Tuesday, 24 September 2019

(10.02 am)

MR PENNICOTT: Good morning, sir.

Before we get to the further witness evidence, could I just mention a couple of matters. First of all, a minor error, although probably more important to the person it concerns or the company it concerns. Yesterday, during the course of my procedural update, I inadvertently said that Atkins were both in COI 1 and COI 2. I was wrong. It was pointed out by Atkins last night that they were only in COI 1 and they would like that corrected, so that's what I've just done.

Sir, secondly and perhaps rather more relevantly for this week, I have prepared a short opening note in relation to the statistical evidence, and I was proposing to go through that very quickly. It's a short note; it won't take very long.

CHAIRMAN: Certainly.

MR PENNICOTT: I hope Mr Ng will bear with us.

Sir, as we know and as was mentioned yesterday, on 18 July 2019, MTR, with the approval of the government, produced the holistic report and the verification report.

Having considered those reports, the Commission concluded that it would be appropriate to explore

certain aspects of their content to better understand the conclusions reached in those reports, and in particular the underlying justifications for the intention to carry out what are described in those reports as "suitable measures" to certain of the structures.

Sir, it also became apparent to the Commission and its legal team, on detailed consideration of those reports and certainly submissions from Leightons, that the statistical analyses used in those reports were of importance and would likely assist and inform the structural engineering evidence.

As a consequence of all that and various directions that I made reference to yesterday, Leighton have produced two reports from Mr Barrie Wells, who we will hopefully be hearing from tomorrow. The government have produced two reports from Prof Yin from the Hong Kong University. And originally MTR produced two anonymous reports on statistical analyses. Subsequently, the MTR informed us that those reports were prepared by MTR's project team, which includes Mr Ng and also Mr Nelson Yeung who would be able to speak to them.

Sir, the Commission itself has no statistical expert. I, therefore, make a few observations with a degree of diffidence and caution. Sir, as you know,

when we come to the experts, that is Dr Wells and Prof Yin, the order of cross-examination is going to be altered from its usual practice, and the government, Mr Khaw or Mr Chow, will be cross-examining Dr Wells first, followed by MTR, if they have any questions, followed by myself last; and when Prof Yin comes to give evidence, it will be in the reverse and Mr Shieh will cross-examine Prof Yin first, followed by MTR, followed by me.

So, sir, however, despite not having our own expert, we obviously have read, we hope fairly carefully, the reports from Dr Wells and Prof Yin, and would therefore like to make just a few observations of perhaps a simple nature.

(A technical break)

Sir, turning to what we perceive to be the relevance of the statistical analysis, to the issue of safety or suitable measures, it seems to us that by way of preliminary background and in pretty simple terms, the way it goes is this, that coupler connections were tested by reference to set criteria, which we will come to during the course of the evidence, but in a nutshell no more than two threads and 37 millimetres, a figure that we are familiar with by PAUT test, or 40 millimetres by direct measurement.

Having carried out the testing, the failure rates of the coupler connections were recorded and expressed as a percentage of those tested. The failure rates were then translated into what are described as strength reduction factors, also expressed as a percentage. Then the strength reduction factors were utilised to inform the extent of the proposed remedial works to parts of the structures. That's really the process that was gone through. And as explained by the MTR in its report, the statistical analysis adopted what is known as a binomial, that is a pass-or-fail approach or methodology.

(A technical break)

Sir, that is the basic background, but, as explained by the MTR in their report, which Mr Ng and Mr Yeung will speak to, the general coupler connections at both the EWL and the NSL slabs, resulted in a defective rate or reduction factor of 36.6 per cent and 33.2 per cent respectively; and separately and distinctly the capping beam coupler connections, which are primarily in area A and HKC, but area A is the important one for present purposes -- the capping beam coupler connections result in defective rate/reduction factor of 68 per cent. And it's those percentages, those reduction factors, which, as I say, inform the suitable measures that are going to

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be apparently carried out by MTRC.
However, sir, so far as one can tell, the statistical analysis for the general coupler connections does not appear to raise any issues of safety or a requirement to carry out "suitable measures" at the EWL and NSL slabs, that is in relation to the coupler connections themselves. There are other issues about the monolithic construction issue that we heard much about in COI 1, but that's a different point.
However, sir, for reasons set out in the verification report -- so it's COI 2 -- assuming the general coupler connections in place of lapped bars at the NAT, SAT and HHS, have a similar defective rate or reduction factor, there will be an issue of safety or suitable measures in respect of those areas.
Sir, the point here is, as we understand it, that no invasive opening-up has been carried out in those particular areas and no tests therefore have been carried out on the coupler connections in those areas, as we understand it. So essentially an extrapolation is being done from the information gathered from the results that have been obtained in the other areas and applied to those areas. That's as we understand it, in simple terms, how it works.
Sir, however, the statistical analysis for the

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capping beam coupler connections -- now, the capping beams, you may recall, are largely but not exclusively in the areas HKC, the Coliseum area, and area A. They are not so much in B and C. This gives rise to an issue which I'll mention in a moment or a potential issue that I'll mention in a moment. Sir, the upshot of what has been done by way of testing is that it's been concluded that certain suitable measures at both the EWL and NSL slabs in area A are required. The slight anomaly -- perhaps that's not the right word -- the slight oddity, perhaps, is that in fact no testing again has been done in area A. The testing, albeit limited, has been carried out in HKC, the capping beams in HKC, only 11 of them, and two of them have been found defective and some conclusion has been reached as a consequence of that that remedial -- sorry, that's a Freudian slip -- suitable measures should be carry out in area A.
So testing in HKC; conclusion been reached that suitable measures need to be carried out in area A. No doubt this will be explained to us, how that's all been reached, in due course.
As I say, in contrast, there's been no real statistical analysis carried out in respect of untested rebar in NAT, SAT and HHS. In any event, they do not raise any issue of safety or suitable measures.

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So far as the position of the statistical analysis is concerned, in the holistic report -- and this all appears to be agreed by Prof Yin, who I think we will discover in due course had a degree of involvement in the statistical aspects of the holistic report -- firstly, it is appropriate, he says, to use a binomial approach to analyse the data collected from the opening-up process. So he says binomial approach is the right approach, it having been originally, as we understand it, suggested by MTRC to the government, and indeed, if one goes back further, one sees that that binomial approach was suggested by Arup to the MTRC, who then passed it on to the government. So it appears to have been generated originally by Arup, through MTRC, to the government. That's the binomial approach.
Sir, as I mentioned just now, the acceptance and rejection criteria are -- and we heard a lot about this, obviously, during the course of COI 1 -- that there shall be a maximum of two threads exposed on the rebar, and the engagement length of the threaded steel rebar inside the coupler should be at least 37 millimetres, if you are using the PAUT measurement process.
As you will recall, sir, some problems with that original process arose and it was modified, and also certain direct measurements have been taken, and when

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one is using a direct measurement one is taking 40 millimetres; that is, one's not giving the discount, as it were, for the 3 millimetres for the potential discrepancy in using the PAUT method.
Sir, adopting -- this is repeating what I have just said -- the binomial approach, applying those criteria, using what is known as a 95 per cent confidence level, which I hope will be explained to us also in due course -- I think I've got a basic understanding but not much more than that -- for the general coupler connections is giving the failures or the failure rates of the percentages that I've mentioned there: 36.6 per cent and 33.2 per cent respectively.
Dr Wells makes several criticisms of the approach that's been adopted by MTRC and the government. I should say one point that I've not mentioned here, but is perhaps of importance because I will be discussing one aspect of it with Mr Ng shortly, is this: the areas that were tested, locations that were tested, are said to have been randomly selected, and Prof Yin has a very lengthy and detailed, very helpful, explanation in his COI 1 report as to how that selection process took place, who was involved with it and how it came about, and there's a considerable amount of detail in it. But there are certain factual -- and clearly that's

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a factual discussion; I mean, he tells us as a matter of fact how the random selection process worked and what input he had into it or he and his colleagues had into it, and what input the MTRC had into it, and how it all worked. There are a couple of aspects of that that I want to address with Mr Ng.

I mention that because it appears Dr Wells has doubts as to the randomness of that process, for reasons which he sets out in his report.

So that -- sorry, sir.

COMMISSIONER HANSFORD: We will address this with Dr Wells, I know: does Dr Wells have doubts about the process, the randomness of the process, or the applicability of a random process?

MR PENNICOTT: My understanding is, the way he approaches it is that -- he starts off by saying, "Look, there are 175 diaphragm walls -- let's get this around the right way -- without a capping beam, and there are 65 -- 62 or 65, it doesn't matter -- diaphragm walls with a capping beam.

MR SHIEH: 175 without and 62 with.

MR PENNICOTT: 62 with. So there's a ratio of essentially 3 to 1, 175 plays 62.

However, when the upshot of the testing is that there are essentially 90 locations, 83 of which --

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MR SHIEH: 90 samples.

MR PENNICOTT: Sorry, yes, 90 samples from the 28 locations -- generates 83 without a capping beam and seven with, a ratio of 12 to 1.

So he says, "I don't understand how this can possibly be random. As a statistician", he says, "there are serious doubts, given the different ratios, different proportions, as to the randomness of that selection process." That's his point, I think, if I've understood it correctly.

COMMISSIONER HANSFORD: Okay.

MR PENNICOTT: I've got a feeling there may be an answer to that factually, which I will mention to Mr Ng in just a moment.

COMMISSIONER HANSFORD: Okay.

MR PENNICOTT: I may not have got it right, I don't know, but we will see if we can explore it a bit with Mr Ng, insofar as he knows anything about the random process and how it was devised.

Sir, there are other criticisms made by Dr Wells which I have mentioned here, albeit only in summary form. The next one is this, that by adopting the binomial approach, a rebar coupling connection with 37 millimetres or more engaged length is assumed to be fully functioning; 37 millimetres, fully functioning.

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But a rebar coupling with, let's say, 34.8 millimetres' engagement length, which Dr Wells has calculated to be the mean for the EWL slab, is only 5.8 per cent less than the engagement length criteria, but it is assumed to bear no load and be completely ineffective.

COMMISSIONER HANSFORD: Yes.

MR PENNICOTT: So he says, even if you've got one at 36.5 millimetres -- so it's just failed by 0.5 of a millimetre -- it's not ascribed any strength at all in this binomial approach because it's simply pass/fail.

Now, obviously Prof Yin addresses the complications with doing it in other ways, and no doubt we can explore that with both Dr Wells and with Prof Yin.

COMMISSIONER HANSFORD: Yes.

MR PENNICOTT: So there is a query about the applicability of the binomial approach by Dr Wells.

Dr Wells has, as I say in paragraph 14, carried out some calculations, alternative calculations, using a different methodology, and that reduces the reduction factor by way of a percentage quite considerably. Sir, as I understand it, it is those calculations, or at least some of them, that the government have asked Dr Wells to provide some more information about, and we understand that that information will be provided later today. It was asked for last night but Leightons have

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indicated that they will be able to provide it later today.

Sir, another criticism that Dr Wells identifies or makes is that within the statistical approach that's been adopted, there are a number of items -- sorry, samples -- which have simply been, for one reason or another, discarded. He suggests that that isn't the correct approach; that they should be given what he calls a missing value; that is, instead of simply discarding samples that can't be measured, for one reason or another, they should be given a value by treating them as -- which is derived from the other figures that give a representative or an expected value. So don't just discard them; work out from all the other information that you have a representative or expected value, and feed that into the equation, rather than simply giving it nothing and just throwing it away.

COMMISSIONER HANSFORD: This is the so-called missing value approach?

MR PENNICOTT: Yes, sir.

Sir, the other analysis -- and it may be there is no actual difference between the experts on the mathematics -- but Dr Wells explains how the reduction factors are fairly dramatically affected, depending upon the engagement length criteria that you take. I've

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already mentioned the figures that are derived from using the 37 millimetres. If you take 28 millimetres, which is arguably six or seven threads, depending on how you calculate it, you get much more, as I say -- much less reduction factor as a consequence. That's another point he makes. But, as I say, that's just whether it's right to take 37 millimetres or 32 millimetres or 28 millimetres, is clearly going to, as a matter of arithmetic, affect the reduction factor because that's affecting the number of samples that pass or fail; even if you use the binomial approach, you are going to get a different figure.

Sir, almost finally, we just draw attention -- and again it may be I want to ask Mr Ng a couple of questions about this shortly -- to the fact that MTR had -- and you will perhaps recall some of this -- certain cyclic tension and compression tests carried out after the conclusion of the Original Inquiry hearing, and the MTR's consultants, Arup, have reported and commented upon those tests.

We have set out -- and I'll look at this with Mr Ng shortly -- certain observations that Arup have made. They say that, for example, although 37 millimetres is the compliance acceptance criteria, 32 millimetres or seven threads' engagement "can constitute a full

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strength connection", and they say "it would be unreasonable not to accept at least 7 thread engagement as an acceptance criterium for a full strength connection".

They say, on this basis, the "fit for purpose" criterion has been taken as seven threads or 32 millimetres of engagement, albeit that they recognise that the compliance criterion for passing the tests is set at 37 millimetres. And if you apply 32 millimetres of engagement, by calculation, you can arrive at, again, a much-reduced reduction factor of about 12 per cent.

CHAIRMAN: Could you give us the bundle reference for the Arup report?

MR PENNICOTT: Yes, sir. It's OU6, around about 8 -- the pages I have cited from are at 8260 and 8634, but I will be looking at those in a moment with Mr Ng.

COMMISSIONER HANSFORD: So it's the footnotes 23 and 24 in your opening?

MR PENNICOTT: Yes.

COMMISSIONER HANSFORD: Thank you.

MR PENNICOTT: Sir, the last three paragraphs in our note simply refer to the capping beam point and the different figures that are derived from the samples that have been tested in the HKC and applied to area A, and the figures are set out there. I won't read them out.

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So, sir, with that very brief and no doubt incomplete introduction, I was going to turn to or allow Mr Boulding to turn to Mr Ng.

MR BOULDING: Yes. Good morning, Chairman. Good morning, Mr Commissioner.

Mr Ng has been sitting patiently in the witness box listening to my learned friend, no doubt with great interest. I'm now proposing to call him. I understand that he's going to take the affirmation and helpfully give evidence in English.

MR NG WAI HANG, NEIL (affirmed)

Examination-in-chief by MR BOULDING

Q. We know, do we not, Mr Ng, that you prepared a witness statement for the assistance of the learned Commissioners in this particular Inquiry?

A. That is correct.

Q. If we could go to bundle BB10082, I hope we see the first page of that witness statement; is that correct?

A. That's correct.

Q. You tell us, do you not, that you are currently the lead project manager for the SCL project?

A. Yes, I am the lead project manager for the SCL project.

Q. That position, I understand, you took up, what, in January 2019; is that correct?

A. That's correct.

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Q. If we could go on to the signature page, which we will find at BB10089, do we there see your signature below the date of 23 September 2019, just yesterday?

A. That is my signature.

Q. Are the contents of this witness statement true to the best of your knowledge and belief?

A. They are.

Q. Now, it's a convention in this Inquiry that we look to see where you are in the overall MTR organisation. A chart has been located but at the moment it's not found its way into the bundle. I understand that everybody has a copy of it.

But do you have in front of you a chart which, in the bottom left-hand corner, is stated to be effective 1 August 2019?

A. That is August 2019, yes.

Q. If we were to go approximately two-thirds of the way along the horizontal axis and look up, do we there see you as lead project manager-SCL civil-NSL, Neil Ng"?

A. Yes, that's my name in the box.

Q. And that's your location within the overall MTR organisation; is that correct?

A. Precisely in this project team.

Q. Thank you. Now, what's going to happen now, Mr Ng -- you've already got the flavour of how this works --

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obviously Mr Pennicott has some questions for you, then various other lawyers in the room will have some questions for you, I suspect; and of course the Chairman and the Commissioner can ask you questions at any time they like, and it may well be at the end that I'll have a few more for you. Do you understand that process?
A. I do understand.
MR BOULDING: Please remain there.
Examination by MR PENNICOTT
MR PENNICOTT: Good morning, Mr Ng, and thank you very much on behalf of the Commission for coming along to give evidence this morning.
A. Thank you.
Q. Mr Ng, you describe yourself as the author -- sorry, as one of the authors of the holistic proposal and one of the authors of the holistic report.
Can you just tell us a bit about your role in the authorship of the proposal and the report; what was your involvement?
A. First, I would explain about the proposal. I began drafting the proposal in 2018, that's the first revision, as one of the authors for the proposal as well. The proposal eventually found its course from revision A to revision B, to which I was also involved in, for revision B, up to the point of issue -- I recall

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it's early December 2018. That is the proposal.
As for the report itself, during the course of the execution of the proposal, I kept in touch with the process, and with the team I helped to also draft parts of the holistic report and also review the report itself, and did some editing with the team up to the point of submission.
Q. Right. I mean, how many people were involved, from the MTR, in the authorship -- not editing but the authorship -- of the report, in addition to yourself?
A. The count itself is not so clear, but I think it would involve people at my level, at the project manager level, also the general manager level, as well as the project director level.
Q. So a number --
A. Of people.
Q. -- of people at different levels?
A. Correct.
Q. Then as far as the verification proposal and the verification report are concerned, you describe your role there as editor rather than author. Is that correct? Have I understood that correctly?
A. That is correct. I believe that's what I stated in my statement as well.
Q. Yes. Right. So would that be, if you like, a situation

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where you had less involvement than in the holistic proposal and the holistic report? It was very much an editing process?
A. That is correct, because the report itself was actually drafted mainly by my other colleagues.
Q. All right.
Then we know that the reason you are here is that MTR submitted two reports to the Commission in response to a request to deal with statistical evidence, and, as I understand it, you were again involved in the editing of those two reports that have been submitted to the Commission?
A. That is correct, as an editor and reviewer, yes.
Q. Okay. But you have knowledge of those two reports that have been submitted, to the extent that you've described in your witness statement?
A. That is correct.
Q. Okay.
We know, from the reports, from your witness statement, from Mr Yeung's witness statement, that in I think about December 2018 a task force group was set up. Is that right?
A. That is correct.
Q. And that comprised representatives of the government, the expert adviser team, the Hong Kong Police Force, and

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representatives of MTR; is that right?
A. The memberships are about there, correct.
Q. As I understand it, you tell us that you very seldom attended the task force group meetings. Is that right?
A. That is correct as well. I took the time to go when I had, and also when there are specific issues that was requested of me to be present.
Q. Okay. As I understand it, Mr Yeung, however, did attend the task force group meetings on a much more regular basis?
A. Yes. I believe he will be able to give more precise answer when he takes the stand.
Q. Yes. I do have a few questions about the task force group meetings, so perhaps it would be best if I leave those for him; is that right?
A. If you have questions, I will try to answer them as best I can, for the meetings I have attended, just to help the Commission.
Q. All right. I will see how we go, but I may leave that for Mr Yeung.
A. Thank you.
Q. Could I ask you, please, to look at paragraph 9 of your witness statement, where, just above paragraph 9, you have a heading, "The purpose of the holistic and verification proposals/reports", and then you say, "to

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ensure the SCL project complies with the code, statutory and contractual requirements"; do you see that?
A. I do see that.
Q. In the last sentence of paragraph 9, perhaps in repetition of the heading, you say:
"The purpose of the holistic proposal/report and verification proposal/report is to ensure the works comply with the relevant code, statutory and contractual requirements."
Do you see that?
A. I do see that.
Q. If we could then look at paragraph 5 of the report for the COI 1 that you've prepared, which should be in bundle ER1 at tab 11, page 2.
If we could go to the front sheet, please, just so Mr Ng knows where we are. It's on the screen, Mr Ng.
A. Got it.
Q. That's the front sheet to the report that was submitted to the Commission.
A. Okay.
Q. If we go to paragraph 5 on page 2, please. The report says:
"It is important to note at the outset that both the holistic proposal and the holistic report were not intended to address issues from only a public safety

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perspective. Rather, they were prepared to address the issues and non-conformances identified in the construction of the Hung Hom Station Extension from a code, contractual and statutory compliance perspective with a view to obtaining the requisite approval from the relevant authorities for the completion of the works and subsequent commercial operation of the Shatin to Central Link."
So, Mr Ng, is it your understanding and your evidence that the primary purpose and objective of the holistic proposal was directed at code, contractual and statutory compliance, as opposed to safety?
A. Safety is important, and my understanding is if a project was designed and constructed to the code and statutory requirement, then it should be safe.
Q. But, as I understand it -- is this right -- obviously safety is important, of course, and fundamental, but the primary objective from MTR's objective of the holistic report, let's focus on the report, was to persuade the government of code, contractual and statutory compliance?
A. That is one of the purposes of the report.
Q. What's the other purpose, if it's got more than one purpose?
A. The safety aspect.

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Q. So you say it's both, it's safety and compliance?
A. Correct.
Q. Okay.
Could I then just mention a few topics, hopefully most of which are uncontroversial, but, Mr Ng, you will appreciate that whilst I've read your statement and the report and the Commission has and no doubt the lawyers in the room have as well, there are perhaps people outside who haven't, and so I just want to ask you just to confirm a few points, which I know you have mentioned in your statement or in the report.
First of all, as we know, MTR did not engage a specialist expert statistician; that's correct, isn't it?
A. It's confirmed to be correct.
Q. Was that a conscious decision taken by MTR, that they wouldn't do that and they would simply rely upon the government?
A. That is a conscious decision, yes.
Q. As a generality -- forget about specifics for a moment -- in the holistic report, reliance was placed by MTR on various government advisers, the expert advisory team, and Prof Yin and his colleagues at the Hong Kong University; is that correct?
A. I think that is correct. However, I think it's not just

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reliance on the experts. I think it's a consultation with the experts. So it's not just relying on experts provided by the government.
Q. Right. So you are consulting with them, there is a process of interaction with them?
A. If I can be a bit more precise.
Q. Please do.
A. For civil and structural issues, we would consult with them. For statistical issues, we would rely on the expert from government.
Q. Right.
Now another point. The binomial approach -- and I'm not getting into statistics with you, Mr Ng -- as I understand it that was originally proposed by Arup to MTR. Is that correct?
A. That is correct, yes.
Q. And that then was proposed to government and to Prof Yin, and was agreed to by him?
A. That is also correct.
Q. There are two appendices to the report that you edited and prepared for the Commission. Perhaps we could just look at those very briefly. I'm not looking at the detail; I just want to know where they came from.
If we could go, please, to the same bundle reference that we were at just a moment ago. Go to page 20. Then

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if we could go to the next page, please, which I don't think is numbered, unfortunately -- that's why I said it's the next page -- it says "Appendix I". Then over the page, please. Mr Ng, we see there a heading, "Binomial analysis methodology and results". We don't need to look at the calculation, thankfully; not yet.

This is, as I understand it, what's known as the Clopper-Pearson method?

A. That's correct. That is the Clopper-Pearson method as I understood as well.

Q. Is that a method that was known to you or was it something that was given to you by others?

A. It's not a method that's known to me. It was a method that's been suggested, I believe from Arup, back in the early -- from the beginning.

Q. Right. So that method came from Arup?

A. I believe that's correct, but I cannot be sure, but I know that the name has appeared in the report.

Q. Yes, that's right.

However, the next -- if we could go to the next page, please, appendix II. This is "The formula, methodology and result". If we could go over the page, please. Again, Mr Ng, I'm not going through the detail of this with you, but as I understand it this is the calculation that was done in relation to -- or rather

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the formula that was used in the calculation in relation to the capping beams; is that right?

A. That is correct.

Q. And, as I understand it, this was a formula that was produced by Prof Yin; is that correct?

A. That is also my understanding.

Q. Okay. It runs over two pages, as we can see.

As I've understood it, Mr Ng, with the formula, Clopper-Pearson, provided by Arup, the formula in relation to the capping beam provided by Prof Yin, MTR personnel itself did the arithmetic on the basis of the formula that had been provided; is that correct?

A. I cannot be sure what calculation MTR have done, but I understand the project team have done some calculations themselves, to see what result they would get. But I cannot be sure the exact formula they used.

Q. It was my understanding, from what I've read, that having been provided with the various formulae, it was MTR itself that did the calculation, no doubt checked by Prof Yin and his colleagues and perhaps others, but it was you who crunched the numbers.

A. We had done some number analysis, correct.

COMMISSIONER HANSFORD: Sorry, and when you say you had, is this your team that had done them?

A. The MTR project team, correct.

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COMMISSIONER HANSFORD: The MTR project team under your direction?

A. Under my -- working together -- direction, you would call it, yes.

COMMISSIONER HANSFORD: Okay. Thank you.

MR PENNICOTT: All right. Could I then ask you some questions about random sampling.

A. Please.

Q. Have you read Prof Yin's report -- reports?

A. Not entirely. I have not read entirely Prof Yin's report.

Q. It is repeatedly said, both in the holistic report and in the report that you have provided to the Commission, that the samples were randomly -- samples of the coupler connections that were tested were randomly sampled, and that's your understanding, is it?

A. That's my understanding as well.

Q. Could we please look at Prof Yin's report for COI 1, which is in ER1 at tab 12, please.

If we could go, please, to page 7. Sorry, let's look at the front sheet so we know what we are looking at. Page 1. We see Prof Yin's name at the top, his position, his specialist field and his instructions. So we know what we are looking at.

A. Yes.

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Q. If we could then please go to page 7. He has a heading there, "Rationale and considerations in relation to the random sampling of coupler connections". Do you see that?

A. I see that.

COMMISSIONER HANSFORD: Sorry, that's not on my page 7. That's page 8, is it not? Or maybe we've got different pagination.

MR PENNICOTT: I'm looking at, I hope, COI 1.

COMMISSIONER HANSFORD: Okay. I think I know what's happened. The report for COI 1 and COI 2 are the same report, there are just different sections.

MR PENNICOTT: Definitely similar, yes.

COMMISSIONER HANSFORD: No, no, but this is page 8. I understand.

CHAIRMAN: Sorry, are we looking to adequacy of sample size?

MR PENNICOTT: We are looking at a heading that should say, "Rationale and considerations in relation to" --

CHAIRMAN: Okay. So it's page 8, in fact.

COMMISSIONER HANSFORD: Let's not worry about the page numbers. It's the paragraph numbers that matter.

MR PENNICOTT: Hopefully it's 2.1.

CHAIRMAN: Thank you.

MR PENNICOTT: All right.

Mr Ng, let me start by asking you this, before I ask

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a couple more detailed questions: were you involved at all in this random sampling/selection process?
A. Unfortunately, I was not involved in the selection or the methodology.
Q. Let me ask you a rather more direct question then, because I -- I think you will be able to help us, but let me ask you this. In paragraph 2.4.2 in his report, Prof Yin refers to what he describes as "the first meeting", the first sample selection meeting, "held on 5 December 2018"; do you see that?
A. I do see that.
Q. Then at paragraph 2.4.5 he refers to the second sample selection meeting five days later, on 10 December 2018; do you see that?
A. I do see that.
Q. Did you attend either of those meetings?
A. I was not at the meetings.
Q. Okay. I don't suppose you know whether Mr Yeung was at either of those meetings?
A. He might be at one or both. I think it's better that you ask Mr Yeung.
Q. I will ask him. That's fine. I've not been able to find any documents that actually minute or refer to those meetings, but there it is.
Could we go back, please, to paragraph 2.2.1.

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COMMISSIONER HANSFORD: Sorry, are we saying those meetings are not minuted?
MR PENNICOTT: I can't say they were or they weren't, I have no idea.
COMMISSIONER HANSFORD: Okay.
MR PENNICOTT: I have certainly not seen any minutes and there are no minutes of those meetings referred to in the chronology that has been prepared week to week by the government, and certainly no documents that evidence those meetings that I'm aware of.
COMMISSIONER HANSFORD: Okay. Thanks.
MR PENNICOTT: There's a heading, Mr Ng, just above 2.2.1 which is headed, "D-wall panels available for selecting sampling units at EWL and NSL slabs". Then Prof Yin deals with the EWL slab. He says:
"The EWL slab is connected to East D-wall and West D-wall of approximately 400 metres run from gridlines 0 to 50, comprising a total of 234 D-wall panels."
Do you see that?
A. I do see that.
Q. Perhaps without looking at it but for those of us who perhaps can remember, gridlines 0 to 50 cover areas A, HKC, areas B and C; do you agree?
A. Yes, I do agree.
Q. Am I right in thinking, however, that all the samples --

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leaving aside the 11 samples that were subsequently taken in the HKC area, all the locations were in areas B and C, where samples were taken?
A. My recollection is, yes, all the other samples were in areas B and C.
Q. Right. So that would not be between gridlines 0 and 50? That would be wherever the gridline starts at B?
A. Yes, that would be correct.
Q. So at around about gridline 15?
A. By area B and C, my recollection, starts around gridline 15.
Q. Yes, between 15 and 16?
A. Yes.
Q. Okay. So, if one is talking about random sampling, the first constraint that appears to have been placed on random sampling was it was only areas B and C that were sampled, apart from the HKC 11 that were done subsequently?
A. Because I wasn't part of the sampling process, I do believe the sampling had encompassed all the diaphragm wall panels from gridline 0 to 50. That's as far as my understanding is concerned.
Q. All right. But we know that no sampling was done in area A?
A. I'm not sure whether -- it might not be the right way to

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say whether the sampling was done at area A, but I think the selection had encompassed the diaphragm walls in area A.
Q. But there was no opening-up in area A, was there?
A. That is factually correct. There was no opening-up in area A.
Q. Therefore, there was no coupler sampling from area A?
A. If you talk about opening-up and coupler sampling, that's correct, there's no opening-up and coupler sampling in area A.
Q. Okay.
COMMISSIONER HANSFORD: Do we know why?
A. My understanding is probably, during the random sampling selection, it was simply not selected, by chance or by probability. However, because I wasn't at the two meetings -- we might be able to shed more information in the subsequent witness, Mr Yeung.
COMMISSIONER HANSFORD: Okay.
MR PENNICOTT: Sir, Prof Yin explains to us, in the succeeding paragraphs of his reports, the detail of this process, how -- this is not a question for you, Mr Ng; I'm just explaining this, Mr Ng, if I may -- in paragraph 2.2.2, for example, he starts off by explaining how the panels were put into four different groups, and then the numbers ascribed to each of the

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four different groups, and explains how those groups were derived.

He then has a discussion about the NSL slab, and one can see from that discussion that there were constraints again in the NSL slab about where places could be opened up because, in the NSL slab, as you know, there were inaccessible areas that simply couldn't be opened up, so there was a constraint there.

Then what he does, over at paragraph 2.3.4, having said that what they are looking for is 84 samples in both the EWL and the NSL, they are hoping to do 28 openings in both the EWL and the NSL, to give them three samples from each -- or three coupler samples from each connection, giving them 84 samples in all. And again, he tells us how they allocated those 28 locations amongst the four different areas, and that's the way it breaks down.

Then ultimately you get the description of how they then, having opened up, if you look at paragraph 2.3.15 -- you see all the rebar there and how it was selected and which samples they selected.

COMMISSIONER HANSFORD: Thank you.

MR PENNICOTT: But the only point I just wanted to clarify with Mr Ng was this whole question of whether in fact the whole of area A, HKC, B and C were taken into

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account. On the face of it, it appears that they were, but it will need, it seems to me, a better understanding of why it was that in fact, as it turned out, it seems originally only B and C -- the locations in B and C, were taken, and there subsequently were 11 done in HKC and none done in area A. I'm afraid I just don't know why that was the case, but perhaps we can explore that with others.

All right, Mr Ng. There was a stage -- we know that the holistic report was prepared, essentially, by reference to three stages: stage 1, stage 2, stage 3. But in stage 2 there was a stage 2A and a stage 2B. 2B was the coupler connection sampling exercise that we've just been discussing.

A. Yes.

Q. And stage 2A were other coupler connections investigated by way of opening-up in specific areas where there were documentary problems about whether -- what was there. Do you recall that?

A. I do recall that.

Q. So, in the stage 2A investigations and results from the coupler connections testing, somebody decided to exclude those from the analysis that we have. Do you understand that?

A. I understand what you are saying.

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Q. Do you know who made that decision not to include the stage 2A results in the overall analysis?

A. I do not know precisely who made that decision. This type of discussion was probably part of the task force group meeting.

Q. Okay. All right.

Can I ask you, please, to be shown the holistic report, which is OU5/3229. Let's just show you the front sheet, so we know where we are, Mr Ng.

If you could be then shown 3309. This is a table from which a lot of the calculations have been derived.

A. Yes.

Q. Because this records all the results --

A. Yes.

Q. -- as you can see.

What you can see in the first, I think, 11 or 12 items, if we scroll down -- keep going; stop there, thanks -- that the first 12 items have been discarded; do you see that?

A. Yes, I do see that.

Q. Again, do you know whose decision it was to discard those items from the calculation?

A. Again, I do not know precisely, but I believe this was also discussed in the task force group meetings.

Q. All right. We can put that one away.

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Could I ask you, please, to be shown OU6/8579. You may not have all the hard copy pages in that file, depending on whether it has been updated.

CHAIRMAN: Do we have it?

MR PENNICOTT: It will be on the screen, sir.

CHAIRMAN: Thank you.

MR PENNICOTT: That should be a letter from Arups to MTR, 23 August 2019. Do you see that, Mr Ng?

A. I do see that.

Q. So this report, just to note the chronology, 23 August 2019, postdates, comes after, the holistic report which was submitted on 18 July 2019. All right? Just to make sure --

A. Understood.

Q. -- we don't get tripped up.

Mr Suen, who's sending this to Mr Wong, Ken Wong, general manager-projects, says, "Here's the stage 3 assessment report, comprising eight volumes" -- thankfully, not all eight volumes are here.

Is this a report you would have considered at the time, Mr Ng?

A. This report, first of all it's the first time I've seen this cover page, to be honest.

Q. Right.

A. Regarding would this report be considered, it definitely

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would be a report that MTR would be reading, to understand the contents.
Q. All right. Let's just proceed a little bit further.
If we go to page 8580, so over the page -- so that's the front sheet to the stage 3 assessment report, Mr Ng; do you see that?
A. Yes.
Q. If you look carefully, it says "Rev F"; do you see that?
A. Yes, I do.
Q. Which suggests to me that there were probably six previous versions of this report, starting at the original, followed by A to E. Is that correct?
A. I do not know because I'm not the author of the report.
Q. Did you see any of the earlier versions of the stage 3 assessment report? Do you remember seeing it?
A. I do not, unfortunately, no.
Q. When you were preparing the holistic report in, I don't know, May/June/July of this year, did you not have an earlier version of the Arup stage 3 assessment report?
A. I might have been copied in the report which has been sent to me, in my mailbox, but I have not seen the report myself.
Q. Right. So you don't remember reading a version of the Arup stage 3 assessment report for the purposes of

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preparing the holistic report?
A. Not myself personally. I have not read the Arup stage 3 earlier version of the report.
Q. All right. That makes it slightly more difficult for me to ask you some questions about it. Right.
Could I ask you, please, to be shown -- sorry, let's just look at the contents so that we can see where we are going. If we look at page 8581, please, so the next page. That's the contents page, Mr Ng. Then 8582, please. You will see, at 8.2, towards the top of the page, "Coupler testing programme and acceptance criteria"; do you see that?
A. I see that.
Q. Then appendix C is "Coupler testing programme"; do you see that?
A. I see that, yes.
Q. If we could then, please, go to page 8620, you will see, at the top of the page is a heading, "Stage 2 opening-up works and coupler testing", and then at 8.2, heading "Coupler testing programme and acceptance criteria". Then:
"Load test programmes have been carried out by MTR on coupler connections for various levels of engagement, specifically 6, 7 and 8 threads engagement. It appears that all the tension tests have demonstrated that the

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minimum load capacity of the rebar can be achieved for these levels of engagement, and for the onerous cyclic tests it can be reasonably argued that the 7 and 8 thread engagement tests also passed."
Then, importantly, he says this:
"On this basis the fitness for purpose acceptance criteria has been taken as 7 threads, or 32 millimetres of engagement.
By comparison, compliance acceptance criteria has been set at 37 millimetres."
Mr Ng, was there any time at which you were aware of Arup's conclusions in those last two sentences that I have read out, that the fitness for purpose acceptance criteria had been taken at 32 millimetres' engagement? Were you aware that was Arup's position?
A. I was not aware of the position taken in this report. I was aware of the position that Arup has been talking about 32 millimetres from earlier conversations.
Q. Right. The question I was going to ask was: there's no reference to fitness for purpose acceptance criteria, 32 millimetres of engagement, mentioned in the holistic report, and I just wondered why that is. Do you know why there's no reference to that in the holistic report?
A. I suppose -- my answer to that question is because 32 millimetres is not 37 millimetres, which has been

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defined as the criteria for the PAUT and 40 millimetres for direct measurement, and that's probably the reason why 32 millimetres has not been mentioned in the holistic report.
Q. But if you are looking at safety on the one hand and compliance on the other -- okay, I can see why the 37 millimetres is mentioned in the context of compliance, but why isn't 32 millimetres of engagement mentioned in the context of safety?
A. I suppose when I talked about the report itself, the safety and also statutory requirement and code compliance have to go -- have to be both achieved, not one or the other. That is the spirit of the report.
MR PENNICOTT: All right. Thank you very much, Mr Ng. I have no further questions, sir. Thank you.
Sir, I don't know whether that would be an appropriate time to have the morning break?
CHAIRMAN: Yes, that's a good idea. 20 minutes?
MR PENNICOTT: Thank you.
CHAIRMAN: Thank you.
(11.18 am)
(A short adjournment)
(11.41 am)
CHAIRMAN: Sorry, can I just ask a couple of questions, Mr Ng.

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MR PENNICOTT: Yes, of course.

Questioning by THE COMMISSIONERS

CHAIRMAN: I'm trying to work myself back into some of the measurement questions and that sort of thing. Please forgive me if I come at you at a sort of primary school level; okay?

But I think what's been the result of the report is 37 millimetres is the safety length; is that right?

A. In terms of the PAUT results, 37mm has been defined as --

CHAIRMAN: And assuming the threaded bar on the rebar is the normal -- the proper length, hasn't been cut at all, that's going to mean that you've normally got two threads showing?

A. I think that means maximum two threads showing, maximum.

CHAIRMAN: Okay. Come across here. Stand just here, a little bit closer.

A. Me?

CHAIRMAN: Yes. Thanks very much. Just over here. That will help a lot. This test will be useless on me because I'm an aging gentleman but you are young and vigorous and no doubt have good eyesight. How many threads are showing?

A. Looks to me one to two.

CHAIRMAN: And if I turn it just this little bit, how many

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threads are showing?

A. Looks to be two.

CHAIRMAN: Looks to be two? Okay. And if I say to you that could be three?

The point I'm making is it's really difficult, is it not, to actually assess how many threads, whether it's two or three or three or four; would you agree?

A. It's not easy.

CHAIRMAN: It's not easy. And how many of these things in a line have you got to be tested, to be checked by your people?

A. We have thousands.

CHAIRMAN: Thousands. And is this above ground? Because my understanding is it's not. It's below ground; right? It's in a big tunnel.

A. These ones in Hung Hom Station are below ground, yes.

CHAIRMAN: Yes, below ground. So you haven't got the sunshine putting its lovely rays onto the metal. You've got artificial lighting. And these people cannot get that close; is that right? They can't come right up and do this, as I'm doing now (demonstrating), inches away?

A. They can.

CHAIRMAN: They can?

A. They can go close up.

CHAIRMAN: Okay.

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A. Because the construction, we need proper access for them to do whatever is necessary for inspection.

CHAIRMAN: At the final test. Okay. So you would expect them to go that close to check each one?

A. I would, because it's part of the quality supervision plan.

CHAIRMAN: But on your basis, there's a 68 per cent failure to do that, by your people?

A. We expect our people to do that as well because --

CHAIRMAN: On your basis, your people have failed in 68 per cent of occasions?

A. Our people are not required to check the couplers 100 per cent according to the quality supervision plan.

CHAIRMAN: Okay.

A. I believe -- my recollection is that 20 per cent check.

CHAIRMAN: Just, you see -- as a layperson, you will have to help me here -- I appreciate the statistics, but I'm looking at a rebar, and I'm now taking it out, which has an awful lot of threads on it and is as solid as anything, and you are suggesting that we can discount all of this as being worth nothing, that's the rest of these threads, if in fact you've got it wrong in your eyesight down in a tunnel in the middle of the day by having three threads showing as opposed to two; right?

A. If I may, not precisely just counting it. We do

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understand there are engineering strength, but in terms of compliance we cannot account for that.

CHAIRMAN: On one basis, you are discounting it entirely.

A. On one basis, yes.

CHAIRMAN: It just strikes me as very hazardous way of going about it, incredibly hazardous, and you are talking about thousands of these things, and we are now sitting in this place, after all of these months, working out statistics that go on whether -- and I'm not even sure if that's two threads showing or one thread showing and I'm 6 inches from it. You would agree then it's a difficult task to be dealt with wholesale?

A. It's a difficult task but it's a task that must be done.

CHAIRMAN: All right. Thank you.

You would then say that if somebody didn't see the extra one thread, then you can discount it under one basis? All the rest of the strength in it evaporates?

A. I think, for this process, during construction, I think there would be discussions on site, but for the report writing which had been done and the testing which had been done in 2019, we would also be looking at the threads together with the government and the rest of the team, including the police.

CHAIRMAN: One other thing. We'll come to it later but it just puzzles me slightly. We have code compliance, and

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you mention it in the report and your statement as well -- thank you -- and we also have safety. Now, do the two -- are the two always synonymous? In other words, if it's not code compliance, it ipso facto, to use something I learned 300 years ago at school, a Latin term, by that fact alone, it's unsafe?

A. Engineering-wise, I believe if it's not code-compliant, you can still achieve safety, but if we have to achieve code compliance by product, it would be safe.

CHAIRMAN: All right. Let me put it this way: can something be fit for purpose even though it's not code-compliant?

A. I believe it can.

CHAIRMAN: It can? Okay. Thank you.

Yes?

MR SHIEH: Mr Chairman just took the wind out of my sails by your last question.

CHAIRMAN: I'm so sorry.

MR SHIEH: But I do have some left.

CHAIRMAN: Sorry.

Cross-examination by MR SHIEH

MR SHIEH: Mr Ng, good morning.

A. Good morning.

Q. I represent Leighton. I have some questions for you.

Can I ask you to look at the report that you prepared for the purpose of this Commission. I think we

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can just look at the report for the purpose of COI 1. It would be in the expert reports bundle.

Can I invite you to go straight to paragraph 5. This follows on from the question just put to you by Mr Chairman. Can you look at paragraph 5.

A. Yes, I will.

Q. "It is important to note at the outset that both the holistic proposal and the holistic report were not intended to address issues from only a public safety perspective."

Do you see that?

A. I do.

Q. You go on to say:

"... they were prepared to address the issues and non-conformances identified in the construction of the Hung Hom Station Extension from a code, contractual and statutory compliance perspective ..."

Do you see that?

A. I do.

Q. You have answered Mr Chairman's question already so I'm not going to revisit that, but one question I am interested in is this. If you look at the second line from the bottom:

"... requisite approval from the relevant authorities ..."

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Do you see that?

A. I do.

Q. In fact, "with a view to obtaining the requisite approval from the relevant authorities"; do you see that?

A. Yes.

Q. Can I ask you this: who are the "relevant authorities" in this case?

A. If you allow me to explain a little bit. For Hung Hom contract, part of the contract is under the instrument of exemption, which is approved or accepted by the Buildings Department. Part of the structure is under the instrument of compliance which will be accepted by the Highways Department. So one approving authority would be Buildings Department, for instrument of exemption; the other approving authority, for instrument of compliance, would be Highways Department.

Q. Okay.

A. If I may also add, part of the Hung Hom structure is also under full BD Ordinance, and the approving authority for those parts of the structure is Buildings Department.

Q. Okay, Buildings Department.

Moving on to paragraph 6:

"Since the commencement of the preparation ... MTRC

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worked intimately with and engaged in extensive discussions and consultation with the government and its advisers."

Would it be right to say that when you referred to "the government", it would include the relevant authorities or departments that you have just mentioned?

A. Yes, they would.

Q. "MTRCL considered and took into account both comments and views received from the government and its expert advisers in the preparation of the holistic proposal."

Can I ask you this: does it mean that the MTRC is inclined to accept rather than reject suggestions or views, however you call them, put forward by the government, because your objective is to get approval by the government? Do you understand?

A. I do understand your question.

Q. Can you answer it?

A. There are consultation process. Some issues could be consulted -- in fact most of the issues are consulted, rather than just accepted outright.

COMMISSIONER HANSFORD: Sorry, when you say "are consulted", what do you mean, "are consulted"? Do you mean "are debated"?

A. That is -- I might not want to use the word "debate", but "discussed". For example, method of investigation,

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the process that are being carried out on site, yes. So those would be discussed with government and also in the task force group.
COMMISSIONER HANSFORD: Right.
MR SHIEH: This may be what lawyers call a matter of euphemism: you used the word "consulted", but let's be absolutely realistic about it. You are trying to get approval from various government departments. They decide whether to approve. If they give you comment, it's rather difficult for you to argue the toss with them; right? It's easier for the MTR just to say, "If you want this, fine; I'm going to do it your way"? Is that a fair way of describing it -- human nature, common sense?
A. Yes, that can be one way of describing it.
Q. Hong Kong government is a shareholder of MTRC?
A. That's correct.
Q. 75 per cent?
A. Thereabouts, yes.
Q. Thereabouts.
Can I ask you to look at paragraph 21 of the MTRC report. This refers to a letter from RDO, that's Railway Development Office; yes? It's under the Highways Department; correct?
A. That's correct.

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Q. "... the following comments on the Arup holistic study report".
Look at subparagraph (3):
"The argument that there was little technical justification to open up the bottom steel because it was not subject to heavy stress was not acceptable. This was because any improper connection of the bottom steel by reason of the fact that it did not accord with the detailing requirement as stipulated in the Code of Practice for Structural Use of Concrete was regarded as a non-compliance issue ..."
Do you see that?
A. Yes, I do.
Q. First of all, are you aware of the argument concerning little justification to open up the bottom steel, as described in the Arup proposal?
A. To a certain extent I am aware of it.
Q. You are aware of it?
A. Yes.
Q. So you are aware of the argument, of the view, that because the bottom steel was not subject to stress --
A. It's subject to compression.
Q. It's subject to compression, yes, subject to compression, and therefore with little justification to open up. So you are aware of that argument?

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A. I am.
Q. So the RDO rejects that argument on the basis put forward there, on the basis of a non-compliance issue; you remember that?
A. I do vaguely remember that, yes.
Q. Okay. To the best of your recollection, the RDO did not put forward any argument disputing the technical aspect of the view put by Arup; correct?
Let me put it another way. The objection by the RDO was on the basis that it did not comply with the Code of Practice. The RDO was not disagreeing with the technical argument about being under compression and therefore there's little technical justification to open up; do you remember that?
A. I vaguely remember that, as I explained.
Q. Thank you.
So that would be an example where objections were raised not on safety or technical grounds but on what appears to be compliance ground; do you accept that?
A. I think, yes, objection was raised by more than one reason, and for this case it's more about non-compliance and workmanship.
Q. Thank you. I'm talking about this example.
A. Understood.
Q. Thank you.

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COMMISSIONER HANSFORD: Sorry, are you saying this particular objection was raised for more than one reason? You said, "The objection was raised by more than one reason", so are you saying this particular objection was raised for more than one reason -- are you?
A. No, I didn't mean that, not for this purpose, not for this particular example.
COMMISSIONER HANSFORD: This particular example, the objection was raised for one reason?
A. I believe it's only for one reason, yes.
MR SHIEH: Non-compliance with Code.
COMMISSIONER HANSFORD: Okay.
MR SHIEH: That was why I picked this example.
COMMISSIONER HANSFORD: Yes. I was just trying to ensure that we had the right transcript.
MR SHIEH: Thank you.
Who suggested adopting a confidence level of 95 per cent?
A. I cannot recall this particular parameter, who adopted the 95 per cent.
Q. Thank you.
Can I ask you to look at paragraph 34 of the MTRC report. This is about the acceptance criteria.
A. Understood.

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Q. Let me ask you some question which does not require statistical training. In an examination, if you set the pass mark at 80 out of 100, you are going to get more failures than if you set the pass mark at 50 out of 100; do you accept that as a general proposition?
A. That makes sense.
Q. Thank you. So, very often, how many people pass or fail a certain test or how many samples pass or fail a certain test depends on where you draw the pass mark?
A. Yes, that would be right.
Q. Thank you.
At paragraph 34, you set out the press release by the government which stated two criteria: maximum of two full threads exposed, and the embedded length inside the coupler at least 40 millimetres in length. Do you see that?
A. Yes, I do.
Q. Then, at paragraph 35:
"The government ... considered that when conducting the structural analysis ... MTR should use the information obtained from stages 1 and 2, such as the as-constructed details ... and should take into account the technical data provided by BOSA ..."
Now, pausing here, were you aware -- and I'm talking about when you prepared the holistic report; right?

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A. Yes.
Q. Were you aware of the government announcements and the position taken by the government?
A. Yes, I was aware of that.
Q. Because those were in fact advised by the government in the meetings that you described in paragraph 36 of the report?
A. Yes. That was also discussed in meeting, and also a letter from government was received.
Q. Now, were you aware, at the time you prepared the holistic report, that during the first stage of the Commission of Inquiry, expert structural engineering evidence was adduced by various parties, who discussed, as a matter of safety, the kind of embedded lengths that would suffice? Were you aware that there had been such expert evidence given at the time?
A. I was aware of that.
Q. You were aware?
A. I was aware.
Q. At the time you prepared the holistic proposal?
A. At the time -- not the proposal but the report.
Q. Report, thank you.
I'm not going to test you about the details, because details may not matter that much, but you were aware that embedded lengths lower than 37 millimetres had been

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put forward by experts in this Commission of Inquiry?
A. Not put forward but I was aware there were discussions.
Q. Were you roughly aware of the order of magnitude of the kind of acceptable embedded lengths?
A. Not precisely how many millimetres of threads, but I do remember there was discussion about what other acceptance criteria should be.
Q. Because, let's be honest, people talk. You may not be involved in the hearing itself but obviously within the MTR office people would be saying, "Hey, the stance taken by MTR is 20-something would suffice"; you would have heard that, correct?
A. No. We did not really talk about whether 20-something would suffice. I think we were talking about engineering-wise what strength we could have achieved for certain engagement length.
Q. Which may not be 37 -- which may not be as high as 37 millimetres or 40?
A. That's correct. It could be lower than 37 or 40 millimetres.
Q. Thank you. Because you mentioned engineering-wise --
A. Correct.
Q. -- from a technical angle?
A. That's correct.
Q. Thank you.

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Were you aware that Dr Glover -- have you heard of Dr Glover?
A. Yes, I do know of Dr Glover.
Q. Were you aware that Dr Glover has put forward a view that an embedded length of 26.4 millimetres would be enough for safety purpose?
A. I am not aware of the 26.4, but I've been in discussion about Dr Glover about engagement length other than 37 or 40 millimetres.
Q. Thank you. So you were alive to the argument and possibility that engineering-wise an embedded length less than 37 millimetres would suffice for the purpose of safety? You were aware of that argument?
A. I am aware of that argument, yes.
Q. But we know, as a matter of fact, government advised the two criteria it had put forward in the press release: maximum two threads exposed, 40 millimetres embedded, with the 3 millimetres' tolerance, namely 37 millimetres by PAUT -- that's what you eventually accepted; correct?
A. What we eventually accepted is not based on the press release by government. It was also a letter from the Buildings Department, addressed to MTR and myself.
Q. Mr Lok?
A. That's correct.
Q. Lok Pui Fai?

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A. That's correct.
Q. And after all, the Buildings Department is "the" department which plays an important part in giving approvals?
A. That is correct.
Q. Thank you.
After seeing the government's position put to the MTR via the Buildings Department letter, I'm asking as a matter of fact, did the MTR, as a matter of fact, do any work, engineering-wise, to see whether or not the embedded length needs to be as high as 40 millimetres to achieve safety, or did the MTR just say, "The government wants it, we just accept the advice"?
A. We did do some laboratory testing for various engagement lengths, to determine the characteristic strength of the coupler engagement, after we received the letter.
Q. And engineering-wise did those results show that embedded length need not be as high as 40 millimetres to achieve safety?
A. From a tensile strength and compression strength point of view, those were achieved. From my recollection, from the results, elongation-wise it did not meet this particular requirement for --
Q. Elongation-wise; right?
A. Right.

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Q. Whether elongation is a relevant factor is of course a subject of possible debate; correct?
A. I would leave that to the structural expert, yes.
Q. Thank you.
Let's look at the acceptance criteria suggested by the government.
CHAIRMAN: Sorry to interrupt.
You would agree, obviously, that if the units that you are looking at are in an area of compression, the term you used earlier, the stress to which they were applied was compressive stress, that would tend to indicate to me, as a layperson, that elongation is not really a matter to worry about?
A. I believe that is also the case, engineering-wise, yes.
CHAIRMAN: Yes.
MR SHIEH: We have dealt with it in part 1 and we can dig up the transcript, but correct me if I am wrong, elongation has to do with -- I'll leave that because it's risky to rely on hazy memory.
We've discussed the question about cyclic movement and elongation in part 1 and whether these considerations are indeed relevant for the location of the Hung Hom Extension, but I'll leave that.
Let's look at the numbers. Every normal rebar is taken to be 44 millimetres in length?

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A. I think they were typically 44 millimetres.
Q. Typically 44?
A. Typically.
Q. Each thread typically is taken to be 4 millimetres?
A. Yes, that's for the BOSA type threaded bar, yes.
Q. Two exposed threads would be 8 millimetres?
A. My calculation, that's correct.
Q. 44 millimetres minus 8 millimetres would be 36 millimetres?
A. Correct.
Q. With 3 millimetres' tolerance, if there is a 36 millimetres' embedded thread, if you use PAUT to examine it, with 3 millimetres' tolerance, you could measure by PAUT 33 millimetres; correct?
A. That is correct, yes.
Q. But that would fail, according to the government's proposal, because the government says 37 by PAUT.
A. I think the criteria should not be looking at only maximum two threads exposed. It must also look at the actual engagement length.
Q. Exactly. So merely exposing two threads from an uncut rebar is not enough; you also need to fulfil the embedded length criterion in order to pass, correct, under the government proposal?
A. That's correct, and if I may add, I believe the threads

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exposed is the maximum, two threads. Sometimes, the threads might not be exposed. Sometimes, half a thread might be exposed. But up to a maximum of two threads.
Q. I know. But if it's allowed, it's allowed. So you can have a rebar which passed the exposed thread criterion but failed because it did not pass the 40 millimetres embedded criterion?
A. Yes.
Q. That's internally inconsistent; would you accept that?
A. I don't really understand the question about "internally". Could you ask again or in another way?
Q. If maximum of two exposed threats is permitted, and on the basis of a 44 millimetre thread, the embedded length would be 36 millimetres only; correct?
A. Yes.
Q. As a matter of arithmetic. 36 is less than 37; correct?
A. Correct.
Q. It's less than 40?
A. Less than 40.
Q. So if one insists on 40 millimetres by direct measurement, or 37 by PAUT, a rebar which exposed two threads would fail the embedded length criterion; do you accept that?
A. Yes.
Q. Do you regard this dual criterion as internally

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inconsistent then?
A. I do not, because I think typically, when we use this product or use this type of connection, we would have to ensure the workmanship, and therefore a typical engagement would be about 10 millimetres -- ten threads, I beg your pardon. And this is the requirement set out by the government for us to use this product.
Q. Let me try once again. Day in, day out, when people check coupler connections, they use visual checking; correct?
A. Since this incident, actually, I should clarify, we not only use visual checking; we actually put a tape measure into the coupler before the secondary bar is inserted or installed.
Q. Okay. Let's leave that. Let me ask that again.
The government's proposal is, first of all, at most, two threads exposed, at most. So, on the government's suggestion, you could have 44 minus 8 millimetres, because that would be two threads exposed; correct?
A. Yes.
Q. So that is one of -- well, that is one aspect of the dual criterion. Yet the government goes on to say you need to look at how many millimetres were actually embedded, it needs to be 40, but if it's 40 it could not have been maximum two threads exposed. Do you

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understand the logic?
A. Yes, I do understand the logic.
Q. That is why I say it's internally inconsistent, because on the one hand it allows, as one passing criterion, exposure of two threads, that is minus 8 millimetres, but on the other hand it says, "Forget about that because I want 40 millimetres in there." Do you understand what I'm saying?
A. I do, but I think it's not as simple as that, because typically we are able to insert ten threads into the coupler. There are maybe situations, if there are not enough space inside the coupler, then you would be able to insert -- you won't be able to insert the ten threads, but typically you would be able to insert the ten threads, and I believe hence that is the requirement to test whether there were ten threads engaged into the coupler.
Q. But if it's ten threads engaged, that would be 40 inside; there would not be two threads outside?
A. That is correct. Or it could be, depending on the threaded bar, some threaded bars are 11 threads, some threaded bars we have seen 12 threads. So even if you have a situation where you have 10 threads engaged, you still might be able to see one to two threads exposed, depending on the threading of the bar by the technician.

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Q. But then why would you look at exposed threads at all, in that case?
A. I believe the reason for the exposed threads is that make sure we at least have ten threads inserted into the coupler, or thereabouts, nine or ten threads.
Q. Thereabouts, nine or ten threads? So, in your mind, nine or ten could both be acceptable?
A. In my mind, no. In my mind, it's very clear. I have a letter sent to me, addressed to me, to follow the recommendation requirements from BOSA, and this is what I have to adhere to.
Q. In your mind very clear not as a matter of engineering-wise, but as a matter of what the government wanted; correct?
A. In my mind, it's about compliance.
Q. Compliance. Thank you.
CHAIRMAN: Sorry, could I just come back again -- please forgive me -- and I'm only interested in compliance now, not interested in fit for purpose and safety, which I appreciate may well be, and often are, different issues.
But one of the things, coming back to it -- and sometimes, when you revisit something after a break, you see it anew -- is, unless I misunderstand this, the threads have to run at a bit of an angle to each other.

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In other words, they are slightly diagonal, because otherwise it's not going to go in, it's just go to go round and round and round. What I've done is I've looked at two threads showing. Then, when I turn the coupler around, it becomes three threads showing.
So your poor workmen, your poor inspectors, they are going to be looking at this, and depending on what part they look at, it's going to be three threads showing or two threads showing, with thousands of them; right?
Would I be correct to say, and we are looking only at compliance now, that if three threads are showing, it's non-compliant? And on the basis of compliance, nearly three-quarters of the threads on this statistical analysis were not sufficiently embedded -- right? -- which means that on three-quarters of the occasions that threads were put in, the rebar fitters got it wrong, the contractors got it wrong, and your own professionally qualified people got it wrong too, on your own statistical figures. Would that be right?
A. I don't think that would be entirely 100 per cent correct, because I think, despite there may be more than two threads showing, we also have to look at whether the couplers had been fully engaged, because if they were not fully -- if the inspectors saw more than two threads showing, the logical question would be asked: can the

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rebar be inserted any further?
CHAIRMAN: Yes. I appreciate that.
A. This is what we would expect the site team to do.
CHAIRMAN: All right.
A. And if -- sorry, if the rebar cannot be inserted any further, then it would have achieved its installation requirement, even with more than -- if just with two threads showing.
CHAIRMAN: All right. But the fact is that the statistical analysis that we are now looking at, for purposes of code compliance, shows a failure rate for code compliance purposes of about 68 per cent -- or have I got that wrong?
MR PENNICOTT: For area A, sir.
CHAIRMAN: Yes. I'm just talking about one area, yes, area A.
A. For area A, this 68 per cent unfortunately -- probably I'm not in the best position to answer the 68 per cent, because there is process they went through from the statistical approach as opposed to the EWL slab and NSL slab in the rest of the areas, areas B and C.
CHAIRMAN: All I'm trying to do is to understand, from a reasonably simple approach -- the first problem that I have, and I'm not an engineer, but we are talking about two threads maximum showing, is that depending how

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you look at it, it could be three, because the threads are going in at an angle; right? So if you are looking at it at the wrong angle, you've got it wrong to start with. I find it very difficult to think that any well-established engineering implement such as this, which is used for putting buildings up all around the world, would be so hazardous; right? So that's number one.
Number two is that when you look at what does go in, if there's, say, three threads showing, it's still a very large proportion of the rebar fitting into a very solid coupler.
Number three is -- it's difficult to think that from a point of view of code compliance, so much would be placed on the shoulders of the rebar fitter, the project management inspection team and then the MTR inspection team, because, in area A at least, and it's just a sample area, those three sets of people, all of whom, one can assume, were doing their best, by and large, have failed in 68 per cent of occasions. That's like saying you've got a job to do and three-quarters of the time you are going to get it wrong. That would be unacceptable in any set of circumstances. It's very difficult to think that all three layers of engineers and/or workmen would have got it wrong on that number of

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occasions. So it tends to raise questions as to the validity of the statistics.
Do you see the point I'm making? And I'm probably coming at an entirely wrongly, and I'm sure you can prove my ignorance now.
A. Unfortunately, I really cannot prove your ignorance or whether it is an actual ignorance, because the 68 per cent, as I tried to explain, has gone through a statistical process.
CHAIRMAN: You see, there's a very old saying that was said about in the 17th century or so, "Statistics, statistics and other damned lies", or something like that.
MR SHIEH: Lies, damned lies and statistics.
CHAIRMAN: I'm not suggesting that for one minute, and that's not meant in any way whatsoever as a condemnation of people who have far greater brain power than me to specialise in statistics, but what I'm saying is, purely and simply, it requires some clear analysis, from a layman's common-sense point of view. You would agree with that?
A. Yes, if I understand what your question is.
CHAIRMAN: Thank you very much. I won't take it further.
MR SHIEH: Mr Ng, can I trouble you to look at paragraph 41 of the MTR report.
A. Yes.

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Q. No, I think I can skip that. I think I can go straight to the point Mr Chairman was asking about, and that is area A, which is paragraph 44 of the MTR report. As a matter of fact, no opening-up was carried out at area A.
I just want to ascertain a question of fact which you may be able to help with. Area A was not deliberately excluded from the sampling process?
A. I do not believe that is the case. I think, again, I explained earlier this morning, the sampling process was witnessed by my other colleague, and I think he might be able to reaffirm my understanding.
Q. So it was available for being chosen by way of the sampling process? It so happened that none of the samples chosen came from area A; is that what you understand to be the position?
A. That's my understanding.
Q. Which leads us to this phenomenon that a 68 per cent strength reduction factor, arrived at through some formula, was applied to area A, when, as a matter of fact, no sample had been taken from area A. That would be a fair way of describing what we are now facing; correct?
A. That's factually correct.
Q. So the 68 per cent was a statistical construct, not

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based on one single observation of what actually is in area A?
A. That's correct, factually.
Q. But you, not being statistically trained, would have no view on that? You just took the result; you were not in a position to express any view on the commonsensicality or the absurdity of such a result?
A. I think I have to respect the statistical approach that has been carried out, with sampling that has been obtained in HKC and other areas, such as areas B and C.
Q. Thank you. Let me just check whether I need to ask you one further question.
Paragraph 41. This describes what happened after completion of the PAUT test. We know historically what had happened. After doing the PAUT test, it was discovered that there were certain coupler connections in locations which utilise capping beams; correct?
A. Yes.
Q. This was actually not foreshadowed or factored in at the stage when the sampling model was considered; correct?
A. No. I think when we had the sampling methodology we knew there were capping beams in area A and HKC.
Q. You knew already, as a matter of fact?
A. Yes.
Q. But that feature was not factored in to, let's say, the

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sampling process, as to what samples to be picked from what location?
A. My understanding is the sampling was looking at the entire length of the station B, whether there were what type of structure and how they were constructed, so again from gridline 0 to gridline 50.
Q. You mean, when the sampling methodology was decided, no conscious attempt was made to distinguish between samples to be taken from capping beam locations and samples to be taken from non-capping beam locations?
A. I believe that is correct, yes.
Q. So, from MTRC's perspective, whether it's capping beam or non-capping beam, it's to be treated as a uniform whole -- not "hole" but "whole", I mean?
A. That's correct, for the sampling methodology.
Q. Then can you look at paragraph 41:
"In early May 2019, after the completion of PAUT ... the task force group requested MTR to take into account 11 coupler connections using type B rebars at the capping beam side which were also exposed during the opening-up. As requested, MTRCL visually inspected and counted the number of exposed threads of those 11 numbers of the type B rebars to establish the engagement length. The 11 coupler connections were located at D-wall panel ... From the measured length of the exposed

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threads, two out of the 11 samples, which were found at panels WH35 and EH32 in area HKC, were not properly connected. The task force group requested MTR to address those two samples in the statistical analysis. Since the holistic proposal focused on the condition of the coupler connections at the slab side only, the binomial analysis was to be applied to assess the defective rate of coupler connections at one side only, ie from the slab. In May and June ... following extensive discussions and consultation within the task force group, it was agreed that the original statistical analysis had to be modified to account for the combined effect of the conditions of the coupler engagement at both the EWL slab and the capping beam sides.
In mid-June 2019, MTRCL proposed using binomial analysis to calculate the defective rate for each of the EWL slab side and the capping beam side coupler engagements, followed by a probability analysis to calculate the combined reduction factor. The task force group commented that MTRCL's proposed analysis was not acceptable from a statistical perspective."
Reading this, the impression I got was that how to deal with supposed defects found in the capping beam locations was something which was decided ad hoc in May 2019, rather than something already factored in or

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planned when the holistic proposal was designed. Do you accept that?
A. I do not accept that. I think I have to be more -- clarify this a little bit, because the capping beam had been known at an early stage of the sampling. What we were expecting was to expose the coupler on the slab side, whether there were capping beam or no capping beam. I think the situation is we had actually exposed the coupler at the capping beam area but also -- not just from the slab side but also on the capping beam side.
Q. But forgive me for asking what may appear to be a rather layman-like or dumb question: the configuration of these couplers in capping beam areas were known right at the outset; correct?
A. Correct.
Q. There would be two sides. One would be the slab side, facing the slab. The other would be that facing the D-wall; correct?
A. Correct.
Q. So in terms of planning, what sort of -- which side is to be exposed ought to have been factored in during the planning process?
A. In terms of planning, we were looking at the connection on the slab side.

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Q. Only?
A. That's correct.
Q. It so happened that, not as originally planned, the D-wall side was opened up as well?
A. That's correct.
Q. But, as initially planned, if no one opened up the D-wall side, one would just have the samples on the slab side; correct?
A. That's a possibility.
Q. Yes. And what happened was, just because somebody opened up the D-wall side, the task force said, "Hey, new idea, let's do some statistical analysis based on taking into account the D-wall side as well"? Is that a fair way of describing what had happened?
A. Probably not entirely fair because I think when we see a defect on site, probably not just one party but I suppose every party involved in the project would have to look at the defect that's been exposed. So it wouldn't be just one party that might be raising this question.
Q. What I mean is, as originally planned, it was obviously thought that only opening up the slab side would be enough, because that was what was originally planned; correct?
A. Correct.

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Q. No one from the government actually said, "Hey, hang on, as a matter of planning or whatever, opening up one side is not enough; let's open up the other side"? No one from the government suggested that at the planning stage; correct?
A. That's correct.
Q. Forgive me for using this word: opportunistically, after some opening-up was done, the government said, "Hey, hey, let's open up the other side"; would it be a fair way of describing it?
A. No. That's not exactly what happened.
If I can explain a little bit, and if I cannot explain clearly, I believe my colleague Mr Yeung would be able to explain even more clearly than I am.
My understanding is, in area A, what we have actually done was opened up a typical opening size to expose the coupler.
Q. Sorry, area A, did you say?
A. I beg your pardon. I have to say HKC. I have to take that back. It's actually HKC. The opening-up location actually first exposed the coupler on the capping beam side rather than the slab side, because we were planning to open up the connection on the slab side, but it just so happened the position of the coupler was not exactly aligned with the planned opening at those particular

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locations.
So, in effect, when we exposed the coupler connection on the capping beam side, we still had to go to expose the connection on the slab side, but just by those locations we actually had ended up exposing the couplers on the capping beam side and the slab side.
Q. Let me try it one more time. At the original planning stage, it was not regarded by anyone to be a problem that for capping beam location, one only opens up the slab side; correct?
A. I don't think anyone would discount any possibility or probability. I think we were looking at the capping beam side. I mean, I beg your pardon, at the slab side. But having said that, I don't think anyone would discount any possibility of finding other things.
Q. Of course, in real life, never say never, but at the planning stage, opening up the slab side was regarded as suitable, appropriate?
A. That was the plan.
Q. And there was no suggestion -- there was no suggestion -- for example, at the planning stage, which says, "Ah, consequential upon opening up the slab side, if defects reach a certain level then further steps are to be taken"? There's no such step in the flow chart?
A. There may have been but I cannot recall whether there's

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actually a step to look at this possibility. I don't know if there's a step that looks at this possibility.
Q. Finally, the holistic report, it is the work product of MTRC; correct? It's issued in the name of MTRC?
A. Correct.
Q. Did anyone from MTRC send any draft of the holistic report to the government for its review or comment before MTRC issued the holistic report?
A. I believe that was part of the process of drafting the report. We did send draft to government.
Q. So the government would be able to comment on or object to or influence any part of the holistic report?
A. As far as we are concerned, the government were able to comment on the report.
Q. Did the government amend or comment on any drafts of the report?
A. My recollection is they did.
Q. How about the report produced for the purpose of this Commission of Inquiry? Has the government been given a chance to comment on those reports?
A. Do you mean the statistics report?
Q. Correct.
A. I don't recall there was that opportunity.
MR SHIEH: Thank you.
I have no further questions.

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CHAIRMAN: Thank you very much.
Cross-examination by MR KHAW
MR KHAW: Mr Ng, I act for the government and I have a few questions for you.
Regarding the questions raised by Mr Shieh just now on behalf of Leighton, you remember what he described as dual standards, when he referred to the 40mm and also two exposed threads -- do you remember that?
A. I do remember that.
Q. If we can take a look at some of the results. If we can have a look at the Original Inquiry bundle OU5, page 3312.
Now, 3312, if we can take a look, for example, at items 63 and 64 first -- do you see that?
A. I do.
Q. Number 63, we have the information which shows that there are two to three exposed threads; do you see that?
A. Yes, I do.
Q. Then 63 shows engagement length of 40.6, and 64 shows engagement length of 39.9.
In those examples, is it correct to say that even if two to three exposed threads were found, that would still be considered a pass so long as it is longer than 37mm? Is that correct?
A. That is correct.

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Q. If we take another example, number 81, the same page, the last item. We can see that the number of exposed threads was stated as two to three; correct?
A. Correct.
Q. But the engagement length is recorded as 36.8, which is below 37; right?
A. Correct.
Q. And that is considered a fail?
A. That's correct.
Q. Let's take one more example. The next page, item 89. We can see that the number of exposed threads was recorded as one to two only; do you see that?
A. I do see that.
Q. But the engagement length was 35.4; do you see that?
A. Yes.
Q. And that is considered a fail?
A. That's correct.
Q. So is it fair to say that regardless of the number of exposed threads, whether it's one, two or three, the primary factor in determining whether it is a pass or a fail depends on the engagement length, ie the 37mm which has been agreed?
A. I would say that would be the primary requirement, because there are bars, as I explained earlier, that could have more than ten threads for type A bar. In particular, if I can recall, for type B bar, you could have ten threads engaged but you could also have ten threads exposed.
Q. Thank you.
COMMISSIONER HANSFORD: Can I just follow up on that, please. If you take item 75, where we've got three to four exposed threads, and a 40.5 engagement length, that one's defective. Why is that one defective?
A. Good question. I cannot answer this one.
COMMISSIONER HANSFORD: It's just one that jumped out at me. There may be more. But I thought you were telling us that it had to pass both columns in order to be not defective. Is that what you are telling us?
A. No. I think, if there were ten threads engaged, meaning we expected there to be at least ten threads engaged into the coupler, but the steel bar could have more ten threads threaded during the production. So, if there were more threads threaded, such as 12 or more, then you would still see more than two threads exposed, even when we have ten threads engaged. There is that possibility.
COMMISSIONER HANSFORD: I've just spotted one anomaly, that item 75. I don't pretend that was selected at random. But there may be others here, which is slightly worrying, I think.
A. It's well spotted.

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MR KHAW: So, in terms of the number of exposed threads is concerned, in the light of acceptance or rejection criteria, is it correct to say that the acceptance criteria have been set to be two to three exposed threads, in the sense that when it exceeds two to three, ie three to four, in view of the example just mentioned by Prof Hansford at 75, when it exceeds two to three then it's considered a fail? Is it a fair way to say that?
A. According to the conditions -- requirements put to us, to the project team, by the government, if it's exposed more than two threads it's classified as a fail case.
Q. If you can then take a look at OU3254.
3254, it's part of the holistic proposal report, and 3.3.20 says -- the heading is "Rebar/coupler with 2 to 3 exposed threads", and then it continues to say:
"PAUT technicians estimated the number of exposed threads based on their visual examination. They would report the 2 to 3 exposed threads when they observed a condition which is more or less similar to the maximum tolerance specified by the coupler manufacturer ... Eight random samples at the EWL slab with 2 to 3 exposed threads and engagement length not less than 37mm ... or 40mm ... are not considered as defective for the binomial analysis."

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So there are two conditions that were looked at in determining whether it's a pass or a fail. One is whether it exceeds two to three exposed threads, and the other one is the engagement length; is that correct?
A. That's correct.
Q. Another question that I wish to just very briefly discuss with you relates to the stage 3 assessment report as prepared by Arup. I believe Mr Pennicott, near the end of his examination, referred you to that report which was I think published in August this year.
If we can have a look at that report. It's again part 1 Inquiry OU6, page 8580.
That's the cover page of that report that we have seen this morning.
If I can ask you to take a look at 8620.
A. Yes.
Q. Paragraph 8.2, that you have seen earlier this morning. 8.2, the second paragraph, says:
"On this basis the fitness for purpose acceptance criteria has been taken as 7 threads, or 32mm of engagement.
By comparison, compliance acceptance criteria has been set at 37mm."
Mr Pennicott referred you to the second paragraph, regarding the seven threads and 32mm of engagement.

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Now, we all understand that this stage 3 assessment report was published after the holistic proposal report came out; is that right?
A. That's correct.
Q. I'm just wondering or can you confirm whether this fitness for purpose acceptance criteria taken as seven threads or 32mm had ever been tabled for consultation or discussion with the government?
A. It had been tabled, following the lab testing results, yes.
Q. Do you have any recollection as to when it was tabled?
A. It would have been -- the first batch of tests was finished in February 2019, and the second batch of testing was finished in April 2019. So I believe any time between February -- after February, we would have tabled these results with government.
Q. I see. The results were actually provided to the government, but my earlier question was whether this fitness for purpose acceptance criteria being set at seven threads or 32mm, whether that particular set of criteria had been tabled for the government's acceptance or consideration?
A. The criteria had not been tabled. We were merely talking about the characteristic strength of the partial engagement couplers.

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Q. Thank you.
Earlier this morning, Mr Pennicott referred you to the binomial analysis, and you agreed with us that the binomial analysis was proposed or initiated by Arup and it was subsequently accepted by the government, after consultation. You remember that?
A. I do.
Q. Regarding the 95 per cent confidence level, I think Mr Shieh also asked who actually proposed that confidence level, and I think your answer to us was that you are not sure who actually initiated?
A. I cannot recall who.
Q. You cannot recall.
A. Yes.
Q. If I can just take you to the MTR report on statistical analysis regarding part 1 of the Inquiry. Page 11 of this report, internal page 11, starting from paragraph 24. Have you found that?
A. I have it.
Q. Thank you. Paragraph 24 starts with this statement, about Arup's recommended use of the binomial approach, and then that approach "is summarised as follows".
Then if we can take a look at subparagraph (5). It says:
"Arup gave the following example: If one takes

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a population of 10,000 coupler connectors, and exposes and tests 50 and none fail, there is a possibility that all of the 10,000 couplers pass. There is however also the possibility, albeit remote, that all of the other 9,950 couplers are faulty. If all the combinations of passing and failing in between these extreme situations are considered, given the sample and population sizes, a binomial statistical analysis establishes there is a 95 per cent possibility/confidence level that a maximum of 5.67 per cent of the whole population is faulty."
So just through reading this paragraph, when the report talks about Arup's recommended use of the binomial approach, and also the example given by Arup which has led to the 95 per cent confidence level, am I correct to say that in fact the 95 per cent confidence level was proposed by Arup during his analysis?
A. Not -- I think, reading this report, cannot precisely say whether it was Arup, because it says "there is a 95 per cent confidence level". It doesn't say "adopt a 95 per cent confidence level", subparagraph (5).
Q. Perhaps the last question. You remember Mr Pennicott earlier this morning asked you about the composition of the task force; do you remember that?

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A. I do remember.
Q. So it consists of representatives from the government, from the MTR and also from the EAT team and also the Hong Kong Police, as you have told us?
A. Correct.
Q. Perhaps if I can just take you to one small paragraph of the report, of the MTR's report: paragraph 42. It says:
"In mid-June 2019, MTRCL proposed using binomial analysis to calculate the defective rate for ... the EWL slab side and the capping beam side coupler engagements, followed by a probability analysis to calculate the combined reduction factor. The task force group commented that MTRCL's proposed analysis was not acceptable from a statistical perspective."
Then you referred us to an email -- the report refers us to this email at footnote 42. There's an email from task force to MTRCL dated 21 June. I think that can be found at, again original bundle, B21/26696.
It's an email dated 21 June 2019 from Eddy Kam of RDO to Mr Oscar Wong of MTR, and it basically talks about the "binomial analysis on the failure rate of coupler connection at capping beam location." Then it says:
"It is noted that the calculation simply multiply

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the upper bound of two independent 95 per cent confidence intervals. The product does not make much statistical sense as the overall level of significance is unknown. It is not a [then there is a calculation]. So the estimates are not justified statistically. You are required to recast your analysis with advice from your statistics experts."
Pausing here, I understand that you told us that you probably were not privy to most of the task force discussions?
A. That's correct.
Q. Are you aware that in fact in around June there were actually quite a lot of communications between the government and MTR regarding the statistical analysis?
A. I was aware of that.
Q. If we just look at the last sentence which says:
"You are required to recast your analysis with advice from your statistics experts."
Now, we understand that MTR did not engage any outside statistical consultants for this particular purpose, save and except the advice given by Arup in relation to the adoption of the binomial analysis that you have stated in your statement, and also MTR's report.
So, at that time, if MTR needed to seek advice on

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statistical matters, apart from the advice or input given by the government for discussion purposes or for your consultation, would it be right to say that it would be Arup that MTR would be looking to for such advice?
A. It would not be appropriate because I think Arup were not considered as -- I hope Dr Glover doesn't mind me saying that -- a statistical expert, so we didn't engage Arup on this matter.
Q. I see. But apart from Arup and apart from the advice given by the government, would there be any party that MTR could actually look to when it was necessary to consider matters regarding statistical analysis at that time?
A. Yes. There would be -- although I wasn't involved in the task force group discussion for this issue, but I think one of the options was to engage, again, the statistical expert provided by the government who was involved in the early stage of the statistic sampling methodology, because they were already involved in the project, already conversant with the situation.
Q. Thank you. And apart from that, there would be no other parties that MTR would be looking to in relation to matters arising from statistical analysis?
A. That's correct.

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Q. Thank you.
COMMISSIONER HANSFORD: If that's correct, who's Eddy Kam referring to in that last sentence? Do we know?
A. I think his question was "you are required to seek somebody's assistance that might be appointed by MTR". That person, by the time of the email, did not exist.
COMMISSIONER HANSFORD: So is he effectively saying "you are required to get some statistical advice on this matter"?
A. That's our understanding.
MR KHAW: But, as a matter of fact, as you pointed out, there was no other party that you would actually look to, if it was necessary to consult anyone on matters of statistical analysis?
A. I think it's not appropriate to say there was no other party. I think we had considered there is an appropriate party already that existed, such as the government statistical expert.
MR KHAW: I have no further questions.
CHAIRMAN: Good. Thank you very much.
Mr Boulding, should we do this after lunch?
MR BOULDING: Yes, I'm quite prepared to do that, sir. Thank you very much.
CHAIRMAN: So the normal -- forgive me --
MR PENNICOTT: 2.30.
CHAIRMAN: 2.30, yes. Good. 2.30. Thank you.

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(1.08 pm)
(The luncheon adjournment)
(2.32 pm)
Re-examination by MR BOULDING
MR BOULDING: Good afternoon, Chairman. Good afternoon, Commissioner.
Good afternoon, Mr Ng. I just have one matter I'd like to ask you about, if I may. Do you remember agreeing with the learned Chairman that the works could be fit for purpose even if they were not code-compliant?
A. May I ask who are you referring to again, agreeing with who?
Q. The Chairman. Do you remember the Chairman suggesting that?
A. I beg your pardon. I just didn't hear that word properly.
I do agree that without being code-compliant, it can still be fit for purpose.
Q. And tell me this: by "fit for purpose" do I understand you to be referring to the fact that the works are safe?
A. Yes, in my opinion, "fit for purpose" also means safe.
Q. Now, if the works can be fit for purpose even though the works are not code-compliant, does that mean that code compliance is irrelevant?
A. No, that does not mean code compliance -- it's not

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irrelevant. In Hong Kong, we work to the building regulations, and in so many words, that requires to be code-compliant.
Q. Can we look at a document together. Could we go to COI 1, stats report, COI 1, and that's at ER1, expert reports 1, and I think tab 11.1. Then if we could go to paragraph 5 which I hope is on page 2 -- splendid -- can you read that paragraph to yourself, please, Mr Ng.
A. I've read it.
Q. Now tell me this. If the works are not code-compliant, would you be able to get the requisite approval from the relevant authorities for commercial operation of the Hung Hom Station works?
A. Yes. If I understand this question correctly, that means if the work was code-compliant, yes, I would be able to get statutory compliance and certification signed off by the approving authority.
Q. What about if the works are not code-compliant? Would the authorities be prepared to sign off the works?
A. Not in my experience.
MR BOULDING: Thank you very much indeed, Mr Ng.
Sir, Chairman, I don't know whether you have any questions arising out of that.
Questioning by THE COMMISSIONERS
CHAIRMAN: For a layperson like myself, I find myself

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mentally in a conundrum, in a difficult position, because if you have, as in the present case, and if, for purposes of argument at this stage -- because of course this Commission must hear all evidence before it makes its mind up on any factual matter, and it is to be stressed that the Commission's statement in its interim report that it believed the station to be safe was an interim finding, by its very nature -- but leaving all that aside, if you agree that works can be fit for purpose even though they are not code-compliant, but they must meet the code, that raises two questions, in my mind.
The first question is what is the purpose or what is the essential purpose of the code if not to ensure that building works are fit for purpose and meet other requirements such as environmental requirements, spacing, fresh air requirements, urban planning and that sort of thing? But also the question arises: would there not be room for negotiation between a contractor who has completed works which are fit for purpose and which in all other respects meet the necessary requirements such as urban planning and things like that -- would there not be room for that contractor to negotiate with the Buildings Department, to say, "It becomes simply non-feasible financially to make it

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code-compliant? You know, we are having to spend hundreds of millions of dollars to do so, when in this particular case it's not necessary", and then to negotiate with the buildings office; so they can say, "Yes, we would not normally allow something that doesn't meet the code to be given final approval, but in this instance we always have a discretion and we will consider agreeing"?
A. This is a question addressed to me, I presume?
CHAIRMAN: It's a question addressed to you. It may be that you are not able to answer it, but I suppose if I reduce all that verbiage down to a simple question, it becomes simply this. If everybody's satisfied that it is fit for purpose, is there not room to negotiate with the authorities to have approval granted for occupation, even though it may not meet the code in all respects?
A. If I may make a response, sir.
CHAIRMAN: Yes.
A. First of all, I think the purpose of the regulations in Hong Kong is, in addition to the code, it's also the statutory requirement. For example, the statutory requirement requires the project manager to make submissions of -- both design submissions, as-built records, test records and the like, so that there is a proper paper trail and record to keep a proper project

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record, to demonstrate that the works have been constructed accordingly.

I'm not personally privileged to make any suggestion whether there can be any negotiation with the authority, even though I'm the competent person on this particular contract and other contracts. In this city, there are other registered practitioners who might have a different view, but in my own personal opinion I take discipline as a very serious issue, as a very serious matter, in that if there are records required, if there were regulations that had to be followed -- I don't really ask for a judge to relieve my penalties for a speeding ticket, for example, unless the judge makes that decision himself. So, therefore, I take record-keeping as a serious matter in my own personal profession, in addition to workmanship and design codes.

CHAIRMAN: All right. Good. Thank you. I think you made the point well that, from your perspective, even though something may be fit for purpose as far as you can see, there must be full records of what was done, but you don't know what the future holds as to the stresses on the building and where those records may be necessary, and they are part of an overall regime which ensures the integrity of the whole building.

A. Yes, I agree to what you said.

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CHAIRMAN: Okay. Good.

COMMISSIONER HANSFORD: But just following up on that, Mr Ng: there's a difference, is there not, between the requirement to complete and submit records and the requirement to comply with the code? They are not the same thing, are they?

A. I don't believe they are the same thing, because design code is a very technical nature. Statutory requirement is a process nature.

COMMISSIONER HANSFORD: Right.

A. Yes.

COMMISSIONER HANSFORD: So what you have been referring to, in your response to the Chairman, very helpfully, has been the statutory compliance?

A. That is correct.actually, I would also add that the code in Hong Kong also has their own history, although there are other international codes, and when we step outside the Hong Kong Code we must seek also agreement and approval from the authorities to use international codes, which are not first and foremost in Hong Kong, to my understanding.

COMMISSIONER HANSFORD: Yes.

CHAIRMAN: But there must be, must there not, some level of compromise? Because you may have a building, a very detailed, complex public structure, which everybody

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accepts is fit for purpose, but in a number of respects does not meet the code and it becomes impossible, without knocking the whole thing down and starting again, to meet the code. Then there must be some room for compromise, because otherwise you have two results. (a) you have a very big, beautiful building that nobody can ever use, or (b) you have to knock it all down and start again.

A. To a degree, yes. I do believe, as an engineer, you do have to have the freedom to adopt certain practices. But it comes to a point where adopting the certain practice also needs agreement with certain authorities. All I'm saying is I'm not in the privilege to ask for waiver, unless it is something which I strongly believe in, which I propose.

CHAIRMAN: No, I'm not suggesting -- sorry, I think you missed my question and it's my fault, obviously -- but what I'm saying is if you end up without necessarily meeting the code in all respects with a building which has been completed, and it is fit for purpose, everybody accepts that, but there has been negligence and there has been a failure to meet the code in certain respects. At that juncture, you've got limited choices, have you not? All I'm asking is: do you believe there's any room for manoeuvre at that stage, with the authority, in

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those circumstances?

A. With all due respect, I do think this is a question that should be answered by the authority.

CHAIRMAN: All right. Good. Thank you very much.

MR SHIEH: I hope I won't be regarded as slightly presumptuous to raise and make this point, because I think the questions raised by the Commissioner have hit on a point that could have been by way of submission, but since the Commission has expressed an interest in hearing it, I might as well raise it now and then I can ask the next witness or the Commission may wish to explore it with this witness, and that is this. One has assumed there is this mysterious creature called the code in respect of which you need to comply, by adhering to the bible laid down by Mr Lok, ie 40 millimetres embedded and two threads maximum exposed. It's been repeated so many times and one could be forgiven for thinking, yes, there is a code/statute somewhere which stipulates 40 millimetres embedded plus two exposed threads, to the extent that this witness says, "Yes, you can be safe, but you don't need 40 millimetres embedded and two threads exposed, then tough luck, you breached the code", but what is the code that stipulates two threads maximum exposed and 40 millimetres embedded?

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Mr Lok is not the law. The Building Authority is not the law. They may wish to err on the side of absolute conservatism, to err on the side of disapproval, but what is the code and what is the statute? This witness may or may not know. It may all be a matter of submission at the end of the day. But one mustn't assume that there is a code somewhere for which one breaches if we don't need the bible laid down by the government. The government is not the law. The government always breaks the law -- often breaks the law.

CHAIRMAN: Thank you.

Sorry, Mr Boulding, I think we've --

MR BOULDING: As my learned friend said, that rather sounds like a submission to me, and I don't intend to follow that one up.

CHAIRMAN: The question may in fact -- I think this witness has answered it very professionally and very well indeed by saying, "At the end of the day, this is not for me; ask somebody else more appropriate."

MR BOULDING: It sounds as though you are free to go, Mr Ng. Thank you very much indeed.

Could he be released, sir?

CHAIRMAN: Of course. Mr Ng, thank you so much.

I think it should also be said, for the sake of

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absolute transparency, is that Mr Ng on two occasions, I think, acted as one of the persons who escorted Prof Hansford and myself around the Hung Hom building site, not on his own but with another group of people. He acted fully professionally and at arm's length in all respects during those visits.

MR BOULDING: There you are. Well done.

CHAIRMAN: I just wouldn't like anyone to think there had been any form of cosiness between this witness and ourselves.

(The witness was released)

MR BOULDING: Of course. Thank you very much.

I will now call my next witness, Mr Yeung. I understand that Mr Yeung is going to give evidence in Cantonese, so we will need our headsets.

MR YEUNG KIN WA (affirmed in Cantonese)

(All answers given via simultaneous interpreter except where otherwise specified)

Examination-in-chief by MR BOULDING

Q. Good afternoon, Mr Yeung. We know you have produced a short witness statement for the assistance of the learned Commissioners. I wonder if we could look at the first page. It's BB10090.

Do we there see the first page of your witness statement, Mr Yeung?

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A. (In English) Yes.

Q. If we go on to page 10092, do we there see your signature immediately below the date of 23 September 2019?

A. (In English) Yes.

Q. Are the contents of that statement true to the best of your knowledge and belief?

A. Correct.

Q. Now, I'd like to ask just a couple of questions by way of clarification arising out of Mr Ng's questioning. I wonder if we could go to Prof Yin's report, which I understand is ER1, tab 12. Splendid.

Then could we go on, please, to paragraph 2.4, which, depending upon the version which is up here -- it's page 14 of my version; that will do. Scroll down. Splendid. Go up a bit, please.

Do you see the section there headed "2.4 Samples selection meetings"? Then:

"Two meetings were held between the government and MTRCL for the random selection of sampling units at EWL slab and NSL slab for purpose (ii) investigation."

Do you see that there?

A. I see that.

Q. Do I understand, Mr Yeung, that you in fact attended both of those meetings?

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A. Correct.

Q. And obviously, if asked by any of my learned friends or the Commissioners about those meetings, I trust you will be in a position to tell them what occurred; is that correct?

A. Yes, I can.

Q. Thank you very much, Mr Yeung. What's going to happen now is that you'll probably be questioned first by Mr Ian Pennicott QC, counsel for the Commission. Then various other lawyers in the room might ask you questions, and then I'll finish at the end, and of course the learned Chairman and Prof Hansford can ask you questions at any time that takes their fancy.

A. Yes.

MR BOULDING: Please stay there.

COMMISSIONER HANSFORD: Maybe I can take you up on that straightaway, Mr Boulding, by just asking: Mr Yeung, do you know if those two meetings were minuted?

A. According to my recollection, there's none. No meeting minutes.

COMMISSIONER HANSFORD: No meeting minutes. Thank you.

Questioning by MR PENNICOTT

MR PENNICOTT: That saved me one question.

Mr Yeung, good afternoon, and thank you very much for coming along to give evidence to the Commission. As

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Mr Boulding said, I'm acting for the Commission and I've got a few questions for you, not a great deal.

Mr Yeung, could I return immediately to the question of random sampling. Mr Boulding has helpfully indicated, through you, that you were at the meetings on 5 and 10 December 2018, referred to in Prof Yin's report.

So would it be right to conclude, Mr Yeung, that you had some fairly detailed involvement in the random sampling process?

A. Maybe I can explain the process. After we submitted the holistic report, there was a meeting held at the University of Hong Kong. The team led by a HKU professor started a 360 selection process. There was a BD representative, and someone from the police and RDO as well. They were there to witness the sampling process.

The HKU professor started by explaining the 360 methodology and what he was going to do about it, and he talked about the best compliance rule and what to watch out for. I was there to listen to all these. Then we started the sampling/selection exercise.

There were two occasions, so that's why there were two meetings. On the first day, it was the EWL slab, the 360 exercise. The second one, NSL slab. And 360

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selection would involve three steps. For the first, there's a D-wall panel. Second, the selection of the number of layers, bottom or top layer. Then the third one is selection -- setting up of the opening-up locations, from D-wall counting a certain distance to start the opening-up exercise.

So that's why it took two meetings to do all this.

Q. Yes. I understand. Mr Yeung, could I immediately take you to what I understand actually happened in terms of locations of the opening-up. Could I ask you, please, to be shown -- sir, I don't know whether you've got the hard copies of these, as I requested -- but could you go, please, to OU5.

Just so we know where we are, Mr Yeung, 3229 to start with, it's the front sheet of the holistic report.

Do you see that? It's just really to orient you, Mr Yeung.

A. (In English) Okay.

Q. If you would be good enough, please, then to be shown or given page 3306.

This is appendix B2, Mr Yeung, to the holistic report, and I imagine you might be familiar with this page; is that right?

A. (In English) Yes.

Q. Good. What this is showing, as I understand it,

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Mr Yeung, is the 28 panels, 28 locations, where opening-up was done?

A. (In English) Yes.

Q. And those 28 were chosen, as I understand it, by the random selection process that you've described?

A. Correct.

Q. What we can see here, as I understand it, is that there were 14 locations on the West Wall and 14 on the East Wall; yes?

A. (In English) Yes.

Q. What one also sees is that there were two locations only in the Hong Kong Coliseum area?

A. Correct.

Q. And no locations in area A?

A. Correct.

Q. If one goes -- first of all, the 28 locations, the number 28, that was proposed and adopted by whom? Was that Prof Yin's figure or somebody else's figure? Where did the 28 figure come from?

A. Location 28, in the holistic proposal submitted in October, we started with the figure 84. We estimated that the opening-up would be a length of 400mm, because the spacing of a coupler is 150mm, we thought that opening up location, we would be able to find three colours and therefore it would be 28 locations. That's

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how we arrived at the figure 28.

Q. Understood. Yes.

Then if we could go one page on in the bundle to 3307, Mr Yeung. What we see there is, as I understand it, the result of the random selection process, but this time in relation to the NSL slab.

A. Correct.

Q. Again, there are 28 locations, but this time they are not, as it were, equal on the east and west side; there's 11 on one side and 17 on the other. Do you see that?

A. I do.

Q. But, in common with the EWL slab, there are no locations in area A?

A. Yes, correct.

Q. Mr Yeung, are you able to confirm, from your involvement with the random selection process, that there was no conscious decision that area A should be excluded from this process, so is it just coincidence that both on the EWL and the NSL slab there are no locations in area A? What is the position?

A. Perhaps I should clarify here. In the random sampling, we included area A. It's just that before random sampling, we had boundary conditions. Area A in NSL had mass concrete, so it would be rather difficult to open

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up. And the same applies to EWL. Such information was relayed to Prof Yin.

So, in our sampling process, I'm sure he took into account this factor, and in the process of random sampling area A was included, but it's just that it was never chosen.

Q. Right. So your evidence is that it was included --

A. (In English) It was included, yes.

Q. -- but certain restraints or constraints or potential problems had been identified in area A which were conveyed to Prof Yin, and there was some factoring system devised by him, the upshot of which was no locations in area A were chosen?

A. We provided such information to the professor from HKU, and he included area A in the sampling process. It just turned out that area A had no locations included subsequently.

Q. Yes, because, Mr Yeung, I'm not a statistician, I'm not an engineer, sometimes I've got some common sense but not always, and what has happened here, rather ironically if one stands back, is that so far as the coupler connections is concerned, no suitable measures are being recommended in any area other than area A, the one area that's never been opened up and tested. Don't you find that just a little bit odd?

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A. Well, at the beginning, the sampling results came out in December, and then we didn't know what would happen after opening-up. Stage 3 analysis only started in June. So I can't explain that coincidence.

Q. All right.

CHAIRMAN: Sorry, it's not really a -- I suppose you may call it a coincidence. But, as I understand it, and correct me if I'm wrong, special measures are being recommended concerning the coupler connections in area A; okay?

A. (In English) Yes.

CHAIRMAN: But area A is the one area that nobody has looked into physically at all, and there just seems to be either an illogicality or an incomplete exercise.

A. Chairman, now that you mentioned, the results just came to me now. I just realised it now. When I was working on it -- well, looking back, yes, special measures were done for coupler connections in area A, but in the process I followed Prof Yin's sampling exercise in every step, and we adhere strictly in the opening-up exercise, and then we had the results and they were put to stage B analysis. We followed his instruction in all steps and then coincidentally area A needed special measures.

CHAIRMAN: Sorry, could you help me again: why did area A need special measures?

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A. Well, looking at the situation now, because area A had that capping beam factor, it had a combined effect on the coupler connection and taking into account the combined effects we have now 68 per cent strength reduction, and as a result special measures have to be done in area A.

CHAIRMAN: All right. Thank you.

MR PENNICOTT: Mr Yeung, I think there's no real dispute about this: the conclusion that suitable measures are required in area A has been arrived at through a process of arithmetical calculation, based upon a formula produced by Prof Yin?

A. Correct.

Q. Now, before we leave -- if you could go back, please, Mr Yeung, to page 3306. I just wonder if you could help me with one other matter while you are here. If you could keep that open.

A. (In English) Yes.

Q. And if we could look, please, at Prof Yin's report -- so that's ER1, tab 12, at paragraph 2.3.4, which in my version is at page 10.

Mr Yeung, would I be right in saying that you've had an opportunity of reading Prof Yin's report?

A. No, not yet [disputed interpretation].

Q. All right. Never mind. Let's see how we go.

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At paragraph -- this is, take it from me, part of Prof Yin's report.

Sorry, apparently he said "yes", I'm told.

COMMISSIONER HANSFORD: The transcript says, "No, not yet."

MR PENNICOTT: Quite.

COMMISSIONER HANSFORD: Can you ask the question again?

MR PENNICOTT: I certainly can.

Mr Yeung, have you had an opportunity of reading Prof Yin's report?

A. I do.

Q. That's better.

So, at paragraph 2.3.4, what the professor says is this:

"For EWL slab, the top connections available for sampling were significantly fewer than those at the soffits. It was considered more appropriate to select sampling units at each group of connections separately on a proportional basis to ensure the sampling units selected would be more proportionally distributed in the 4 groups of connections and that random samples from all 4 groups will be selected (to enhance representability of the samples). The number of sampling units to be selected from D-wall panels in each group of connections are tabulated below".

Now, the first point is -- I imagine there's no

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dispute -- the D-walls were broken down into four different groups?
A. Sure.
Q. They are listed in this table, and the total number of D-walls in each group is then listed, and then the number of samples within each group is then identified; do you see that?
A. (Nodded head).
Q. In the first group, which is the EWL East D-wall top connection, there are three; do you see that?
A. I do.
Q. If you look at the diagram, the plan on the other page, at OU3306, would I be right in suggesting that those three are the ones in the light pink colour, that is EH32, EH40 and EH48.
A. I can't confirm now.
Q. Right. If you look at the legend, it says, "Selected panels for purpose ii (top) (4 panels)"; do you see that?
A. I see that.
Q. What I was going to suggest was that the other one, to make up the four, was WH35, which is on the western side; do you see that?
A. I see that.
Q. Does that seem logical to you, Mr Yeung, that those are

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the four, the three I mentioned just now, plus WH35?
A. My feeling is that it looks like it.
Q. All right. Thank you very much. We can leave that topic there.
Could I then just ask you some questions about the task force group. Prof Hansford asked you earlier whether the two meetings to do with sampling, whether they were minuted.
Can I ask you another general question: were the task force group meetings minuted?
A. No meeting minutes.
Q. And how frequent were the task force group meetings?
A. Starting from December, they met about weekly, and then later on, when we were close to doing the HR report, starting from late April, they met on a daily basis.
Q. Yes. I've certainly seen a document which I can show you, Mr Yeung, which suggests that, for example, at the beginning of May 2019, there were four meetings in the space of about six days.
A. Yes. Well, every day, very long meetings.
Q. Whose idea, whose brainchild, was the setting up of the task force group?
A. The task force group was set up with this purpose. When we started opening-up, we had to submit documents, and those documents had to be approved by several parties,

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mainly by the police, BD, the approval authority and also RDO. First, I used email to seek their approval for execution of the works, and then back and forth it took too long to get the final approval, so I suggested that time would not allow us to proceed in that way, so we should set up a group with main task members to discuss main issues that needed amendment to proceed, and we would agree at those meetings to be implemented on site. That was the purpose of the task force group in early December.
Then, come April and May, we met more frequently because, according to the timeline, we had to submit the HR report by end of June. So it was important for us to sit down and discuss and complete the report.
Q. So the short answer to my question is that you suggested the setting up of the task force group; is that right?
A. I couldn't recall whether it came from me, but that was our common view, because rather than having back and forth email correspondence, why don't we sit down, that's better than communicating by email.
Q. Yes, I understand the rationale and that's very helpful, Mr Yeung.
Just a minor point. Why was it necessary for the police to be involved?
A. My impression is that when we started to think about

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opening-up, the police said it was sort of a crime scene. So many police officers were deployed to different locations at that time. When we did the opening-up, the police were there to witness the breaking up of the concrete. So it was a rather strict procedure, and the police would look at -- assess what has happened, they would take photos, and then they would also have to be involved in giving their approval.
So we had to meet on a daily basis, otherwise the process would be a very protracted one.
Q. Yes. I see. All right. And from the government's side, we know that the expert adviser team were -- either all of them or at least one of them, I'm not sure which -- also members of the task force group; that's right, is it?
A. They did not attend regularly. They would only attend the meeting on a need basis. When we first started, they were there, and then in the middle part when we met with some problems -- for example, when we reached the third layer, we couldn't do the excavation, and to ensure best compliance we invited HKU professor to advise on how to do the excavation. Then, when we decided on the 360 and also the pass and fail criteria, we also invited the professor to give us a briefing, to tell us how to assess whether a sample is a valid sample

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or an invalid sample.
Q. Okay. Mr Yeung, did the task force group itself have a hand in writing the holistic proposal or the verification proposal? Proposal, not report, the proposal.
A. We did not involve -- we did not involve ourselves in the proposal. The task force was set up in October.
Q. And did the task force group have a hand in actually compiling and writing the holistic report and the verification report?
A. When we drafted the holistic report and the VR report, we submitted our drafts to members of the task force for comments. We took into account their comments in the write-up of the report. So they were invited to comment in the process.
Q. Can I ask you, please, to look at a document with me. It's DD10. It's at 12771. It should be a letter of 13 June 2019 from Mr Chan of Highways or RDO to Mr Bayliss, the project director at MTR; do you see that?
A. Yes.
Q. And it's referring to "the holistic proposal for verification and assurance of as-constructed conditions" and so forth. Indeed, it's referring to the holistic proposal and the verification proposal. Do you see

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that?
A. Yes, I see that.
Q. And it's enclosing some minutes of a meeting that took place two days earlier, on 11 June, the minutes of which we do have, and they are at page 12773. Do you see that, Mr Yeung?
A. I see that.
Q. It's a meeting that you attended; do you see that?
A. That's correct.
Q. And this is the part of a process, as I understand it, Mr Yeung, whereby the MTR is discussing with government, the expert advisory team; we can see both the holistic report or drafts of the holistic report and drafts of the verification report?
A. That's correct.
Q. And this is not, as I understand it, this meeting, not a meeting of the task force, the task force group. This is a separate, as it were, ad hoc type of meeting?
A. That's correct.
Q. And at 1.1 the minutes say this:
"These parts of the draft final report were generally acceptable [that's stages 1 and 2] and the government would provide detailed textual comments for refinement."
Then two issues need to be resolved which are then

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identified.
If you look at the heading "Stage 3" and then you look at the minute at 1.3, what's recorded here -- and I suspect that these are minutes prepared by the government, obviously -- it says this:
"The government commented that the draft final report on stage 3 submitted ... on 3 June ... was not in proportion with the parts on stages 1 and 2, and lacked sufficient details for readers to understand the thinking process and how the conclusions were arrived at with sound justifications. The government further highlighted that the stage 3 task force had in the past two months painstakingly worked out a version of [the] draft final report (last version circulated on 30 May 2019) (TF version) which had largely been in agreement on the contents."
Is it right that the task force had itself painstakingly worked out a draft of the final report?
A. Maybe I need to do a clarification here. The task force -- well, when it was March or April, there were two teams, actually. One of them focused on stage 2 exercise and the report on that stage. Another task force or another team was tasked with looking at stage 3 assessment. I think this paragraph here refers to about stage 3. I was not very much involved in that part of

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the task force work. I was mainly involved in the one on stage 1 and stage 2.
Q. Who was involved in the stage 3 task force, Mr Yeung?
A. A colleague called Thomas.
Q. He was involved with members of the government and the EAT and the police as well; is that right?
A. I believe the police did not participate in the task force, stage 3 task force. RDO, BD and EAT were involved.
MR PENNICOTT: Thank you.
COMMISSIONER HANSFORD: Presumably this colleague Thomas -- was he at this meeting? Would he be listed in the list of attendees?
MR PENNICOTT: It could be Thomas Lau.
A. Yes, it's Thomas Lau.
COMMISSIONER HANSFORD: Thomas Lau. Thank you.
MR PENNICOTT: He's the chief design manager.
A. (Nodded head).
MR PENNICOTT: Thank you, sir.
Mr Yeung, without pressing you too far -- it's not my job to do so -- would you agree with this proposition, that the task force group, admittedly containing MTR representatives but also the government, the EAT in particular, had a significant influence on the contents of the holistic report and the verification

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report?
A. As I have said, the purpose of compiling the report would be to enable us to be code-compliant and to fulfil all BO requirements so that we can submit ultimately BA14. Then there were RDO and BD people there. They were from the approving authorities. Their comments had to be carefully considered and accepted by us.
Q. I'm told, Mr Yeung, that at the beginning of that answer you used the words, "You can say so." Is that correct?
A. Not according to my recollection. I don't think I said something like that.
MR PENNICOTT: All right. Just give me one moment. If there's anything else Mr Shieh wants to ask you about with those minutes, I'll leave him to do it.
Thank you very much, Mr Yeung. I have no further questions.
Cross-examination by MR SHIEH
MR SHIEH: Good afternoon, Mr Yeung. I represent Leighton. I have a few questions for you.
Would you agree with this proposition, that the task force group, admittedly containing MTR representatives but also the group, the EAT in particular, had a significant influence on the content of the holistic report and the verification report?
A. As I've said, BD and RDO are the approving authorities.

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The report would ultimately have to be accepted by them. Therefore, their comments and advice have to be seriously taken into consideration.
Q. Because, after all, the purpose of the report is to persuade the government departments to grant approval; correct?
A. The report would have to be submitted for their acceptance, ultimately, by RDO and BD.
Q. And the views or the content of the report had to find favour, for example, with the Buildings Department?
A. (Chinese spoken).
Q. "Acceptable to".
A. Yes, acceptable to BD authority.
Q. So let's be realistic about it: if the BD has indicated a certain preference for certain matters to be dealt with in a certain way, it would be unrealistic for the MTR to prepare the holistic report, other than to follow the views of the Buildings Department?
A. The task force meetings provided us with a forum to discuss the issues and also the comments offered and how to deal with them. It's not that we accept whatever the BD had told us. Sometimes we would revert to the BD about what we thought about that and they would accept it.
Q. If there is a point on which, despite your persuasion,

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the Buildings Department stood firm, then realistically the MTR is not going to prepare a holistic report which goes against a view which the Buildings Department had insisted upon; right?
A. If there were comments from the BD and the RDO on the report, the final report, very obviously they would not accept our final report submitted in such a way.
Q. Therefore, in order for the report to be acceptable to them, in case of conflict which cannot be resolved, the MTR would choose to go along with the view of the Buildings Department?
A. The purpose of the task force meeting is to give us opportunities to discuss it and to come up with an agreed option acceptable to all parties.
Q. I'll try again. In reality, if people can agree, then they can agree, but if deep inside you don't agree, then the Buildings Department persists, then you have no choice but to appear to agree?
A. Well, there must be a way to come up with an approach that is agreeable to all parties.
Q. Now, when Mr Pennicott was discussing area A with you, you mentioned that there were certain boundary conditions in area A which might make it difficult for the purpose of accessing area A to take samples; you remember that?

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A. I do.
Q. You mentioned that these boundary conditions were notified to Prof Yin?
A. Yes.
Q. Were you aware whether anything was done by Prof Yin to take those boundary conditions into account in designing -- or in deciding the precise locations for choosing samples?
A. That I am not clear, because at the meeting the professor from HKU explained the methodology, the workflow to us. I believe he had taken into account information I conveyed to him, including the fact that some areas would be inaccessible and could not be done. So I gave him such information. As regards how he did it in his programme, I don't know.
Q. Help me with this. In theory, are you suggesting that area A is as available for sample-taking as any other area, in theory? Is that what you understand to be the case?
A. In my impression, in selecting samples area A was one of the locations included. Samples that could be chosen were limited, but then it was included anyway.
Q. What do you mean by "samples which could be chosen were limited"?
A. Well, we took random sampling of the 200-odd panels and

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area A was included.
Q. But you were not aware whether anything was done in designing the actual sampling so that the chances of area A being picked might be lower?
A. How he did it, I am not clear. I only told the professor information I had, that area A was a bit difficult. And as regards the D-walls, I told him that we changed couplers to through bars at certain locations and he had that information from me too.
Q. Can I ask you to look at the MTRC report. COI 1 at paragraph 5.
Here, it says:
"It is important to note at the outset that both the holistic proposal and the holistic report were not intended to address issues from only a public safety perspective. Rather, they were prepared to address the issues and non-conformances identified in the construction of the Hung Hom Station Extension from a code, contractual and statutory compliance perspective with a view to obtaining the requisite approval from the relevant authorities ..."
Do you see that sentence?
A. I do.
Q. And you see the reference to "code, contractual and statutory compliance perspective"; do you see that?

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A. I do.
Q. Now, remember that concept. We have used the loose terminology of "code compliance" in this hearing, but let's take that to be a shortform for "code, contractual and statutory compliance"; okay?
A. Mmm.
Q. Can I then ask you to look at paragraph 36 of the same report:
"Between December 2018 and January 2019, a number of meetings were held and attended ... to discuss the acceptance criteria for assessing whether a coupler connection passed or failed for the purpose of the binomial analysis. Having discussed the matter at length, the government advised and MTRCL adopted an engagement length of no less than 40 millimetres by direct measurement and no less than 37 millimetres by PAUT as the acceptance criteria ..."
Do you see that?
A. Yes.
Q. You were present at those meetings?
A. I attended some but not all. I can't recall exactly what meetings I had attended.
Q. Fair enough. Can you look at paragraph 34:
"Insofar as the acceptance criteria are concerned, by a press release dated 24 December 2018 the government

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stated its position that, according to the information from BOSA, the proper installation requirements of a coupler were: (i) there should be a maximum of two full threads exposed; and, (ii) the embedded length of the threaded steel bar inside the coupler should be at least 40 millimetres in length. The government considered that the couplers should be installed in accordance with the above requirements."
Do you see that?
A. I do.
Q. Now, at the time you prepared the holistic proposal, were you aware of this position publicly pronounced by the government?
A. I didn't know when we submitted the holistic proposal in December, because the press release was not yet out.
Q. But as we can see from paragraph 36 the government in fact put forth advice: "an engagement length of no less 40 millimetres by direct measurement and no less than 37 millimetres by PAUT as the acceptance criteria for the purpose of the binomial analysis."
So, at the very least, by the time of the meetings, you were aware that that was the advice or position taken by the government?
A. Correct.
Q. Now, tell us if you do not know the answer. Under what

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code, contract or statute is the requirement of 40 millimetres embedded length laid down?
A. According to my understanding, within BD, there's a data bank of approved material, and BOSA couplers was in that data bank kept by BD, and I believe the information by BD is that acceptable coupler should mean 40mm full engagement before it is considered fully in compliance.
Q. Does the data bank -- again if you do not know the answer, tell us. Is the data bank about BOSA couplers a code, a contract or a statute?
A. I am not sure what area it falls under. I am not sure.
Q. Can I ask you to look at COI 1. Can we look at the COI 1 bundle C10, at 7011.
This is a BOSA pamphlet or document. Can you look at 7013. Have you seen this BOSA document?
A. I do.
Q. "Summary":
"After connection has been fully tightened, one should see a maximum of two full threads to ensure a proper installation."
Do you see that?
A. I do.
Q. Can you turn to 7016. I think one is dealing with ductile, the other is non-ductile, but it doesn't matter because here we also see:

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"After connection has been fully tightened, one should see a maximum of two full threads to ensure a proper installation."

Do you see that?

A. I do.

Q. Are you aware of any specification in the BOSA materials which stipulated 40 millimetres' embedded length? It may not be here. I'm just asking you as a matter of fact. You don't have to feel obliged to give an answer, because it may not be within your area of knowledge.

A. Well, on 10 January, there was a letter from BD, and before that I had never seen this figure, 40mm.

Q. So you relied on the say-so of Buildings Department to guide you as to what you thought to be code requirements; correct?

A. Well, code requirements -- I think it's very correct to rely on BD's advice.

Q. But you would accept, would you not, the BD may be right or it may be wrong in its understanding of requirements of code or statute or contract; correct?

A. In the letter from BD, BOSA's reply to BD was attached, to clarify what should be the status of a proper installation of a coupler, and it mentioned that full engagement, it should be ten threads, ie 40mm.

Q. That may or may not be what BOSA said, but in terms of

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the regulatory framework, such as contract, code or statute, where does a BOSA specification fit in?

Let me start again. As a construction professional, are you aware of any code of practice, whatever, which stipulates a requirement to comply with 40 millimetres' embedded length or two threads maximum exposed?

A. I'm not aware of such code requirements. As I said, BOSA was a material case. For any instrument to obtain BD's approval, it would apply from BD, and of course the catalogue would be given to BD, telling it, "This is my product and I want it to be an approved material." And of course it would have mentioned what is meant by compliance, and BD would give them their requirements to meet the tensile strength, the cyclic loading test, elongation, and I believe BOSA's materials would achieve 40mm full engagement before it can achieve this criteria.

Q. I've asked this question of your colleague Mr Ng this morning, but I will ask you again. You are aware that this Commission of Inquiry has heard some evidence from engineering experts about the extent of embedded length required to achieve safety; are you aware of that?

A. Yes, I do.

Q. Are you aware that the experts have given various numbers in terms of embedded length as to the minimum

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embedded length required to achieve safety?

A. I do.

Q. 26-point-something millimetres, 28; you've heard of those numbers?

A. Yes.

Q. Unconstrained by what BOSA stipulated in the document -- they have looked at some results and they have expressed some views -- you are aware of that?

A. Yes.

Q. But then, for the purpose of arriving at an acceptance criterion, have you, as a matter of fact, had any regard to the views of experts who expressed their views on the minimum embedded length required, or have you not?

A. I'm aware of their views.

Q. Have you had regard to those or have you not had regard to those?

A. On the question of strength, well, it may be safe, but it will not be able to meet the elongation requirement.

Q. Is elongation requirement a relevant aspect for the purpose of the Hung Hom Station?

A. This requirement is stipulated in the BD requirement, in the acceptance letter on the use of mechanical couplers. It's one of the requirements in that document. We have to fulfil it.

Q. You would accept, would you not, that what may be the

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requirement of Buildings Department, in terms of what you call code compliance, may not be the same as what is required in terms of safety?

A. If you are talking about safety without talking about code compliance, you can say so.

MR SHIEH: Thank you very much.

I have no further questions.

MR KHAW: Chairman, a few questions. I wonder whether it's a convenient time for a break.

MR PENNICOTT: I think so.

CHAIRMAN: Yes. That sounds good. Quarter of an hour.

(3.49 pm)

(A short adjournment)

(4.09 pm)

Cross-examination by MR KHAW

MR KHAW: I am acting for the government. There is just one matter I wish to very briefly clarify with you.

You have told us that area A actually has formed part of the sampling exercise; is that correct?

A. Yes.

Q. When you discussed area A with other counsel, you also told us that there are some, I think in your words, boundary restrictions regarding area A; is that correct?

A. Yes.

Q. When you talk about the boundary restrictions, in fact

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you are talking about the fact that area A is not accessible due to blockage of access by some existing mass concrete; is that correct?
A. Yes.
Q. Just as a matter of illustration, if I can ask you to take a look at Original Inquiry bundle H534. If we can blow it up a little bit and just focus on the middle, we can some shaded area described as "Mass concrete fill", and then there's a density number; do you see that?
A. Yes.
Q. By looking at this document, can you explain what you said about the blockage of access by existing mass concrete infill between EWL slab and NSL slab?
A. Now, in the diagram, you can see places like near the D-wall, the whole place is filled up by mass concrete fill. In other words, if we were to open up the soffit side of the slab, theoretically speaking we had to cut open the mass concrete and that was one of the constraints. Similar situation with EWL level, there was blockage by part of the screen wall and the area was not accessible for our opening-up exercise.
Q. Sorry, may I have a moment?
You just referred to a possible case that if you were to open up the soffit side of the slabs. Can you actually point to that side by referring to this

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document?
A. Here (indicating).
Q. And what about NSL, the same part regarding NSL; can you ...
A. Here (indicating).
NSL is at this location (indicating).
Q. I thought it should be the lower --
A. (In English) The lower, sorry.
Q. Yes, that's the NSL.
A. Correct.
MR KHAW: Thank you. I have no further questions.
MR BOULDING: Sir, I have no re-examination, unless you have any questions.
Questioning by THE COMMISSIONERS
COMMISSIONER HANSFORD: Yes, I've got one.
So, Mr Yeung, on the report, the MTR report on statistical analysis relating to the Original Inquiry, you were one of the authors of this report, I believe; is that correct?
A. (In English) Holistic report, yes.
COMMISSIONER HANSFORD: Can we turn to it, and can we turn to paragraph 48, page 19.
A. Yes.
COMMISSIONER HANSFORD: As I understand it, reading paragraph 48, it's telling us that since the submission

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of the holistic report, MTR is looking at optimising the recommended suitable measures.
Then if we go over the page, we've got items (1), (2) and (3), where the suitable measures is likely to be reduced in area A from 65 metres to 25 metres; in shear links, there's a reduction or likely reduction from not more than 2.5 per cent to approximately 1 per cent; and in the construction joints, the extent of the measures will likely be the same as that recommended in the holistic report.
What has caused this reduction? Where has this reduction come from?
A. In our stage 3 assessment, we refer to the preliminary assessment, that for area A we need an area of 65 by 25 metres for suitable measures. But in the detailed design stage, to the BD, the DDC, design team colleagues made some adjustment to the moment distribution, so that the reduction can be introduced. That's one of the methods suggested.
COMMISSIONER HANSFORD: So did you say these suggestions are being made by the BD design team?
A. No, Atkins, MTR's DDC, our people. Detailed design consultant.
COMMISSIONER HANSFORD: DDC. So these items are still under consideration, are they?

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A. Correct.
CHAIRMAN: Sorry, so Atkins are considering making these design alterations?
A. Atkins is doing some fine-tuning of the design calculation to minimise the area of disturbance as far as possible.
CHAIRMAN: Okay.
COMMISSIONER HANSFORD: Has that been approved by BD?
A. Not yet. We are still in the submission stage.
COMMISSIONER HANSFORD: Okay.
CHAIRMAN: But you are submitting?
A. (In English) That's right.
CHAIRMAN: Thank you.
COMMISSIONER HANSFORD: Thank you.
MR BOULDING: Thank you very much, Mr Yeung.
That's our evidence for today, Chairman.
CHAIRMAN: Thank you very much.
Thank you very much indeed. Thank you for attending.
WITNESS: (In English) Thank you.
CHAIRMAN: You've been very helpful and you are excused now. Thank you.
WITNESS: (In English) Thank you.
(The witness was released)
MR PENNICOTT: Sir, on that very last point that

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Prof Hansford raised with the witness, of course the Commission has, through MTRC, been advised of the process by which the design of the suitable measures is being refined from time to time, and obviously the Commission has asked to be kept informed of progress and what is happening, and I think, as I understand it, that is indeed what is happening at the moment.

I suppose there is a hope, perhaps, rather than expectation that by the time we come to hear the structural engineering evidence in January, perhaps things will have moved on, perhaps crystallised in a much more certain sense than they are at the moment. As I say, that's perhaps more hope than expectation, but let's leave our fingers crossed.

MR BOULDING: Sir, just on that point, if I can remind you and my learned friend about Mr Ng's witness statement. In paragraph 25 he says:

"I note the Commission has asked to be kept updated on the design and implementation of the suitable measures. MTR will do so and has already provided an initial update. Further updates will be provided on a monthly basis, as requested."

I can obviously see that this is very important, and those behind me no doubt will impress upon MTR how important it is that, if we can improve upon that, we

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will do that, for obvious reasons.

CHAIRMAN: Thank you.

MR PENNICOTT: That's what I had in mind. Thank you very much for the references.

CHAIRMAN: Thank you.

May I also mention -- with Mr Ng, I mentioned that he had been one of the MTR staff members who had escorted Prof Hansford and myself on a visit, and Mr Yeung was another. It's my fault for not mentioning it earlier. But again, along with all the other staff members, he dealt with the two of us with impeccable professionalism and at arm's length in all respects. Thank you.

H O U S E K E E P I N G

Tomorrow morning I think we are not sitting, is that right, because we are waiting for the contact with London?

MR PENNICOTT: Sir, that's right, which as presently advised will be at 3 o'clock.

CHAIRMAN: And how -- I know it's a difficult one but how long do you imagine you are likely to be?

MR PENNICOTT: Sir, can I mention this. We have invited the parties to indicate how long they will be in cross-examination of -- let's start with Dr Wells because that's obviously the immediate issue. The

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government have indicated that they will be about two and a half hours with Dr Wells. I understand that the MTR have verbally informed us today that they will be between zero and 30 minutes, depending, I imagine, on the cross-examination of the government.

CHAIRMAN: Okay.

MR PENNICOTT: I'm bound to say I have not got a clue how long I'm going to be, other than I don't think I'm going to be very long. I would suspect maybe 15 minutes to half an hour, because I'm very much going to be listening to the government's cross-examination of Dr Wells.

CHAIRMAN: Yes.

MR PENNICOTT: I've got my list of points that I want to raise but hopefully I'll be ticking them off as Mr Khaw is cross-examining so that I won't need to trouble ...

CHAIRMAN: All right, so ...?

MR PENNICOTT: Sir, what I think the upshot of that probably means is that we are, unfortunately, probably going to have to trouble Dr Wells on Thursday as well as tomorrow, but obviously we will see how things go tomorrow.

MR BOULDING: Sir, just on that, can I put down a marker and reserve my position. It's absolutely right that at the moment, it looks to me as though it's nought to

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30 minutes so far as my questions are concerned, but you will be aware of the fact that you've made a direction that Dr Wells produces all sorts of information by 6 o'clock this evening, and conceivably that might affect what I question on.

CHAIRMAN: Of course.

MR BOULDING: And it may well be that my learned friends for the government think that it could affect what they ask him about as well. That's a matter for them. But I put down my marker.

CHAIRMAN: Yes, thank you.

Mr Khaw?

MR KHAW: Mr Chairman, obviously on that point it really depends on the volume of further information that we receive tonight, but we are keen to start because we don't want to waste time -- we are keen to start tomorrow afternoon. But of course subject to what we receive from Dr Wells this evening, there's just a possibility that I wish to also put a marker down, and that is if we cannot go through all the materials provided by Dr Wells tomorrow and also Thursday, there's a possibility that we may need to continue cross-examining him in October, if there can be a time slot available to us. That's just a possibility. But we will try to finish as much as we could, after

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digesting the materials that we receive tonight.
CHAIRMAN: All right. Thank you very much.
When, then, would we be thinking of finishing tomorrow with Dr Wells?
MR PENNICOTT: Sir, my understanding is we are only sitting until 5 o'clock. We have two hours from 3 o'clock until 5 o'clock tomorrow afternoon, and then the same -- sir, there are practical problems with sitting beyond 5 o'clock tomorrow evening. I don't think those same problems arise on Thursday, should it be necessary, but there are practical problems so far as tomorrow is concerned.
CHAIRMAN: All right.
MR PENNICOTT: So what one is hoping for, if there's all plain sailing and neither the government nor MTRC are prejudiced by the information that's going to come through from Dr Wells this evening, we trust, is that we will have Dr Wells tomorrow afternoon and it sounds like Thursday afternoon as well, and then on Friday we will have Prof Yin. That's the ideal situation and then all the statistical evidence will be finished.
The problem will be if we run into difficulties, for whatever reason, on Dr Wells, because the question then is what do we do with Dr Wells if he's got to be held over and then what do we do about Prof Yin? That is my

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concern. But let's not worry about those problems until they arise.
CHAIRMAN: On Thursday we've got more elasticity, have we in time?
MR PENNICOTT: I'm afraid we have, sir. It's going to be another 3 o'clock start on Thursday.
CHAIRMAN: Then we can go through until 6.30 if necessary?
MR PENNICOTT: I don't believe or I haven't been advised any practical problems arise on Thursday but I have been advised there are practical problems tomorrow.
CHAIRMAN: All right.
MR PENNICOTT: What I had discussed with Mr Khaw, albeit briefly, was whether there was any sense in trying to interpose Prof Yin sort of in the middle of Dr Wells, but it seemed to me that was far too complicated and might give rise to all sorts of issues that will make things worse rather than better.
CHAIRMAN: No. I agree with that.
So the way forward for this week then is tomorrow we start at 3.00, so everybody be here at, say, 2.30, and -- remind me, have we done a videolink before? I think we have. We had a couple of the Australian gentleman from Leightons, and we've done London.
MR PENNICOTT: The videolink is being organised by the Hong Kong Trade Office in London, which I think is the

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same location as was used previously, so fingers crossed.
CHAIRMAN: Okay. So that's tomorrow afternoon then. If everybody could be here at about 2.30 so we can get started.
And then again on Thursday --
MR PENNICOTT: Similarly.
CHAIRMAN: -- similarly. Then Friday the full day for the professor?
MR PENNICOTT: We hope, if all goes smoothly.
CHAIRMAN: Okay. Good. Then that should deal with what we have termed the statistical evidence.
MR PENNICOTT: Yes, sir.
CHAIRMAN: Excellent.
Thank you very much indeed. Tomorrow, 2.30.
(4.29 pm)
(The hearing adjourned until 2.30 pm the following day)

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