. Well, I haven't got -- I mean, the screen is not showing
 10 me anything I can see is relevant at the moment.
 11 Q. No, I'm just identifying the documents.
 12 A. Right. This is corrections to my first report, yes.
 13 Q. It says there just underneath what we call the tramlines
 14 where it says "Corrections to Dr Worden's Expert
 15 Report", it says you have identified some minor
 16 corrections and clarifications?
 17 A. Yes.
 18 Q. If we go to page {D3/1.1/2} and if we look down at 761
 19 towards the bottom, you say:
 20 "the chances of the bug occurring in a Claimant's
 21 branch would be about 2 in 10 million?"
 22 A. Yes.
 23 Q. And it should be:
 24 "the chances of the bug occurring in a Claimants'
 25 branch would be about 2 in a million."

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1 A. That is right.
 2 Q. So what was stated there was out by a factor of 10, and
 3 that's why you've corrected it?
 4 A. A correction had to be made. Yes, that is right.
 5 Q. Did you notice any other errors?
 6 A. No, I didn't because there were quite a few statements
 7 of this "in a million" nature in my report. I made
 8 careful checks of the main thread that led to my key
 9 result in section 8.7, and that was my focus. And
 10 similarly on the transaction corrections I had made
 11 checks to that spreadsheet and, you know, I included the
 12 spreadsheets with the reports so that you can see how
 13 the arithmetic is done from the spreadsheets.
 14 Q. And some of it you point out is basic arithmetic?
 15 A. I think all of it is basic arithmetic.
 16 Q. I'm very grateful.
 17 Now, have you been involved in any group litigation
 18 as an expert?
 19 A. No, this is a new experience for me.
 20 Q. I understand.
 21 A. I think I haven't. No, I'm pretty sure I haven't.
 22 Q. It is right, isn't it, you are not a behavioural
 23 economist by training?
 24 A. Absolutely, I'm not a behavioural economist.
 25 Q. You know who Richard Thaler is?

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1 A. No, I don't.
 2 Q. He won the Nobel prize for economics in 2017 for his
 3 work in behavioural economics. That is not your field
 4 of expertise?
 5 A. No, it is not my field of expertise. My knowledge of
 6 economics is shallow and really my knowledge is much
 7 more about business finance because I have been involved
 8 in managing parts of various businesses.
 9 Q. But you have referred in your report -- if we look at
 10 {D3/1/107} and if we look at paragraph 415 there.
 11 A. Yes.
 12 Q. You have said there:
 13 "I can go a little further than this ..."
 14 This is referring to approaches to challenging
 15 discrepancies:
 16 "... by making weak inferences about how a manager
 17 of a small business, such as a Subpostmaster, needs to
 18 prioritise his time in monthly balancing and other
 19 evidence."
 20 A. Yes.
 21 Q. "The Second Witness Statement of Ms Angela Van Den
 22 Bogerd at paragraph 187 says: 'Generally, when
 23 discrepancies are of a value of several hundreds of
 24 pounds, I would expect Subpostmasters to contact NBSC.'
 25 A. Yes.

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1 Q. Now, what then follows is this statement:
 2 "If this is correct, it is consistent with my
 3 estimates."
 4 That suggests you have made your own estimate of the
 5 value at which a subpostmaster would contact NBSC?
 6 A. Yes, I have made my own estimates, and you can see they
 7 are rather more detailed than Mrs Van Den Bogard's
 8 witness statement. In other words, she's put a point on
 9 the spectrum. I have made some estimates about what the
 10 spectrum is.
 11 Q. Can we just be careful with what we are talking about,
 12 because it does matter. You understand, particularly
 13 with your background as a scientist, the difference
 14 between an estimate and an assumption, don't you?
 15 A. Absolutely. I think I do, yes.
 16 Q. It is pretty fundamental. An estimate is based on some
 17 facts --
 18 A. I have made a number of -- well, have I been loose in
 19 terminology between --
 20 Q. Dr Worden, at present I'm just trying to clarify with
 21 you what you have and have not done. I'm not going to
 22 tie you to the words, but I'm going to show you the
 23 words you use to clarify what you have in fact done or
 24 not done.
 25 A. "I assume the following, as best --"

15

1 Q. Dr Worden, would you allow me to take you through it?
 2 A. I'm sorry.
 3 Q. It will just help you to identify to show what you I'm
 4 asking --
 5 A. I'm just reminding myself that it is actually
 6 assumptions I'm making in this paragraph.
 7 Q. That's what I'm asking you, because there are a number
 8 of ways of reading that paragraph. Because after the
 9 quote of Mrs Van Den Bogard's witness statement, which
 10 is in bold and ends with the words "paragraph 187)",
 11 there's then this sentence:
 12 "If this is correct, it is consistent with my
 13 estimates."
 14 Then there is a separate sentence which says:
 15 "I assume the following, as best assumptions ..."
 16 Now, the first question for you is this: when you
 17 use the phrase, which we have also seen elsewhere, or
 18 similar, "if this is correct, it is consistent with my
 19 estimates", now, the use of the word "estimate" there,
 20 I think we have agreed, tends to suggest something
 21 different to "assumption", doesn't it?
 22 A. Absolutely, yes.
 23 Q. So can you please just tell the court did you make your
 24 own free-standing estimate without regard to Angela Van
 25 Den Bogard's witness statement of the levels at which

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1 a subpostmaster would or would not challenge
 2 a discrepancy by ringing the NBSC?
 3 A. To clarify wordings, in my reports --
 4 Q. Could you answer the question first?
 5 A. In my report I made various estimates following from
 6 an assumption. In other words, I made assumptions to
 7 put into the maths which then constituted my estimates.
 8 So that's the distinction in my mind between assumption
 9 and estimate. And when I say it is consistent with my
 10 estimates, it is consistent with estimates following
 11 from my assumptions.
 12 Q. Right. To clarify that sentence I'm asking you about,
 13 where it says "if this is correct, it is consistent with
 14 my estimates", you are not saying that you have any
 15 independent basis upon which to support what Angela Van
 16 Den Bogard says, are you? You didn't make any estimates
 17 that confirm her witness evidence?
 18 A. Well, there is a process you use in engineering of
 19 ballpark estimates, which are imprecise -- or ballpark
 20 assumptions -- I'm sorry if I get confused about the
 21 wording here -- which are very approximate assumptions
 22 you make in order to drive a calculation through. And
 23 then you look back at the calculation and you say: is
 24 the precision I have achieved in that calculation
 25 sufficient or do I need to refine / revisit some

17

1 assumptions?
 2 So you are always looking at the precision you need
 3 to achieve in the result when you are concerned with how
 4 precise should my assumptions or my estimates be. How
 5 precise should my assumptions be in order to drive this
 6 set of estimates which arrives at a number. How precise
 7 do I need that number to be? I felt that given the
 8 precision I needed or the court needed in the final
 9 result, the precision of these assumptions, you know,
 10 whether it is £300 or £400, for instance, was
 11 sufficient.
 12 Q. I will just take you back to the question for the
 13 moment. We understand you made assumptions.
 14 A. Yes.
 15 Q. And you have set them out.
 16 A. Yes.
 17 Q. And you have said they are assumptions.
 18 A. That is right.
 19 Q. But you didn't make any fact-based estimate of what
 20 would in fact happen yourself, did you?
 21 A. I didn't go and interview a postmaster, for instance, or
 22 anything like that. They were assumptions and they are
 23 advertised as assumptions, and so if the court wishes to
 24 change the assumptions and drive them through the
 25 calculation, for instance, the calculations were

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1 intended to have that ability, so that if the court --
 2 I make some assumptions, if the court decides to find
 3 something different then the court can drive those
 4 different findings through my calculations.
 5 Q. Okay. I will put it one last time. The answer is no,
 6 isn't it, you didn't make --
 7 A. I think I said no. Yes, it is no. I didn't make
 8 a fact-based --
 9 Q. Yes. To do so you would have needed the relevant fact
 10 background, wouldn't you, to make an assessment of that?
 11 You would have had to understand the process, what sort
 12 of headwinds people faced when they sought to report
 13 things, how they valued their own time etc?
 14 A. To get precise numbers --
 15 Q. To make an estimate not an assumption?
 16 A. To get precise numbers I would have had to do that.
 17 Q. Or any number that was an estimate rather than
 18 an assumption, you would need some facts upon which to
 19 make an estimate, wouldn't you?
 20 A. Well, as I say, my view of the word "estimate" is
 21 an estimate is what I made following my assumptions.
 22 Q. No, Dr Worden --
 23 A. Is that unclear? That I made some assumptions and put
 24 them into some maths and that resulted in some
 25 estimates.

19

1 Q. So the estimates that you refer to are the outcome of
 2 having made assumptions?
 3 A. That is right.
 4 Q. I understand. And you accept that you had neither the
 5 facts nor the relevant expertise to make estimates which
 6 effectively fall within the field of behavioural
 7 economics?
 8 A. I accept that entirely.
 9 Q. Thank you.
 10 A. I won't say more.
 11 Q. Thank you.
 12 Just stepping back a minute, you have got a PhD in
 13 theoretical particle physics, yes?
 14 A. Mm.
 15 Q. You have this wealth of experience as acting as
 16 an expert and so forth?
 17 A. Mm.
 18 Q. You have made very detailed statistical calculations in
 19 the report?
 20 A. I wouldn't call them very detailed. I think you know
 21 there are a number of multiplications there and
 22 divisions and so on, and where the more detailed
 23 statistics came in was estimating what sort of sample
 24 size I would need to get more precision in the result.
 25 Q. I understand. So you went into more detail in those

20

1 areas?
 2 A. Occasional footnotes addressed these questions, yes.
 3 Q. And you spotted the correction of the typo when you went
 4 through your report?
 5 A. Yes.
 6 Q. Order of magnitude of 10?
 7 A. Yes.
 8 Q. Would you say, Dr Worden, you are a details man?
 9 A. Physics people tend to focus; they don't like loads and
 10 loads of facts, they like to focus on the core analysis
 11 and make sure that's very right.
 12 Q. I understand.
 13 A. So they are detailed people in that sense.
 14 Q. I understand. When we look at Mr Emery at {D3/5/1}, we
 15 have got his CV.
 16 A. Yes.
 17 Q. And we can see he has obviously had a lot of IT
 18 experience over many years. And if you go over the
 19 page, please, {D3/5/2} we can see that he has a degree
 20 in computing science from Imperial College?
 21 A. That is right.
 22 Q. And if we go to page {D3/5/5}, we can see where he
 23 worked and over what period.
 24 A. Yes.
 25 Q. He was obviously at Logica for many, many years,

21

1 wasn't he?
 2 A. That is right. We worked together at Logica in 1976, or
 3 something like that.
 4 Q. I understand. Is that how you have ended up together?
 5 A. Well, obviously, you can see from his resume he has been
 6 at Logica for a fair old time and he's been at
 7 Charteris, and Charteris was a kind of spin-off Logica,
 8 and I've been there. So we've overlapped quite a lot.
 9 Q. Does Charteris still do some consulting for Logica?
 10 A. Not for Logica. Logica doesn't exist anymore.
 11 Q. When did it cease to exist?
 12 A. It was taken over by CGI, I think, and ceased to exist
 13 as a name about ten years ago, I think.
 14 Q. What I really meant was I think at that point quite
 15 a lot of people left?
 16 A. Well, there have been various watersheds, yes.
 17 Q. Was Credence originally a Logica solution?
 18 A. That's a very good question. I haven't really looked
 19 into that. Logica obviously had some role to do with
 20 Credence but certainly I was nothing to do with
 21 Logica at the time.
 22 Q. Had you had experience of data warehousing when you were
 23 working for Logica?
 24 A. Yes, we -- a team that worked for me was involved in
 25 business intelligence and that involved data

22

1 warehousing. And generally I have been doing databases
 2 since the year dot and that includes data warehouses.
 3 Q. Because data warehousing was quite big in the late
 4 1990s, wasn't it?
 5 A. It has been big since then, yes.
 6 Q. In fact, Logica was quite strong in that area in the
 7 early 2000s?
 8 A. Well, I had left them by that point.
 9 Q. I understand. That is right though, isn't it?
 10 A. Logica was a bit of a jack-of-all-trades, actually.
 11 Q. Okay. And just going back to Mr Emery, in your
 12 experience of Mr Emery, I don't want to be unfair, but
 13 is he a details man?
 14 A. I think he is more than me, yes.
 15 Q. And are there any parts of the expert report that he has
 16 not checked? I think you suggested earlier he might not
 17 have checked the maths?
 18 A. That is right.
 19 Q. Is that right?
 20 A. I don't think he has checked the maths.
 21 Q. But otherwise would he have read through --
 22 A. He certainly read through the whole report and the
 23 appendices.
 24 Q. And you have probably read through it several times as
 25 well?

23

1 A. I'm afraid so.
 2 Q. I'm afraid so. How many times?
 3 A. How many times I read through my report? Yesterday
 4 and -- about five times, I suppose.
 5 Q. Five times. So with your eyes on it and Mr Emery's eyes
 6 on it, we have four eyes, haven't we?
 7 A. Yes.
 8 Q. Probably other people who I want ask you about have
 9 looked at it as well, lots, and some of the people who
 10 have looked at it looked at it many times, yes?
 11 A. Well, I have looked at it many times, Mr Emery has
 12 looked at it many times and I suspect the lawyers have
 13 as well.
 14 Q. Can I ask you about how you have approached the
 15 assumptions upon which you have given your opinions in
 16 your report.
 17 Could we look, please, at page {D3/1/153}. We are
 18 going to look, if we may, at paragraph 650. Do you have
 19 that?
 20 A. Yes. "Receipts/Payments Mismatch".
 21 Q. Now, this is looking at the receipts and payments
 22 mismatch bug at the bottom of page 153.
 23 A. Mm.
 24 Q. You see the heading there "8.6.1"?
 25 A. Yes.

24

1 Q. And you say:
 2 "This issue is cited in paragraph 5.6 of Mr Coyne's
 3 report."
 4 A. Mm.
 5 Q. "It involved a bug in Horizon which was triggered by a
 6 rare circumstance (which one would not expect to be
 7 exercised in testing) and which had an effect on branch
 8 accounts."
 9 A. Yes.
 10 Q. "If Mr Godeseth's evidence about this bug is not
 11 accepted, I shall revise my opinions accordingly. They
 12 are based on written evidence - particularly on a
 13 written analysis by Gareth Jenkins ..."
 14 Yes?
 15 A. Yes.
 16 Q. "... as well as the Second Witness Statement of
 17 Mr Godeseth."
 18 A. Yes.
 19 Q. You make a consistency point there. Can we just go back
 20 now you have seen the whole paragraph?
 21 A. Yes.
 22 Q. I just want to ask you about three lines down in that
 23 paragraph, 650, on the right-hand side the following
 24 sentence:
 25 "If Mr Godeseth's evidence about this bug is not

25

1 accepted, I shall revise my opinions accordingly."
 2 Now, pausing there. Let's just only look at this
 3 example in your report. Let's just focus on this.
 4 In this example what you have done is premised the
 5 opinion that you give on the court accepting
 6 Mr Godeseth's evidence.
 7 A. That is right.
 8 Q. But you have fairly said that if the court does not
 9 accept that evidence "I will revise my opinions
 10 accordingly."
 11 A. Yes.
 12 Q. The content of this report in this respect, we will come
 13 to other examples later, focuses on what the
 14 consequences would be if the defendant's factual
 15 evidence is accepted?
 16 A. Generally, if findings -- if things happen in oral
 17 evidence which go against witness statements then
 18 I would need to come back and say what's the impact.
 19 Q. Yes. You understand, don't you, that the moment at
 20 which everyone finds out whether factual evidence is
 21 accepted or not is when the judgment is handed down?
 22 A. Absolutely, yes.
 23 Q. So you are proposing to revise your opinions after that,
 24 are you?
 25 A. No. That's a good point. What I was saying there is if

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1 it becomes evident, all I can do is make assumptions.
 2 The court will find findings and all I can do is make
 3 assumptions and drive them through my opinions and try
 4 and assist the court that way.
 5 So all of this is assumptions I have made based on
 6 the evidence I have seen, and the court may find
 7 differently.
 8 Q. Can I pause there. You were assuming there that
 9 Mr Godeseth's version was true?
 10 A. I was assuming mainly Mr Jenkins' written analysis which
 11 Mr Godeseth's evidence confirmed.
 12 Q. Let's just go with that for the moment. Have a look, if
 13 you would, please, at {D3/1/260}. It is paragraph 1194.
 14 A. Here we go, yes.
 15 Q. You recognise this page because you were shown it --
 16 A. Yes.
 17 Q. Now, come down four lines and look at the right-hand
 18 side about three-quarters of the way across.
 19 A. Yes.
 20 Q. You see "I have not assumed that any particular version
 21 of events is true ..."
 22 A. Yes.
 23 Q. Yes? Now, what you say, if we look at the transcript,
 24 please, at the bottom of page 26 of today's transcript,
 25 just a few moments ago --

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1 A. Can I get that? Yes.
 2 Q. See the bottom of 26, the question is:
 3 "So you are proposing to revise your opinions after
 4 that, are you?"
 5 And you say?
 6 "Answer: --
 7 A. Sorry, I haven't got the right line.
 8 Q. It is the bottom of page 26, halfway down, line 23. Do
 9 you have that?
 10 A. Yes, I have got that.
 11 Q. Dr Worden, if I'm taking you too fast at any point let
 12 me know --
 13 A. No, it is just me finding my way, that is all.
 14 Q. Not at all, it is not always straightforward.
 15 Line 23:
 16 "Question: So you are proposing to revise your
 17 opinions after that, are you?
 18 Your answer is:
 19 "Answer: No. That's a good point. What I was
 20 saying there is if it becomes evident, all I can do is
 21 make assumptions. The court will [make] findings and
 22 all I can do is make assumptions and drive them through
 23 my opinions and try and assist the court that way.
 24 "So all of this is assumptions I have made based on
 25 the evidence I have seen, and the court may find

28

1 differently .”
 2 A. Yes.
 3 Q. Do you feel that overall in your report you have
 4 provided opinions on the footing that the claimants’
 5 evidence is accepted as often as you have provided
 6 opinions on the footing that the defendant’s evidence is
 7 accepted?
 8 A. Well, my analysis of the claimants’ evidence is mainly
 9 contained in my supplemental report, and I explained
 10 there that individual claimants’ evidence, particularly
 11 individual subpostmaster evidence, I did not feel able
 12 to make strong use of that and I gave the reasons in my
 13 supplemental report.
 14 So my opinions have little dependence on that. And
 15 the core of my opinions, the numerical estimates I make,
 16 those estimates have been designed -- or the process and
 17 the method has been designed so that if -- so that to
 18 make my assumptions evident where those assumptions come
 19 in, and if the court finds something different from my
 20 assumptions the court can go to the spreadsheets and
 21 re-do the method for itself .
 22 So I have tried to make the dependence of what the
 23 court may take from my reports as little dependent on my
 24 assumptions as possible. I’m not sure if I’m answering
 25 the question.

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1 Q. Let me give you another example. This is a slightly
 2 different situation ; let’s look at that as well. It is
 3 on page {D3/1/206}. It is where you are dealing with
 4 transaction corrections.
 5 A. Yes.
 6 Q. They were set out, you understood, in Mr Smith’s witness
 7 statement?
 8 A. Evidence was in that witness statement which I thought
 9 bore on the issue of erroneous transaction corrections,
 10 yes.
 11 Q. Let’s have a look. If we go over the page, please,
 12 {D3/1/207} we can see that you say, 934:
 13 “I proceed on the assumption that these figures
 14 (which are the only ones available to me) are accepted
 15 by the court. If they are not, a different calculation
 16 along the same lines may possibly be appropriate.”
 17 A. Yes.
 18 Q. We will come back to what available evidence there was
 19 about TCs later . For now, you will accept that again is
 20 proceeding on the footing that the evidence of the
 21 defendant will be accepted?
 22 A. Yes, I don’t see that evidence of the defendants is very
 23 relevant to this calculation .
 24 Q. I understand.
 25 Now, you have been in court, haven’t you, for the

30

1 whole of the trial , I think?
 2 A. Not the whole trial .
 3 Q. Did you miss any days?
 4 A. I think I must have missed some days, yes.
 5 Q. Did you hear the defendant’s evidence?
 6 A. I certainly heard Mr Rolls’ evidence.
 7 Q. No, the defendant’s evidence.
 8 A. Sorry, the defendant’s --
 9 Q. I will say Post Office .
 10 A. I heard all of that, yes.
 11 Q. You heard all of that?
 12 A. Pretty sure I did.
 13 Q. Have you had any changes of heart about anything in your
 14 report having heard it?
 15 A. Changes of heart?
 16 Q. Anything you want to change about what you said?
 17 A. Well, had there been some fundamental change I would
 18 have felt obliged to communicate it to the court.
 19 Q. Of course, because you take your duty very seriously?
 20 A. Yes, I do. I can’t think of any major change of heart,
 21 but there may well be things that you bring me to and
 22 I say there’s an adjustment here. But to come back to
 23 the point about precision, I am conscious of how precise
 24 my numerical results have to be in order to be of
 25 assistance to the court.

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1 Q. Well, that’s appreciated.
 2 A. And therefore that level of precision is my yardstick
 3 for saying: has my opinion changed? Does the court need
 4 to be informed about it? And so on and so forth.
 5 Q. I see. Let’s look at some particular facets of your
 6 evidence. Let’s look, if we may, please, at {D3/1/239},
 7 which is paragraph 1086 in your report. Do you have the
 8 page there? It is the bottom paragraph.
 9 A. Yes.
 10 Q. You say, second line, do you have halfway through the
 11 second line the words “when Post Office”?
 12 A. Yes.
 13 Q. “When Post Office is investigating anomalies reported by
 14 subpostmasters, they use Credence and their other
 15 management information systems in the first instance
 16 ...”
 17 Just pausing there, it is pretty important to
 18 identify with care and clarity what systems and
 19 information are available to Post Office, isn’t it, in
 20 this case because it is one of the issues?
 21 A. As far as the experts can find out it is important, yes.
 22 Q. Exactly, so far as the experts can find out. We will
 23 come back to that in a minute, but let’s just focus on
 24 this .
 25 So you agree it is important to identify what

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1 information and systems is available as far as the
 2 experts can find out. Just recapping on that sentence
 3 in the third line of that paragraph, so just remind
 4 yourself what I was asking you:
 5 " ... they use Credence and their other management
 6 information systems in the first instance ..."
 7 Yes?
 8 A. Yes.
 9 Q. There is a footnote there, footnote 41?
 10 A. Yes.
 11 Q. There you say:
 12 "The Witness Statement of Ms Tracy Mather,
 13 16 November 2018, is consistent with my understanding."
 14 A. Yes.
 15 Q. Pausing there, did you get your understanding materially
 16 from her witness statement or did you form
 17 an understanding from something else that was consistent
 18 with her witness statement?
 19 A. I formed an understanding from something else, which is
 20 largely my understanding of things like POLSAP, things
 21 like Credence and my experience of how --
 22 Q. And the opportunities you have had to look at that since
 23 you were instructed?
 24 A. To look at what?
 25 Q. To look at the overall system, documents and so forth?

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1 A. Yes, that was combined with my experience of how
 2 businesses worked.
 3 Q. Of course. So let's look at what Ms Mather said in that
 4 witness statement to which you have referred.
 5 It is at {E2/8/3} and it is paragraph 12.
 6 A. This is not one I have looked at very recently.
 7 Q. Don't worry, I will take you through what it says. It
 8 is a short paragraph.
 9 A. (Reads to himself) Yes.
 10 Q. Let's take it in this stages, firstly as an information
 11 tool, I think that's agreed?
 12 A. Yes, it is also called POLMIS in certain documents.
 13 Q. Yes. That's the same ...?
 14 A. My understanding is that POLMIS and Credence are
 15 different names at different times for the same system.
 16 Q. Same system. Because "POLMIS" stands for Post Office
 17 Limited Management Information System?
 18 A. That is right.
 19 Q. And if we look at the second sentence, it says it is
 20 designed to work alongside other applications?
 21 A. Yes.
 22 Q. So there are a number of different things they can
 23 look at?
 24 A. Yes.
 25 Q. "It is used to help understand what has happened in

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1 a branch as it records all keystroke activity performed
 2 in that branch by the user ID, date and time ..."
 3 Do you see that?
 4 A. Yes.
 5 Q. That was your understanding when you wrote your report,
 6 wasn't it?
 7 A. Yes.
 8 Q. Had you formed that understanding from any other
 9 documents that you had seen or was that understanding
 10 only formed from reading Ms Mather's witness statement?
 11 A. No, I had formed it from other documents.
 12 Q. Can you remember what other documents you had seen which
 13 showed that Credence recorded keystrokes in the branch?
 14 A. To that level of keystrokes in the branch -- no, to go
 15 into that level of -- not level of misunderstanding,
 16 level of understanding, to go to that level of
 17 understanding I think Mrs Mather's witness statement was
 18 useful to me. But the point that Credence is an MIS and
 19 Post Office use it to determine what happened in the
 20 branch and so on, those points were evident to me from
 21 my reading of quite a lot of evidence.
 22 Q. But you will forgive me, Dr Worden, if I ask you the
 23 precise question again, which is this: in relation to
 24 Credence recording "all keystroke activity performed in
 25 that branch", was that your understanding when you wrote

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1 your report or not?
 2 A. I did not go as far as understanding all keystroke
 3 activity. In other words, I felt that Credence was
 4 a fairly comprehensive record of things that had gone on
 5 in the branch, but the phrase "all keystroke activity"
 6 would not have occurred to me before her witness
 7 statement.
 8 Q. So --
 9 A. Because that is a very detailed level of information,
 10 and my experience of MIS is that you are taking all
 11 sorts of slices of information, and really drilling down
 12 to the keystroke is very detailed.
 13 Q. But you would accept, Dr Worden, that whether factually
 14 you could look at the keystrokes' activity performed in
 15 a branch or whether you could not, as Post Office, do
 16 that, would be important, wouldn't it?
 17 A. No, I do not think so. For the purpose of knowing that
 18 Post Office could investigate events in the branch using
 19 their MIS, I did not need to know that it went down to
 20 the keystroke level.
 21 Q. Why not?
 22 A. Because MISs typically deal with more summary
 23 information and they are designed based on the
 24 requirements, and if the requirement doesn't require to
 25 go to keystroke level that's not a part of the MIS. And

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1 I didn't feel myself that going to keystroke level was
 2 necessary for the level of investigation that I believed
 3 needed to be done in Post Office .
 4 Q. So you made a judgment about what needed to be done by
 5 way of investigation and you made a judgment that
 6 keystrokes were not necessary to the level of
 7 investigation that you formed a judgment about?
 8 A. Yes. To me, keystroke level is very, very detailed, and
 9 from my experience of MISs, keystroke level is not often
 10 required in an MIS. An MIS typically deals with more
 11 summary information and ways of getting different slices
 12 of information, and so on and so forth. Going down to
 13 the keystroke level is, to my mind, very detailed.
 14 Q. We will come back to this page in a moment, but can we
 15 just go, please, to {C1/1/2}.
 16 The document you are now looking at is not the
 17 document that was on the screen before.
 18 A. No, this is --
 19 Q. These are the Horizon Issues which you probably
 20 recognise?
 21 A. Yes, that is right. Yes.
 22 Q. And if you look halfway down you will see "Operation of
 23 Horizon" in capitals and in bold?
 24 A. Yes.
 25 Q. Under that, there is one subheading, "Remote Access",

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1 and there is another heading, "Availability of
 2 Information and Report Writing". Do you see that?
 3 A. Yes.
 4 Q. Under that, there is issue 8, and issue 8 says:
 5 "What transaction data and reporting functions were
 6 available through Horizon to Post Office for identifying
 7 the occurrence of alleged shortfalls and the causes of
 8 alleged shortfalls in branches ..."
 9 Yes?
 10 A. Yes.
 11 Q. So it was a specific Horizon Issue that you were
 12 instructed to report on?
 13 A. Yes.
 14 Q. To identify what transaction data and reporting
 15 functions were available through Horizon to Post Office?
 16 A. Yes.
 17 Q. And the reason that you weren't interested in whether or
 18 not keystrokes were available was the one you have just
 19 given to the court a moment ago: that you formed
 20 a judgment about what would be necessary, and on the
 21 basis of that judgment you formed a judgment that
 22 keystrokes wouldn't be important?
 23 A. Well, broadly that is correct. I should say also
 24 there's a kind of prioritisation that the expert has to
 25 do, how far he can drill down in particular areas and

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1 what drilling down is used for.
 2 Q. And you felt, if we go back to Ms Mather's report -- it
 3 is {E2/8/3}, it is a short paragraph and it makes quite
 4 a key point about keystroke activity, doesn't it?
 5 A. It does.
 6 Q. And she positively said that it records all keystroke
 7 activity in that branch by the user?
 8 A. Yes.
 9 Q. And when I started asking about this it did sound as if
 10 you were saying you had separately formed the view from
 11 other documents that that was possible?
 12 A. No, I had said I had separately formed a view from other
 13 documents that Credence was used to investigate what
 14 happened in the branch.
 15 Q. Right. Let's go back, please, to the paragraph
 16 I originally asked you about, which is {D3/1/239}. It
 17 is paragraph 1086. You will remember it is at the
 18 bottom of the page.
 19 I asked you about the second sentence of that
 20 paragraph:
 21 "When Post Office is investigating anomalies
 22 reported by Subpostmasters, they use Credence and their
 23 other management information systems in the first
 24 instance ..."
 25 Yes?

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1 A. Yes.
 2 Q. You give the footnote at 41?
 3 A. Yes.
 4 Q. And you say:
 5 "The Witness Statement of Ms Tracy Mather ... is
 6 consistent with my understanding."
 7 Yes?
 8 A. Yes.
 9 Q. And that's the witness statement we have just been
 10 looking at.
 11 A. Yes.
 12 Q. Which specifically says that Credence records all
 13 keystroke activity .
 14 A. Yes.
 15 Q. So you accept that this would suggest to anyone reading
 16 it, whether it is the court or the claimants or anyone
 17 else, that you agreed with her description of what
 18 Credence could do?
 19 A. No, that's not quite what I said.
 20 Q. You say it is consistent --
 21 A. Her description is consistent with my understanding and
 22 went beyond it.
 23 Q. You didn't spell out anything -- should we read
 24 throughout your report where you say "consistent within the
 25 my understanding" as meaning "there is some aspect in

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1 which my understanding coincides with what I'm referring
 2 to?"

3 A. I think we read "consistent" in the ordinary sense of
 4 "consistent".

5 Q. I see. But on the face of Mrs Mather's statement you
 6 would agree, wouldn't you, that Post Office had access
 7 to information that the SPM doesn't have if she is
 8 right?

9 A. Well, whether or not she is right, Post Office has
 10 information that the branch doesn't have.

11 Q. Of course we will come to that in more detail. I'm just
 12 focusing on the keystrokes.

13 If she is right about the keystrokes being available
 14 to Post Office, they have effectively a record of what
 15 buttons were pressed in the branch?

16 A. Yes.

17 Q. And the SPM doesn't have them?

18 A. I believe that is right, yes.

19 Q. And so you were here I think when Mrs Van Den Bogard
 20 gave her evidence, weren't you?

21 A. I certainly read the transcripts, but --

22 Q. Let's refresh your memory. Sorry, I interrupted you,
 23 Dr Worden.

24 A. I do not think I was actually in court when Mrs Van Den
 25 Bogard was --

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1 Q. Okay, let me show you the transcript then, to be fair to
 2 you. {Day6/69:1}, please.

3 (Pause)

4 We are going to look at lines 10 to 23. There is
 5 a question:

6 "Question: ... the point is this, that the Credence
 7 report would show the specific keystrokes by the
 8 operator in branch, wouldn't they?"

9 Do you see that?

10 A. And she says yes.

11 Q. She says yes, and then:

12 "... so if one wanted to get to the truth about what
 13 keystrokes Mr Patny had pressed, one could have obtained
 14 a Credence report to identify that and that would
 15 have --

16 "Answer: Have used a Credence report, yes.

17 "Question: And that would have shown all the
 18 keystrokes pressed --

19 "Answer: Yes.

20 "Question: -- so you could follow exactly what he
 21 had done in sequence?

22 "Answer: Yes."

23 Do you see that?

24 A. Yes.

25 Q. Were you here for the evidence of Mr Patny?

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1 A. I do not think I was.

2 Q. Where we looked at the internal Post Office documents
 3 where he had been promised a Credence report and it
 4 didn't seem to come?

5 A. I do not think I was here for that evidence, no.

6 Q. Now if we look, please, at page {Day6/104:1} because
 7 Mrs Van Den Bogard was re-examined about that.

8 (Pause)

9 We are going to look on this page at lines 2 to 10.

10 A. 104, 2 to 10.

11 Q. Just to orientate you, this is my learned friend
 12 Mr de Garr Robinson, leading counsel for the
 13 Post Office, re-examining Mrs Van Den Bogard about the
 14 section of cross-examination I have just shown you. Do
 15 you understand?

16 A. Yes.

17 Q. Okay.

18 "Question: Now, the reason why I'm putting this to
 19 you is because Mr Green put to you that Credence shows
 20 every single keystroke that's pressed by the postmaster
 21 and you accepted what he said and he put it to you on
 22 the basis that this is what Mrs Mather said. Could I
 23 ask you this question: is it the case that Credence
 24 gives an account of every single key that's pressed by
 25 the postmaster in branch?

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1 "Answer: That's not my understanding, not every
 2 single stroke.

3 "Question: I'm grateful."

4 Do you see that?

5 A. Yes.

6 Q. So in re-examination there was a different picture.

7 A. Yes.

8 Q. But I think you said you were reading the transcripts.
 9 Did you notice this?

10 A. I didn't notice this. I'm afraid I didn't, no. I can't
 11 say I have read every line of the transcript because it
 12 would take a day to do it for each --

13 Q. I understand.

14 Okay. Let's look at page {Day6/149:1}.

15 A. Right.

16 Q. Because Mrs Mather was the person whose witness
 17 statement you had actually positively referred to,
 18 wasn't she?

19 A. By me? Yes.

20 Q. Yes, it is in your report. You say look at that --

21 A. She's consistent with my understanding, yes.

22 Q. Yes. And if we look on page 149, look at lines 7 to 20.
 23 Again, this is my learned friend, leading counsel for
 24 Post Office, re-examination Mrs Mather this time.
 25 Sorry, examining Mrs Mather in chief. That's before she

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1 is cross-examined.
 2 A. Right, okay.
 3 Q. Yes?
 4 A. Mm.
 5 "Question: And now, Mrs Mather, I have to ask a
 6 question which is born out of sheepishness on my part.
 7 Everyone else in court will understand why, but you
 8 won't. I would like to ask you about paragraph 12 of
 9 your statement please ..."
 10 That is the one we have just been looking at.
 11 A. So that is --
 12 Q. We saw what it said. It was perfectly clear, wasn't it?
 13 A. The keystroke --
 14 Q. Yes, that is right.
 15 "Question: Here you are describing Credence and you
 16 say:
 17 "Credence is used as an information tool.
 18 It is designed to work alongside other
 19 applications. It is used to help understand
 20 what has happened in a branch as it records all
 21 keystroke activity performed in that branch by
 22 the user ID, date and time.'
 23 "Could I ask you to explain what you mean
 24 by the phrase 'It records all keystroke
 25 activity?'"

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1 And she says:
 2 "Answer: What I actually meant was the
 3 transactional data as in sales and non-sales."
 4 A. Right.
 5 Q. So that was a bit of a surprise.
 6 A. Yes. I mean --
 7 Q. Hence your reaction by saying the intonation of the word
 8 "right" in your answer which doesn't always come out on
 9 the transcript?
 10 A. Yes. This, if you like, Mrs Mather's witness statement,
 11 down to keystroke, that was consistent with my
 12 understanding but it went beyond it. And now what's
 13 happening here is it doesn't go beyond my understanding
 14 as far as it did before.
 15 Q. So it recedes back to what your unspecified --
 16 A. It comes closer to what I would have expected from
 17 an MIS.
 18 Q. I don't want to be unfair, but were you sort of guessing
 19 based on experience about what an MIS would have?
 20 A. Yes, I have lots of experience of what an MIS has.
 21 Q. So that is the understanding you are referring to?
 22 A. That is right, yes.
 23 Q. So --
 24 A. Also what I can infer from the documents I have seen,
 25 you know. I put those together with my experience and

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1 one imagines what Post Office would need in order to
 2 investigate what went on at the branch, and my
 3 understanding is they would need what Mrs Mather says
 4 here, transactional data. They would not need
 5 individual keystrokes. That's my -- what my experience
 6 tells me.
 7 Q. So is it right, then, that you hadn't appreciated
 8 whether or not keystrokes were recorded in branch either
 9 way despite referring expressly to Mrs Mather's
 10 statement when you made your first --
 11 A. I said Mrs Mather's statement was consistent with my
 12 understanding, and it was, and it went beyond my
 13 understanding. And now we have seen that the extent to
 14 which it went beyond my understanding varied at the
 15 time.
 16 Q. It is fair to say that the finesse that you are now
 17 making was not expressly explained in your first report,
 18 was it?
 19 A. What I said in my first report was it is consistent with
 20 my understanding, and it was and it is.
 21 Q. But what she said about keystrokes couldn't have been
 22 consistent with your understanding about that because
 23 you had no idea?
 24 A. If somebody tells you something that is consistent with
 25 what you think and goes beyond it, then it is

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1 consistent. That's all I'm saying.
 2 Q. So the court should have that in mind for every use of
 3 the word "consistent" in your report?
 4 A. I think I'm using the word "consistent" in the ordinary
 5 sense of the word.
 6 Q. I understand.
 7 A. That things can be consistent if they overlap in
 8 a consistent way.
 9 Q. Let's look at a different example. For all those
 10 reasons you didn't feel there was any need to change any
 11 aspect of your report even on Horizon Issue 8 which
 12 asked about what information --
 13 A. No, there was always this trade-off that one wanted to
 14 write twice as much as one could write, and there was
 15 always this editorial trade-off of, how much to drill
 16 down and what was useful to the court.
 17 Q. But isn't it quite useful just to list to the court what
 18 the information they have is, in answer to the question
 19 "what information do they have", scope: they have this,
 20 they have this, they have this, they did have this, they
 21 didn't have that and they did have the other?
 22 A. I was making decisions about how much detail is needed
 23 here and there, and I made that decision not to do
 24 a detailed list of this and this and this, and perhaps
 25 I was wrong. I'm always having to make these decisions

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1 about how much detail do you go into here in order to
 2 assist the court.
 3 Q. But you would accept, Dr Worden, that it is a binary
 4 issue: do you have access to the keystrokes in the
 5 branch or do you not?
 6 A. That is a binary issue.
 7 Q. So that could have been accommodated in your report by
 8 the addition of a few words in that footnote?
 9 A. It could have been.
 10 Q. Or one line in your report?
 11 A. It could have been. Yes.
 12 Q. Let's move to a different example. I'm not going to go
 13 into the detail of this because we are going to deal
 14 with remote access later. I want to ask you what you
 15 say at {D3/1/244}. Do you see that? If we can go to
 16 {D3/1/244}.
 17 A. Paragraph number?
 18 Q. Let's just get the correct page up. There we are. It
 19 is paragraph 1114. Do you see that's under the heading
 20 "Transaction injection in Old Horizon"?
 21 A. Yes.
 22 Q. You say there:
 23 "Mr Godeseth says that, in the Old Horizon
 24 system ..."
 25 Which is Legacy Horizon?

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1 A. Mm.
 2 Q. "... The SSC could also inject transactions and that
 3 those transactions were clearly distinguished from those
 4 entered at the branch because they would have included a
 5 counter position greater than 32 when no branches would
 6 have had such a high number of counters ..."
 7 Yes?
 8 A. Yes.
 9 Q. And if we go forward, please, to page {D3/1/245}, so
 10 turn over the page, at paragraph 1119 you are
 11 considering what Mr Roll's evidence was.
 12 A. Yes.
 13 Q. You say:
 14 "Mr Roll worked in the SSC, and I established above
 15 that (during his tenure with Fujitsu) certain SSC users
 16 had the ability to transact injections, although these
 17 would have become visible to Subpostmasters. So, in my
 18 opinion, Mr Roll could not have made these changes to
 19 branch accounts 'without the Subpostmaster knowing?'"
 20 Yes?
 21 A. Yes.
 22 Q. Now, we know in fact now that Mr Roll was right about
 23 that and we will come back to that when we do the remote
 24 access piece. But at the moment I just want to ask you
 25 about this paragraph and how it is expressed.

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1 A. There is a typo. "Transact injections" is a bit --
 2 I think it is "inject transactions".
 3 Q. Don't worry about that, no one is going to complain
 4 about that. What you say is that Mr Roll worked in the
 5 SSC, yes?
 6 A. Yes.
 7 Q. Service support centre?
 8 A. Yes.
 9 Q. And then these are the words I want to ask you about:
 10 "... I established above that (during his tenure
 11 with Fujitsu) certain SSC users had the ability to,"
 12 inject transactions I think it can be fairly be --
 13 A. Yes.
 14 Q. "... although these would have become visible to
 15 Subpostmasters."
 16 Yes?
 17 A. Yes.
 18 Q. So in your opinion, Mr Roll could not have made these
 19 changes to branch accounts without the subpostmaster
 20 knowing?
 21 A. Yes.
 22 Q. Now, that was a disputed issue of fact between Mr Roll
 23 and the Post Office, wasn't it?
 24 A. Yes.
 25 Q. And you say that you have established it above.

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1 A. Yes. Can we go back to the above?
 2 Q. Let's go back to the above and I will show you. It
 3 seems to the reader possibly that it is paragraph 1114,
 4 which is {D3/1/244} and following?
 5 A. Yes.
 6 Q. Because this is the section where you basically say what
 7 Mr Godeseth says: a counter position greater than 32,
 8 yes?
 9 A. Yes.
 10 Q. And you say it accords with your experience and so
 11 forth. And then you point out at 1116 that it couldn't
 12 be done without the subpostmaster's knowledge, yes?
 13 A. I say "thus". Let me see what leads before "thus".
 14 (Pause)
 15 Q. So what you have actually done, as we can see between
 16 1114 and 1118, and then over the page on 1119, is you
 17 have looked at a disputed issue of fact, you have
 18 accepted Mr Godeseth's factual evidence in the face of
 19 Mr Roll's account, you say you have established over the
 20 page {D3/1/245} that effectively what Mr Godeseth says
 21 is correct because you used the word "established". And
 22 on that footing you have given the court your opinion
 23 that Mr Roll is wrong. That's what you have done.
 24 A. Yes.
 25 Q. And you shouldn't have done that, should you?

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1 A. I think I shouldn't. I think the word "established" was
2 too strong.

3 Q. Well, there are two points. (1) It is misleading to say
4 you have established it because all you have done is you
5 have said "I accept Mr Godeseth's evidence" and proceed
6 on that footing as if it is fact. That's the first
7 problem.

8 A. As I say, I think "established" was too strong and I was
9 wrong to say that.

10 Q. Well, okay. Let's go back. I took you to
11 paragraph 114. It is on {D3/1/260}. We had a look at
12 this didn't we, 114?

13 A. What paragraph are we talking about?

14 Q. Sorry, I misspoke, paragraph 1194.
15 Right-hand side, four lines down. That declaration
16 is not true in respect of what you did where you said
17 "establish", is it?

18 A. I think there are occasions in my report I have made
19 mistakes and this was a mistake, yes.

20 Q. And the particular type of mistake that we are talking
21 about is one that you have expressly said at the end you
22 have not done?

23 A. That's what this says, I think. I think on that
24 occasion, on this counter 32 issue, I did, although
25 I said at the time Mr Godeseth's evidence is consistent

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1 or accords with my experience in that paragraph, I did
2 later at 119, or whatever it was, go on to draw
3 a stronger inference which I should not have done.

4 Q. You have based your opinion accepting Mr Godeseth's
5 evidence and on that basis you have rejected Mr Roll's
6 evidence of fact on a disputed issue, hotly disputed and
7 central to these proceedings. The answer to that is
8 yes?

9 A. Well, this has developed over time and what I have said
10 is that my statement in the first report was too strong,
11 and --

12 Q. But pausing there, your approach, it is not just the use
13 of the word "established", I'm putting to you fairly and
14 squarely that your approach was wrong. There were two
15 witnesses saying opposite things. As an expert you
16 should have said: if Mr Godeseth is correct, this; if
17 Mr Roll is correct, it undermines the proper access
18 controls that I mention in my witness statement as my
19 final countermeasure and undermines the reliability or
20 robustness, or whatever it is, of the Horizon system, or
21 whatever your view was if Mr Roll was correct. That's
22 what you should have done, isn't it?

23 A. I have tried in my reports to --

24 Q. Can you just answer the question: do you accept that's
25 what you should have done?

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1 A. I'm just prefacing an answer. I have tried in my
2 reports generally to acknowledge the limitations of
3 factual witness evidence. On this occasion I was wrong
4 and I should have done so.

5 Q. Can you think of any prominent example in your report
6 where you proceed on the footing that the claimants are
7 right about anything?

8 A. Well, this depends on the claimants' evidence being
9 relevant to my opinions, and I can't think of any
10 occasions where individual subpostmasters' evidence, for
11 instance, is relevant to my opinions.

12 Q. But we know from this example that Mr Roll's evidence
13 was the evidence that was put forward by the claimants.
14 And you rejected it.

15 A. Yes.

16 Q. And we know that that's an important example because we
17 now know the answer that you were wrong to reject it,
18 don't we?

19 A. We do.

20 Q. So it was both wrong in its approach and wrong in its
21 outcome, wasn't it?

22 A. The outcome was wrong, no doubt. As I say, my approach
23 has been to try wherever possible to qualify factual
24 witness evidence with the statement: this is my
25 assumption and this is why I'm using an assumption to

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1 proceed.

2 I have tried wherever I can to make that
3 qualification and we agreed on this occasion that
4 I should have made it more careful.

5 Q. I can only put it one more time: on this your approach
6 was wrong and your conclusion was wrong?

7 A. Yes.

8 MR GREEN: My Lord, would that be a convenient moment?

9 MR JUSTICE FRASER: Yes, we will have 10 minutes.

10 Dr Worden, you know this, I know, because you are
11 experienced and you also heard me reminding Mr Coyne
12 many times, but now you are in the middle of your
13 cross-examination you are not allowed to talk to anyone
14 about the case. We are going to have a 10-minute break
15 for the shorthand writers. Please don't feel you have
16 to stay in the witness box. I always encourage
17 witnesses to move around and stretch their legs. But we
18 will come back in at 11.55 am.

19 (11.46 am)

20 (A short break)

21 (11.55 am)

22 MR GREEN: Now, Dr Worden, just picking up from where we
23 left off just before the break, we had been looking at
24 {D3/1/245}, which is your first report, at
25 paragraph 1119. And I'm going to ask you about that.

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1 Yes? Do you remember?
 2 A. Yes, I do indeed.
 3 Q. I think you may have mentioned that you address that in
 4 your second report?
 5 A. Yes.
 6 Q. Between the first and second reports there had been
 7 a further statement from Mr Roll and a further statement
 8 from Mr Parker, hadn't there, Mr Parker's second witness
 9 statement?
 10 A. That is right.
 11 Q. And you would have read those?
 12 A. Yes.
 13 Q. To inform yourself about whether the approach you had
 14 taken in your first report was right or not?
 15 A. Yes.
 16 Q. It is the only fair way to do it, isn't it?
 17 A. Well, obviously I did --
 18 Q. Yes, you must have done. And paragraph 27 of
 19 Mr Parker's second witness statement explained that what
 20 Mr Roll had described was possible. Do you remember
 21 that?
 22 A. If we go to that --
 23 Q. Let's have a look at it. It is on {E2/12/9}.
 24 There's Mr Parker's second witness statement. Go to
 25 page {E2/12/9} of that. If we look at paragraph 27, and

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1 this is Mr Parker referring to paragraph 20 of Mr Roll's
 2 second witness statement?
 3 A. Yes.
 4 Q. "... Mr Roll describes a process by which transactions
 5 could be inserted via individual branch counters by
 6 using the correspondence server to piggy back through
 7 the gateway."
 8 Yes?
 9 "He has not previously made this point clear. Now
 10 that he has, following a discussion with colleagues who
 11 performed such actions I can confirm that this was
 12 possible."
 13 Yes? So we are now in a position where a point
 14 favourable to the claimants has not only been set out in
 15 the claimants' evidence, but agreed by the Post Office.
 16 That is correct, isn't it?
 17 A. Well --
 18 Q. On the evidence.
 19 A. The difficulty I have with this, or one difficulty
 20 I have, is that I don't understand the phrase "piggy
 21 back".
 22 Q. Well, let's pause there. Just look at what he actually
 23 says:
 24 "He has not previously made this point clear."
 25 Line 3:

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1 "Now that he has, following a discussion with
 2 colleagues who performed such actions ..."
 3 So it is not theoretically possible. I have spoken
 4 to people who were actually doing this. Having done
 5 that, I can confirm that this was possible.
 6 A. Yes.
 7 Q. Right. Now, pause there. The premise that you
 8 proceeded upon, which we have looked at in your first
 9 report, was that Mr Roll was wrong, that it was
 10 possible. This is a yes or no answer.
 11 A. No, it is not that simple. In other words, that
 12 I believe that what I did not accept in my first report
 13 was that it could be done without the subpostmaster
 14 knowing --
 15 Q. Precisely.
 16 A. And I was never very clear on -- I never got to the
 17 bottom of the issue of what the subpostmaster might
 18 know. Now, piggy backing says this was possible, but
 19 I was not clear whether that would make it evident to
 20 the subpostmaster.
 21 Q. No, Dr Worden, the way it went was that Mr Rolls said it
 22 was possible without the knowledge of the subpostmaster?
 23 A. Yes.
 24 Q. And that's what you were specifically responding to in
 25 your first report?

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1 A. Yes.
 2 Q. And that's what you rejected which we dealt with before
 3 the break, yes?
 4 A. Yes.
 5 Q. And you rejected it on the basis of Mr Godeseth's
 6 evidence that it would be done through a counter number
 7 higher than 32?
 8 A. Right.
 9 Q. So that it would be visible to the postmaster if they
 10 noticed the counter number?
 11 A. Counter number higher than 32 was one way in which the
 12 postmaster could find out.
 13 Q. Well, that was the way --
 14 A. No, not the way. That's not what I believe.
 15 Q. Well, that's what Mr Godeseth was saying, wasn't it?
 16 A. That's what Mr Godeseth said at the time, yes. But --
 17 Q. Let's go back to --
 18 A. -- fundamentally, I believe that whether the postmaster
 19 knew or not is not a simple matter of counter 32 or not.
 20 Q. Dr Worden, you know where this cross-examination is
 21 going, don't you?
 22 A. No, I don't.
 23 Q. Let's have a look and then I will bring you back to what
 24 you have just said.
 25 Mr Parker in paragraph 27 specifically says that

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1 what Mr Roll has been describing --
 2 A. Can I read paragraph 27 carefully, then. {E2/12/9}
 3 This was possible --
 4 Q. Without using counter 32, yes?
 5 A. But this paragraph, as far as I can read it, does not
 6 refer to the subpostmaster's knowledge.
 7 Q. Okay. Well, I will have to come back and trace through
 8 everything in a minute. Let me take you forward to what
 9 you say in your second report and we will do it all over
 10 again carefully. But {D3/6/20} is your second expert's
 11 report. Okay?
 12 A. Yes.
 13 Q. So you were commenting, yes, on paragraph 82 at the
 14 bottom of the page?
 15 A. Yes.
 16 Q. You are specifically commenting on paragraph 20 of
 17 Mr Roll's witness statement.
 18 A. Mm.
 19 Q. Yes?
 20 A. Mm.
 21 Q. And you say:
 22 "[He] addresses a factual point about injection of
 23 transactions."
 24 So when you say that, you know that that is
 25 a factual matter in dispute, don't you?

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1 A. Yes.
 2 Q. You do. Second line:
 3 "He says: 'Sometimes we had to ask for a specific
 4 person to log in to the counter before injecting
 5 transactions so that the software would not detect any
 6 discrepancies. A transaction inserted in this way would
 7 appear to the subpostmaster as though it had been
 8 carried out through the counter in branch."
 9 A. Yes.
 10 Q. Then you add the words {D3/6/21}:
 11 "He ... goes on to disagree with my paragraph 1119."
 12 Which is the one --
 13 A. Can we just go back to that paragraph again so we can
 14 compare them side by side?
 15 Q. Yes, we can.
 16 MR JUSTICE FRASER: It might be sensible to have that in the
 17 hard copy.
 18 A. Yes, that's what I'm trying to do.
 19 MR JUSTICE FRASER: Is that what you are looking for? It
 20 is --
 21 MR GREEN: 245.
 22 MR JUSTICE FRASER: I don't know if Dr Worden has
 23 a paginated one.
 24 MR GREEN: I understand.
 25 A. Sorry about this.

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1 MR JUSTICE FRASER: Don't worry.
 2 (Pause)
 3 A. Now, this is chapter 11, is it?
 4 MR JUSTICE FRASER: Does that document have a bold number in
 5 the bottom right-hand corner, a bundle page number?
 6 A. Yes, it does.
 7 MR JUSTICE FRASER: If you turn to {D3/1/245}, is that the
 8 page you want?
 9 A. Right, okay, these would have become visible to
 10 subpostmasters without the subpostmaster knowing were
 11 there. We are there.
 12 Q. So the genesis of this is that at 1119 you explain that
 13 you have established above that these would become
 14 visible to subpostmasters and rejected Mr Roll's
 15 account. That's what you did at 1119. You can see
 16 that?
 17 A. That is right, that is correct.
 18 Q. You have accepted that the approach and the conclusion
 19 were both wrong?
 20 A. I was overstrong.
 21 Q. That the approach was wrong?
 22 A. Yes, I have accepted that.
 23 Q. And that the conclusion was wrong?
 24 A. I have accepted that.
 25 Q. And you also accepted that it is clear from the evidence

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1 that the conclusion was wrong --
 2 A. I accepted that I was wrong in accepting Mr Godeseth's
 3 evidence over Mr Roll's evidence in my first report.
 4 Q. But we now know, I put to you, that those changes can be
 5 made without the knowledge of the subpostmasters?
 6 A. Well, it is without the knowledge of the subpostmaster
 7 that's the nub of the issue.
 8 Q. So you write paragraph 1119, then we get Mr Roll's
 9 second witness statement, and Mr Roll -- we won't go
 10 there now but it is {E1/10/6}. Then we get Mr Parker,
 11 his second witness statement?
 12 A. Which doesn't refer to knowledge of the subpostmaster in
 13 the paragraph you took me to.
 14 Q. Okay. Let's go back to Mr Roll at {E1/10/6}.
 15 Now, the passage that you have now accepted between
 16 114 and 119 was perhaps not as it should have been?
 17 A. Yes.
 18 Q. Is the very passage to which Mr Roll is referring in
 19 paragraph 20 on this page, isn't it?
 20 A. Can I read this long paragraph, 20?
 21 Q. Please do. (Pause)
 22 A. Okay, I have absorbed that paragraph now.
 23 Q. And he specifically explains two-thirds of the way down
 24 in that paragraph "therefore". Do you see "and
 25 therefore"?

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1 A. "... and therefore not a number greater than 32,"
 2 absolutely.
 3 Q. "... and not in a way which would distinguish it in any
 4 logs as having been inserted by Fujitsu rather than by
 5 the subpostmaster or an assistant."
 6 A. Yes.
 7 Q. Then at the bottom of the page, five lines up on the
 8 right-hand side, "A transaction inserted". Do you see
 9 that?
 10 A. Yes.
 11 Q. "A transaction inserted in this way would appear to the
 12 subpostmaster as though it had been carried out through
 13 the counter in branch."
 14 A. Yes.
 15 Q. Couldn't be clearer, could it, what he is saying?
 16 A. It is pretty clear but --
 17 Q. "I therefore disagree with Dr. Worden's conclusions that
 18 these transactions would always have been visible to
 19 subpostmasters ..."
 20 And he references the specific paragraph he is
 21 looking at:
 22 " ... if he means to say that they would be shown to
 23 subpostmasters as transactions inserted by Fujitsu,
 24 rather than as transactions which appeared to have been
 25 created in branch."

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1 A. Yes.
 2 Q. Right. And that is what, when we go to Mr Parker's
 3 second witness statement -- let's look at that again.
 4 It is {E2/12/9}. Mr Parker, paragraph 27, we have
 5 already looked at it.
 6 A. Yes.
 7 Q. Mr Parker is referring to paragraph 20. That's the
 8 paragraph we have just looked at, isn't it, Dr Worden?
 9 A. That is correct.
 10 Q. "... Mr Roll describes a process by which transactions
 11 could be inserted via individual branch counters by
 12 using the correspondence server to piggy back through
 13 the gateway. He has not previously made this point
 14 clear. Now that he has, following a discussion with
 15 colleagues who performed such actions I can confirm that
 16 this was possible."
 17 A. Yes.
 18 Q. So the conclusion that it is not possible to do so, we
 19 can see at this point has been reached by Mr Parker as
 20 well as --
 21 A. The question is what do we mean by "it"?
 22 Q. Dr Worden, you knew that a central issue, not only
 23 a central issue legally but a very high-profile issue in
 24 the case, was the extent to which Post Office had remote
 25 access to the counters, didn't you? You knew that?

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1 A. Yes, and what I'm talking about, what I was talking
 2 about was the extent to which this could happen without
 3 the knowledge of the subpostmaster.
 4 Q. And that's the --
 5 A. And we agreed in the joint statement that more or less
 6 Fujitsu or Post Office could do anything.
 7 Q. Let's just take it in stages. That turns out to be the
 8 case, but we will come back to that separately.
 9 At the moment what I'm asking about is the approach
 10 that you have taken to disputed issues of fact in your
 11 reports. And this is one of them. We have identified
 12 what went wrong with paragraphs 1114 to 1119. I'm going
 13 to ask you now to look again; I have shown you Mr Roll's
 14 second statement, I have shown you Mr Parker's second
 15 statement. Look now, please, again. Go back to where
 16 we were before, {D3/6/20}.
 17 This is your second expert report?
 18 A. Sorry, I'm not there yet.
 19 Q. Don't worry. Do you see at the top --
 20 MR JUSTICE FRASER: We are not there yet.
 21 MR GREEN: Sorry. {D3/6/20}, "ER2 Worden". Do you see
 22 that?
 23 A. Yes.
 24 Q. "Charteris" at the top right-hand corner. This is your
 25 second report. We are going to look, please, at

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1 paragraph 82 again.
 2 A. Right.
 3 Q. "In his paragraph 20, Mr Roll addresses a factual point
 4 ..."
 5 And you accepted earlier that that was a factual
 6 point that you knew to be in dispute?
 7 A. There are two factual points in dispute. There is
 8 whether SSC could inject transactions and whether they
 9 could do it unknown to postmasters.
 10 Q. Quite. And the witness statements we have been looking
 11 at specifically deal with whether they could do it
 12 unknown to subpostmasters.
 13 A. Well, what they specifically deal with is a particular
 14 mechanism for counter 32 by which subpostmasters might
 15 find out. And that, in my opinion, is probably not the
 16 only mechanism.
 17 Q. Let's take it in stages. The answer you just gave was
 18 very interesting. It was in two parts. You said
 19 that -- give me one second -- they were dealing with
 20 counter 32, yes? Those witness statements, the
 21 counter 32?
 22 A. Dealing with counter 32. What do you mean by that?
 23 Q. I will give you your exact words in a minute when my
 24 realtime starts working again, but the point you were
 25 making is that the witness statements were referring to

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1 this counter 32 point that had been raised by
 2 Mr Godeseth.
 3 A. Yes.
 4 Q. And the way in which they were dealing with them,
 5 Dr Worden, is that they were saying: actually, as well
 6 as counter 32, which would be capable of showing
 7 a subpostmaster that it had been injected by Fujitsu,
 8 there was also a separate way, which would not. That's
 9 what those witness statements were addressing, isn't it?
 10 A. There was a separate way which would not do the
 11 counter 32 thing, but then the question is whether that
 12 separate way is unbeknownst to the postmaster.
 13 Q. Well, Mr Roll specifically says it is unbeknownst to the
 14 postmaster --
 15 A. Where does he say that? Can we go back to that
 16 statement?
 17 Q. We can do it one last time. I think I am going to have
 18 to move on. Mr Roll, paragraph 20, {E1/6/1}.
 19 A. Before we move on, I would like a short opportunity to
 20 try and explain what I was doing here.
 21 Q. Let's go back to your second witness statement. If you
 22 are going to explain something, can you explain why it
 23 is in your second witness statement that you did what
 24 you do.
 25 Let's look at D3 --

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1 A. I would really like to explain that.
 2 Q. We will do it in stages. I will ask the questions and
 3 you give the answers and explain what you need to
 4 explain to his Lordship about how you have adopted this
 5 approach as an expert.
 6 MR JUSTICE FRASER: Can you each try not to talk over one
 7 another. It is not just you; it is Mr Green as well.
 8 MR GREEN: I apologise.
 9 MR JUSTICE FRASER: The transcribers need to get everything
 10 down, so one at a time.
 11 So where are we going?
 12 MR GREEN: {D3/6/20}.
 13 A. This is a long paragraph, or is it?
 14 Q. No, this is in your second witness statement --
 15 A. Report.
 16 Q. Sorry, your second expert report. I do apologise. And
 17 I am trying to take you to paragraphs 82 to 85. We
 18 never get past 82. So let's just see what paragraph 82
 19 says.
 20 A. Yes. It summarises apart from the end of Mr Roll's
 21 paragraph 20.
 22 Q. If we go over --
 23 A. Could I get to my supplemental report so I can get over
 24 the page?
 25 Q. Of course. Please get any documents you wish,

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1 Dr Worden. I don't want to stop you.
 2 A. Where are we? Can somebody tell me the chapter?
 3 Q. It is your second report. Your second report is -- you
 4 should be able to find it -- {D3/6/20}.
 5 A. 20?
 6 Q. Page 20.
 7 A. Right, okay.
 8 Q. Do you have that?
 9 A. Got it nearly. Sorry, I'm not there yet. Not there
 10 yet.
 11 Right, okay. Got it.
 12 Q. You got that page?
 13 A. Yes.
 14 Q. Okay. And I was asking you about paragraph 82 at the
 15 foot of that page.
 16 A. Yes.
 17 Q. I will just wait until you finish pouring the water?
 18 A. Sorry.
 19 Q. Don't apologise. I just don't want to -- if you want to
 20 try and turn the pages. Now, we were looking at the
 21 foot of page 20, weren't we?
 22 A. Yes.
 23 Q. "Mr Roll addresses a factual point about injection of
 24 transactions. He says: 'sometimes we had to ask for
 25 a specific person to log in to the counter before

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1 injecting transactions so that the software would not
 2 detect any discrepancies. A transaction inserted in
 3 this way would appear to the subpostmaster as though it
 4 had been carried out through the counter in branch."
 5 {D3/6/21}
 6 A. I think his actual 20 has a kind of "if" after it.
 7 Q. Let's look at what you are citing.
 8 A. Let's look at what I say, let's do that.
 9 Q. You say:
 10 "He then goes on to disagree with my
 11 paragraph 1119."
 12 Which is the one we have already explored in --
 13 A. And that's where I said I didn't think it could be done
 14 without the knowledge of the --
 15 Q. That's where you say you disagree it could be done
 16 without the knowledge of the subpostmaster.
 17 A. Yes.
 18 Q. You knew that a factual witness who had actually worked
 19 at Fujitsu, he is not a claimant, he has volunteered to
 20 come and give independent evidence, was saying that this
 21 was possible?
 22 A. He was saying it was possible without the knowledge of
 23 the subpostmaster. My opinion is --
 24 Q. Can we take it in stages, please, because you knew that
 25 he was saying that and you also knew by the date of this

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1 report that Mr Parker had agreed, didn't you?
 2 A. No. Mr Parker had agreed it could be done. He did not
 3 agree that it could be done without the knowledge of the
 4 subpostmaster.
 5 Q. Okay.
 6 MR JUSTICE FRASER: Can I just ask for a point of
 7 clarification because it has not come up on the
 8 LiveNote.
 9 I think in your answer you just said to Mr Green "He
 10 was saying it was possible without the knowledge of the
 11 subpostmaster". By "he", you mean Mr Roll?
 12 A. Yes.
 13 MR JUSTICE FRASER: Then you said "my opinion is" and
 14 I thought you said different to that, but it didn't go
 15 on the -- is that right or did you --
 16 A. Yes, my opinion is different to that.
 17 MR JUSTICE FRASER: Your opinion is different to what
 18 Mr Roll said?
 19 A. I'm not sure it contradicts what Mr Roll actually said
 20 because Mr Roll said there was this counter 32 mechanism
 21 which made it clear. My opinion is yes, that would have
 22 made it clear, but there may be other mechanisms like
 23 actually seeing the guy doing it.
 24 MR JUSTICE FRASER: Okay.
 25 MR GREEN: If we read down through this section of your

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1 witness statement, you say:
 2 "It seems to me that I require further factual
 3 information before I can comment on this evidence.
 4 Which 'specific person'? Under what circumstances? How
 5 frequently? Until I have that information, it remains
 6 possible in my view that any transaction which 'would
 7 appear to the subpostmaster as though it had been
 8 carried out through the counter in branch' might only be
 9 a transaction that he had given his consent for, as the
 10 'specific person' - and which had in effect been made on
 11 his behalf."
 12 So what you are saying is you are reading Mr Roll as
 13 saying that sometimes they asked for somebody in the
 14 branch to be logged on, yes?
 15 A. Well, I'm not reading Mr Roll, I'm saying I want to know
 16 more about what Mr Roll says.
 17 Q. And if we go to paragraph 85, you say that:
 18 "In his paragraphs 27 - 34, Mr Parker provides
 19 detailed and specific commentary on Mr Roll's
 20 paragraph 20, using his knowledge and the appropriate
 21 contemporary documents, where they have been found.
 22 Here he acknowledges that Fujitsu could insert
 23 transactions into branches by a piggy back process. I
 24 am not yet able to comment on Mr Parker's evidence or
 25 the documents he cites."

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1 Why were you able to comment on Mr Godeseth's
 2 evidence and apparently establish a disputed fact, but,
 3 when Mr Parker gave evidence favourable to the
 4 claimants, unable to comment on his evidence?
 5 A. It was a time issue. You know, did I have other
 6 evidence to drill down, did I have time to drill down?
 7 But Mr Parker's evidence went to the point of whether it
 8 was possible and subsequently the experts have agreed
 9 that it was very difficult to say anything was
 10 impossible. Mr Parker's evidence goes to that. The
 11 issue that we are discussing is whether it is possible
 12 without the knowledge of the subpostmaster.
 13 Q. What evidence would you have needed in front of your
 14 eyes, beyond Mr Parker agreeing with Mr Roll, to be able
 15 to say: on the basis of that, I accept that it was
 16 possible to inject a transaction without the
 17 subpostmaster knowing?
 18 A. Well, that's a bit hypothetical. I mean, I can
 19 conjecture that if Mr Parker had said "I agree piggy
 20 backing was possible" and "I agree that the
 21 subpostmaster would have known nothing about it", then
 22 that would have done it.
 23 Q. Pausing there, Dr Worden. Do you accept that by
 24 refusing to comment on Mr Parker's evidence when he
 25 agrees with Mr Roll, that contrasts very strikingly with

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1 accepting Mr Godeseth's evidence as establishing a fact?
 2 A. I was not refusing to comment on Mr Parker's evidence.
 3 What I was saying was that Mr Parker and Mr Roll seemed
 4 to agree that something was possible, so I'm not going
 5 further on that. What I don't know about is whether
 6 something was possible without the subpostmaster
 7 knowing.
 8 Q. Well, I suggest to you, Dr Worden, that it is bizarre to
 9 deal with that evidence in that way.
 10 A. I don't agree.
 11 Q. Let's look at the joint statement at {D1/5/6}. Now,
 12 that, 10.6, is where the subtopic of remote access is
 13 being dealt with. Yes?
 14 A. Yes.
 15 Q. And Mr Coyne is dealing with it. Where do you say to
 16 the court that you have reflected your view in the light
 17 of Mr Roll's further evidence and Mr Parker's further
 18 evidence in this agreed statement? Or didn't you?
 19 A. I would need to -- let me pore through that joint
 20 statement, but basically my recollection of the joint
 21 statement is -- which one is it?
 22 Q. Dr Worden, how about this: is that something you would
 23 like to have a glance at over the luncheon adjournment?
 24 Just in case there's any particular parts that come to
 25 mind?

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1 A. It might be useful, yes. But as I say, my opinion in my
 2 second report was that I wasn't clear from the evidence
 3 I had seen, so whether this could be done without the
 4 subpostmaster's knowledge, and I would have required
 5 more evidence from either Mr Roll or Mr Parker to make
 6 myself clear on that. In the joint statement I do
 7 recall that the experts agreed that you cannot say
 8 anything was impossible, that, you know, it is difficult
 9 for the experts to say at this distance that certain
 10 things were not possible. However, that was a separate
 11 issue from whether a thing could be done without the
 12 subpostmaster's knowledge.
 13 Q. Okay, let's just go back one last time to {D3/1/245}.
 14 So even though you say that the experts were agreed that
 15 they couldn't say things were impossible, it is the
 16 precise effect of what you conclude at 1119, isn't it?
 17 A. 1119 --
 18 Q. You say:
 19 "... Mr Roll could not have made these changes to
 20 the branch accounts ..."?
 21 A. Can we look at the agreement on the joint statement to
 22 see how that meshes with 1119? I can't remember where
 23 it is in the joint statement.
 24 Q. Go back to {D1/5/6}. You have referred to
 25 paragraph 1114 --

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1 A. Sorry, I'm not there yet.
 2 Q. If you look at the screen. Do you see 10.6?
 3 A. That's Mr Coyne's statement.
 4 Q. Yes, Mr Coyne said that. And there's a reference there
 5 in the right-hand corner of that box to
 6 paragraph 1114 --
 7 A. Sorry, it is not clear to me who put in the reference.
 8 If Mr Coyne made a statement I think probably what
 9 happened is he put in the references.
 10 Q. Okay. What I was keener on was perhaps you can have
 11 a glance at the joint statement over lunch?
 12 A. I will do, yes.
 13 Q. And if there was somewhere where you thought the court
 14 should fairly look to see any revision of the way your
 15 views were expressed as at 4th March, then perhaps you
 16 can direct the court to that.
 17 A. Yes, sure.
 18 Q. Now, when you are doing that, could we just go back,
 19 please, to your second witness statement --
 20 MR JUSTICE FRASER: Report.
 21 MR GREEN: I'm so sorry. I apologise.
 22 Dr Worden, your second report, second expert's
 23 report, at {D3/6/21}.
 24 A. Yes.
 25 Q. Having said that the experts couldn't say anything was

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1 impossible --
 2 A. Well, I really would like to see the wording of that
 3 joint statement.
 4 Q. No, no, but I'm asking you about what you put in your
 5 second report before the joint statement.
 6 A. Yes.
 7 Q. Okay. And in the your second report in paragraph 84 you
 8 have actually -- this appears to be the thing -- one
 9 thing that you are able to say is impossible. So you
 10 say:
 11 "Therefore --
 12 A. I say:
 13 "Mr Roll's ... evidence does not cause me to alter
 14 the opinion ..."
 15 Q. Yes, the one that we agreed was incorrect in approach
 16 and conclusion.
 17 A. We agree now, but at the time I wrote the second report,
 18 on the basis of Mr Roll's evidence and Mr Parker's
 19 evidence, I didn't see reason to change that opinion.
 20 Q. I would suggest to you that you were inexplicably
 21 reticent to accept something that was contrary to
 22 Post Office's interests.
 23 A. No, I was reticent. Not inexplicable, I was reticent
 24 because I had not seen sufficient evidence to convince
 25 me that these things could be done without the knowledge

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1 of the subpostmaster.
 2 Q. But Dr Worden, would you accept that the approach you
 3 have taken there contrasts very, very strikingly in how
 4 you approach Mr Roll's evidence with the approach you
 5 took at 1119 in your first report when you accepted,
 6 effectively, Mr Godeseth's evidence?
 7 A. I have accepted that my approach at 1119, that use of
 8 the word "established" was wrong and my approach was
 9 wrong, and we have established that -- you know we have
 10 done that before the interval --
 11 Q. My question is: do you accept the contrast is very
 12 striking?
 13 A. I think the court will have to -- I accept that my
 14 attempt to make my position clear that I'm not trying to
 15 find findings of fact, I'm not trying to find one
 16 witness or the other, I accept that on this occasion
 17 I fell short of that.
 18 Q. Do you mean only in your first report or also in your
 19 second report?
 20 A. Not in the second report. I believe the second report
 21 was -- you know, I believe that the evidence from
 22 Mr Parker and Mr Roll, and if we look again at Mr Roll's
 23 paragraph 20, I believe that the question that I asked
 24 in paragraph 83 that I want further evidence, I believe
 25 that was a valid approach.

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1 Q. When you say in paragraph 84 -- because we have dealt
2 with what you accept about your first report at
3 paragraph 1119 several times, haven't we?
4 A. Yes.
5 Q. So in your second report, you say, notwithstanding what
6 you have now accepted about 1119, in your second report
7 that you were right not to change that view.
8 A. I hadn't seen sufficient evidence to change that view.
9 Q. But do you say you were right not to change that view
10 when you revisited the entire piece in your second --
11 A. At the time I believe it was right not to change that
12 view because I hadn't seen evidence that convinced me
13 that this change could be made without the knowledge of
14 the subpostmaster. That's where I am.
15 Q. Dr Worden, do you accept that that betrays a complete
16 failure to appreciate the need to consider the situation
17 both on the basis of whether the claimants' evidence is
18 right as well as on the basis that the defendant's
19 evidence is right?
20 A. No, I don't accept that.
21 Q. Do you accept that you have failed to make obvious
22 observations on the basis of evidence of the claimants
23 with which one of the defendant's evidence has in fact
24 agreed?
25 A. I accepted what I accepted about the first report,

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1 1119 --
2 Q. No, on the second report.
3 A. On the second report, no, I don't accept that.
4 I believe that Mr Roll's evidence about counter 32 and
5 sometimes we had to get somebody's permission and so on,
6 that left me in a position of doubt where I was not able
7 to change my opinion.
8 Q. How did you pursue any genuine doubts that prevented you
9 from saying anything helpful to the claimants about
10 that?
11 A. What do you mean pursue?
12 Q. Did you ask anyone at Fujitsu?
13 A. I mean, I had to write this report and this was the
14 position at the time of this report. I was not
15 expecting a third witness statement from Mr Roll
16 addressing that there might have been that, for
17 instance. I just wrote down what I felt was appropriate
18 to write down in the second report.
19 Q. Let's pause there. You identify your sort of, as it
20 were, standing on the island of not having enough
21 information to say anything, and the question is, what
22 did you do about it because it is obviously an important
23 issue? Did you ask for any further information
24 yourself?
25 A. I do not think I did, no.

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1 Q. Because not only are you entitled to ask for further
2 information from those instructing you, but the courts
3 made a specific direction that you can apply for
4 directions, and you also have the ability to request
5 information formally, don't you?
6 A. Absolutely. But let me try and explain the sources of
7 my doubt. Counter 32 is clear cut. If counter 32 is
8 there, the subpostmaster sees it. But in my opinion,
9 there may be many other mechanisms whereby the
10 subpostmaster may observe that something has been done,
11 and that includes simply observing that somebody had
12 been in his branch and he had given his permission to do
13 something, and that was the area of doubt which was
14 raised by Mr Roll's statement.
15 Q. So pausing there, Dr Worden. Did you understand that
16 what was being agreed was that a Fujitsu person would
17 actually go into the branch? Is that what you think
18 this is all about? It is, isn't it?
19 A. This was my doubt, right, which person, what
20 circumstances. And if we look at Mr Roll's
21 paragraph 22, you know, we had to ask for a specific
22 person to log in and that means somebody at the counter
23 in the branch doing something specific.
24 Q. Because the position is that they can't use that unless
25 someone is logged in at the branch. And my question to

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1 you is slightly different. Did you understand this
2 entire exchange as being about someone from Fujitsu
3 turning up at the branch and saying "Jeff, can you log
4 in, please"?
5 A. No.
6 Q. In the branch?
7 A. I didn't understand the entire exchange in full. It
8 left doubt in my mind that something had to be done at
9 the branch, somebody had to log in at the branch to make
10 this thing happen. I didn't understand the full detail
11 of that so I was left in doubt.
12 Q. Because you made references in your answers to seeing
13 someone actually make a change at the branch?
14 A. Well, the whole question I was asking consequent to
15 Mr Roll's witness statement is: what does he mean?
16 Q. But the entire issue is about remote access, not at the
17 counter, isn't it?
18 A. Remote access means not at the counter, but this seems
19 to have been facilitated by something at the counter.
20 Q. I understand, but it sounded as if you were saying you
21 understood a Fujitsu person would go into the branch and
22 be seen to make an alteration?
23 A. No, I didn't mean that.
24 Q. So if you have referred to that in the transcript we
25 should disregard that; that's not what you had in mind?

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1 A. What I have referred to is that Mr Roll's paragraph 10
 2 to 20 leaves me in doubt as to what actually happened.
 3 Q. Let me go back to the original question from which we
 4 have gone round a little bit. What steps did you take
 5 to clarify the ambiguity which bore directly on one of
 6 the identified Horizon Issues? Did you take any steps
 7 at all?
 8 A. I didn't take any further steps beyond this report.
 9 Q. Could you tell his Lordship why not?
 10 A. Priorities and, you know, whether I felt that further
 11 investigation would get me further. It was kind of my
 12 feeling that it was a difficult area and that -- put it
 13 this way, sorry, it is very hard to explain this, but
 14 there are levels of depth and complexity in the way
 15 Horizon actually works which the experts have not been
 16 able to plumb, if you like, and there is a whole lot of
 17 detail about how a transaction might have been
 18 identified. For instance, there is a PEAK that talks
 19 about counter 11 and 12. That's not counter 32 but that
 20 will maybe give an indication.
 21 To my mind there was a kind of swamp of difficult
 22 questions there and I was not going to -- I felt,
 23 rightly or wrongly, going to make progress in that area.
 24 Q. Even in circumstances where in your first report you had
 25 concluded that Mr Roll was factually wrong?

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1 A. I was taking the situation as at my second report, and
 2 as I say, I wrote down what I believed I could conclude
 3 at the time and I did not have much expectation that
 4 I would be able to conclude more.
 5 Q. Dr Worden, what is weird is you conclude very forcefully
 6 one way in your first report and then you are not
 7 prepared to reach a conclusion which would have been
 8 correct the other way in your second?
 9 A. I do not think that is weird. I'm trying to go with the
 10 evidence and provide what I know to the court.
 11 Q. But you are going only with the defendant's evidence in
 12 report 1 and then when the defendant's evidence agrees
 13 with the claimants', you stop going with anyone's
 14 evidence?
 15 A. No, I have to go where I think the evidence takes me and
 16 I have to try and be balanced and neutral about it. And
 17 sometimes I may fail to do that, I'm sorry, but I'm
 18 trying to actually assess the evidence. And to my mind,
 19 in my second report, what Mr Parker said and what
 20 Mr Roll said did not sufficiently convince me that
 21 I could write down, yes, it could be done without the
 22 knowledge of the subpostmaster.
 23 Q. What threshold of proof were you applying when you are
 24 faced with the defendant's evidence, agreeing with the
 25 claimants' and you are still unconvinced? Beyond

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1 reasonable doubt? 99%?
 2 A. It is not a question of threshold of proof, it is
 3 a question of what opinions I can usefully offer the
 4 court.
 5 Q. But you had offered one and you are refusing to change
 6 it in your second expert report. It is not that you
 7 haven't offered one at all. Dr Worden, if we were there
 8 we would all understand. You say too complicated, it is
 9 absolutely impossible to plumb the depths of this
 10 system, as you mentioned, I can't give an opinion one
 11 way or the other. That is not what happened. You give
 12 a very clear opinion which we've analysed with some
 13 care --
 14 A. And I've agreed it was overkill.
 15 Q. Right. And then you refuse to change the overkill
 16 opinion in any way because you say there's some doubt.
 17 A. Well, we established today that my approach in my first
 18 report was wrong.
 19 Q. Yes. And you stick to it in your second report, that
 20 the point --
 21 A. No, I wrote in my second report -- in my second report
 22 I wrote what the evidence persuaded me and convinced me
 23 about, and that was I hadn't seen sufficient evidence
 24 that this thing could be done without the knowledge of
 25 the subpostmaster. I was trying to be balanced and fair

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1 and that was what I was doing in my second report.
 2 Q. So this exchange that has gone on a bit longer than
 3 I expected, but this is helpful to the court in
 4 understanding your approach to being balanced and fair,
 5 what you have done here is a fair example, is it, of you
 6 being balanced and fair throughout your reports? That
 7 is right?
 8 A. I don't see that I can comment to how this example
 9 relates to the whole of my reports.
 10 Q. Do you think you have been especially fairer elsewhere
 11 in your reports? You have given this, you have
 12 described this approach as balanced and fair --
 13 A. I'm trying not to go beyond the evidence.
 14 Q. Just focusing on the balance and fair point, let's not
 15 go back to the evidence. You say that this is
 16 an example of you being balanced and fair?
 17 A. Yes.
 18 Q. You are a statistician, yes? You understand what
 19 a representative example means, don't you?
 20 A. Yes.
 21 Q. Is this a fairly representative example of you being
 22 balanced and fair in your approach in your reports? It
 23 is, isn't it?
 24 A. I think this is a fair example of me trying to assess
 25 the evidence in front of me and trying to draw

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1 conclusions as far as I can and not trying to go beyond
 2 the evidence, and that is fair, I believe.
 3 Furthermore, if you look at the balance of my
 4 reports, there are many, many occasions where I have
 5 tried not only to be fair on the claimants but to be
 6 biased in my numerical estimates in favour of the
 7 claimants.
 8 Q. We will come to those.
 9 A. Absolutely.
 10 Q. So, one final question and we will move on. You would
 11 have no problem with the court using this as an example
 12 of your approach overall?
 13 A. What's written in the supplemental report, I have no
 14 problem with the court using it as an example of my
 15 approach.
 16 Q. Even if it were a totemic example of your approach --
 17 A. Totemic is not a word that occurs --
 18 Q. A very good example of how you approached the evidence?
 19 A. I would hope the court will take into account all sorts
 20 of examples of my approach in assessing whether I've
 21 been balanced or not.
 22 Q. I understand. Let's move on.
 23 You have given your evidence that you didn't follow
 24 up your doubts on this point. More widely, have you
 25 spoken to any of the Fujitsu witnesses in the course of

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1 preparing your reports?
 2 A. There was one early conversation.
 3 Q. Who was that with?
 4 A. With Gareth Jenkins, and it was a phone call with
 5 lawyers present and I was trying to clarify --
 6 Q. Well, if lawyers were present I'm not going to ask you
 7 about the content, if it was in any way privileged. So
 8 my learned friend will indicate if he has got any
 9 problem with that?
 10 MR JUSTICE FRASER: Was the conversation with Gareth Jenkins
 11 on the phone as well?
 12 A. It was on the phone.
 13 MR GREEN: Okay. What about anyone else from Fujitsu?
 14 Because there are lots of witnesses have been here, you
 15 have all got a room, everyone has been going in and out,
 16 you have had the opportunity to speak to people from
 17 Fujitsu, haven't you?
 18 A. Well, the defendant's lawyers set down a set of ground
 19 rules for what --
 20 Q. I don't want to ask you about what they told you, I just
 21 want to ask you have you spoken to anyone from Fujitsu?
 22 Mr Godeseth? Mr Parker?
 23 A. We talk about the weather, yes. I mean --
 24 Q. No, about the case?
 25 A. About the case, no.

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1 MR DE GARR ROBINSON: My Lord, I'm perfectly happy for my
 2 learned friend to ask about the ground rules that the
 3 defendant's lawyers set down if my learned friend
 4 wishes to.
 5 MR GREEN: And has anyone from Fujitsu provided any written
 6 comments or observations on your report, because we
 7 heard Mr Godeseth had had some comments which originated
 8 from Mr Jenkins on one of his statements?
 9 A. It is obvious that when I did analysis of various KELs,
 10 Fujitsu did the same analysis and that came out in
 11 a witness statement which I saw at the same time as
 12 everybody else. That was the only instance.
 13 Q. But they haven't actually provided any comments for you?
 14 A. Not for me, that went into my reports.
 15 Q. But you did know you were entitled to ask questions of
 16 Fujitsu, didn't you?
 17 A. Well, that always happened through the Post Office
 18 lawyers.
 19 Q. No, of course. And you have in fact asked questions
 20 through Post Office lawyers of Fujitsu, haven't you?
 21 A. I have done, yes.
 22 Q. If we look, please, at {H/302/1}. It is a letter of
 23 29th May, and if we go, please, to the second page
 24 {H/302/2}, we can see halfway down:
 25 "Question from Dr Worden."

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1 A. Yes.
 2 Q. And there are questions and Fujitsu responses?
 3 A. Yes.
 4 Q. You hadn't actually agreed those questions with
 5 Mr Coyne, had you?
 6 A. No.
 7 Q. Was there a reason for that?
 8 A. It was just my -- not curiosity, but there were various
 9 questions in my mind that were unanswered to me from my
 10 examination of the documents. I was not aware that
 11 Mr Coyne was interested in the same questions.
 12 Q. Okay. So you followed up things that you had some
 13 uncertainties --
 14 A. I found those documents puzzling in various places.
 15 Q. So on this puzzling issue you did follow up by asking
 16 questions?
 17 A. Yes, because I felt answering the questions could be
 18 productive, I felt there was a big chance that, you
 19 know, I would get an answer which would actually resolve
 20 that uncertainty.
 21 Q. Okay. If we go back a page {H/302/1} to the first page
 22 of this document, we can see that the date on the letter
 23 was 29th May.
 24 A. Yes.
 25 Q. And can you remember roughly when you asked the

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1 questions?
 2 A. I can't, I'm afraid. I mean --
 3 Q. Was it a few days -- because 29th May is the Wednesday
 4 before we restarted the trial.
 5 A. I think it was rather earlier than that. I mean, I have
 6 read the low level design of the transaction correction
 7 tool a considerable time earlier and I think my
 8 questions about it had nothing to do with the trial
 9 starting.
 10 Q. Okay. On the face of it, let's look at {H/324/1}, on
 11 3rd June in a reply to a letter from Freeths, it says:
 12 "Dr Worden asked the questions which are set out in
 13 our letter on 19 March 2019."
 14 Does that sound about right?
 15 A. Yes, that probably is ...
 16 Q. If we just go back to {H/302/2}. Just under the heading
 17 it says:
 18 "Dr Worden has asked a number of questions ..."
 19 A. Yes.
 20 Q. It seems these are the ones you asked back in March,
 21 yes? And it then goes on to say:
 22 "We have taken instructions from Fujitsu ..."
 23 Yes?
 24 A. Yes.
 25 Q. "... in respect of these questions and set out below

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1 both the questions asked and responses given. These
 2 responses are being disclosed to Dr Worden at the same
 3 time as this letter is being sent to you."
 4 So did you get the answers for the first time last
 5 Wednesday?
 6 A. I believe so.
 7 Q. Okay.
 8 A. Again, I'm not brilliant on these sort of dates and
 9 chains of events, but I believe so. I mean --
 10 Q. Dr Worden, can I ask you this. Mr Coyne made lots of
 11 requests, didn't he?
 12 A. Yes.
 13 Q. Lots?
 14 A. Quite a lot, yes.
 15 Q. And although they were put in a form of a joint request
 16 document, in fact he was making lots and lots of
 17 requests for information which only he was making?
 18 A. Yes.
 19 Q. Was there a reason why you didn't support any of them?
 20 A. Well, basically I think it became evident, and it is
 21 evident now, that two experts took very different
 22 approaches, and my approach was top down, understand the
 23 architecture and work down through things like KEL. So
 24 as far as I was concerned, I had plenty of information
 25 to go on. And Mr Coyne's information requests didn't

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1 strike me as things that, yes, I have got to really see
 2 that because I was -- had a different priority. I was
 3 trying to do a top down understanding of the
 4 architecture and top down look at robustness, and so on
 5 and so forth.
 6 And so I had plenty of documents to look at,
 7 basically. So I think it is the different approaches
 8 taken by the two experts that led to lack of overlap.
 9 Q. That's your explanation for not having supported any
 10 requests?
 11 A. I do not think I supported any requests --
 12 Q. Sorry, not having supported the very many requests he
 13 had to make?
 14 A. Yes, I felt his interests were different from mine and
 15 I really had plenty to do.
 16 Q. And you initially only looked at KELs, didn't you, you
 17 didn't actually look at PEAKs?
 18 A. No, I looked at KELs and I looked at PEAKs where they
 19 were relevant. I felt that KELs were a more distilled
 20 form of information. I felt they were sufficient in
 21 many ways, especially when you go and look at the PEAKs.
 22 Q. You looked at one or two PEAKs referred to in the KELs
 23 you looked at?
 24 A. Yes. Look at some of them where you feel the KEL
 25 doesn't tell you enough.

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1 Q. And Mr Coyne was looking at PEAKs and KELs?
 2 A. I think in the first report he was looking mainly at
 3 KELs, like me, and in his second report he turned on
 4 PEAKs.
 5 Q. And --
 6 A. For instance, in my report Mr Coyne had commented on
 7 nine PEAKs in his first report and I commented on those
 8 in my first report as well.
 9 Q. I understand. You heard Mr Coyne was asked whether
 10 anyone provided documents for him to look at?
 11 A. Mm.
 12 Q. Ie ones that he hadn't found or his assistants hadn't
 13 found. Were you provided with any documents, particular
 14 documents by anyone to look at, have a look at this?
 15 A. Very early on there was a tranche of about 75
 16 architecture documents that were put to me, but I think
 17 they were in the disclosure and that was when I was
 18 doing my high level early exploration. Other than that,
 19 I think the Post Office lawyers have been really trying
 20 to get a very level playing field.
 21 Q. Other than that?
 22 A. Mm.
 23 Q. So when we look at {C5/9/2}, it is a document of 30 May.
 24 Just to give you the chronology, 30 May is the Thursday
 25 before we start the trial, 31 is the Friday. Sorry,

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1 2018, I do apologise. This is 30 May 2018. I was
 2 confusing it with another document. This is 30 May 2018
 3 when there was a question about whether or not Mr Coyne
 4 had had the same documents as you had in early 2018.
 5 Yes?
 6 And if we look on page {C5/9/2}, the answer is in
 7 the final paragraph, three lines up from the bottom:
 8 "Dr Worden commenced work in around February 2018
 9 and has had broadly the same information and documents
 10 as Mr Coyne."
 11 Yes?
 12 A. Yes.
 13 Q. Mr Coyne had actually asked you in an email, hadn't he?
 14 If we go to {F/1792.2/1}, do you remember Mr Coyne asked
 15 you in an email had you:
 16 "... had access to additional resources that [he]
 17 had not had access to? ... any document repositories
 18 other than those formally disclosed? Or access to PO or
 19 Fujitsu staff who had imparted any knowledge?"
 20 A. I'm afraid my knowledge of the precise chronology a year
 21 ago is not very -- now we have got it --
 22 MR JUSTICE FRASER: I do not think it can be F.
 23 MR GREEN: It is {F/1792.2/1}. You might need to refresh.
 24 MR JUSTICE FRASER: That's 1792.1.
 25 MR GREEN: We will come back to it. If you had been sure

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1 that Mr Coyne had had the same access that you had, you
 2 would be able to answer that straightaway, wouldn't you?
 3 A. I was just trying to get on with the job of drilling
 4 into this stuff.
 5 Q. Fair enough.
 6 A. And I'm not a good witness on precise blow-by-blow who
 7 said what.
 8 Q. Dr Worden, don't worry. Let's move on. Let's look
 9 at --
 10 MR JUSTICE FRASER: On the basis it is 12.58 am and you have
 11 asked the witness to look at something over the short
 12 adjournment, I think we ought to stop now.
 13 Mr de Garr Robinson made effectively an offer about
 14 the ground rules which I don't intend to say anything,
 15 other than if you are going to ask any questions about
 16 it and there is a document, it is probably best to make
 17 sure that there are copies rather than pose it as
 18 a memory test. But it is completely in your ballpark.
 19 MR GREEN: My Lord, yes.
 20 MR JUSTICE FRASER: And do you just want to remind the
 21 witness what it is you asked him to do over the short
 22 adjournment?
 23 MR GREEN: Yes.
 24 Dr Worden, I think you were very kindly going to
 25 look at the joint report.

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1 A. JS4?
 2 Q. JS4. Have a look there to look at where you feel you
 3 have commented helpfully or as you felt appropriate in
 4 relation to that remote access issue.
 5 MR JUSTICE FRASER: Now, Dr Worden, just to be helpful to
 6 you, do you have a hard copy there of the joint
 7 statement?
 8 A. Yes, I do.
 9 MR JUSTICE FRASER: You have, all right. Because it is
 10 probably asking too much of a witness to do it on
 11 screen.
 12 A. No.
 13 MR JUSTICE FRASER: But if you have got a hard copy it is
 14 much easier.
 15 We will come back at 2 o'clock. Thank you all very
 16 much.
 17 (1.00 pm)
 18 (The short adjournment)
 19 (2.00 pm)
 20 MR GREEN: My Lord, I have already shown my learned friend
 21 this. This is Mr Coyne's mobile telephone on which
 22 a missed call from Dr Worden is recorded at 1.40 pm.
 23 Can I just show your Lordship so your Lordship has
 24 seen it.
 25 MR JUSTICE FRASER: Yes.

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1 MR GREEN: Dr Worden, you understand you are not supposed to
 2 talk to anyone --
 3 A. Yes, I noticed -- this was a pocket call. I noticed my
 4 phone was ringing somebody -- I didn't even notice what
 5 the number was -- and I stopped it.
 6 Q. I understand. You will understand why --
 7 A. Absolutely, of course.
 8 Q. Now --
 9 MR JUSTICE FRASER: I think the modern expression for that
 10 is a bum call; is that right?
 11 A. I understand it is.
 12 MR JUSTICE FRASER: I think pocket call is a much better way
 13 of putting it.
 14 MR GREEN: Dr Worden, the ground rules you were given you
 15 mentioned before lunch, could you just explain what they
 16 were?
 17 A. Basically that conversations between me and Fujitsu
 18 about the case had to happen with a lawyer present who
 19 would intervene if anything crossed any boundary.
 20 That's basically it.
 21 Q. I understand. So you weren't able to call to Fujitsu
 22 without a lawyer being there?
 23 A. Yes.
 24 Q. To see what was being discussed. And can we get up,
 25 please, on the Opus system -- I think it is

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1 {F/1792.3/1}. I think I may have thought it was 1792.2.
 2 This was the email I was referring to. This is May 2018
 3 halfway down.
 4 A. Yes.
 5 Q. You didn't respond.
 6 A. I don't recall the email. I will accept that I didn't
 7 respond.
 8 Q. Okay. Can I ask you this: when you were given the
 9 ground rules, were you given the ground rules before or
 10 after you spoke to Mr Jenkins with Womble Bond Dickinson
 11 on the line?
 12 A. No, the ground rules were for the trial.
 13 Q. For the whole trial?
 14 A. Yes.
 15 Q. Can I just ask you whether you can remember whether you
 16 were given the ground rules before you spoke to
 17 Mr Jenkins or after?
 18 A. No, Mr Jenkins was a year ago.
 19 Q. Yes. But the ground rules were for the trial only?
 20 A. Yes.
 21 Q. So they didn't apply before the trial started?
 22 A. No, but conversation before the trial was Mr Jenkins'
 23 phone call, nothing else.
 24 Q. I understand. So there was no prohibition on you
 25 talking directly to Fujitsu people prior to the ground

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1 rules --
 2 A. No, that's not correct. The position was I wanted
 3 a clarification in my understanding of the receipts
 4 payment mismatch, and a phone call was set up with WB
 5 present. Very shortly after that, and that was
 6 May 2018, Mr de Garr Robinson said we have to be
 7 absolutely whiter than white about this, no direct
 8 contact with Fujitsu at all, and so everything was
 9 through Post Office lawyers --
 10 Q. Thereafter.
 11 A. Yes.
 12 Q. I understand.
 13 Can we now look quickly at the transcript, please,
 14 today's transcript, at page {Day18/9:1}. Do you have
 15 page 9 at the top?
 16 A. Yes, I have it.
 17 Q. And it might not be quite the right page. You said
 18 earlier in your evidence that you had had plenty of
 19 information to look at and you were taking a top down
 20 approach. Do you remember that?
 21 A. Yes, I remember that.
 22 Q. And you had looked at the sort of high level documents
 23 of architecture --
 24 A. Looked at a lot of architecture documents, yes.
 25 Q. Can I ask you to look, please, at {F/1611/1} and we will

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1 look at the first page to see what it is. This is
 2 a Post Office board agenda from 31 January 2017. Do you
 3 see that?
 4 A. Yes.
 5 Q. If we go to page 100 of that document, please
 6 {F/1611/100}. Now, this is in the context of looking at
 7 the Horizon architecture, and can I take you back to
 8 page {F/1611/87} first, please. Just look at the --
 9 this is a "Technology Strategy Update"?
 10 A. Yes.
 11 Q. I just want to take all these documents reasonably
 12 briefly. The first question is, is this the sort of
 13 type of document that you would have had regard to when
 14 compiling your report, or not?
 15 A. Well, it is certainly not the type of document I was
 16 interested in in the early stages of putting together
 17 what I called the foundation sections of my report.
 18 Q. What about later stages?
 19 A. Well, I would like at these documents typically in
 20 response to seeing references in Mr Coyne's report.
 21 Q. If we look at the second line, at the context there?
 22 A. Context?
 23 Q. Do you see under "Context"?
 24 A. "IT not fit for purpose", that is right.
 25 Q. It is fair to say, isn't it, that where Post Office

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1 themselves are recognising the limitations to their own
 2 system, that is likely to be a fair and sensible view?
 3 A. This is Post Office talking about the whole IT estate.
 4 Q. Yes.
 5 A. And they put their phrase "not fit for purpose" in there
 6 and they were obviously discontent, yes.
 7 Q. And if we look, if we may, please, at page {F/1611/98}
 8 A. Sorry, could I check the year of this?
 9 Q. 2017.
 10 A. 2017, right. Okay.
 11 Q. If we look at page 98 you will see paragraph 25 down at
 12 the bottom.
 13 A. "There are tensions in each contract." Yes. (Pause)
 14 Q. You see Fujitsu:
 15 "... a 6 year fixed contract signed with PO which
 16 continues to invest in legacy and obsolescence where FJs
 17 own strategy globally is to move to cloud."
 18 Do you see that?
 19 A. Yes.
 20 Q. So that's their own perception of the system and the
 21 situation they are in?
 22 A. That's PO's perception of Fujitsu's strategy, yes.
 23 Q. Yes. If we look at page {F/1611/100}, please. This has
 24 got senior people like Tim Parker, the chairman, Angela
 25 Van Den Bogard, also attending, various others. On

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1 page 100 if we look at paragraph 35, for example, do you
 2 see there "For Retail"?

3 A. Yes.

4 Q. They are specifically talking about HNG-X, which is the
 5 Horizon system?

6 A. Right.

7 Q. So it is not the general IT environment, is it?

8 A. No, that is Horizon specific --

9 Q. It says:

10 "The Horizon (HNG-X) platform is at the end of its
 11 life and needs replacing."
 12 Yes?

13 A. Yes.

14 Q. That's fair comment, isn't it?

15 A. It is interesting, that. I mean, 20 years is a long
 16 life and that's what they were saying, yes. Personally
 17 I think it is doing quite well, but there we are.

18 Q. "Previous attempts to move away from HNG-X platform,
 19 specifically with IBM, have been unsuccessful."

20 A. Yes, I didn't know about that.

21 Q. Did you see this document at all, can you remember?

22 A. I have seen reference to this end of life quotation at
 23 some time, but I haven't read this document in detail.

24 Q. You didn't follow this one up?

25 A. No.

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1 Q. Let's look, please, at {F/1603/5}. So that document was
 2 31 January 2017, this is 17 January 2017.

3 MR JUSTICE FRASER: I think we are at 1603, but did you want
 4 to be at 1603 --

5 MR GREEN: Yes, 1603, this is 17 January 2017. If you look
 6 at "Credence", do you see that?

7 A. Yes. (reads to self)

8 Q. Do you see "Credence" underlined?

9 A. Yes, I'm just reading that paragraph (Pause).

10 Q. Do you see where it says Accenture picked up a difficult
 11 pass?

12 A. Yes, and additional costs at the moment.

13 Q. Starting to see light at the end of the tunnel. Then
 14 Fujitsu. Do you see that heading?

15 A. Yes. Not hold the power.

16 Q. "FJ see the contract as a cash cow, so need to persuade
 17 them that working with POL to migrate to cloud
 18 technology is to their benefit against a 'too good'
 19 contract."

20 Did you see this document at all?

21 A. I didn't read these pieces -- this page.

22 Q. Looking at it now, does that chime with a sense of
 23 anything you have seen?

24 A. Well, that Fujitsu paragraph, it sort of chimes because
 25 I have always had the impression from the governance

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1 structure and the documentation and so on that Fujitsu
 2 were not short of budget, really.

3 Q. They weren't, okay. And at least not short of budget
 4 coming from Post Office?

5 A. That is right.

6 Q. If we go forward, please, at {F/1586/3}. Perhaps you
 7 should see the first page, November 28, 2016. Then if
 8 we look at page 3 as it comes up?

9 A. That's interesting.

10 Q. Yes?

11 A. Okay.

12 Q. If we look at the first column:

13 "Horizon software was developed in 1996, originally
 14 as a DSS IT project."
 15 Yes?

16 A. Yes.

17 Q. There was a heavy part of it which was DSS, but also for
 18 the Post Office is what happened, isn't it? You know
 19 about that?

20 A. I hadn't gone into the detail of that prior project but
 21 I know it existed.

22 Q. DSS wanted a big system and Post Office went to be
 23 a joint procurer. Then the DSS dropped out and the
 24 Post Office was left holding the contract?

25 A. I'm just aware of that pre-history but have not gone

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1 into it.

2 Q. "At the time Horizon was one of the first electronic
 3 Points of Sale.

4 "Horizon was created before the internet had any
 5 real effect on Retail or Banking.

6 "It was built as a 'closed' system & designed based
 7 on paper processes, is clumsy & operator unfriendly."

8 Now, were you aware of that recognition, either in
 9 this document or anywhere else, that Post Office
 10 internally recognised that it was operator unfriendly?

11 A. Well, this is a document in 2016 talking about 2001.

12 Q. No, I'm just asking you a clear question, Dr Worden. It
 13 says it is clumsy and operator unfriendly. Were you
 14 aware from this document or from any other document that
 15 that was Post Office's internal view of Horizon?

16 A. I was not aware from more contemporary documents and
 17 I had not read this one.

18 Q. Thank you. Did you say from more contemporary
 19 documents?

20 A. No, I mean I do not think I have seen a document before
 21 2000 -- I mean, the case for moving the HNG-X included
 22 "Let's get rid of Escher", and so on. It didn't include
 23 "God, the interface is clumsy".

24 Q. Okay, so you weren't aware of that?

25 A. I wasn't aware of that --

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1 Q. -- in forming your views you have expressed?
 2 A. No.
 3 Q. Let's look at the third column, if we may, "IBM deal
 4 ends". And the only bit I would like you to look at
 5 really there is halfway down, third bullet point:
 6 "However, whilst modernising the 'front end' is
 7 relatively straightforward, as the project developed we
 8 realised that shifting the 'back-end' is extremely
 9 difficult ."
 10 A. Yes.
 11 Q. So they reverted back to Fujitsu .
 12 A. Yes.
 13 Q. And then if we look on the right, "HNGA":
 14 "Whilst HNGA runs on updated Windows software,
 15 fundamentally its architecture is the same as HNG-X"
 16 That is fair, isn't it?
 17 A. Yes.
 18 Q. "This means that it remains a 'closed' and inflexible
 19 platform that retains the complexity of transaction
 20 journeys and operational requirements - not Simpler to
 21 Run!"
 22 A. Yes.
 23 Q. I think it appears to follow from not having read this
 24 document that you may not have appreciated that when you
 25 were putting your reports together?

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1 A. No. But if I may comment briefly on the shifting the
 2 back end extremely difficult , that seems to me to chime
 3 with my understanding that the bulk of the investment
 4 actually was in the back end and that's where the
 5 complexity was.
 6 Q. And the front end was the bit the subpostmaster was
 7 using?
 8 A. Yes, and I would guess, and it is a bit of a guess,
 9 that, you know, in terms of lines of code, complexity
 10 and so on and so forth, the back end is more than the
 11 front --
 12 Q. So more had been invested in the back end than in the
 13 front end that the subpostmasters had been using?
 14 A. I feel broadly the back end is more complex.
 15 Q. {F/1557/1}, please. This is a month earlier than the
 16 previous one, 22 October 2016.
 17 MR JUSTICE FRASER: Just before you go there, do you know
 18 what the expression "thin client" -- how would you thin
 19 client --
 20 A. Thin client generally nowadays corresponds to a client
 21 that's just a web browser and it goes through to some
 22 internet site. I think that's pretty much the meaning
 23 now.
 24 MR JUSTICE FRASER: That's perfect.
 25 Mr Green.

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1 MR GREEN: This is a document from October 2016, and on
 2 page 1 under "Context" would you look at paragraph 3:
 3 "Our back office" ?
 4 A. Struggles, yes.
 5 Q. "Our back office also struggles with the complications
 6 of dealing differently with each of our many clients,
 7 heavily manual processes ..."
 8 Do you see that?
 9 A. Yes.
 10 Q. "... reconciling disparate sources of data,
 11 retrospectively financial controls and a lack of
 12 flexibility ."
 13 A. Yes, and this is referring to the Post Office bank.
 14 Q. Yes. And it says:
 15 "This backlog of challenges, poor support contracts
 16 and a lack of skills have led to a prohibitive cost of
 17 change preventing the improvements that should occur as
 18 a part of business as usual."
 19 Do you see that?
 20 A. Yes.
 21 Q. Now, first of all, did you broadly pick up that
 22 impression from anything else or not?
 23 A. There were various other documents, like finance roadmap
 24 and so on, which conveyed a general impression to me
 25 that the Post Office back office in its IT and its use

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1 of POLSAP and various different SAPs and so on, and the
 2 business processes around it, that they had to interface
 3 with the clients, but that back office process was more
 4 complex than the Horizon back office .
 5 Q. I understand the complexity point. I'm talking about
 6 the satisfactoriness point. Did you get that
 7 impression?
 8 A. Well, obviously from these documents Post Office was
 9 unsatisfied about something.
 10 Q. You hadn't picked that up yourself?
 11 A. Well, I picked it up when I started looking at the
 12 documents cited by Mr Coyne.
 13 Q. Right. Did you expressly deal with that anywhere?
 14 A. Well, it seemed to me not really directly part of
 15 Horizon.
 16 Q. Okay. I do not think you have dealt with these other
 17 documents we have been to already, have you?
 18 A. None are very familiar .
 19 Q. Okay.
 20 A. But as I say, I did start looking at these Post Office
 21 IT strategy documents when Mr Coyne cited them.
 22 Q. Let's go a bit earlier, 29th August 2016. {F/1522/1},
 23 please. Let's look at paragraph 1. Can you look at the
 24 right-hand side three lines down:
 25 "The Back Office process and applications remain

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1 complex, unreliable, expensive to maintain and not
 2 suitable for today's business."
 3 A. Yes.
 4 Q. Did you look at that document?
 5 A. Again, I can't recall looking directly at this document.
 6 I'm not brilliant on looking at this --
 7 Q. I understand.
 8 A. -- etc, but it doesn't surprise me.
 9 Q. And it doesn't surprise you that they mention that it is
 10 unreliable?
 11 A. This is the Post Office back office --
 12 Q. Yes.
 13 A. -- things like POLSAP and all sorts of stuff --
 14 Q. All things they --
 15 A. Much more than that, the whole of Post Office business.
 16 Q. Yes, the whole thing, and that didn't surprise you that
 17 it was unreliable?
 18 A. They say unreliable. It didn't surprise me it was
 19 unwieldy.
 20 Q. You said this didn't surprise you a moment ago. You are
 21 just rowing back on that a bit. Bit worried it is
 22 damaging to Post Office to say so?
 23 A. Unreliable, good question. Well, they say that and that
 24 seems to be part of the package, yes.
 25 Q. You said it is a good question, the reason why I'm

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1 asking is reliability of the overall process at least on
 2 one view is a question which may be of relevance in this
 3 trial, isn't it? Including reliability of the back
 4 office aspects. Is that fair?
 5 A. Well, there has been a bit of prohibition about looking
 6 at Post Office business processes.
 7 Q. Who prohibited you?
 8 A. Well, people said that's out of -- I got a flavour that
 9 Post Office business processes have been out of scope.
 10 For instance in TCs, the process for creating TCs has
 11 not been a thing the experts have looked at.
 12 Q. You sort of said people said and then you said you got
 13 a flavour?
 14 A. Yes.
 15 Q. Can I ask you, did you form a view yourself about
 16 whether that was out of scope or were you told not to
 17 look at it?
 18 A. I was told that it was out of scope, and I found some
 19 difficulty with that because in a sense things like
 20 robustness of Horizon actually depends on all sorts of
 21 things and one has to try and assess the consequences of
 22 certain things, where the causes, how business processes
 23 work and so on, are out of scope. And it is a bit of
 24 a blurry boundary.
 25 Q. We will come back to it later, but you refer to

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1 transaction corrections and transaction acknowledgements
 2 and things as very important countermeasures in your
 3 report?
 4 A. That is right, yes.
 5 Q. So they were central to your analysis?
 6 A. They are essential to my analysis.
 7 Q. And they rely on Post Office back office systems that
 8 we've been talking about?
 9 A. The approach I took to that is transaction corrections
 10 are a corrective measure, they are a countermeasure. It
 11 is obvious they work a very large proportion of the
 12 time, and I tried to work out numerically the small
 13 proportion when they didn't work.
 14 Q. We're going to get to that in some detail, but for
 15 today's purposes I'm only asking about relevance. So
 16 where we are is you were told it was out of scope. You
 17 had difficulties with that because you felt that that
 18 was an important countermeasure --
 19 A. Well, I think I reconciled it to myself in that certain
 20 causes were out of scope but the effects were in scope.
 21 Q. I understand.
 22 A. Does that make sense?
 23 Q. We will explore whether it makes sense or not. Against
 24 that background you hadn't had any particular regard to
 25 a document we see at 1522?

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1 A. Well, the view I have taken is that the Post Office
 2 whole IT estate is much bigger than Horizon.
 3 Q. I understand. But it is right, just to be clear, that
 4 the Post Office back office estate, yes -- back office
 5 systems that we have been talking about just now --
 6 A. Yes.
 7 Q. -- are relevant to the issue of data integrity,
 8 transaction corrections, transaction acknowledgements
 9 and those things?
 10 A. Indeed they are. As, you could say the same thing,
 11 certain client IT systems are relevant.
 12 Q. Absolutely. So if you had concerns about data integrity
 13 coming in from Camelot on National Lottery, that would
 14 be relevant as well?
 15 A. Yes.
 16 Q. Okay. Let's look at {F/555/1}, please. Let's go a bit
 17 earlier. Let's go before 2010. My screen has gone
 18 completely --
 19 MR JUSTICE FRASER: It is because the F folder is so big.
 20 Give it a second, I daresay it will appear in a moment.
 21 MR GREEN: Thank you very much.
 22 So this is a document from December 2009,
 23 7th December 2009, and if we could go to page
 24 {F/555/10}, please. This is the 2009 appraisal,
 25 internally:

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1 "Horizon - Current State."
 2 It says, as at 2009:
 3 "13 year old design and technology to satisfy
 4 a different business."
 5 A. Yes.
 6 Q. "Evolved rather than designed?"
 7 A. Where does it say that?
 8 Q. Third bullet point.
 9 A. I see. I was looking at the footnotes, sorry.
 10 Q. Just look at the big points, the ones they thought were
 11 really important.
 12 A. (Reads to self) Yes.
 13 Q. And "slow and expensive to use". Do you see that in the
 14 middle?
 15 A. Which year was this assessment?
 16 Q. This was 2009.
 17 A. And that's what they are saying there, yes.
 18 Q. Had you looked at this document?
 19 A. Again, I do not think I have seen this actual document.
 20 Q. Well, let's look at the bottom four lines, please:
 21 "Horizon is also a system that is wrapped up in
 22 'barbed wire' - making changes difficult and costly -
 23 test everything!"
 24 Do you see that?
 25 A. Sorry, where is "test everything"?"

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1 Q. If you look at the bottom four lines of the text, at the
 2 bottom of the page, four lines up from the bottom --
 3 A. (Reads to self) Yes, I must admit this is different
 4 from my own understanding of Horizon.
 5 Q. This is different from your own understanding?
 6 A. Yes.
 7 Q. Okay. And:
 8 "Design was optimised at the time to minimise costs
 9 ..."
 10 Do you see that, at the bottom?
 11 A. "... ([especially] network) - offline -- what's their
 12 reference to offline working?
 13 Q. ?i think it's probably because internet access was more
 14 expensive in those days.
 15 A. The question then is what was it at the time: was it
 16 original Horizon or HNG-X? This is before HNG-X, so
 17 this is the original design. Right, okay.
 18 Q. Original design. But you fairly accepted that that's
 19 different to the view of it you formed in your reports?
 20 A. Yes.
 21 Q. And you probably hadn't seen this document?
 22 A. I hadn't, no.
 23 Q. Can we look now at two individual documents relating to
 24 individual subpostmasters which we know about because
 25 they were lead claimants in the November trial.

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1 Let's look, please, at {F/68/1}. You will see that
 2 this is an email and I would like to take you over the
 3 page to page {F/68/2} where the chain begins, if I may,
 4 please. You will see there that it is from
 5 Frank Manning. Do you see halfway down?
 6 A. From Frank Manning, yes.
 7 Q. See that? And we look up two lines, it is to Sue Lock?
 8 A. Yes.
 9 Q. The subject is "Horizon matters --"
 10 A. Yes.
 11 Q. -- Barkham SPSO?"
 12 A. Yes.
 13 Q. And it explains in the third paragraph:
 14 "The balances are a mess ..."
 15 Do you see that?
 16 A. "Balances are a mess", yes.
 17 Q. "... (in pre-Horizon times - the Postmistress virtually
 18 achieved a clean balance every week) ..."
 19 Do you see that?
 20 A. Yes.
 21 Q. Do you see "but" in bold?
 22 "... I worry that something like 25 re-boots in one
 23 day is having an effect overall."
 24 A. Yes.
 25 Q. And if you look at the second paragraph on that email

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1 you will see he says:
 2 "I visited there today & was too scared to accept a
 3 cup of tea in case the Horizon system crashed cos the
 4 electricity supply is still a live (excuse the pun)
 5 issue."
 6 A. Yes.
 7 Q. Now look at the bottom big paragraph, before "help
 8 please", the one that starts "Need your best offices".
 9 Do you see that?
 10 A. "Need your best offices", yes.
 11 Q. "Need your best offices to get this case to a proper
 12 solution - she keeps getting promises of attention - but
 13 nothing is actually being done now to clear up the
 14 problem. It is Horizon related - the problems have only
 15 arisen since install & the postmistress is now barking &
 16 rightly so in my view."
 17 A. Yes.
 18 Q. "Help please."
 19 Now, it is fair to assume, isn't it, that where
 20 Post Office internally recognised that Horizon was
 21 likely to blame, or in this case positively asserts that
 22 it definitely is, it is quite likely to be right?
 23 A. Well, I don't know who Frank Manning was or what kind of
 24 evaluation he had done. I mean, it seems he has made
 25 a visit to the site.

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1 Q. Indeed. Do you think --
 2 A. And on that basis he had seen that apparently there are
 3 lots of power cuts.
 4 Q. 25 reboots in one day. Do you think that would have
 5 an effect to --
 6 A. Well, it seems -- I'm just guessing because, you know,
 7 I haven't studied this evidence in detail, but it seems
 8 to me electricity supply is something to do with the
 9 reboot.
 10 Q. Yes. But do you accept it is quite possible that
 11 a problem with the electricity supply causing 25 reboots
 12 might well be the source of problems in her accounts and
 13 balances on the basis of this document, or have you got
 14 some other explanation that you would like to --
 15 A. "Balances are a mess ..."
 16 Q. You can't diagnose it at this distance in time?
 17 A. No.
 18 Q. I'm only putting to you do you think it may be fair that
 19 that may well be right?
 20 A. It is certainly possible.
 21 Q. But is it fair to accept that it may well be right on
 22 the face of the document?
 23 A. I accept it may well be right.
 24 Q. Let's go back to page {F/68/1}, please. This is to
 25 Kevin Cox from Sue Lock. It says:

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1 "Frank came to see me about this office and we
 2 discussed it with Sanjay and said that she needed to
 3 prove that it was Horizon that was causing all these
 4 power failures in the office."
 5 A. Yes.
 6 Q. "Can you tell us please how we can now get this resolved
 7 as it appears now it is a direct consequence of the
 8 installation and not anything that has happened in
 9 steady state."
 10 A. Yes, that what it says.
 11 Q. It is fair to assume that may well be right?
 12 A. Well, it is a puzzling paragraph because Horizon causing
 13 power failures --
 14 Q. I'm not suggesting Horizon is causing the power failure.
 15 A. That's what this paragraph says.
 16 Q. I'm suggesting that power failures and lots of
 17 recoveries are quite likely to cause balances to be in
 18 a mess at this branch, aren't they?
 19 A. All I'm saying is that the phrase "Horizon was causing
 20 these power failures" indicates to me some possible
 21 confusion about cause and effect.
 22 Q. You don't know this, Dr Worden, but what in fact
 23 happened is this had been all installed as the system.
 24 A. My general view would be that Horizon has been built to
 25 be robust against power failures, and therefore the

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1 prior expectation is that there can be a number of power
 2 failures which do not cause discrepancies in accounts.
 3 Q. So you would not have expected that outcome on the basis
 4 of your understanding of the Horizon system --
 5 A. My understanding is that power cuts happen approximately
 6 once per branch per month, I believe, or was it once per
 7 branch per year. I'm sorry about that, but they do
 8 happen and Horizon has to be robust against them.
 9 Q. And what we have seen is not consistent with your
 10 understanding of its robustness?
 11 A. That is right.
 12 Q. If we look, please, at another document, last example,
 13 {F/99.1/1}. Now, this is an audit in 2001 of Mr Bates'
 14 branch. You probably read his name. He is the lead
 15 claimant.
 16 A. I think I know what he looks like.
 17 Q. Bates v Post Office?
 18 A. I think he is here, actually.
 19 Q. Yes. This is his branch. If we could go forward,
 20 please, to page {F/99.1/4}, if you go down to "Cash
 21 Management" heading, do you see that? Halfway down?
 22 A. Yes.
 23 Q. Go down to the next heading "Control Gaps - High Risk".
 24 A. Yes.
 25 Q. The cash holdings were 25% higher than the ideal target

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1 holding.
 2 A. Yes.
 3 Q. And then underneath "Comments":
 4 "A correct assessment of cash holdings could not be
 5 made because the Horizon system intermittently adds the
 6 previous days cash holdings to the daily declaration."
 7 A. So that is what the auditor is saying?
 8 Q. Yes. The auditors are very familiar with the system,
 9 aren't they?
 10 A. I am sure they are.
 11 Q. And that is also not consistent with your understanding
 12 of how Horizon works, or should work?
 13 A. I haven't seen, I think, other evidence about adding
 14 previous day's cash --
 15 Q. I'm not asking whether you have seen other evidence, I'm
 16 asking is that consistent or inconsistent with your
 17 impression of Horizon's robustness or reliability?
 18 A. That is inconsistent.
 19 Q. Can we now move on, please, to documents recently
 20 disclosed, so new. So the Friday before the hearing was
 21 31st May, Thursday was the 30th and the Wednesday was
 22 the 29th.
 23 A. Fine.
 24 Q. So let's start with documents closed on Friday, 31st May
 25 or uploaded to the bundle on the 31st. I will just show

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1 you.
 2 A. It is uploaded to the bundle we are talking about.
 3 Q. It is in the bundle. {F/1834.14/1}
 4 A. I have tried to look at some of the things recently in
 5 the bundle. I haven't done it all.
 6 Q. Dr Worden, we just want to know what you have looked at,
 7 what you haven't and what you made of it, that's all.
 8 So {F/1834.14/1}.
 9 A. Yes.
 10 Q. This document as a document was first disclosed on
 11 31st May, but it contains information from the MSC
 12 spreadsheets which have been disclosed a few months
 13 prior.
 14 A. Right, okay. Yes.
 15 Q. Now, have you seen this document before?
 16 A. No, I haven't.
 17 Q. Do you have any idea why it has been uploaded?
 18 A. No, I don't.
 19 Q. Can I show you just how it works. If you look at the
 20 top of this one, you have the MSC number in the middle?
 21 A. Yes, middle of the page.
 22 Q. There is the heading, 043J -- I probably should have
 23 said -- 043J0348236. This then explains:
 24 "Below is the extracted text relating to," this MSC,
 25 "taken from Rows 284594 to 284654," in one of the three

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1 documents to which one had to put together the MSC logs?
 2 A. Yes.
 3 Q. Did you find the MSC logs in their original form easy to
 4 use?
 5 A. I didn't find them too problematic. They were clumsy.
 6 They are monster spreadsheets, but what I found is one
 7 of them, I think it is this one that the extract is
 8 from, was fairly narrative and you could go to
 9 a specific MSC just using an Excel search and you could
 10 read the narrative. And, indeed, I actually built
 11 a JAVA tool to filter the MSCs and get a smaller
 12 spreadsheets of things I wanted to --
 13 Q. Okay. Let's look at this one. We can see what's being
 14 done because the third paragraph says:
 15 "The proposed change is to insert 1 dummy
 16 Transaction Acknowledgement (TA) row for Branch 74005
 17 into the Branch Database (via an SQL INSERT statement)
 18 with transaction amount value zero and a quantity of 1."
 19 Yes?
 20 A. Sorry, I'm not there at the moment.
 21 Q. It is the third paragraph at the top.
 22 A. I see --
 23 Q. Third paragraph --
 24 A. (Reads to self)
 25 Q. Okay?

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1 A. Yes.
 2 Q. Then do you see "Justification for the change and
 3 urgency"?
 4 A. Yes.
 5 Q. "POL have requested this issue be resolved," and there
 6 is a POL incident reference, Q17628223, yes?
 7 A. Yes.
 8 Q. And from there we can see the text about it, and if we
 9 go over the page {F/1834.14/2}, at the top of the page:
 10 "POL approval required (Y or N) ..."
 11 Do you see that?
 12 A. Yes.
 13 Q. And it says:
 14 "No," so POL approval isn't required, "- POL aware
 15 ..."
 16 And gives the same reference that we have seen on
 17 the previous page?
 18 A. Yes.
 19 Q. So what we learn from this MSC on a fair reading is that
 20 POL have asked for something to be sorted out, this was
 21 how it was going to be done, POL was aware, Post Office
 22 was aware and so they didn't need any approval because
 23 they were already aware, they had asked them to do it.
 24 Yes?
 25 And we can see the other questions that follow on

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1 that page. Go forward one page, please, {F/1834.14/3}.
 2 You see:
 3 "SSC (managed by Steve Parker)."
 4 At the top?
 5 A. Yes.
 6 Q. We go over the page again {F/1834.14/4}, you have to
 7 note here at the top it says:
 8 "Below is the extracted text relating to MSC
 9 043J0348236 taken from Rows 121273 ..."
 10 A. Yes, this is another one of the spreadsheets.
 11 Q. Yes. So what they have done is they have put the rest
 12 of the information about the MSC on --
 13 A. On the same MSC number.
 14 Q. On the same MSC number. So they are right to do that,
 15 aren't they?
 16 A. Yes, absolutely. Absolutely.
 17 Q. That is the only right way to do it?
 18 A. That is the correct way to do it.
 19 Q. And you can see expected impact, testing, security
 20 implications:
 21 "Do users need to be informed of the change?
 22 "No."
 23 Etc.
 24 Do you see that?
 25 A. Yes. And this was inserting a TA?

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1 Q. Yes.
 2 Then let's look on page {F/1834.14/5}, please. It
 3 says:
 4 "The information relating to [this MSC] cannot be
 5 easily extracted from," the complete data spreadsheet?
 6 A. Well, there are three of them. Are we talking about
 7 different ones of the three now?
 8 Q. Yes. So they have two in there, but not the third one
 9 because it is too difficult to get out.
 10 Now, if we now compare that one with one of the
 11 others also that was provided on Friday, 31st May in
 12 a similar format, {F/1834.12/1}, the same principle. It
 13 explains the text below, yes?
 14 A. Yes.
 15 Q. "Below is the extracted text". Top line:
 16 "Below is the extracted text ..."
 17 Do you see that?
 18 A. Yes, that is the one that I have looked at --
 19 Q. So you looked at this one, have you?
 20 A. No, not this particular MSC, but I'm saying the source
 21 of my information on MSCs is mainly the narrative one.
 22 Q. Let's look at what the non-technical overview says. It
 23 says on the right-hand side:
 24 "This causes discrepancies in Stock declarations
 25 report."

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1 Do you see that?
 2 A. Yes.
 3 Q. So:
 4 "Older unused branch declarations are being picked
 5 up in Branch Declarations Report in the same trading
 6 period ... [or] balance period ... (BP) from previous
 7 year occurs again."
 8 A. Yes.
 9 Q. So it is picking those up and causing discrepancies in
 10 the stock declarations report?
 11 A. Yes.
 12 Q. At the bottom under the second line of asterisks you
 13 will see:
 14 "Steps to carry out the fix."
 15 A. Yes.
 16 Q. And it is:
 17 "Logon to BDB Host Node 1 as 'oracle' user."
 18 A. Yes.
 19 Q. Then there and over the page we see the scripts being
 20 used {F/1834.12/2}.
 21 A. Sorry, can I just read that? (Pause)
 22 Q. I'm not going to ask you about the scripts, I just want
 23 to show you aspects of the document.
 24 A. Yes.
 25 Q. If you look at the bottom --

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1 MR JUSTICE FRASER: Of? Bottom of page 2.
 2 MR GREEN: On the bottom of page 2. There is a mandatory
 3 field:
 4 "POL approval required (Yes or no)."
 5 A. Yes.
 6 Q. We see there "no" on the next page {F/1834.12/3}.
 7 A. I see, on the next page, right.
 8 Q. So it looks as if there POL approval was said not to be
 9 needed?
 10 A. Yes.
 11 Q. And if we look further down we can see there is
 12 a "delete SQL" being applied?
 13 A. Yes.
 14 Q. And this is effectively to try and remedy the stock
 15 discrepancies problems, isn't it?
 16 A. It is remedying a problem in BRDB, yes.
 17 Q. And we go over the page to page {F/1834.12/4}, please.
 18 And it says:
 19 "Who will action this change ..." at the bottom.
 20 Then go over the page to page {F/1834.12/5}, "RMGA
 21 UNIX"?
 22 A. Yes.
 23 Q. So that is the end of that one. So we don't have there
 24 the data from the other spreadsheet that we did have on
 25 the previous one we looked at. Do you remember the

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1 first one had two spreadsheets output?
 2 A. Yes.
 3 Q. Now, what we now need to do is we need to look in the
 4 spreadsheet itself at {F/1843/1}.
 5 A. Can I get it on this screen?
 6 MR GREEN: It will come up.
 7 MR JUSTICE FRASER: It might take a moment, but it will
 8 appear currently.
 9 A. Previously I didn't get spreadsheets on those screens at
 10 the back there for some reason.
 11 MR GREEN: What we are going to do, Dr Worden, is we are
 12 going to look on the second spreadsheet that we haven't
 13 got reproduced within the Womble Bond Dickinson document
 14 and just see what's in there.
 15 Because what we are looking for is on row 90474 --
 16 don't scroll, please. Could you go into the A1 thing
 17 and type "A90474"?
 18 A. There we go.
 19 Q. There we go. And scroll down a tiny bit, if you would,
 20 so we can look below that?
 21 A. I see, yes. So this is all the impact stuff?
 22 Q. This is all the impact stuff which is not included in
 23 the document prepared by Womble Dickinson.
 24 You see there 1:
 25 "What is the expected impact on the live/production

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1 service of implementing this change?
 2 "None.
 3 "2. What level of testing ...
 4 "N/A.
 5 "3. What are the security implications ...?
 6 "None.
 7 "4. Do users need to be informed ...?
 8 "No."
 9 Regression path, and then:
 10 "8. Has the change been implemented before? If yes
 11 give details of the previous implementation impact and
 12 success criteria :
 13 "N/A.
 14 "9. Taking into account all of the above what are
 15 the worst case risks implementing the change?"
 16 You see that?
 17 A. I have read through. I am not quite in sync with you
 18 but I have read through that case.
 19 Q. Number 4 is:
 20 "Do users need to be informed of the change," and
 21 the answer is "no".
 22 A. Yes.
 23 Q. Now, if we go, please -- and close that spreadsheet --
 24 to {F/812.1/1}.
 25 Now, Dr Worden, this is a PEAK when it comes up. It

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1 is {F/812.1/1}.
 2 A. So this is 2011. Is it referring to the same MSC?
 3 Q. It is referring to the MSC, but I'm going to -- because
 4 it is just about to be 2.50 and it is a new document,
 5 I'm going to ask his Lordship if that's a convenient
 6 moment to have a break and perhaps you can have a glance
 7 at it if you want to.
 8 A. I mean, his Lordship said something about paper copies.
 9 Now, would it be possible to have paper copies of PEAKs
 10 or is that a bit difficult ?
 11 MR JUSTICE FRASER: Even my paper copies of PEAKs have
 12 disappeared, although I'm expecting them back at some
 13 point. But I am sure --
 14 MR GREEN: My Lord, I do not think it is going to be easy
 15 for him to look at various pages.
 16 MR JUSTICE FRASER: How many pages is this PEAK?
 17 MR GREEN: It is reasonably long. It is eight pages long.
 18 MR JUSTICE FRASER: Does anyone on your side of the court
 19 have an unmarked copy of the eight pages?
 20 MR GREEN: No, I don't think so.
 21 MR JUSTICE FRASER: So what is it you would like the witness
 22 to do?
 23 MR GREEN: If he could look at page 2 and just read that,
 24 that would be helpful.
 25 MR JUSTICE FRASER: Over the 10 minutes or now?

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1 MR GREEN: Over the 10 minutes if that's not --
 2 MR JUSTICE FRASER: Would you prefer for us to break for
 3 10 minutes to that you can look at it carefully, or
 4 would you -- it really is not an issue one way or the
 5 other, it is whichever you find easier to do.
 6 A. If it is convenient for a break now, it is nice to look
 7 at one. But I suspect there will be loads of PEAKs
 8 where I won't get a break.
 9 MR JUSTICE FRASER: At the moment I'm unclear whether that
 10 is the case or not.
 11 MR GREEN: Shall we break now, my Lord?
 12 MR JUSTICE FRASER: No, we will. I'm just looking at
 13 logistics if this is going to be replicated tomorrow or
 14 the day after .
 15 MR GREEN: My Lord, yes.
 16 MR JUSTICE FRASER: It is just some people are used to
 17 working on screen, some people are used to working on --
 18 MR GREEN: I understand.
 19 A. And I have a particular way of looking at PEAKs.
 20 MR JUSTICE FRASER: That is entirely understood, Dr Worden.
 21 So after today, counsel is going to make sure that he
 22 has got a hard copy for you.
 23 A. Excellent, thank you.
 24 MR JUSTICE FRASER: Who knows, by then I might even have my
 25 hard copy file back, so I might be able to do it both on

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1 screen and hard copy.
 2 For the moment we will break until 3 o'clock for the
 3 shorthand writers and for you also to have a look at it .
 4 If, when you have read that page, you want to look
 5 through subsequent pages, just ask either of the counsel
 6 who will be standing there on the claimants' side of the
 7 court and they will ask the Opus people and they will
 8 flick it forward on the screen.
 9 Mr de Garr Robinson, does this seem like a sensible
 10 way forward?
 11 MR DE GARR ROBINSON: My Lord, yes.
 12 MR JUSTICE FRASER: All right, I will come back in at
 13 3 o'clock.
 14 (2.51 pm)
 15 (A short break)
 16 (3.00 pm)
 17 MR GREEN: Dr Worden, so if we can just start on the first
 18 page of that PEAK, please, if you go back a page
 19 {F/812.1}.
 20 A. First page, okay.
 21 Q. We have the PEAK number at the top, which is PC0211010?
 22 A. Yes.
 23 Q. And at the bottom of the page under the "Impact
 24 Statement", it says user "unknown", 23rd June 2011. Do
 25 you see that?

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1 A. 23rd June 2011. Is that right?
 2 Q. User unknown, date 23rd June 2011. Then the problem is
 3 explained:
 4 "Branches will be forced to declare stock when they
 5 don't want to. Apparent reappearance of withdrawn stock
 6 may cause spurious discrepancies."
 7 Now, Dr Worden, to give you context we have only
 8 found this document by trying to trace through what was
 9 happening on that MSC.
 10 A. Yes. Could I ask about the linkage to the MSC?
 11 Q. Yes, I will show you. It is page [F/812.1/3].
 12 A. If we go back to the MSC and the beginning of the MSC,
 13 I think --
 14 Q. Can I take it in stages and just show you --
 15 A. Well --
 16 Q. Page 3 at the bottom, do you see 24th June 2011?
 17 A. Yes.
 18 Q. Last yellow box?
 19 A. "Reference Added", that is the last page of the PEAK.
 20 Q. That is the last page of the PEAK.
 21 A. And it refers to that MSC.
 22 Q. It refers to that MSC.
 23 A. Fine.
 24 MR JUSTICE FRASER: I think it is on the first page as well,
 25 isn't it?

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1 MR GREEN: I think it is also.
 2 MR JUSTICE FRASER: At the top.
 3 MR GREEN: Yes, it is MSC on the first line under the
 4 references value. Do you see that?
 5 A. Yes, and that is the MSC we just looked at?
 6 Q. That is the MSC we just looked at, okay?
 7 A. That's my puzzlement, actually.
 8 Q. But I'm just asking you --
 9 A. We will come to my puzzlement when we do.
 10 Q. Okay. For the moment you can see that the MSC refers to
 11 this PEAK?
 12 A. The PEAK refers to the MSC, I will check --
 13 Q. Sorry, you are quite right. The PEAK refers to the MSC.
 14 A. Yes.
 15 Q. And we have seen what the problem is: spurious
 16 discrepancies at the bottom?
 17 A. That's the PEAK problem, yes.
 18 Q. Now, pausing there, had you identified this document in
 19 your researches?
 20 A. Well, I can't say I have seen this PEAK before, but when
 21 you go to page 2 in the Anne Chambers piece on page 2,
 22 it is one of these recurring every year when the same
 23 trading period comes around effects, which is just like
 24 the suspense account book.
 25 Q. This is a slightly different one, but --

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1 A. It is similar.
 2 Q. But pausing there, I was asking you had you seen this
 3 PEAK.
 4 A. I do not think I had, no.
 5 Q. Right. If we go over the page to page [F/812.1/2], you
 6 will see in the yellow box --
 7 A. I don't have colours.
 8 Q. Second box down:
 9 "PC0208335," which we won't look at but for his
 10 Lordship's note is {F/773/1}, "addresses the need to
 11 remove old branch declarations from the BRDB so they are
 12 not picked up and reused when a stock unit reaches the
 13 same TP/BP a year on."
 14 Do you see that?
 15 A. Yes.
 16 Q. So there had been a previous PEAK about it?
 17 A. Yes.
 18 Q. Then she says:
 19 "I have now found that there are some old
 20 declarations which were created but never updated, which
 21 are not removed by the SQL used for both the MSC and the
 22 code fix."
 23 Do you see that? We will look at what that means
 24 and what it is referring to in a moment:
 25 "In particular there are 36 stock declarations which

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1 will almost certainly give branches problems when
 2 balancing between now and the end of 2011."
 3 A. Yes.
 4 Q. And you would agree, wouldn't you, that's not how
 5 Horizon is supposed to work?
 6 A. Yes.
 7 Q. The options discussed are:
 8 "Can we either:
 9 "a) change the fix already in the pipeline ...
 10 (I know this is probably not possible) ...
 11 "b) schedule and produce a fix which also targets
 12 these extra declarations ..."
 13 Do you see that?
 14 Then the next paragraph, bottom of that box:
 15 "If the MSC can be run by 1st July, it should not be
 16 necessary to contact POL or any branches to get them to
 17 take action to remove the declarations themselves (since
 18 we confirmed to POL earlier this year that we had
 19 already taken steps to prevent further instances, this
 20 would be a good idea)."
 21 A. Yes.
 22 Q. So what they are trying to do is get it done quickly so
 23 that the fact that the previous fix didn't fully work
 24 doesn't show up?
 25 A. I think that is right.

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1 Q. That's fair, isn't it?
 2 A. Yes. I think that the reference to the previous MSC
 3 wasn't done quite right and it left some bits over.
 4 Q. Yes. So the previous fix left some bits outstanding?
 5 A. Yes.
 6 Q. Because it wasn't done quite right. Post Office Limited
 7 thought it had been fixed and we know that the problem
 8 first occurred, if we go back to page 1, in
 9 February 2011?
 10 A. Right, okay.
 11 Q. Look at the bottom of the page, first occurred 2011?
 12 A. Yes.
 13 Q. Go forward again {F/812.1/2} and "updated" at the bottom
 14 of that page, Anne Chambers says:
 15 "Apparent reappearance of withdrawn stock may cause
 16 spurious discrepancies."
 17 That is the phrase we see throughout.
 18 Then if we go over the page, please, to page
 19 {F/812.1/3}, it says there at the second box down:
 15:07:16 20 "23rd June 2011 at 17:06:26 User: John Simpkins
 20 "POL are aware of the declarations issue which was
 21 not completely fixed by the previous release, I do not
 22 yet think that they realise that fix was not complete so
 23 a quick resolution to this would be good."
 24 A. Yes.

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1 Q. So what he is saying is: they think we fixed it last
 2 time, if we fix it quickly they may not realise it?
 3 A. That's pretty much what was on the previous page as
 4 well, I think.
 5 Q. Yes, and that tends to confirm it?
 6 A. Yes.
 7 Q. So if we go to page {F/812.1/6}, please, and we look at
 8 the top box:
 9 "RISKS (of releasing or not releasing proposed fix):
 10 "What live problems will there be if we do not issue
 11 this fix?
 12 "Incorrect branch declarations belonging to a
 13 previous year will be picked up and cause stock account
 14 discrepancies to a live trading branch."
 15 Do you see that?
 16 A. Yes.
 17 Q. So the position we have now is that Post Office doesn't
 18 know the previous fix hasn't worked?
 19 A. Yes, Fujitsu had told Post Office we fixed it.
 20 Q. We fixed it --
 21 A. And they weren't quite right, so they are going to tidy
 22 up before it happens.
 23 Q. So the NBSC haven't been told the fix didn't work?
 24 A. Whether it is Post Office or --NBSC would be part of the
 25 chain somehow, they won't know.

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1 Q. And they are going to try and fix it before Post Office
 2 realised it?
 3 A. They are going to try and head it off at the pass before
 4 these branches run into it.
 5 Q. So neither the users nor Post Office were informed about
 6 this fix being done on the face of these documents?
 7 A. That is right. What they are saying is we haven't
 8 completely sorted it, we can sort it before any damage
 9 is done.
 10 Q. That's what they hope to achieve.
 11 A. Yes, they are hoping to do that.
 12 Can I mention my puzzlement about the MSC, or is
 13 that --
 14 Q. By all means, if it is helpful to the court?
 15 A. The MSC, when I read it I thought it was to do with
 16 a transacting acknowledgement for zero pounds, and that
 17 seems to me to be a different view from this.
 18 Q. No, there were two separate MSCs. The first one
 19 I showed you that was very fulsome explaining PO
 20 approval not needed, yes? The fulsome one was for TA
 21 zero pounds?
 22 A. I was just confused.
 23 Q. I understand. The second one didn't have all the PO
 24 approval detail from the second spreadsheet.
 25 A. Right, okay.

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1 Q. So we had to go and find it in row whatever 100,000, dig
 2 it out, then search for the PEAK and, through that, find
 3 out what actually happened, which I have just put to you
 4 and you agreed with.
 5 A. So the second MSC didn't actually say what was going to
 6 be done. I was confused between the two.
 7 Q. I understand. Don't worry.
 8 A. Okay.
 9 Q. Dr Worden, can we move now, please, to the approach you
 10 have taken to Horizon Issue 1. Can I ask you, please,
 11 to look at page {C1/1/1}. It will come up on the
 12 screen. There's the top of the page. There is
 13 a definition of the Horizon system. Yes?
 14 A. System? Yes, right.
 15 Q. "The Horizon system ..."
 16 A. Okay.
 17 Q. "... shall for the purposes of this list of issues mean
 18 the Horizon computer system hardware and software,
 19 communications equipment in branch and central data
 20 centres where records of transactions made in branch
 21 were processed," as defined in the pleadings, yes?
 22 A. Yes.
 23 Q. And that doesn't include the manual processes of
 24 deciding whether to issue TCs or not, does it?
 25 A. Right. That is correct.

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1 Q. When we look at Issue 1, the question that's posed is:
 2 "To what extent was it possible or likely for bugs,
 3 errors or defects," any of those, "of the nature
 4 alleged" and so forth "to have the potential to (a)
 5 cause apparent or alleged discrepancies or
 6 shortfalls ..."
 7 A. Yes.
 8 Q. And it doesn't say "to cause" without being first
 9 qualified by "to have the potential", does it? The
 10 words "to have the potential" are important, aren't
 11 they?
 12 A. What's the distinction between having the potential and
 13 actually doing? I mean, if it doesn't actually do, then
 14 in some sense it didn't have the potential.
 15 Q. Well, let's put it this way: something might have the
 16 potential to do something which you can identify, but
 17 you can't identify whether it has actually done it;
 18 that's fair?
 19 A. Yes, that's fair.
 20 Q. So whether it has actually done it and whether it has
 21 the potential to do it are two different things in that
 22 respect?
 23 A. In a sense the word "potential" reflects a lack of
 24 knowledge. If I knew more I would know whether it is
 25 going to happen or not, but I know less so it is

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1 potential.
 2 Q. Yes. As you fairly accepted earlier, that the Horizon
 3 system by its nature has been quite difficult to plumb
 4 for the experts?
 5 A. To plumb in that sense, yes.
 6 Q. Indeed, you refer to a swamp and so forth. I mean, it's
 7 not the most transparent task you've been engaged in?
 8 A. It is a very big system to understand in a year, yes.
 9 Q. So just coming back to this, what we can say with
 10 confidence, if something actually does cause
 11 a discrepancy in a branch --
 12 A. Then it did had the potential.
 13 Q. -- then it plainly had the potential?
 14 A. Yes.
 15 Q. So potential is necessary but not sufficient to have
 16 an actual impact?
 17 A. Yes, I agree with that.
 18 Q. So it says to have the potential, and then there's two
 19 parts to it: cause apparent or alleged discrepancies or
 20 shortfalls relating to subpostmaster's branch accounts
 21 or transactions?
 22 A. Yes.
 23 Q. Not necessarily in their branch accounts, but relating
 24 to --
 25 A. Ah --

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1 Q. -- branch accounts, bare branch accounts or
 2 transactions?
 3 A. Discrepancies relating to branch accounts. That could
 4 be interpreted very broadly.
 5 MR JUSTICE FRASER: You are both talking at the same time,
 6 I'm afraid.
 7 A. Sorry.
 8 MR JUSTICE FRASER: Go on, Dr Worden.
 9 A. I'm saying discrepancies relating to branch accounts
 10 could be interpreted very broadly and it might be taken
 11 to include all back end discrepancies because they
 12 relate to accounts.
 13 MR GREEN: Okay. (b):
 14 "... undermine the reliability of Horizon accurately
 15 to process and record transactions ..."
 16 Just an example of (b), if a scanner doesn't
 17 correctly scan in a pouch that undermines the
 18 reliability of Horizon accurately to process and record
 19 the transaction, doesn't it?
 20 A. It does, and for better or worse I took my role to be
 21 concerned with lasting effects on branch accounts rather
 22 than transient ones.
 23 Q. Well, you did two things, didn't you? You focused on
 24 actual impact rather than potential?
 25 A. I tried to derive an upper limit on actual impact.

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1 Q. And you added in lasting?
 2 A. I added in lasting.
 3 Q. And in fact we see where you define the issue in your
 4 report, you also focussed on the impact on claimants'
 5 accounts?
 6 A. Yes.
 7 Q. That was your analysis?
 8 A. That was what I felt would be useful to calculate.
 9 Q. But you saw in Issue 1 that it said subpostmaster's
 10 branch accounts?
 11 A. Yes, I agree.
 12 Q. So you took your own course in your own sense?
 13 A. Well, yes, it is in two stages really. The first stage
 14 is I felt extent in Issue 1 required numbers, and for
 15 a second stage I needed some calibration of those
 16 numbers, and those are two steps we can look at in
 17 return, if you like.
 18 Q. In all of this you were still clear that in the Horizon
 19 system, transaction corrections, the manual process of
 20 reconciliation and issuing TCs was not in?
 21 A. The manual process, the cause was not in, yes, but the
 22 effect was.
 23 Q. I see. The helpline was not included in the system,
 24 was it?
 25 A. First line support was not included but the experts did

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1 look at evidence about it .
 2 Q. To have understood a bit about -- we have touched on
 3 this before -- about the processes and the scope for
 4 errors, you need to know a bit about the helpline if you
 5 are going to look at whether people get through and how
 6 often?
 7 A. That is correct.
 8 Q. Did you know whether people on the helpline were reading
 9 out scripts when people rang up about things?
 10 A. Which helpline are we referring to?
 11 Q. NBSC helpline.
 12 A. That is the business helpline .
 13 Q. The first part of call , as it were. Did you know if
 14 they were reading out scripts --
 15 A. I'm sure they had prompts of various kinds.
 16 Q. But you didn't know, was the answer?
 17 A. I didn't know because I hadn't been asked to look in
 18 detail at the MSC.
 19 Q. You heard the helpline referred to as the "hell line"
 20 at all?
 21 A. I didn't see that phrase.
 22 Q. You didn't. Can we look at {F/1257.1/1}, please. This
 23 is a forum post in which Mr Tank had made a post. If we
 24 look at page {F/1257.1/6}, please?
 25 A. Can I ask what forum?

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1 Q. It was a subpostmaster's forum.
 2 A. Internal Post Office thing.
 3 Q. No, a subpostmaster's forum that they used to use.
 4 A. Right.
 5 Q. Okay. {F/1257.1/6}, if you look at the second box down.
 6 A. It is very dim on my screen.
 7 Q. The second box down says:
 8 "When I balanced on 17th September I had
 9 an unexplained loss of £176.74. I paid it in rather
 10 than go through the stress of the hell line. It has not
 11 come to light ."
 12 A. Okay.
 13 Q. It is only a yes or no answer to identify what
 14 information you have had regard to --
 15 A. Right, I haven't read this before.
 16 Q. You have not seen this before?
 17 A. No.
 18 Q. Had you seen any other factual evidence about people
 19 deciding whether to pursue things through the helpline
 20 or not of this sort?
 21 A. Well, what I have particularly looked at is the helpline
 22 logs for one or two weeks. Now, that's not directly
 23 about the decisions made by the postmaster.
 24 Q. If we look at {D3/1/201}, which is paragraph 904
 25 just look at 904 at the bottom. The last two lines ,

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1 couple of lines , you say:
 2 " ... although I have no knowledge of the business
 3 processes for creating TCs used by the central
 4 Post Office departments."
 5 A. Yes.
 6 Q. And that is correct isn't it , you don't?
 7 MR JUSTICE FRASER: Is that the correct word?
 8 A. I said yes.
 9 MR JUSTICE FRASER: I'm sorry, it didn't come up.
 10 MR GREEN: Now, we mentioned that you placed quite a lot of
 11 emphasis on transaction corrections .
 12 A. Yes.
 13 Q. And essentially what you say is where there are
 14 discrepancies in the branch accounts that have to be
 15 corrected, the transaction corrections process is what
 16 then makes that happen?
 17 A. It is a very important part of the correction , yes.
 18 Q. And it is very important for your analysis as well,
 19 isn't it?
 20 A. It goes to my analysis of robustness. It is an example
 21 of user error correction, which I think is quite
 22 an important one.
 23 Q. And because you placed a lot of emphasis on it for
 24 robustness, if the Horizon system -- it is a question
 25 for the judge, but if the Horizon system was as it

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1 appears in the definition at the beginning and didn't
 2 include the transaction correction process itself , you
 3 would have to answer the question, well, for every time
 4 a TC is issued, that may be because a discrepancy has
 5 arisen in branch accounts that needs to be corrected and
 6 that may be due to the Horizon system?
 7 A. Sorry, I haven't quite understood the question.
 8 Q. Your answer to the robustness of Horizon is heavily
 9 dependent upon TCs and, you say, countermeasures which
 10 effectively reflect that process, and you effectively
 11 say that those are important because that's how
 12 discrepancies are corrected?
 13 A. Yes. I'm trying to analyse robustness and the
 14 correctness of errors in asking how effective are the
 15 countermeasures in countering the effects of errors
 16 often when I don't know the causes. It might be
 17 something out in the client's system, or whatever.
 18 Q. And it is right, isn't it , that the answer to the
 19 robustness question on your analysis would be very
 20 different depending on whether you included the
 21 corrective impact of TCs or not?
 22 A. Absolutely. Yes.
 23 Q. Fundamentally different, in fact?
 24 A. Yes, very different .
 25 Q. It is right, isn't it , that you and Mr Coyne took

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1 slightly different approaches to the Horizon Issue 1 and
 2 what it meant, because we see, if we look at joint
 3 report 2 at {D1/2/28} at 1.9, it says:
 4 "The experts have differing views on 'branch
 5 impact'. Mr Coyne refers to any discrepancy that caused
 6 a loss (or gain) within branch accounts that needed
 7 corrective action as an 'impact to branch accounts'.
 8 Dr Worden only considers an effect or impact on branch
 9 accounts where a discrepancy loss (or gain) was not
 10 rectified by a correction such as a Transaction
 11 Correction."
 12 A. Yes.
 13 Q. There was a fundamental difference about that and then
 14 there was also a difference about transient and lasting
 15 inaccuracies in branch accounts, wasn't there?
 16 A. Well, I think that is the same difference, really. "Not
 17 rectified" means lasting, whereas "rectified" means
 18 transient.
 19 Q. Well, we will come back to that point later, Dr Worden,
 20 but that rather depends how long the TC process takes,
 21 doesn't it?
 22 A. It does, absolutely.
 23 Q. So if the TC process takes a long time, then you might
 24 say something was lasting, even notwithstanding years
 25 later it might be corrected?

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1 A. That is not how I understood lasting --
 2 Q. How did you understand lasting?
 3 A. There were delays in the TC process which might be due
 4 to client organisations or might be due to all sorts of
 5 things, and they could be at the outside, I believe,
 6 several months.
 7 My definition of lasting did not depend on TCs
 8 coming in within a certain timeframe. If TC never came
 9 in, that would be lasting, but if TC took several months
 10 to come in that is not what I would call a lasting
 11 effect. A lasting effect is permanent; it is at the end
 12 of the day, you know, he has lost money forever.
 13 Q. So in fact, 1.9 and 1.10 in the report {D1/2/29} are
 14 really directed at the same thing.
 15 At 1.10 what you say -- this is your comment:
 16 "... transient inaccuracies in branch accounts which
 17 needed some form of correction, have arisen so
 18 frequently and from so many causes that to list them is
 19 not useful; and that evidence of each correction being
 20 carried out is unlikely to persist to this day."
 21 That is your position?
 22 A. Yes, that's my view.
 23 Q. Now --
 24 MR JUSTICE FRASER: Just so I'm clear, the example you just
 25 gave to counsel of a transaction that took several

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1 months --
 2 A. A TC.
 3 MR JUSTICE FRASER: I beg your pardon, a TC, a transaction
 4 correction, would that be a transient inaccuracy?
 5 A. That would be a transient inaccuracy, yes.
 6 MR JUSTICE FRASER: That's very useful.
 7 A. The branch accounts would look wrong for that period.
 8 MR GREEN: So now that was one big tectonic difference of
 9 approach between you and Mr Coyne.
 10 A. Yes.
 11 Q. The other one was the identification of particular bugs
 12 and their impacts?
 13 A. We ended up in different places on what we thought were
 14 actual bugs, yes.
 15 Q. I understand. It is right, isn't it, that in seeking to
 16 reach some compromise given the differences of approach,
 17 you managed to agree what we find at 1.15?
 18 A. Yes.
 19 Q. And that was the context in which that sort of
 20 compromise agreement was reached?
 21 A. Yes.
 22 Q. Now, can we look please at page 9 of your first
 23 statement at {D3/1/9}. You describe section 28, at
 24 paragraph 29 of that page. Yes, you describe what
 25 section 8 in your report is about.

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1 A. Yes.
 2 Q. And you describe section 8 as addressing Horizon 1, yes?
 3 A. Yes.
 4 Q. "... the extent to which bugs in Horizon may have
 5 affected the Claimants' branch accounts?"
 6 A. Yes, I've stuck in the word "claimants" there.
 7 Q. You stuck the word claimants in because that's what you
 8 in fact do in section 8?
 9 A. It is mainly what I do in section 8, but I could come to
 10 that.
 11 Q. Now, can we look at how the reasoning in section 8 works
 12 so we understand it. You'll appreciate, Dr Worden, that
 13 there's a difference between the parties on what the
 14 right approach might be?
 15 A. Absolutely.
 16 Q. But I am not going to proceed from here on to analyse
 17 your approach on the basis of how you did it. I'm not
 18 suggesting I agree with your approach, but I'm trying to
 19 understand how you have done it in case you turn out to
 20 be right. Do you understand?
 21 A. I might do.
 22 Q. And it is really to focus on the methodology you have
 23 adopted.
 24 A. Yes, right.
 25 Q. You have made a number of assumptions in section 8 of

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1 your first report, haven't you?
 2 A. Yes, I have, to arrive at a number I made some
 3 assumptions.
 4 Q. It is meant to be an easy question. You are meant to go
 5 yes and then I ask you the next bit.
 6 A. Yes.
 7 Q. Let's look at a couple of them, please. {D3/1/176},
 8 paragraph 769.
 9 A. 769?
 10 Q. Yes.
 11 A. "... would affect all branches ..."
 12 Yes.
 13 Q. Yes. So one of the assumptions you have used for your
 14 model is that all branches, whether claimants or
 15 non-claimants, are effectively --
 16 A. Yes.
 17 Q. There is another assumption if we look at {D3/1/148} at
 18 paragraphs 621 to 622, and I'm going to suggest to you
 19 it is basically the same point underlying it because on
 20 the premise that it affects, there is an even
 21 distribution of bugs, you have then considered a scaling
 22 factor, haven't you?
 23 A. Yes.
 24 Q. And you specifically say at 622:
 25 "It seems implausible to me that there is some

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1 special factor about Claimants' branches, which makes
 2 them more prone to --"
 3 A. Much more prone.
 4 Q. Quite right:
 5 " ... much more prone to bugs which one would expect
 6 to strike any branch at random."
 7 Then you give quite careful consideration to this,
 8 don't you, because it is important, in your report?
 9 A. I have thought about it. It is in the appendix,
 10 I think.
 11 Q. Absolutely, so let's trace it through:
 12 "Nevertheless, I have considered the possibility
 13 carefully in Appendix F."
 14 You say {D3/1/149}:
 15 "I have shown that that there is no significant
 16 difference between Claimants' branches and other
 17 branches, in proneness to bugs in Horizon."
 18 Pausing there. Bearing in mind what I asked you
 19 about this morning, when you say "I have shown there is
 20 no significant difference between Claimants' branches
 21 and other branches", would it be fair to say that when
 22 you say "shown" you mean thought about it, can't think
 23 of a reason and therefore concluded that was the case?
 24 A. I think that's fair, yes.
 25 Q. That's what we see in appendix F.

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1 If we look at {D3/2/207}, paragraph 430. Let's look
 2 at the start of 429, if we may, on page 207. In your
 3 appendix F, 429, you say:
 4 "I have tried to think of possible differences of
 5 this sort, and I have only been able to find one
 6 candidate difference."
 7 So you wracked your brains and the only thing you
 8 could think of is then in paragraph 430?
 9 A. That is right.
 10 Q. And what you come up with, you say:
 11 "It might be said that Claimants tend to make more
 12 errors than non-Claimants ..."
 13 Yes?
 14 A. Yes.
 15 Q. " ... and that these human errors particularly trigger
 16 bugs in Horizon. Or it might be said that certain bugs
 17 in Horizon are successfully handled by non-Claimants,
 18 but tend to cause Claimants to make errors, which cause
 19 losses."
 20 Then you discount both of those?
 21 A. Yes, I say -- the argument that follows is that they are
 22 both second order effects.
 23 Q. I understand.
 24 Now, you heard Mrs Van Den Bogard give evidence, or
 25 you may have heard her, where she accepted that

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1 Post Office may suffer from UEB or user error bias
 2 sometimes?
 3 A. I didn't hear that evidence, but --
 4 Q. Do you think that might be a fair suggestion against you
 5 there?
 6 A. I don't see how that's relevant to this consideration.
 7 Q. You don't think -- you have approached this on the basis
 8 that the claimants are probably making more mistakes?
 9 A. I put that up as a possible hypothesis --
 10 Q. As the only thing you could think of?
 11 A. As the only thing I could think of.
 12 Q. I understand. You then, if we go back very kindly to
 13 your first report at {D3/1/149}, you have proceeded on
 14 the basis of paragraph 623 that claimants' branches are
 15 smaller and have fewer transactions?
 16 A. Yes.
 17 Q. And therefore they are less likely to be hit by
 18 a Horizon bug in a given month?
 19 A. That's the assumption.
 20 Q. Have I fairly summarised those key planks of your
 21 reasoning?
 22 A. I think that's all fair.
 23 Q. Your calculations then follow from those assumptions?
 24 A. Yes.
 25 Q. You reach conclusions which are likely if not calculated

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1 to suggest that the claimants' claims are so implausible
 2 as to be wholly unrealistic, don't you?
 3 A. They are not calculated to suggest -- I did the numbers
 4 as what comes out.
 5 Q. What you conclude is that the claimants' claims are so
 6 implausible as to be wholly unrealistic --
 7 A. I conclude that the maximum amount of shortfall in
 8 claimants' branches which could arise from bugs in
 9 Horizon is approximately 0.5% of their claimed
 10 shortfalls. That is one way of stating the number
 11 I come up with.
 12 Q. So through the prism of looking at the claimants
 13 specifically rather than subpostmasters in general, you
 14 have effectively reached an opinion that it is absurdly
 15 unlikely that their claims can be right; is that fair?
 16 A. Yes. Could I add a little bit? And that is I have
 17 taken two approaches to Horizon Issue 1, one of which is
 18 that I think numbers are important to give meaning to
 19 phrases like "likely" and "risk" and so forth, and you
 20 have to define the scope of those numbers. Because if
 21 you say it is likely in the whole lifetime --
 22 Q. I understand what you have done. We will come to the
 23 detail.
 24 A. But I'm coming to the second stage. The second stage,
 25 I have said I think it is useful for the court to

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1 calibrate those numbers with respect to claimants, but
 2 I may be wrong in that. And if I'm wrong in that, then
 3 the court can convert my numbers from a claimant basis
 4 to an old postmaster basis. I have given the conversion
 5 factors in my report, so if I'm wrong about emphasis on
 6 claimants the court can convert the numbers to something
 7 else.
 8 Q. But Dr Worden, I'm going to follow through what you have
 9 done.
 10 A. Yes.
 11 Q. And ask you at each stage whether you think it is right.
 12 A. Yes.
 13 Q. Or wrong.
 14 A. Fine.
 15 Q. Now, I would like, if you would just bear with me while
 16 we go through a relatively simply statistical exercise,
 17 if that is all right?
 18 A. Yes, fine.
 19 Q. And I would like you first to consider how one would
 20 assess the chances of meeting somebody called Penny
 21 Black in the UK. If you bear with me.
 22 A. Yes.
 23 Q. There are 60 million people in the UK of whom, as far as
 24 we can tell, roughly 24,000 have the surname Black?
 25 A. Yes.

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1 Q. And of those, assume half of them are men and half of
 2 them are women, so that is 12,000. Let's assume 1% of
 3 all women with the surname Black are called Penny. So
 4 1%, 120 people, are called Penny Black in the UK, let's
 5 assume.
 6 That is a consequence of that --
 7 A. Sorry, we started with 60 million? Let me just track
 8 the numbers.
 9 Q. 24,000 are called Black.
 10 A. So that is a factor of 3,000. And then the next factor?
 11 Q. Half of them are men and half are women.
 12 A. So that is a factor of 6,000.
 13 Q. And then 1% of them.
 14 A. So that is 600,000.
 15 Q. In fact, on our calculation 500,000 --
 16 A. Assuming that surnames and Christian names are not
 17 correlated.
 18 Q. Yes, exactly. Assuming they are independent variables.
 19 We get 120 people out of 60 million, which is 1 in every
 20 500,000. I'm not going to criticise your mental maths
 21 in the witness box, just to get in the ballpark
 22 together.
 23 So that is 1 in every 500,000 people. Now --
 24 MR JUSTICE FRASER: 1 in every 500,000 is a lady called
 25 Penny Black.

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1 MR GREEN: A lady called Penny Black.
 2 MR JUSTICE FRASER: It is a different way of saying divide
 3 60 million by 120.
 4 MR GREEN: Exactly. And if you are at a dinner with 50
 5 other people, 50 other females, let's say 50 other
 6 people to start with.
 7 A. So 25 females, let's say.
 8 Q. Let's say 50 other people, right?
 9 A. Yes.
 10 Q. What are the chances of one person there being called
 11 Penny Black? It is 50 over --
 12 A. You mean exactly one or more than one?
 13 Q. Let's say at least one.
 14 A. At least one. I think it is the basic probability of 1
 15 person being Penny Black times 50. I believe it is
 16 that.
 17 Q. Yes, exactly. So that is 50 over 500,000, isn't it?
 18 A. Yes, 1 in 10,000.
 19 Q. 1 in 10,000. What are the chance of two people being
 20 called Penny Black?
 21 A. That's approximately the square unless there is
 22 a correlation of relatively -- if you are in a room full
 23 of relatives, it is very different. But without the
 24 correlation, I believe, let me think about this
 25 carefully, I believe it is the square of the

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1 probability .
 2 Q. Yes. I mean, in fact there is a very fine point that
 3 you have taken one person out of the UK and one person
 4 out of -- but roughly it is the square?
 5 A. Yes.
 6 Q. Yes. So the chances of two people being called Penny
 7 Black is 1 in 100 million, isn't it?
 8 A. Two people at this dinner.
 9 Q. It is one in 10,000 times 10,000. 10,000 times
 10 10,000 --
 11 A. I believe we are all right so far.
 12 Q. It is not meant to be controversial. Just taking you
 13 through it so we are agreed on methodology. And the
 14 chances of three people being called Penny Black,
 15 I promise you the last example, is 1 in 10,000x1 in
 16 10,000x1 in 10,000, which is around 1 in a trillion ,
 17 yes?
 18 A. I'm just trying to think about correlations .
 19 Q. As independent variables. Don't get complicated. Just
 20 as independent variables, that is the answer?
 21 A. As long as we are in that assumption.
 22 Q. Yes, we are, because it is terribly important, isn't it ,
 23 yes?
 24 A. Well, obviously I don't know where this analogy is
 25 going --

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1 MR JUSTICE FRASER: I don't even think you need to worry
 2 about that.
 3 A. Good.
 4 MR JUSTICE FRASER: But so far you are agreeing with
 5 Mr Green's basic approach to --
 6 A. Yes, it seems the probability theory is right,
 7 basically. Yes.
 8 MR GREEN: You may not know this, but in 2015 there was the
 9 175th anniversary of the Penny Black stamp and
 10 Royal Mail had an event to celebrate it at which they
 11 invited people called Penny Black to attend.
 12 A. Yes.
 13 Q. Let's say 50 of those people who they invited to join
 14 the dinner because they were called Penny Black came.
 15 A. Yes.
 16 Q. If you were at that dinner, what are the chances of the
 17 other 50 people being called Penny Black?
 18 A. It is obviously high, but we have violated the
 19 assumption of no correlation .
 20 Q. Yes, it is a different example?
 21 A. It is absolutely, very different .
 22 Q. So 50 people who are in fact called Penny Black have
 23 been invited to join for dinner?
 24 A. Yes. I mean --
 25 Q. So the chances are likely to be at or about 100%, aren't

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1 they?
 2 A. Yes. I should say generally that probability theory is
 3 what one uses in the absence of specific knowledge like
 4 you have just put to me, and that specific knowledge
 5 changes the whole ball game.
 6 Q. The specific knowledge changes the whole ball game,
 7 doesn't it, Dr Worden?
 8 A. It does, absolutely .
 9 Q. And you would accept that if we say, for the sake of
 10 argument, the chances of the 50 people at the dinner,
 11 you can imagine the chap coming out with the 50 credit
 12 cards, "Penny Black anyone?" All the hands go up, yes?
 13 MR JUSTICE FRASER: Because they are all being asked to pay
 14 for the dinner they have been invited to .
 15 MR GREEN: Your Lordship had the point, which made me
 16 hesitant to give the example. But the point is that if
 17 you look at the 100%, yes, on the one hand --
 18 A. Yes.
 19 Q. -- if we say approximately 100% chance of them -- there
 20 might be somebody pretending to be called Penny Black
 21 who is there interloping, but basically 100%, they've
 22 all come because they've been invited because they are
 23 called Penny Black, and one in a trillion for just three
 24 of them, there isn't any bigger margin of probability
 25 that we could illustrate by changing the assumptions.

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1 A. Absolutely, and this shows that specific knowledge
 2 overrides probability theory, when you have that
 3 specific knowledge.
 4 Q. It is essential. Do you know how GLOs work, Dr Worden?
 5 A. GLO?
 6 Q. Yes, that is a group litigation order?
 7 A. Sorry, no, I'm -- I haven't looked into that, really .
 8 Q. They are advertised for people to join. Let's look at
 9 {C7/3/39}. That's the group litigation order. And at
 10 page {C7/3/39}, this is the invitation /publication
 11 notice to join the GLO.
 12 The GLO is limited to people who satisfy those
 13 criteria. Do you see that?
 14 A. Yes.
 15 Q. See what the third one is?
 16 A. They claim to have suffered loss, yes.
 17 Q. It is a pretty important specific bit of knowledge,
 18 isn't it, Dr Worden?
 19 A. I do not see how it fundamentally alters my calculation .
 20 Perhaps you would like to spell that out to me.
 21 Q. Well, you gave an example of people from the same family
 22 being there, that would change everything. I gave you a
 23 counter example of people being invited to join because
 24 they are actually called Penny Black. This is
 25 a situation in which the entire universe of claimants

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1 has only joined the litigation at all because they
 2 believe that they have suffered the very type of losses
 3 we are concerned with.
 4 A. They believe that, yes, but I'm asked as an expert to
 5 examine that from a neutral point of view. I'm not
 6 asked to take the claimants' case or the Post Office's
 7 case. I'm asked to examine on my knowledge of Horizon
 8 what the probability of certain events was.
 9 Q. Okay, let's assume this: if the claimants were right
 10 that they had been affected by such losses, yes, it
 11 would be no surprise at all if they're all here,
 12 would it?
 13 A. I'm still at a loss to understand how that relates to my
 14 analysis.
 15 Q. Let me ask you this, Dr Worden: this is something
 16 special about the claimants that you were searching
 17 about in your quest, isn't it? They are the people,
 18 they are the subsample of people who have sought to join
 19 the group litigation?
 20 A. But it would seem to me that I would then have to base
 21 my analysis on an assumption that the claimants' claim
 22 was true.
 23 Q. Let's look at it the other way round. You would have
 24 a factor to displace your assumption that people who
 25 believed they have been adversely affected in this way

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1 are equally likely to have been adversely affected as
 2 people who believe they haven't been?
 3 A. I don't see how making the assumption that the
 4 claimants' case is true is an unbiased approach,
 5 a balanced approach to assessing Horizon.
 6 Q. Let's take that out of the picture.
 7 A. No, this is my duty, that I have to make a balanced
 8 assumption of the probability of those events not
 9 assuming that either side's case is right when looking
 10 at Horizon.
 11 Q. But Dr Worden, you have reached that assessment by
 12 starting, I would suggest to you, from a demonstrably
 13 false premise that there is no special factor to
 14 distinguish claimants from SPMs generally?
 15 A. No, I have started from the assumption that a bug in
 16 Horizon does not pick on claimants more than other
 17 people. That is a different assumption.
 18 Q. But in making that assumption you have ignored the
 19 obviously relevant point that the definition of
 20 a claimant is somebody who believes they have been so
 21 affected?
 22 A. I have not ignored that role in the point. I'm finding
 23 great difficulty in following how this analogy relates
 24 to the assumption I have made about how bugs in Horizon
 25 act. That is the assumption. Not how claimants act.

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1 Q. I will only ask you one more question about this before
 2 I move to a different aspect of your report. Why would
 3 someone who felt they had not been affected join the
 4 group action?
 5 A. I think somebody who felt they were not affected would
 6 not join the group action. I do not see that as
 7 relevant to the technical assumptions I made in my
 8 section 8.
 9 Q. Let's look at your scaling factor and your maths because
 10 that's not a matter of opinion, is it? The advantage of
 11 maths is that it is right or wrong?
 12 A. That's very much the advantage from the court's point of
 13 view and the expert's point of view.
 14 Q. Let's look at the paragraph of your report Mr Coyne was
 15 taken to at {D3/6/30}.
 16 Just go back to page {D3/6/29} to give you context.
 17 This is in the section 5.1 "Size of Claimants'
 18 branches".
 19 A. Yes.
 20 Q. So this is the second of the assumptions I put to you
 21 earlier, yes? You have assumed even distribution which
 22 we have dealt with.
 23 A. Even distribution of what?
 24 Q. Of bugs across all subpostmasters, we have dealt with
 25 that?

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1 A. Bugs per transaction in Horizon.
 2 Q. Yes. And you are now turning to your scaling factor, as
 3 you have called it?
 4 A. Yes.
 5 Q. "... which expressed the average size of a Claimants'
 6 branch (defined in terms of customer transactions per
 7 day) divided by the average size of any branch across
 8 the Post Office network defined in the same way."
 9 A. Yes.
 10 Q. The relevance of this is that because the claimants'
 11 branches are smaller, smaller by number of transactions,
 12 they are less likely to be hit by bugs. That is the
 13 relevance.
 14 A. That is right, that's the relevance. By about this
 15 factor too.
 16 Q. You say 0.37 in your first report and change it to 0.45
 17 in your second report?
 18 A. That is right.
 19 Q. If we look at paragraphs 113 to 114 over the page, these
 20 are the paragraphs that Mr Coyne was taken to {D3/6/30}.
 21 You say four lines down "In my first report" because
 22 this is your second report?
 23 A. Where are we? Yes, got it.
 24 Q. Paragraph 113, four lines down:
 25 "In my first report, I made a calculation for each

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1 year of the size of Claimant branches versus all
 2 branches, and then took an average across the three
 3 years.”
 4 A. Yes.
 5 Q. Is that based on the data of 2001, 2007 and 2018?
 6 A. Pretty much, I think, yes.
 7 Q. Let's go back and see what you in fact did. {D3/1/149},
 8 624.1.
 9 A. Yes.
 10 Q. You are referring at 624 to the figures in the
 11 spreadsheet Mrs Van Den Bogard had?
 12 A. Yes.
 13 Q. You say:
 14 "If this spreadsheet is accepted, it implies the
 15 following about Claimants' branches:
 16 "624.1. From summing rows of the spreadsheet, the
 17 561 Claimants' branches carried out 558,000 customer
 18 transactions per week ..."
 19 Yes?
 20 Then what you do is you subsequently compare that,
 21 yes?
 22 A. Yes.
 23 Q. To get the number of customer transactions per day?
 24 A. Yes.
 25 Q. Now, there you are referring to the spreadsheet in

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1 Mrs Van Den Bogard's evidence, yes?
 2 A. Yes.
 3 Q. And you actually say at 624.1 that you have looked at
 4 the customer transactions per week in 2007?
 5 A. Yes.
 6 Q. Not an average over three years?
 7 A. I have made an assumption of, if you like, linear change
 8 to get at that figure. I mean, this figure is very
 9 approximate and only needs to be very approximate, and
 10 it was very approximate in my first report. I tried to
 11 improve it a bit in my second report, but 2007, if you
 12 have a uniform rate of change, 2007 is the average of
 13 those three years.
 14 Q. What you have actually done is take the figures for
 15 2007?
 16 A. Yes, as representative of the three years.
 17 Q. But what you didn't do, you didn't take an average of
 18 the three years by actually adding up the three years
 19 and --
 20 A. No, there was an extra assumption in there that the rate
 21 of change between those two periods was the same, as the
 22 average of the three years was the same as the 2007
 23 figures. And that was, if you like, a hidden assumption
 24 that I probably should have been clear about.
 25 But as I say, the level of precision -- one is

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1 always concerned with the level of precision one
 2 needs --
 3 Q. We have got that point.
 4 A. -- in an answer, and I felt that the level of precision
 5 I needed in this figure, even if we changed it to 1 it
 6 wouldn't make much difference, really.
 7 Q. I understand, I have got your point. But on precision
 8 about what you said, it's not right what you say in your
 9 second report. What you actually did was take the
 10 figures from 2007?
 11 A. Well, 2007 I took as representative --
 12 Q. I understand that. It is not what you said you did.
 13 A. No, I should have explained more carefully.
 14 Q. And the figures you had for the network were 2017 and
 15 then you derived some for 2003. That is right, isn't
 16 it?
 17 A. Where are we?
 18 Q. We are in 625 and 626. At 625 is the figure for 2017.
 19 A. Yes. Again, there is an interpolation here that
 20 I didn't have a middle point so I took the average from
 21 the first and the last point.
 22 Q. Okay. So that's what you in fact did in your first
 23 report, and so the change of method that you referred to
 24 in your second report as a subtle statistical change of
 25 method, from one type of averaging to another, it

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1 wasn't, shall we say, fully explained in your second
 2 report, the change of approach, was it?
 3 A. Well, the change in method was explained and I can
 4 re-explain that if you like. It is a matter of --
 5 Q. We have only got so much time, Dr Worden, so let's look
 6 at the analysis.
 7 You refer at paragraph 623 to the spreadsheet in
 8 Mrs Van Den Bogard's witness statement which she refers
 9 to at paragraph 179 of her witness statement. That
 10 spreadsheet is at {F/1837/1}. Were you in court for
 11 Mrs Van Den Bogard's evidence where the original version
 12 had wrongly allocated the figures across branches and it
 13 had been changed but she didn't know it had been
 14 changed?
 15 A. I wasn't in court for that, no.
 16 Q. Did you realise that had happened?
 17 A. I was told about some changes and I believed that within
 18 the margins of precision that I needed, those changes
 19 did not make any significant difference.
 20 Q. Okay.
 21 Now, the spreadsheet -- can I just pause. When you
 22 were told there had been a mistake in the first
 23 spreadsheet, in data that Post Office had extracted, and
 24 they had to change it, did that worry you at all?
 25 A. I thought about it, but as I say, the precision I needed

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1 in this number is a rather low precision, and to that
 2 precision I felt it didn't make a significant
 3 difference.
 4 Q. Did you do the calculations on the spreadsheet or did
 5 Mr Emery?
 6 A. I did it.
 7 Q. Okay.
 8 A. I produced another version of it which I did the sums --
 9 Q. Can we please go down to row 74. Do you see that
 10 there's a gap in column E?
 11 A. Little Waltham, yes.
 12 Q. If we go down to rows 84 and 85.
 13 A. Yes.
 14 Q. Gaps there?
 15 A. I was aware of these.
 16 Q. You were aware of the gaps?
 17 A. I was aware the data was patchy, yes.
 18 Q. And in fact, Mrs Van Den Bogard explained in her witness
 19 statement that the gaps had been filled, didn't she?
 20 A. Mm.
 21 Q. Yes?
 22 A. Yes.
 23 Q. After further investigation the gaps had been filled?
 24 A. Yes.
 25 Q. And you had intended to take the number of the filled or

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1 unfilled column.
 2 A. I can't remember the precise details of my calculation
 3 because, as I say, I was looking for a precision which
 4 was rather low. And therefore in terms of priorities
 5 and what I put my effort to, I knew that other parts of
 6 my calculation had greater imprecision than that, and so
 7 I didn't spend a lot of effort on trying to refine this
 8 figure.
 9 Q. Okay. So will you take it from me that the column E
 10 figure is 558,260, which is the figure you have used?
 11 A. Column E?
 12 Q. Do you see E is the one with the missing ones in?
 13 A. Yes.
 14 Q. And F has got the gap filled?
 15 A. Yes.
 16 Q. Do you see that?
 17 A. Yes.
 18 Q. And the sum of column E is 558,260 and with gaps filled
 19 the figure is 575,803?
 20 A. Sorry, can I have those two figures again? Are they on
 21 this spreadsheet? They are not. You have done the
 22 sums.
 23 Q. They're not but we could sum them at the bottom. I've
 24 got one here.
 25 A. What are the two figures?

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1 Q. Column E with the gaps in it is 558,260, which is what
 2 you have used.
 3 A. Yes.
 4 Q. So you have used the columns with the gaps in it.
 5 A. Yes.
 6 Q. And Mrs Van Den Bogard explained another column was
 7 there which had the gaps filled, and you have not used
 8 that and that comes to 575,803.
 9 A. So the difference is 4%.
 10 Q. I'm just saying you used the wrong column.
 11 A. Well, the kind of calculation one makes is I'm doing
 12 an average of three numbers, one of them is going to
 13 change by 4%, so the impact on the average is 1%. So
 14 does that matter?
 15 Q. No, Dr Worden, sorry, you used the 2007 figure as
 16 a spurious average proxy for three years' averages on
 17 the basis of an assumption that you didn't tell anyone
 18 until you were being cross-examined. That's what
 19 happened.
 20 A. No, it is not what happened.
 21 Q. Right. You explain what happened here.
 22 A. What happens --
 23 Q. Because that sounds like --
 24 A. -- is when you are making an engineering estimate you
 25 have in mind two things: one is the precision of your

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1 result that you need to assist the court, or whatever it
 2 may be, and the other is the precision that you can
 3 achieve in your calculation.
 4 Now, I was aware when I made this calculation that
 5 the precision I could achieve, firstly the precision
 6 I needed was rather small. It might have been to
 7 a factor of 3, or something like that. Secondly, the
 8 precision I could achieve was rather small for reasons
 9 completely unconnected with this; other parts of the
 10 calculation were less precise.
 11 Therefore, you say: when I'm looking at this
 12 calculation, how precise do I need to make it? And if
 13 there's going to be a 4% difference in one of the
 14 numbers that is added up to 3, is that a significant
 15 difference? And you say no, and so it is, you know, not
 16 worth bothering about that. And that is what people do
 17 in engineering calculations and they do not worry about
 18 spurious precision.
 19 Q. Okay. Would you regard it as spurious precision to have
 20 found out for yourself whether the gaps made a material
 21 difference before you decided not to care about them?
 22 A. You can do it by eyeballing.
 23 Q. So you did eyeball the difference? You are saying you
 24 can do it by eyeballing. Are you telling his Lordship
 25 you did eyeball the differences and form a view that it

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1 wasn't worth bothering about?
 2 A. I formed a view that the changes --
 3 Q. No, did you eyeball it and form a view, or is that
 4 an answer of convenience?
 5 A. I believe I did.
 6 MR JUSTICE FRASER: Right, you mustn't overtalk. It is not
 7 you, Dr Worden.
 8 Mr Green, you really mustn't because I would like to
 9 hear what the witness says and then you can follow
 10 it up.
 11 A. But as I say, the whole basis of this calculation is how
 12 much precision do I need for different parts of it. And
 13 I don't spend time struggling to produce high precision
 14 in parts of the calculation that will not produce high
 15 precision in the result.
 16 Q. So are you saying you knowingly chose the column with
 17 gaps in it because you eyeballed and decided not to
 18 bother with the correct column?
 19 A. I can't remember the precise sequence, but I decided as
 20 a judgment about precision required that it was not
 21 necessary to worry about these details.
 22 Q. Why did you divide by 561? Because that's the number of
 23 claimants? Is that the reason?
 24 A. That's basically the reason.
 25 Q. Did you notice that there were only 496 listed on the

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1 spreadsheet or was that not a level of detail you needed
 2 to bother with?
 3 A. Again, I can't remember how exactly I treated that,
 4 but --
 5 Q. You just didn't notice, did you?
 6 A. No, I did notice. I was aware of that difference.
 7 Q. So you knowingly presented to the court a figure which
 8 represented 496 --
 9 A. I knowingly presented to the court a set of estimates
 10 which I believe are sound and have adequate precision in
 11 each part of the estimates. And the ultimate precision
 12 that's required in the assessment is not very high.
 13 Q. Can we go to row 1, please. Do you see what the
 14 heading is?
 15 A. Sorry, what are we looking for?
 16 Q. The heading of the entire table.
 17 A. Yes. The header row or the heading?
 18 Q. It says "Volume of Customer Sessions", doesn't it?
 19 A. Yes.
 20 Q. Are you aware that that's what it was both from the
 21 heading and from the fact that Mrs Van Den Bogard said
 22 it was customer sessions?
 23 A. Yes.
 24 Q. And you are also aware that a session is not confined to
 25 one transaction; it could be three?

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1 A. The average I believe is 1.7, but again, in the sources
 2 of data that I had, there were ambiguities.
 3 Q. Hold on a second, you have just told the court that the
 4 average session contains 1.7 transactions. You just
 5 said that.
 6 A. There are various different terms used in different
 7 places and there are issues of comparability of data,
 8 I agree with that entirely.
 9 Q. Hold on, you have scaled down the claimant branches on
 10 the basis of one variable and one variable alone, namely
 11 the number of transactions?
 12 A. I have --
 13 Q. To do that you have used the number of sessions for
 14 claimants and the number of transactions for all
 15 branches, and you know that they are different and you
 16 know that on your evidence the difference is a factor
 17 of 1.7?
 18 A. No. When I was consulting various different sources
 19 about volumes of transactions, there are various
 20 different sources as well as Ms Van Den Bogard's
 21 evidence, there are early documents and so on and so
 22 forth, and I was aware that there are uncertainties of
 23 definitions about these things and I was doing the best
 24 I could and there are uncertainties in the result.
 25 There is no question of it.

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1 Q. Dr Worden, this is a serious factor because you well
 2 understood, as an expert who has looked into transaction
 3 integrity in session data, that there could be more than
 4 one transaction in a session. You knew that, didn't
 5 you?
 6 Take it in stages. Did you or did you not know that
 7 there could be more than one --
 8 A. Well, the definition of transaction is rather fluid.
 9 For instance, when you have a customer session, that is
 10 genuinely packaged in -- what the 1.7 refers to, it is
 11 unclear in different spaces, but what the 1.7 refers to
 12 is generally how many things a customer does in one
 13 session. But that still doesn't alter the fact that
 14 a session in some terminology is one transaction because
 15 it is a success unit in the database.
 16 So there are these ambiguities and I agree there are
 17 big uncertainties in my calculations.
 18 Q. So in fact, even if we take your figure of 1.7, we
 19 might -- none of this is explained in your report, none
 20 of the uncertainties?
 21 A. Well, this is not the big uncertainty in the analysis.
 22 The biggest uncertainty in the analysis comes from the
 23 number of bugs and the scale of each bug, and that is by
 24 far a bigger uncertainty. And so I felt in terms of
 25 priorities and length of explanation and so on and so

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1 forth, it was not -- you know, the engineering approach
 2 is not to drill down on things that you do not think are
 3 the main uncertainty in your result.
 4 Q. But you might have had to double, or nearly double your
 5 scaling factor on your own evidence?
 6 A. I put in a conservative (inaudible) factor from 0.45
 7 to 0.5, which I will acknowledge I could have done.
 8 Q. But you have left out a massive point the court would
 9 need to know and certainly came up in cross-examination.
 10 A. There are all sorts of uncertainties in this analysis
 11 and I drew attention to what I felt were the main
 12 sources of uncertainty.
 13 Q. So just to clarify, wrap up, you knowingly took the 2007
 14 column with gaps?
 15 A. Yes, that's, as we discussed, an effect of 1 or 2%..
 16 Q. And you eyeballed that to guess what the effect was?
 17 A. Yes.
 18 Q. You say that you noticed that there were only 496 lines
 19 in the spreadsheet but proceeded nonetheless?
 20 A. I believe I corrected that. In fact I believe what
 21 I did was a rough correction which said just put in that
 22 factor 491 over 561 or whatever it is basically.
 23 Q. We don't see it anywhere in your calculation --
 24 A. No, absolutely. I was making decisions about what's
 25 worth drilling down and what's worth exploring and

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1 I felt that the imprecision in the calculation, the
 2 subjects I had to talk about at length, were other
 3 imprecisions and that this claimants' scaling factor, it
 4 doesn't make much difference if the claimant branch size
 5 on average is the same as "other", because a factor 2 is
 6 less than the precision I need in my final result in
 7 order to be useful to the court.
 8 So I was focusing my attention on what I felt to be
 9 the biggest areas of uncertainty in my analysis.
 10 Q. And there's no hint of those uncertainties mentioned in
 11 your report?
 12 A. No, the biggest areas of uncertainty, there is a lot of
 13 mention of them.
 14 Q. And there are a whole load of other points. Let's just
 15 see, for example, you refer to, taking it very quickly,
 16 you may take it from me you refer to 48 million
 17 transactions. Again, it is not a big difference but the
 18 actual figure is not in Angela Van Den Bogard's second
 19 witness statement, it is in the first one. It is
 20 47 million, not 48 million. You say Mr Coyne also
 21 referred to that and he correctly recites it as 47.
 22 This --
 23 A. 47/48, in the context of my calculation I certainly took
 24 a difference of 47 to 48 as being insignificant.
 25 Q. So all of those errors, as we say they are, you say they

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1 are fine? They are all against the claimants, aren't
 2 they? If they are errors, which is a matter for his
 3 Lordship, all of them have an effect against the
 4 claimants, don't they?
 5 A. What I have tried to do is present a numerical
 6 calculation --
 7 Q. Can you just answer the question?
 8 A. Yes.
 9 Q. They are. And if you are an independent expert and the
 10 chances of you making a mistake one way or the other,
 11 say against the claimants, is 50/50, yes?
 12 A. Mm.
 13 Q. The chances of you making the first mistake against the
 14 claimants is a half?
 15 A. Sorry? Which mistakes against the claimants are we
 16 talking about?
 17 Q. The four that I have just identified.
 18 A. Right and what I would say is those can have an effect
 19 and that effect, in my opinion, is balanced by the
 20 claimant favouring factors, that you can see in table
 21 8.4, which have an effect of a factor of approximately
 22 30.
 23 Q. Dr Worden, we are just talking about the primary maths.
 24 A. Absolutely, the primary maths, the maths folds in errors
 25 and changes made from various sources. There are

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1 uncertainties and uncertainties and there are deliberate
 2 claimant favouring factors which have injected, which
 3 amount to a factor of 30.
 4 Q. We will come to those. Just on this analysis, making
 5 four 50/50 mistakes against the claimants, the chance of
 6 6.25% of that being random; 1/16.
 7 A. You are talking two to the four, is that what we're
 8 talking about?
 9 Q. Half of 50 is 25. Half of 25 is 12.5.
 10 A. I do not see the relevance of that figure.
 11 Q. Okay. It is just that the claimants are just unlucky
 12 that all your errors are against them?
 13 A. In this respect yes, but there are large numbers of
 14 errors which are in their favour in the calculation and
 15 I think one should take a balanced view of the errors in
 16 their favour versus the errors against them.
 17 Q. Dr Worden, would you accept that there is a difference
 18 between an error that is not apparent on the face of the
 19 report and a prominently flagged bit of generosity to
 20 the claimants when you adjust a figure that you have
 21 derived in their favour slightly? You understand what
 22 the difference is, don't you?
 23 A. I have tried to present a balanced opinion on this
 24 number.
 25 Q. I'm not asking you that because you have given that

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1 answer about six times. I'm asking you do you
 2 understand the difference between a concealed error in
 3 your report, ie one that we can't see on the face of the
 4 report, and somewhere where you say: I'm now going to be
 5 enormously generous to the claimants and increase the
 6 number to be really generous and conservative. You know
 7 the difference between those two things, don't you?
 8 A. I would not characterise it that way, I would say I made
 9 some engineering assessments about what were the largest
 10 sources of error in my calculation and I focused my
 11 attention on those, and one made the typical engineering
 12 decision that you put your priorities and your attention
 13 where the big errors are and that's what I did.
 14 Q. Let's very briefly, in your second report, we will just
 15 go back to that quickly {D3/6/30}. This is where we
 16 were looking at it and you explain that you have looked
 17 across three years. We have only seen two years of data
 18 for all branches. You used only two years data for the
 19 all branches figure, didn't you? Yes?
 20 A. I think that's the way I did it, yes.
 21 Q. Okay. Let's look at the smaller branches scaling factor
 22 methodology now, how you used the scaling factor. Let's
 23 look at paragraph 630 in your first report {D3/1/150}.
 24 We are looking at paragraph 630.
 25 A. This is in the first report?

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1 Q. Yes, it is. On the basis of the session data
 2 transaction data comparison you say:
 3 "So the claimants' branches, being generally smaller
 4 than the Post Office average, have fewer transactions
 5 per month and so are less likely to be hit by Horizon
 6 bug in a given month."
 7 Then you give the scaling factor.
 8 A. Yes.
 9 Q. Now that analysis depends on three things, doesn't it?
 10 First, it depends on there being one variable by which
 11 that scaling is to be measured and that's transaction
 12 numbers?
 13 A. Yes.
 14 Q. Yes?
 15 A. Mm.
 16 Q. And it also depends on that varying directly in
 17 proportion to bugs --
 18 A. There is a linear assumption in there, yes.
 19 Q. So the assumptions behind it are one variable, varying
 20 directly in proportion to bugs and therefore reaching
 21 your view that the scaling factor is how to calculate
 22 the likely incidents of bugs on those claimant branches.
 23 That is a fair summary, isn't it?
 24 A. I think so, yes.
 25 Q. Now, what we do have is data about branches which were

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1 affected by actual bugs that we do know about?
 2 A. We do.
 3 Q. Yes. And if we were to take the Dalmellington bug, the
 4 88 branches affected by the Dalmellington bug were tiny
 5 outreach branches, weren't they?
 6 A. Well, an outreach branch is tiny but it is an outreach
 7 from a branch which -- I haven't looked into the size of
 8 branches which had outreach branches.
 9 Q. Yes and so to do this, even if you assume it is one
 10 variable, which we will come to and so forth, if you
 11 wanted to get even a sense of whether this was right, it
 12 would be sensible to calculate -- to look at the number
 13 of transactions done by the branches that were suffering
 14 the identified bugs because you don't know how they
 15 compared to average branch sizes, do you?
 16 A. No, I don't.
 17 Q. And that's not a calculation you did?
 18 A. No, this is what I would call the next level of detail
 19 down that one could have gone to look at the branches
 20 affected by the known bugs or the acknowledged bugs --
 21 Q. Would you -- sorry.
 22 A. -- and one could have calculated the average size of
 23 those and I could indeed have factored that in my
 24 calculation, I --
 25 Q. Would you accept that's basic statistics to identify the

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1 characteristics of the control?
 2 A. Identify the characteristics of the control? To
 3 the extent you can, yes.
 4 Q. And you didn't do it?
 5 A. As I say, it is an extra level of sophistication in my
 6 calculation which I didn't do. I acknowledge that.
 7 Q. But you are a bit of a legend in advanced statistics in
 8 court, aren't you?
 9 A. I don't know what that means.
 10 Q. Well, you have given evidence in very prominent cases,
 11 expert evidence, of advance statistical techniques; you
 12 have a PhD in theoretical particle physics; and you have
 13 come to this court in an important case to give expert
 14 evidence about statistics?
 15 A. Yes.
 16 Q. Right. And you say what about why it is acceptable for
 17 you to leave out that step of the analysis?
 18 A. Because one makes a calculation at certain levels of
 19 approximation based on the precision you require in the
 20 result, and the precision I required in the result was
 21 probably to within a factor of 3 or a factor of 10 and
 22 I made the judgment that to achieve that precision
 23 I didn't need to go to that next level of detail that
 24 you have described to me.
 25 Q. So if the average branches, if you had regard to them

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1 having, say, 1/10 of the average transactions of normal
 2 branches, you might have had to have a scaling factor of
 3 x10 instead of x0.37 or 0.45?
 4 A. There is a contradiction there. If my central
 5 assumption is that branches are affected by bugs in
 6 proportion to the number of transactions that they do,
 7 then it is highly unlikely that the branches affected by
 8 the three known bugs should be small in terms of their
 9 numbers of transactions.
 10 Q. That's why it throws up whether your assumption that it
 11 is a uni-variable analysis based on transaction numbers
 12 is right, isn't it?
 13 A. Sorry, I don't understand the question.
 14 Q. You have pointed out that the small branches being hit
 15 would have helped you to identify whether you were
 16 likely to be right that the only relevant variable to
 17 consider was transaction numbers?
 18 A. Sorry, I'm not really following the question.
 19 Q. You have just pointed out when I gave you the
 20 Dalmellington example, you said if it is lots of tiny
 21 branches being hit, you said, well, that would question
 22 my assumption that it is proportionate to transactions.
 23 A. But I think it is unlikely that the Dalmellington
 24 branches were tiny for precisely the reason I have just
 25 stated.

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1 Q. And it is right that a bug that affects an SPM when they
 2 roll over -- yes?
 3 A. Yes.
 4 Q. If you had a bug which just affected rolling over?
 5 A. Yes.
 6 Q. A branch, however large or small, they all have the same
 7 number of --
 8 A. Same number of rollovers. Absolutely. But the branch
 9 that is bigger has some bigger figures in its accounts,
 10 so the effects of one bug on one rollover is likely to
 11 be larger. So that --
 12 Q. In number terms but not in instance and probability
 13 terms?
 14 A. Sorry, I do not understand.
 15 Q. I'm just saying if a bug affects rolling over, just the
 16 process of rolling over, the chances are not affected by
 17 the number of transactions that they are otherwise
 18 doing?
 19 A. No, but the financial impact, which is the main
 20 calculation, is affected.
 21 Q. Yes, but I'm just trying to point out to you that it is
 22 not based on the number of transactions as the frequency
 23 or likelihood of bugs happening in all cases, is it?
 24 A. But my main calculation was financial impact and I knew
 25 that for financial impact larger branches had larger

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1 numbers of transactions and they also had bigger numbers
 2 involved in roll over, so the financial impact, it was
 3 equivalent.
 4 Q. But you deal with that separately. Your scaling factor
 5 is about probability, isn't it?
 6 A. Which scaling factor?
 7 Q. The scaling factor that we have been talking about this
 8 afternoon.
 9 A. You say it is about probability --
 10 Q. The premise of the scaling factor is that they are
 11 equally likely to be hit; an average branch is equally
 12 likely to be hit by another average branch, but
 13 a smaller branch is less likely to be hit because they
 14 do fewer transactions. That is the premise of your
 15 scaling factor?
 16 A. Well, the scaling factor applies to financial impacts.
 17 Q. No, can you just answer the question because you know
 18 what I'm asking. The scaling factor is designed to
 19 control for a lower chance of a branch suffering
 20 an impact of a bug, the incidence not the value, the
 21 incidence of a bug by reference to the number of
 22 transactions that happen in the branch?
 23 A. Yes, we can agree --
 24 Q. That is correct?
 25 A. I can agree with you that if a bug affects roll over,

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1 then a branch that is small is just as likely to be
 2 affected as a branch that's larger, yes. Absolutely.
 3 Q. And if a bug affects remming in the pouch --
 4 A. Yes.
 5 Q. -- if the pouch contains £100,000 or £2,000 for a
 6 smaller branch, it doesn't have any impact necessarily
 7 or any relation to the number of transactions they are
 8 carrying out, does it?
 9 A. I think it does because -- again we are going to a very
 10 fine level of resolution here, but generally one would
 11 expect a larger branch to have more cash remming.
 12 Q. But that might be -- you haven't got any information
 13 about that?
 14 A. We are going down to the next level of resolution in the
 15 calculation here and, you know, one has to cut off
 16 somewhere in the precision of the calculation and the
 17 place one chooses to cut off depends on the precision
 18 you require in the answer.
 19 Q. Finally, in relation to mathematics, we saw with the
 20 spreadsheet at {F/1837/1}, if we can get that up, about
 21 the column without the gaps filled been taken. Yes? We
 22 have been over this. I'm just suggesting to you that
 23 that was actually a mistake, Dr Worden. You just got
 24 the wrong one. You misread -- go up to row 1 please.
 25 What actually happened is you looked at the column

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1 headings, saw 2007 gaps and thought that was the one
 2 with the gaps in it and you made a mistake and took
 3 column E. That's what really happened, isn't it?
 4 A. I'm trying to remember what these columns do mean. You
 5 seem to get the same figure in those two columns, so for
 6 the level of precision I need, you can take either
 7 column.
 8 Q. What that first page doesn't show is all the gaps that
 9 are on the other pages. I'm just putting to you that
 10 actually the evidence you gave earlier isn't right, you
 11 just made a mistake?
 12 A. Well, there are imprecisions in that calculation we have
 13 agreed that, and I felt that those imprecisions were
 14 insignificant in the context of my overall calculation.
 15 Q. It wasn't a deliberate choice to take the wrong column,
 16 was it?
 17 A. I made no deliberate choice to take the wrong column,
 18 no.
 19 Q. It wasn't a deliberate choice to take the column without
 20 the gaps filled, was it?
 21 A. I repeat that I don't think the gaps make a difference
 22 in the context of the accuracy that I'm looking for.
 23 Q. I'm only going to ask it one last time because we are at
 24 4.29. The question is, was it a deliberate choice for
 25 you to take the column that still had gaps in it?

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1 A. It was not a deliberate choice, no.
 2 Q. Was it a mistake?
 3 A. It was a judgment that that issue was not important
 4 enough for me to worry about it.
 5 MR GREEN: My Lord, is that a convenient moment?
 6 MR JUSTICE FRASER: Yes, it is. I have just got a couple of
 7 requests it is just for some documents or some
 8 references. Mr de Garr Robinson, can I just have a hard
 9 copy of Dr Worden's corrections sheet.
 10 MR DE GARR ROBINSON: My Lord --
 11 MR JUSTICE FRASER: I don't need it now.
 12 MR DE GARR ROBINSON: You can have it now --
 13 MR JUSTICE FRASER: Well, if you have a spare one.
 14 MR DE GARR ROBINSON: I believe I have got --
 15 MR JUSTICE FRASER: I was reading it on screen but it is
 16 just helpful and the other thing and this is --
 17 MR DE GARR ROBINSON: This is clear, if I can hand it. My
 18 learned friend has one.
 19 MR JUSTICE FRASER: That is a different thing I think.
 20 MR DE GARR ROBINSON: This is the corrections.
 21 MR JUSTICE FRASER: So that is the corrections given in
 22 chief. I think Mr Green is proffering a copy of the
 23 signed joint statement. Thank you very much.
 24 Then the only other reference which is one for
 25 Mr Green, Mr Green can you just give me, tomorrow is

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1 fine or by email in the morning, just a reference for
 2 the covering letter that came with the MSC document that
 3 you were putting this afternoon at {F/1834.14/1}.
 4 MR GREEN: My Lord, one of them is at {H/325/1} which is
 5 where it is explained that the documents with the new
 6 MSCs are self-evident and don't need to be explained and
 7 there I think is a couple of others which we will find
 8 for you.
 9 MR JUSTICE FRASER: If you maybe just pop them in an email
 10 and copy into Mr de Garr Robinson and in the morning is
 11 fine.
 12 Thank you all very much. Actually when I say in the
 13 morning I don't mean in the morning, actually for you I
 14 do mean in the morning.
 15 MR DE GARR ROBINSON: Really?
 16 MR JUSTICE FRASER: I know we are not sitting tomorrow, so
 17 I'm not asking you to do anything tomorrow. The thing
 18 I was asking Mr Green to do by in the morning, I go back
 19 to my original position, please do send it to me in the
 20 morning.
 21 MR GREEN: I will send it. I'm most grateful.
 22 MR JUSTICE FRASER: Dr Worden it is going to be a bit more
 23 difficult for you because you have one day interval, but
 24 you know you are not to talk to anyone in the case and
 25 we are going to come back on Thursday.

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1 A. Yes.
 2 MR JUSTICE FRASER: Is there anything else for today?
 3 MR DE GARR ROBINSON: My Lord, no.
 4 MR JUSTICE FRASER: I hope tomorrow goes as well as can be
 5 expected in all the circumstances.
 6 MR DE GARR ROBINSON: My Lord, that is very kind. Thank
 7 you.
 8 (4.32 pm)
 9 (The court adjourned until 10.30 am on
 10 Thursday, 13th June 2019)

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