

1 Friday, 30 November 2018

2 (10.08 am)

3 MR SO: Good morning, Mr Chairman and Mr Professor. I do
4 apologise.

5 CHAIRMAN: That's all right.

6 MR STEPHEN JOHN LUMB (on former affirmation)

7 Cross-examination by MR KHAW

8 MR KHAW: Good morning.

9 A. Good morning.

10 Q. I represent the government.

11 Yesterday, in answer to Mr Pennicott's question, you
12 told us your view was that couplers in the EWL slab and
13 also those connecting the slabs to the diaphragm wall
14 were non-ductile couplers. Do you remember that?

15 A. I do, yes.

16 Q. Do you still maintain this view today?

17 A. I do, yes.

18 Q. If I can just clarify this issue with you and then we
19 move on to other topics. If we can take a look at the
20 QSP, which I believe other counsel also referred you to
21 yesterday. It's at bundle H9, page 4262.

22 This is a letter from MTR, submitting the QSP to the
23 government, and you can see from this letter,
24 paragraph 1, it says the submission related to quality
25 supervision plan, submission of the proposed ductility
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1 coupler for diaphragm wall reinforcement cage and slab
2 construction at Hung Hom Station. Do you see that?

3 A. Mm-hmm.

4 Q. If we can just move to 4265, where we can see the actual
5 QSP submitted, Mr Lumb, you would see that it is for
6 installation of couplers, and also it specifies type II
7 ductility coupler; do you see that?

8 A. Yes.

9 Q. Thank you. Just to clarify this with you. If we go to
10 the material from BOSA -- well, maybe we can have a look
11 at 4267 as well. You will see from the introduction to
12 the quality supervision plan, the first paragraph, for
13 the purpose of this document we will see "Type II
14 (ductility coupler", do you see that, "use in any
15 location)"?

16 A. Yes.

17 Q. If we can then have a look at 4056 of the same bundle.
18 This is the material submission also provided by MTR,
19 whereby MTR provided materials in relation to the
20 proposed coupler.

21 If we can go to 4058, we can see a clear distinction
22 between type I non-ductility coupler and type II
23 ductility coupler. So, in that case, it's quite clear
24 to me that, according to the QSP, in relation to the
25 construction of diaphragm wall and slabs, type II

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1 couplers, ie ductility couplers, would need to be used;
2 would you agree?

3 A. So, I guess just to clarify, my opinion is based on,
4 one, the QSP that I have seen, that was submitted from
5 Leighton to MTR. I haven't seen what was submitted from
6 MTR on to government, so I can't comment on that. And
7 the other reason for formulating that opinion is based
8 on what the Hong Kong Code of Practice for the
9 structural use of concrete says in terms of the
10 definition of "ductility", and the definition of
11 "ductility" refers only, in my reading of the code, to
12 columns and beams. There is no reference to ductility
13 requirements in the code for slabs. So that's
14 a technical viewpoint on what ductility means and to
15 which elements of the structure it actually applies to.

16 Q. Thank you.

17 If we can just take you very briefly to two
18 drawings, just to complete this point. If we can have
19 a look at H2/440.

20 These are certain notes attached to the drawings
21 submitted by Atkins on behalf of MTR to the Buildings
22 Department.

23 440, if we can just blow up the part with the
24 diagram in the middle on the right, under the heading,
25 "Notes on diaphragm wall couplers", do you see,

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1 "Couplers positioned within the zone shown below shall
2 be classified as ductility couplers", and also we can
3 see from the diagram there's "Ductility zones" and then
4 2, in relation to "Ductility couplers shall comply with
5 [the following conditions]"; do you see that?

6 A. Yes.

7 Q. Have you ever come across this kind of drawing?

8 A. I've seen this drawing.

9 Q. Maybe just as an additional example, if we can take
10 a look at --

11 A. Sorry, can I just comment on that drawing?

12 Q. Yes, of course.

13 A. Again, my opinion is that this is referring to the
14 vertical couplers in the diaphragm wall. You will note
15 there is no shading or hatching of the slab which
16 indicates any element in the slab to have any ductility
17 requirement, and if you look at the diagram beneath
18 note 4, you will also note that it is referring to the
19 vertical couplers in the diaphragm wall. There is no
20 reference to any horizontal couplers into the slab.

21 Q. I see. But you agree with me that the couplers referred
22 to here are the couplers for construction of the
23 diaphragm wall?

24 A. The vertical couplers, yes, not the horizontal couplers.

25 Q. Right.

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1 CHAIRMAN: Sorry, do we actually have a clear record

2 anywhere of what type of couplers were in fact

3 installed? Because that would seem to --

4 A. I can comment --

5 CHAIRMAN: -- settle the issue, rather than exploring.

6 A. Maybe I can help out on that?

7 CHAIRMAN: Yes, thank you.

8 A. I believe ductility couplers were used everywhere, in
9 ductile areas and non-ductile areas. But the fact that
10 you use a ductile coupler doesn't mean it doesn't apply
11 to a non-ductile zone. The requirements for ductility
12 couplers are more onerous, so I believe the project just
13 used -- they ordered purely ductile couplers for the
14 entire job.

15 CHAIRMAN: Thank you.

16 COMMISSIONER HANSFORD: Sorry, just so that I can understand
17 that -- so what you're saying is the actual piece of kit
18 is capable of operating with ductility requirements or
19 not, but actually the requirement for ductility, in your
20 understanding -- and you use this drawing as part of the
21 evidence -- is just for the vertical ones?

22 A. That is my understanding of the situation, yes, and
23 I believe supported by the Concrete Code as well.

24 COMMISSIONER HANSFORD: Thank you.

25 MR KHAW: If we can just explore a little bit further -- on

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1 this particular page, if we scroll down to note 4:

2 "As-built position of couplers to slabs shall
3 [remain] minimum cover and shall be a maximum of 15mm
4 deeper into the slab than the theoretical level of the
5 connecting reinforcement."

6 Then we see ductility couplers referred to in the
7 diagram; do you see that?

8 A. Yes. That's defining the minimum cover to the slab
9 couplers, yes.

10 Q. So may I take it that the couplers used for the slabs
11 are ductility couplers?

12 A. I don't believe it says that. I think it's defining the
13 position of those couplers. The note is under "Notes on
14 diaphragm wall couplers", so that note defines the
15 setting out of those couplers.

16 COMMISSIONER HANSFORD: Is that diagram, as you understand
17 it, a section, or is that a plan?

18 A. The diagram beneath --

19 COMMISSIONER HANSFORD: The diagram at the bottom.

20 A. That, to me, is a section through the diaphragm wall,
21 with the diaphragm wall running vertically.

22 COMMISSIONER HANSFORD: Right. Okay. Thank you.

23 MR KHAW: If we can just take a look at another drawing at
24 H4/725, maybe that will give us a clearer picture.

25 If we look at the diagram in the middle -- sorry,

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1 it's under this heading of "Proposed cut-off level" --
2 yes, this one, this diagram, and you can blow it up
3 a little bit. Yes, the diagram in the middle. We can
4 see that those areas in rectangular shape, if we look at
5 the legend at the right, the black rectangle shape
6 matter refers to ductility coupler.

7 And if we go back to the diagram in the middle, we
8 can see various ductility couplers, and some are
9 vertically shown and some are horizontally shown, and
10 they have been connected at EWL slabs.

11 So, upon seeing this particular diagram, would you
12 still maintain your view that non-ductile couplers were
13 used for the construction of the platform slab, EWL
14 slab?

15 A. I haven't seen this diagram before.

16 Q. Right.

17 A. But this would show, for this drawing, that those
18 couplers are ductility couplers, in accordance with the
19 legend.

20 Q. Yes.

21 A. I guess my question would be, again, per code are they
22 ductility couplers. I think you need to read also the
23 Code of Practice.

24 Q. So notwithstanding what we have seen from the actual
25 QSP's requirements, notwithstanding what we have seen

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1 from the drawing, you still maintain your view that it's
2 the non-ductile couplers which were used for the
3 construction of the slabs?

4 A. As a structural engineer, my opinion, based on the Code
5 of Practice, is that non-ductility couplers are -- or
6 shall I say ductility couplers are not required in this
7 particular application.

8 CHAIRMAN: But they were in fact used, to the best of your
9 knowledge?

10 A. They were used. They were used across the job.

11 CHAIRMAN: Yes.

12 MR KHAW: Thank you. So, in that case, do I take it from
13 you, Mr Lumb, that you do not maintain your view which
14 was given yesterday that couplers in the EWL slab and
15 those connecting slabs to diaphragm wall were
16 non-ductile couplers only?

17 A. No, I maintain my opinion, as a structural engineer,
18 that ductility couplers are not required. I also
19 commented that, as a company, I believe that ductility
20 couplers were used generally, across the job. And
21 I think the reason behind that is you don't want to
22 procure some couplers which are ductile, some couplers
23 which are non-ductile, because clearly then there's
24 a huge risk that they get mixed or they end up in the
25 wrong place.

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1 Q. But leaving aside your opinion as a structural engineer,
2 simply as a matter of fact, coming back to this
3 particular project, you agree that ductile couplers were
4 used?

5 A. This drawing shows ductile couplers.

6 Q. Thank you.

7 Now, we all know that you were asked to lead
8 an urgent review as a result of Mr Jason Poon's email
9 dated 6 January 2017.

10 A. Yes.

11 Q. And it's your evidence that Mr Anthony Zervaas asked you
12 to conduct that review?

13 A. It was Mr Paul Freeman together with Mr Zervaas, yes.

14 Q. Yes, thank you.

15 One matter I am somewhat interested to know is this.
16 In Leighton, is there any system or mechanism which
17 deals with complaints like this one, like the one lodged
18 by Mr Jason Poon?

19 A. This is the first time I've experienced this situation
20 in my career with Leighton.

21 Q. Right. So, in view of your experience, you have never
22 been asked to conduct any similar review like this one?

23 A. Not of this nature. I've been asked to conduct other
24 reviews of I guess a more technical nature, but not this
25 style.

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1 Q. Not a review arising from an allegation regarding
2 malpractice, so to speak?

3 A. No.

4 Q. Thank you. So we can say that this review was a rather
5 special, ad hoc review for this particular occasion?

6 A. Correct.

7 Q. You remember yesterday China Tech's lawyer asked you why
8 you did not consider it necessary to interview Jason
9 Poon, and you gave us the answer: it was an internal
10 review, and you also told us that you -- quoting from
11 your words, you had read and digested Jason Poon's
12 email, so you knew what the allegation was about. Do
13 you remember that?

14 A. Yes.

15 Q. If we can take a look at the email forwarded to you:
16 C35/26683. This is the email from Jason Poon which was
17 forwarded to you, and we can see from this email that
18 there were two photographs attached, at 26685, 26686; do
19 you see that?

20 A. Yes.

21 Q. So I take it that when you received this email from
22 Jason Poon, which was forwarded to you by Mr Zervaas,
23 the two photographs were attached to the email that you
24 received; is that right?

25 A. Correct.

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1 Q. I would like to know if, during your investigation,
2 whether you actually went on to check the exact location
3 as shown on each of those photographs. Do you know?

4 A. The location, no, but the date is the only, I guess,
5 evidence as to where it might be.

6 Q. Yes. We can all see the date from the photograph. But
7 somebody was making a complaint that some workers were
8 doing things which we do not usually see on the site, so
9 photographs were shown to you. Did you find it
10 necessary to at least ascertain where was the location
11 as shown in any of these pictures?

12 A. I believe so, yes.

13 Q. But you did not?

14 A. No, I believe we -- my colleague did look at the
15 particular area or zone.

16 Q. No. Wait a minute. You were the investigator assigned.
17 I'm asking whether you actually, you yourself, made any
18 enquiry with anybody in Leighton as to, "Hey, where is
19 this location as shown in the picture?" Did you raise
20 that enquiry?

21 A. Me personally?

22 Q. Yes.

23 A. No, but I gave the direction to my investigator or the
24 guy who was helping me carry out the review.

25 CHAIRMAN: Both, perhaps? Did you personally do it or did
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1 you give an instruction?

2 A. I didn't personally, but part of the review, based
3 around this date, September, was to look at the records
4 around that date, in terms of the inspection forms, the
5 RISC forms, the quality control checklist.

6 MR KHAW: Right. So, just to understand your answer
7 correctly -- so you yourself did not give any particular
8 instructions to anyone in Leighton as to where is the
9 location as shown in any of these pictures; am I right?

10 A. I asked my colleague -- clearly this was an event in
11 September -- to take a look at the records for
12 particularly this period, September period.

13 Q. Yes. Mr Lumb, I'm not talking about the record. We
14 will deal with the records later. I'm only interested
15 to know, when you saw this picture, did you raise
16 an enquiry with anyone in Leighton as to where was the
17 exact location as shown in any of these pictures? It's
18 as simple as that.

19 A. We looked at the concrete pour dates and the CJs, so
20 from that you can deduce which area it may be.

21 Q. So which area, according to your understanding?

22 A. Off the top of my head, I don't know.

23 Q. You don't know?

24 A. No.

25 Q. Did anyone tell you? Did anyone tell you what was the
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1 area?

2 A. I can't recall.

3 Q. Thank you.

4 CHAIRMAN: Sorry, so there was no mention in the report,
5 therefore, of the estimated location of these
6 photographs?

7 A. It's not mentioned in the report.

8 MR KHAW: Thank you. Upon seeing these pictures, did you
9 also check who are those workers, who were they working
10 for; did you?

11 A. No. Again, I'd like to point out that the report was
12 carried out over a short period, it was two and a half
13 days that we had to go from zero to an end product.
14 Of course it's very easy to look back now and say, "We
15 should have done this, could have done that, did you do
16 this?" But the fact is we carried out the reports, to
17 the best of our ability, within the period of time that
18 we were given. We didn't have time to carry out
19 a forensic investigation such as is being carried out in
20 this Commission.

21 CHAIRMAN: Could I ask, on that subject, why was it
22 necessary that it be an urgent report?

23 A. That was the period that we were given. I was tasked to
24 go to the project, speak to the people we could, look at
25 our systems, quality systems, our procedures, and have

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1 a report back to the project within one week of the
2 initial request.

3 CHAIRMAN: Okay. It's just that it may be suggested that
4 an urgent report is normally needed so that you can act
5 upon it to stop something that is ongoing, whereas this
6 appears to have been, in large measure, historical, and
7 so therefore perhaps the urgency is not required. I may
8 be wrong there, and I appreciate you've also got
9 pressures upon you all to get on with the bigger job at
10 hand.

11 A. I can't comment on the period, other than that was the
12 period I was given by Mr Freeman and Mr Zervaas, who
13 asked me to carry out the review.

14 CHAIRMAN: Okay.

15 MR KHAW: Thank you. Mr Lumb, just going back to my earlier
16 question, I'm not talking about any forensic exercise.
17 I'm not talking about any DNA test or anything like
18 that. I'm just asking, I'm just interested to know,
19 upon seeing these pictures, did you care to at least
20 find out who those workers were?

21 A. No.

22 Q. Thank you.

23 We have heard your exchange with Mr Pennicott
24 regarding the QSP requirements, and I believe a lot of
25 people in this room would find that the QSP requirements

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1 have already been referred to ad nauseam. But if I may
2 just go back to one point in relation to the QSP
3 requirements. It's H9/4269.

4 We have seen this many times, but if I may just ask
5 you to confirm that during the investigation process,
6 you were obviously aware of the requirement in relation
7 to the level of supervision and inspection required for
8 the coupler installation works; am I right?

9 A. Not during the original review, but when requested by
10 MTR to make reference to the statutory requirements,
11 then we became aware of the requirements.

12 Q. I see.

13 I can put it this way. You were not aware of the
14 requirement when you prepared your first report, but you
15 were certainly aware of this requirement at the time
16 when you prepared your final report, when you put in the
17 statutory requirements?

18 A. Yes.

19 Q. So, at the time when you prepared your final report, you
20 were aware of this full-time and continuous supervision.
21 Do you, as head of engineering, does this requirement
22 mean that when the activities for splicing assemblies
23 on site were carried out, staff from Leighton would need
24 to watch and supervise such activities closely?

25 A. So, again, just to go back to what I said yesterday, at
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1 the time of carrying out the review the QSP that we saw
2 and which we attached to the report was for the
3 diaphragm wall and barrettes. We didn't see or attach
4 anything at the time that we saw was relevant to the
5 slabs.

6 So, in terms of the level of supervision you are
7 requesting now, at the time I couldn't comment on that.
8 They were non-ductility couplers, so it was a T1 -- it
9 was a T1 requirement which was covered by our normal
10 quality supervision requirements.

11 Q. Yes. So, at the time when you compiled the final
12 report, what you are saying is that even though at that
13 time you were aware of these requirements under the QSP,
14 but you were under the impression that these
15 requirements only applied to diaphragm walls but not
16 platform slabs?

17 A. At the time, yes.

18 Q. Do you still maintain this view now, after seeing --
19 after having a chance to see all the relevant documents
20 again?

21 A. I maintain my view about ductility, yes.

22 Q. What about the requirement that, insofar as level of
23 supervision and inspection is concerned, the
24 requirements apply to both diaphragm wall and platform
25 slabs; would you agree now?

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1 A. I think it goes back to the question of are the couplers
2 ductility couplers or not in the slabs. We had the
3 discussion earlier about my opinion and you showed me
4 other documents. I also said refer back to the Code.
5 So ...

6 CHAIRMAN: Sorry, can you help me here -- I'm falling a bit
7 behind. My understanding is that we accept that
8 ductility couplers were in fact used universally.

9 A. Yes.

10 CHAIRMAN: And your investigation was into trimming, or
11 possible trimming, of couplers, and supervision thereof;
12 okay?

13 A. (Nodded head).

14 CHAIRMAN: Are you saying that even though they were all
15 ductility couplers, if those ductility couplers were
16 placed in a particular area, for example in the slabs,
17 then they were effectively doing the job of
18 non-ductility couplers?

19 A. Correct.

20 CHAIRMAN: And you could treat them as non-ductility
21 couplers?

22 A. Correct.

23 CHAIRMAN: Okay. That I understand.

24 COMMISSIONER HANSFORD: I think I still need a bit of help
25 with this, because it seems to me we've got something
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1 called a ductility coupler, but we've also got something
2 about mechanical couplers for steel reinforcing bars
3 without ductility requirement. So we've got something
4 about ductility requirement, with ductility requirement,
5 or for ductility requirement, and without ductility
6 requirement. Is that different? Is it the requirement
7 for ductility that's the issue, or is it the actual
8 coupler itself that's capable of being -- of taking --
9 of satisfying the ductility requirement?

10 Do you see the point I'm making?

11 A. Yes. I think the Buildings Department acceptance letter
12 in the appendices refers to couplers with ductility
13 requirement or couplers without ductility requirement,
14 and there are two separate appendices --

15 COMMISSIONER HANSFORD: Yes.

16 A. -- written for both, and the difference, as you probably
17 know, one, couplers with ductility requirement requires
18 a QSP, and the level of supervision is T3. The couplers
19 without ductility requirement, there is no QSP, and the
20 level of supervision is by a T1 equivalent.

21 If you then refer back to the Hong Kong Code of
22 Practice for Concrete, that will define the zones where
23 there is a requirement for ductility.

24 COMMISSIONER HANSFORD: So is your understanding, then, that
25 if you're in an area using couplers without ductility

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1 requirement, but you are still using the standard
2 coupler that you're using everywhere, then the lesser
3 requirements, the lesser quality requirements, for
4 supervision are required; is that your view?

5 A. That's my view, yes.

6 CHAIRMAN: Just so that again I can put the stamp of
7 approval for myself on this, so I understand it, you're
8 saying it doesn't really matter what couplers are used,
9 the issue is the requirement for ductility, so
10 "requirement" is the core word?

11 A. Yes.

12 CHAIRMAN: So if you've got ductility in an area where you
13 don't need to have ductility couplers, but only ordinary
14 couplers, then you supervise and deal with all the
15 issues as if they are ordinary couplers?

16 A. Correct, and by the requirement I would refer back to
17 the Code of Practice as setting out the requirements.

18 CHAIRMAN: Okay.

19 MR KHAW: If we can leave aside the difference between
20 ductility couplers and non-ductility couplers for the
21 time being. Let's focus on the QSP first.

22 We all know that this QSP was attached to the
23 submission made by MTR to the government, and if I can
24 just bring you to have a look at one additional document
25 attached to that submission: 4264. It's a certificate

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1 of preparation of plans or documents, signed by
2 competent person of MTR. Then the submission title is
3 called, "Quality supervision plan submission of the
4 proposed ductility coupler for the diaphragm wall
5 reinforcement cage and slab construction at Hung Hom
6 Station".

7 What I am interested to know is that when you were
8 going through the QSP at the time of your investigation
9 process, did you actually check this document, ie the
10 purpose of the submission of the QSP?

11 A. This isn't the QSP that, as far as I recall, we made
12 reference to in the report.

13 Q. No, this is not the QSP. This is the document attached
14 to the submission made by MTR, and the submission
15 related to the QSP, but this is a certificate signed by
16 the competent person, setting out the submission title
17 here, which tells us that it is about both diaphragm
18 wall reinforcement and slab construction.

19 A. I haven't seen this.

20 Q. If we go back to the QSP on the next page, you just told
21 us that you were under the impression that the level of
22 inspection -- the requirements for level of inspection
23 and supervision set out in this QSP only applied to
24 diaphragm wall but not platform slabs.

25 A. Correct.

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1 Q. Can you tell us on what basis, in relation to the
2 contents of this document, would you be able to form
3 that particular view?

4 A. I think you need to or we need to refer back to the QSP
5 which is attached in the report that we submitted, the
6 one that we looked at yesterday.

7 Q. Yes. If we can go back to the QSP that we discussed
8 yesterday: C27/20441. This is a submission form
9 provided by MTR, and we can see that --

10 A. Sorry, this is the submission from Leighton to MTR.

11 Q. Yes, you are right. This is provided by Leighton to
12 MTR, and the document title is "Quality supervision plan
13 for installation of couplers for diaphragm wall and
14 barrettes by BOSA -- second submission".

15 So this is the QSP that you just wanted to refer to?

16 A. This is what we were given during the review period.

17 Q. Yes.

18 Then if we can take a look at the contents of this
19 quality supervision plan, on the next page, "Quality
20 supervision plan on enhanced site supervision &
21 independent audit checking by MTRC & [Leighton] for
22 installation of couplers", again it is about type II
23 couplers, ie ductility couplers; do you see that?

24 A. Yes.

25 Q. Then if we move on, 20446, we can see the same
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1 requirements regarding supervision of site works. The
2 first paragraph under (5): "Supervision and inspection
3 by RC [ie Leighton] on site -- installation works".

4 A. Sorry, RC for the diaphragm wall was not Leighton.

5 Q. Sorry?

6 A. The registered contractor for the diaphragm wall was
7 Intrafor, I believe.

8 Q. Right, yes, "by RC on site", and then there are three
9 requirements imposed; you can see that?

10 A. Yes.

11 Q. So again I'm just curious to know on what basis, even in
12 view of the contents of the two QSPs that we have
13 seen -- on what basis were you able to draw the
14 distinction --

15 A. As I --

16 Q. -- to the effect that the QSP only should apply to
17 diaphragm wall but not platform slabs?

18 A. So, at the time of review, this is the document which we
19 saw as the QSP.

20 Q. Yes.

21 A. And this document was for diaphragm wall and barrettes.

22 Q. Yes.

23 A. So, based on that, that was how I drew my conclusion.

24 Q. Yes, but we also have the QSP in relation to
25 specifically diaphragm walls and platform slabs.

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1 A. That wasn't provided to me at the time. This is the
2 reason that I attached this QSP into the report. We
3 attached the information that we were given.

4 Q. Right. So, when you were conducting the report, you
5 were all along under the apprehension that there were no
6 specific supervision or inspection requirements for the
7 construction of the slabs; is that what you mean?

8 A. When we were conducting the report, we based our view on
9 the QSP, ie this one, that we were provided, which was
10 specific to the diaphragm wall and barrettes.

11 Q. I see. If I can go back to the passage that I was just
12 referring you to, 20446, under (5), paragraph 1,
13 "Supervision and inspection by RC". You just told us
14 that this "RC" refers to the contractor for the splicing
15 works, not Leighton.

16 A. This was for the ...

17 Q. Are you sure?

18 A. My understanding is the registered contractor for the
19 diaphragm wall was Intrafor.

20 Q. But the registered contractor for the purpose of this
21 document is clearly Leighton, at 20444.

22 A. Again, my understanding, this document is for the
23 diaphragm wall and barrettes, and the registered
24 contractor was the registered specialist foundation
25 contractor, which was Intrafor.

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1 CHAIRMAN: Sorry, again I'm falling behind; please forgive
2 me. I'm looking at this and it says:

3 "Quality control supervisors (RC) will be
4 responsible to carry out full-time and continuous
5 supervision of the splicing assemblies on site."

6 Now, as a layperson, I've been educated as to
7 splicing assemblies, which is, as I understand it, the
8 actual act of putting rebars into couplers, and as
9 a layperson I've listened to Intrafor, and they don't
10 seem to have been involved in doing anything like that.
11 What they did was they put couplers into the cages for
12 the diaphragm walls, and then, if those couplers were
13 correctly positioned and tied, and everybody signed off
14 on that, then everybody said "Yes", and it went into the
15 trench, and they didn't then have to go underground
16 later to actually inspect the reinforcing bars being put
17 into those couplers.

18 Now, I may be wrong there, because as I say I'm
19 falling behind and you can educate me as to where I'm
20 wrong.

21 A. No, sir, that's correct. It applies to the diaphragm
22 wall, the couplers on the vertical bars in the diaphragm
23 wall, which are installed in a trench.

24 CHAIRMAN: Yes.

25 A. Certainly Intrafor would not come back and had no
26

1 involvement in any further connection to any horizontal
2 couplers. Their responsibility was only for, if you
3 like, the elements cast into the wall and the splicing
4 assemblies for those elements cast into the wall, but no
5 further subsequent connections, you know, once the face
6 of the wall was exposed.

7 CHAIRMAN: So Intrafor would not have been responsible for
8 continuous supervision of the splicing assemblies
9 on site?

10 A. During the diaphragm wall construction and installation,
11 yes, they would be.

12 COMMISSIONER HANSFORD: Because -- and the reason you say
13 that, you're referring to the vertical couplers?

14 A. The vertical couplers, yes.

15 CHAIRMAN: Oh, okay, vertical couplers, of course, yes.
16 Sorry, I thought we were talking about -- because the
17 cause of your investigation was somewhat later than that
18 process.

19 A. Yes. I guess the point we were discussing was the
20 relevance of this QSP, which I'm saying is relevant to
21 the diaphragm wall element and the splicing assemblies
22 within the diaphragm wall.

23 MR KHAW: If we can go back to 20444. You can see at the
24 top "RC" is defined as registered contractor. Do you
25 agree that it refers to Leighton?

26

1 A. No. The registered contractor for the diaphragm wall
2 was Intrafor. I'm certain of that.

3 Q. All right.

4 So all along when you are reading this document, you
5 take "RC" as Intrafor, not Leighton; is that right?

6 A. For the diaphragm wall, yes.

7 Q. Thank you.

8 If I can just go back to one of my earlier
9 questions. That is, at the time when you were
10 conducting the investigation process, you were aware of
11 these two QSPs, and according to your understanding
12 there were no specific supervision or inspection
13 requirements for the coupler installation regarding the
14 construction of platform slabs; is that right?

15 A. Based on the QSP that we saw, correct.

16 Q. Right. During the investigation, did you raise any
17 query as to why there were requirements regarding
18 supervision and inspection for coupling works regarding
19 diaphragm walls, but there were absolutely requirements
20 for inspection or supervision for platform slabs? Did
21 you raise any query?

22 A. I think it comes back to a point we discussed earlier
23 about ductility v non-ductility. If you refer to the
24 Buildings Department letter of acceptance for couplers
25 without ductility requirement, the only requirement is

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1 the level 1 TCP supervision. So, based on that, that
2 was my understanding of the circumstances.

3 CHAIRMAN: Sorry, I'm still behind on this.

4 This document says, "RC -- registered contractor",
5 "Quality supervision plan"; that I get. Underneath, it
6 gives the name of BOSA Technology, but surely
7 "registered contractor" is defined, isn't it, somewhere,
8 like saying, "The registered contractor under this
9 document is ABC", or, if you want to be complicated, as
10 a lot of lawyers like to be in drawing up contracts
11 because they don't want anybody to understand what's
12 actually happening at first glance, "Please go to
13 schedule 17012"?

14 A. There is a formal document which is submitted to MTR and
15 to Buildings Department which defines who the registered
16 contractor is for different elements of the works. So
17 there will be a form that has been submitted which
18 clarifies that Intrafor would be the registered
19 contractor for the foundation and diaphragm wall works,
20 and subsequently a separate form that clarifies that
21 Leighton is the registered contractor for all subsequent
22 works.

23 COMMISSIONER HANSFORD: And are you aware whether that form
24 is in the bundles that have come to this Commission?

25 A. I have no idea.

26

1 COMMISSIONER HANSFORD: I thought you would say that, and
2 I'm half-looking around the room to see if anybody else
3 would like to draw my attention to that.

4 A. It's a statutory document so it should be very easily
5 available.

6 COMMISSIONER HANSFORD: Thank you.

7 MR KHAW: If I can go back to 20443.

8 CHAIRMAN: Sorry to interrupt, it just seems to me it's
9 quite a simple issue and we have a very fundamental
10 concern as to who was responsible for actually
11 conducting supervision. I'm a bit puzzled by that.
12 I would have thought that something like that would have
13 been abundantly clear because the simplest and easiest
14 of building contracts must surely state who's
15 responsible for what.

16 MR KHAW: I would have thought so, certainly.

17 MR PENNICOTT: Sir, can I on this specific point that we're
18 on at the moment -- it seems to me that the problem
19 we've got is where do you start? If your starting point
20 is Mr Lumb's starting point, that is that this QSP only
21 applies to the diaphragm wall and the barrettes, then
22 one can see why it is that Mr Lumb concludes that the
23 "RC" must mean Intrafor.

24 CHAIRMAN: Yes.

25 MR PENNICOTT: However, if the starting point is where the
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1 government is, MTR is, and I have to say at the moment
2 the Commission's legal team is, that this QSP applies
3 not only to the diaphragm wall and the barrettes but
4 also to the installation of the rebar connecting into
5 the couplers for the purposes of constructing the slab,
6 then one puts a different definition on the "RC",
7 because in those circumstances it would undoubtedly be
8 Leighton.

9 CHAIRMAN: The point I'm trying to make is, as
10 a layperson -- and I emphasise that; I know I say it
11 a lot, but my witnesses are professionals, I know that
12 the advocates who are in this courtroom, many of them
13 have many years of experience in the building trade and
14 I don't -- but I express a certain consternation that,
15 as the Chairman of this Commission, we are now, after
16 all of the building has gone on, debating who actually
17 had responsibility for supervising a very important part
18 of this construction.

19 MR PENNICOTT: Yes.

20 CHAIRMAN: And I use the word "consternation" advisedly.

21 MR PENNICOTT: Yes, sir. Of course the other problem is
22 what actually happened. We know that when the diaphragm
23 walls, the cages -- and we are obviously focusing on the
24 cages at the moment, the reinforcement -- we know from
25 all the documents we've seen generated largely by

26

1 Intrafor that the supervision was undoubtedly by MTRC,
2 Leighton and Intrafor, because all the cage-by-cage
3 documents that we've seen were signed by all of them.

4 So I have to say, at the moment, that our
5 understanding is -- certainly I understand where Mr Lumb
6 is coming from, because if you start with this idea or
7 the proposition that this only applies to the diaphragm
8 wall, one can see that it's quite simple to make the
9 conclusion that the "RC" means Intrafor.

10 CHAIRMAN: I'm not for one moment blaming Mr Lumb, I do
11 hasten to add.

12 MR PENNICOTT: No. But, sir, unfortunately, I think
13 probably Mr Lumb is right also in this sense, that if
14 one looks at the statutory definition of "RC" or
15 "registered contractor", it can mean RGC, registered
16 general contractor, such as Leighton, and it can also
17 mean registered specialist contractor, such as Intrafor.
18 So it can mean both, that is right.

19 I don't know whether we can find the statutory
20 provision but --

21 CHAIRMAN: The point I make is a point I made a bit earlier.

22 MR PENNICOTT: Yes, sir.

23 CHAIRMAN: I would have thought that things like this are so
24 clearly defined that there can be no doubt.

25 COMMISSIONER HANSFORD: That would certainly normally be the
26

1 case.

2 CHAIRMAN: Yes.

3 MR PENNICOTT: We've got a number of statutory references
4 that I can take you to, but I don't know whether it's
5 going to help in the context of the current discussion.

6 CHAIRMAN: Then we will just get deeper and deeper.

7 MR PENNICOTT: We will just get into -- yes, right. It's
8 a question of what it really means in the context of
9 this particular document, and one can see, it just seems
10 to me, it depends what the starting point is.

11 MR KHAW: Just one more question on this point, and then
12 I will move on.

13 Mr Lumb, if we can take a look at this QSP for
14 diaphragm wall and barrettes, we see that, for example,
15 20443, under the "Content", there is "Assignment of
16 quality control supervisors personnel (from MTRC/RC)".

17 So you are saying that this "RC" should mean
18 Intrafor. So what Leighton did in this document was to
19 impose requirements for Intrafor and not itself; is that
20 right?

21 A. As registered contractor for the foundation works,
22 Intrafor have the statutory responsibilities to meet the
23 requirements of the Buildings Department acceptance
24 letter and any attached appendices or related documents
25 to that.

26

1 But we, as main contractor or as RGBC, we clearly
2 have to share the statutory requirements with our
3 sub-contractor, which was Intrafor.

4 Q. If your understanding of this document is correct, it
5 would mean that Leighton was preparing for a QSP which
6 imposed actually no requirements on Leighton itself?

7 A. Not preparing a QSP. A QSP was largely prepared by
8 BOSA, but there is a formal communication channel
9 between ourselves, as the main contractor, and MTRC, the
10 client. So, clearly, any correspondence between our
11 sub-contractors and the main contractor has to come
12 through us and is submitted through ourselves as the
13 main contractor.

14 Q. Right. So it means that when Leighton was submitting
15 this QSP to MTR, they were actually submitting this QSP
16 for and on behalf of Intrafor?

17 A. That's correct.

18 Q. Thank you. That's interesting.

19 If we can take a look at your report. If we can
20 take a look at the first report first: C27/20257. The
21 first item:

22 "The following conditions on mechanical couplers for
23 steel reinforcing bars for ductility requirement are
24 required".

25 Then it sets out various requirements in relation to
26

1 the qualified site supervision, what should the
2 competent person do, et cetera.

3 Then if we can move to 20259, under item 3,
4 "A quality supervision plan of the competent person and
5 the RGBC/RSC is required to be submitted to this
6 department prior to the commencement of the mechanical
7 coupler works. The quality supervision plan should
8 include the following details."

9 Now, (b), we can see that your report says:

10 "Frequency of quality supervision, which should be
11 at least 20 per cent of the splicing assemblies by the
12 quality control supervisor of the competent person and
13 full-time continuous supervision by the quality control
14 coordinator of the RGBC/RSC of the mechanical couplers
15 works."

16 Do you see that?

17 A. Mmm.

18 Q. Now, in your report, you have never drawn any
19 distinction between the requirements imposed for the
20 construction of diaphragm wall on the one hand and on
21 the other hand the construction of platform slabs; would
22 you agree?

23 A. I think, if I recall, the reference to this table --
24 maybe you can go to the section on statutory, maybe just
25 before this -- I think it speaks about this table in the

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1 context of the diaphragm wall or foundation element. If
2 you can scroll up.

3 So, if you go to section 9.1, two or three pages
4 before this, under item 3, the penultimate paragraph of
5 9.1 says:

6 "The approval letter for diaphragm wall ... is taken
7 as a reference for verification of document compliance."

8 So what you see there in that table was written
9 I think in the context of diaphragm wall.

10 Q. No, I'm sorry, if you rely on this particular page,
11 item 3, where you are referring to "BD letter", clearly
12 you were aware of the letter regarding track level and
13 also foundation and pile cap; right?

14 A. Yes. What I'm saying is that in the penultimate
15 paragraph, where we make reference to the table in 9.1
16 and 9.2, that is made in the context of the diaphragm
17 wall, not in the context of the slabs.

18 Q. Yes. But am I correct to say that in your report, you
19 never mentioned that there were no specific requirements
20 in relation to the coupling installations for platform
21 slabs?

22 A. We didn't discuss that.

23 Q. In fact, when you were compiling the report, you knew
24 full well of the specific requirements in relation to
25 coupling installation for both platform slabs and
26

1 diaphragm walls; am I correct?

2 A. Yes, but remembering the view at the time was the slabs
3 were non-ductile so didn't impose the same conditions.

4 Q. In your report, if I can refer you to C27/20250, you
5 mentioned in paragraph 2:

6 "After forming the shear key ... it was advised that
7 a survey of the diaphragm wall couplers was undertaken,
8 and checks on the couplers carried out for number,
9 setting out orientation against the approved diaphragm
10 wall rebar shop drawings. No formal record of the
11 survey or coupler checks are in place recording this
12 process."

13 Do you see that?

14 A. Yes.

15 Q. When Mr Pennicott asked you yesterday whether you were
16 surprised when you discovered that there were no formal
17 records of coupler check, your answer was "not
18 necessarily"; do you remember that?

19 A. Yes.

20 Q. Then you went on to say "it would be nice to have"?

21 A. Yes.

22 Q. We are not concerned at all with whether it would be
23 nice to have it or not. Would you agree that keeping
24 proper records of inspection and supervision is key to
25 quality control; would you agree?

26

1 A. Yes, correct.

2 Q. Would you agree that the absence of any formal record of
3 survey, as you put in your report, amounts to
4 a non-compliance insofar as record-keeping is concerned?

5 A. I don't believe so. I think, as Mr Brewster said,
6 fixing of coupled bars for slabs is not an uncommon
7 construction activity. Maybe for the diaphragm wall it
8 is slightly different in terms of the density of the
9 couplers, but for slabs, it's very much business as
10 usual, I would say. On most projects in Hong Kong there
11 is a large element of couplers.

12 Q. You are certainly aware of the requirement imposed under
13 the QSP that it was necessary to record supervision and
14 inspection in a record sheet and write it into
15 an inspection logbook; you are aware of that?

16 A. Yes.

17 Q. So, going back to my earlier question, with such
18 a requirement, when you discovered that there was no
19 record of observing in relation to coupling
20 installation -- checking, inspection or supervision of
21 the coupling installation -- would you regard it as
22 a non-compliance of the requirements?

23 A. No. As I understood it from the project, the checking
24 was done, as has been explained previously,
25 I understand, using the quality control checklist and
26

1 using the formal contract RISC form. That was how the
2 project handled their quality requirements. That was
3 a record of their inspections that they had before
4 moving on to the next hold point.

5 MR WILKEN: Sir, I've let Mr Khaw ask the question twice and
6 he has his answer. He's fishing in relation to
7 regulatory activity outside the ambit of this
8 Commission, because "non-compliance" is capable of
9 a double meaning.

10 MR KHAW: I got my answer already, Chairman.

11 You just referred me to -- that is your answer, you
12 referred me to the quality control records. I take it
13 that when you are referring to the quality control
14 records, you are referring to both the RISC form and
15 also the cast in situ concrete quality checklist?

16 A. Yes. There are two RISC forms, I believe, and one
17 quality control checklist.

18 Q. But am I correct to say that those two forms, the
19 contents of those two forms, won't tell anybody which
20 coupler installation was checked or how many of those
21 were checked; would you agree?

22 A. It would tell me that they've all been checked.
23 I wouldn't expect any engineer to sign off a form if he
24 is not happy that the couplers have been visibly checked
25 and, you know, confirmed to be okay. They wouldn't be

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1 doing their job if they were signing off without that.

2 Q. Mr Lumb, I'm not asking what it means to you. I'm
3 asking, when one looks at the contents of the RISC form,
4 when one looks at the content of the concrete in situ
5 checklist, one cannot tell from the documents themselves
6 as to which particular coupling installation was checked
7 and how many were checked; would you agree?

8 A. It doesn't identify individual couplers, but as
9 I explained, I would expect it should cover all.

10 Q. And there's an appendix P in your report, 20583. If we
11 can start from 20584, that is a set of records of
12 specific tasks performed by TCP, RC stream, and we can
13 see that 854 is a form signed by Chan Chi Ip; right?

14 A. (Nodded head).

15 Q. Then there are various forms covering different periods,
16 and the one by Chan Chi Ip goes -- from Chan Chi Ip goes
17 all the way to page 592.

18 Now, obviously you referred to these forms in your
19 investigation process; right?

20 A. Yes.

21 Q. Am I also right in saying that these forms do not tell
22 anyone what was actually inspected, what was actually
23 inspected?

24 A. The SSP forms are fairly general forms.

25 Q. Yes.

26

1 A. If you look at, in the Code of Practice for Site
2 Supervision, it defines what the items in the left-hand
3 column are, C8, C9, C10, but from memory they are fairly
4 general items, such as "Is an excavation safe?", or
5 "Have you carried out the site monitoring?" or -- there
6 are no specific items which refer to couplers or
7 checking of rebar, but this is a statutory requirement
8 to comply with the SSP.

9 Q. Yes. Now, we have discussed the contents of the RISC
10 forms, contents of the concrete in situ checklist, the
11 contents of these inspection records which are rather
12 general.

13 If I may then take you to your conclusion at 20265,
14 your conclusion actually specifically refers to
15 compliance with the Buildings Department approval
16 letter, so I'm going to ask you this. Given our
17 discussion regarding the records, which actually do not
18 show which particular coupling installation was checked,
19 how many were checked, there is no basis for you to come
20 to this conclusion that the records were found to be in
21 order and compliant; would you agree?

22 A. I would disagree. I don't believe there is any
23 requirement to show individual coupler-by-coupler
24 inspection records. That's not stated anywhere. So,
25 based on my view and judgment at the time, I'm happy in
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1 terms of writing that statement.

2 Q. Now, in your fourth witness statement, you referred to
3 the people who were interviewed for the purpose of the
4 investigation process.

5 A. Mm-hmm.

6 Q. The first thing I would like to ask you on this is: was
7 there any record or note of interview that you or your
8 colleagues have kept for this purpose?

9 A. We don't have any records that are retained.

10 Q. Not at all?

11 A. Everything that was found went into the report.

12 Q. Thank you.

13 CHAIRMAN: Could I ask, just briefly -- sorry -- your fourth
14 paragraph down:

15 "It was found that while some non-conformances were
16 identified during the construction of the works, these
17 were raised by Leighton's own supervisors through the
18 established non-conformance report process ..."

19 But of course that's not 100 per cent accurate, is
20 it? Because there was the photograph that showed, on
21 its face, an apparent cutting of threaded rebar by some
22 workman.

23 A. But we saw no evidence that -- yes, there was no context
24 behind that, and we saw no evidence that it had been
25 incorporated into the works and in terms of the people

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1 that we spoke to there was no awareness of that either.

2 CHAIRMAN: I suppose that's what worries me a little,
3 because I appreciate it's an internal report, but
4 I don't think, because something's an internal report,
5 it thereby prohibits speaking to people outside in order
6 to find out what's best internally. Do you see the
7 point?

8 A. Mm-hmm.

9 CHAIRMAN: So perhaps, with the benefit of hindsight and in
10 an ideal world, if Mr Poon had been contacted, he might
11 have said, "This is what happened. I was at this
12 particular junction. I saw them doing X, Y and Z", and
13 he would therefore have given body and substance to
14 those two photographs, which might then have better
15 enabled you to complete your report.

16 A. I was never given any direction to approach or speak to
17 Mr Poon.

18 CHAIRMAN: No, but weren't you just given authority to
19 prepare a satisfactory report?

20 A. By "internal", I took it as retaining the scope of the
21 investigation within the Leighton business and the
22 Leighton employees. That was how I read the request.

23 CHAIRMAN: All right.

24 MR KHAW: Regarding those people who were interviewed during
25 the investigation process, you agree that Mr Man Sze Ho

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1 was the only engineer on the list responsible for the
2 inspection of coupler installation?

3 A. Yes.

4 Q. Were you aware that in fact Mr Edward Mok was also a key
5 person responsible for the inspection of coupler
6 installation?

7 A. We were aware subsequently. We only spoke to people who
8 were on the project at the time. I think Edward had
9 left the project by that stage.

10 Q. Right. But did you apply your mind at least, during
11 your investigation process, for the purpose of at least
12 ascertaining who were the key persons responsible for
13 the inspection of the coupling works for the project,
14 despite whether he moved to another project or whatever?
15 At least you should apply your mind to that; right?

16 A. We interviewed those engineers who we were advised to
17 speak to by the project team there and who were
18 available at the time.

19 Q. Now, you just told us that without any formal records of
20 survey, then you of course had to look at other records
21 like the RISC form, et cetera, but obviously the
22 interview with the key person in charge of the
23 inspection would be important because that would give
24 you an idea as to what they did; would you agree?

25 A. Yes.

26

1 Q. During the investigation process, talking about Man
2 Sze Ho only, did you ever make any enquiry regarding the
3 percentage of coupling installations which had actually
4 been inspected?

5 A. I can't recall personally. I wasn't the one conducting
6 the interviews.

7 Q. Finally, in your report, you also referred to one NCR
8 incident, and you also attached the relevant documents
9 at appendix J to your report.

10 Is it fair to say that the NCR incident, it was
11 an incident about bar cutting, threaded bar cutting; you
12 are aware of that? So at least you would agree with me
13 that the nature of this NCR incident is similar to the
14 nature of Mr Poon's allegation; would you agree?

15 A. Yes.

16 Q. Now, in view of the NCR incident, did you care to at
17 least find out whether it was an isolated incident or
18 whether it might represent a more widespread
19 malpractice?

20 A. Yes, we asked the question, and we were given the answer
21 that the staff were only aware of that one incident.

22 Q. So you were satisfied that it was an isolated incident?

23 A. Yes.

24 Q. Did you know anything about the cause of the NCR
25 incident; why did the workers choose to cut the threaded
26

1 rebar on their own initiative?

2 A. No one could explain that to us.

3 Q. Did you make enquiry in that regard? Did you? Did you
4 talk to anyone, "Hey, does anybody know about why the
5 workers actually cut the threaded rebar in relation to
6 the NCR incident"?

7 A. Again, I wasn't the one asking the questions so I can't
8 speak on behalf of my engineer who did, but I would
9 expect him to ask that question.

10 Q. And what was the response you were given in relation to
11 the cause? Did you ever receive any response as to the
12 possible cause or causes of that incident?

13 A. No. No one would know.

14 Q. Sorry, you said "no one would know", it means you
15 actually asked and you did not get an answer, or you
16 simply assumed that no one would know?

17 A. I didn't ask the question. My colleague would have put
18 the question. But the feedback, I recall, was that
19 no one knew. When I asked my colleague what was the
20 reason behind it, his feedback was no one would know or
21 no one knew the reason behind the cutting.

22 CHAIRMAN: But, in that regard -- I suppose this is why I'm
23 a bit puzzled, even though I appreciate this is
24 an internal investigation -- if somebody had gone down
25 to the rebar fixers and spoken to the foreman and said,

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1 "Look, we've now had a complaint from a sub-contractor,
2 there are some photographs. We appreciate these things
3 happen but come on, man to man, what are the reasons
4 here, what are the causes?"

5 A. I think even to this day, as far as I'm aware, we
6 haven't got to the bottom of why it was done. So within
7 the scope of my review we didn't make any progress there
8 either.

9 CHAIRMAN: You see, forgive me again, but if that had taken
10 place -- and personally I see no reason why it shouldn't
11 have taken place, even though it's an internal
12 investigation -- you might have got things like, "Look,
13 it's a difficult contract, we are running up against
14 time, the walls aren't properly put", or "Too many of
15 the couplers are out of order", or "The time taken to do
16 remedial work should be an hour and in fact we are
17 having to wait 48 hours, so there's a temptation from
18 time to time"; that sort of discussion might have
19 helped, wouldn't it?

20 A. I think had the review taken place a year earlier,
21 during the course of the works, perhaps that would have
22 been an appropriate angle. The time the review took
23 place was January 2017, so all works on both EWL and NSL
24 slab had been completed, and the teams basically
25 demobilised. So you didn't really have the
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1 opportunity -- you know, these were events that were
2 12 months earlier, more maybe, so no one -- everyone had
3 moved on, everyone had no recollection of the events,
4 you know, which had happened 12 or 14 months previously.

5 CHAIRMAN: Yes, I appreciate the fact that you are asked to
6 look at a historical event now covered up by concrete.
7 Yes, thank you.

8 MR KHAW: Mr Lumb, would you agree that on your list of
9 interviewees, probably the only person who might have
10 some direct knowledge regarding this NCR would be
11 Mr Harman?

12 A. I would expect Mr Ip to have been aware of it.

13 Q. Yes. Did you yourself or did anyone, any of your
14 colleagues, actually speak to Mr Harman regarding the
15 possible causes of the incident, do you know?

16 A. I don't know.

17 Q. Would you agree that without actually knowing the cause
18 of the NCR incident, it would be rather impossible for
19 you to ascertain whether this was only an isolated
20 incident or it might represent a more widespread
21 malpractice; would you agree?

22 A. Not necessarily. I would again refer back to our review
23 of the quality records and of the inspection processes,
24 the signing off of those individual records by
25 engineers. That was, if you like, the main gist of the

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1 review, that we had suitable quality systems in place to
2 prevent or guard against any fundamental, you know,
3 aspect like this.

4 Q. I'm sorry to take you to one of our earlier points,
5 regarding the responsibility of Leighton in relation to
6 the inspection or quality control of the coupling works.

7 Now, we heard what you said in relation to your
8 understanding of the QSP, but if I may just take you to
9 H20/39721.

10 It's a letter from Leighton dated 9 October this
11 year, addressing certain comments made by the Buildings
12 Department, and if we can then take a look at H39722,
13 this is a letter signed by Mr Brewster. "Item (c)":

14 "1. In relation to the 'As-built for on-site
15 assembly of EWL/NSL slab to diaphragm wall/slab couplers
16 forms' the statement that the original was produced in
17 June 2018 was to clarify that the form was
18 a non-contemporaneous record ...

19 2. The quality control coordinators for the
20 mechanical coupler works related to the Hung Hom Station
21 [project] diaphragm wall and EWL platform slab were ..."

22 Then it sets out the specialist foundation
23 contractor of Intrafor.

24 "(b) LCAL engineering and supervision staff
25 responsible for the platform slab reinforcement works."

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1 So it is quite clear from Mr Brewster's response
2 that there were Leighton engineering and supervision
3 staff responsible for the platform slab reinforcement
4 works; would you agree?

5 A. Agree. Again, if you look at the Buildings Department
6 letter of acceptance, the appendix which relates to
7 non-ductile couplers, there is still a requirement for
8 quality control coordinators. That doesn't disappear.
9 So, yes, I agree that there's a requirement for quality
10 control coordinators for the mechanical coupler works.

11 Q. Just regarding the record, the issue of records, that
12 Mr Pennicott discussed with you yesterday, I only have
13 two questions for you.

14 If we can take a look at H14/35067. This is the
15 original template, as we gather from you, and the
16 heading is "Checklist for on-site assembly", et cetera.
17 It was later changed to "As-built" --

18 A. I referred to it as the draft.

19 Q. Yes, as a draft. It was later revised -- the heading
20 was revised to mean as-built?

21 A. Yes.

22 Q. Here, if we can go to the box, the lower part of this
23 document, we can see a description, "EWL bottom bars",
24 "EWL top bars"; do you see that?

25 A. Yes.

26

1 Q. Then we have different rows described; do you see that?

2 A. Yes.

3 Q. B1, B3, B5, B7, T1, T3, T5, T7; right? Then we even
4 have the particular numbers of the bars set out, 1 to
5 59, 1 to 50, et cetera; do you see that?

6 A. Yes.

7 Q. Would you agree with me that in order to put or circle
8 a "yes" or an "S" in the items in this box, one could
9 only rely on the RISC forms -- as far as documentation
10 is concerned one could only rely on the RISC forms and
11 the concrete in situ checklists; do you agree?

12 A. Yes, and we made that reference at the top.

13 Q. Yes. But the contents -- none of the RISC forms or the
14 concrete in situ checklists would be able to provide us
15 with any information regarding the coupling installation
16 condition in relation to a particular bar regarding
17 a particular row; do you agree?

18 A. When signing off a checklist -- sorry, the checklist,
19 I mean the quality control checklist -- then my
20 expectation of anyone within our business would be they
21 should only sign off that box once they are happy that
22 the works have been constructed accurately and
23 thoroughly. So I wouldn't expect anybody to sign off
24 a checklist without being able to confirm that the works
25 were in accordance with the working drawings or the

26

1 diaphragm wall drawings.

2 Q. Thank you. Further, if we focus on this box again --
3 now, we asked a lot of people, a lot of Leighton
4 witnesses, as to who actually put the circle for "S",
5 for this box. Nobody could help us. You couldn't help
6 us, apparently.

7 A. I think we discussed this yesterday, that we had
8 engineers on site, there was multiple engineers working
9 on these, and some were providing the background, they
10 were pulling together the, if you like, template from
11 the diaphragm wall shop drawings. Some were working
12 through site instructions, photographs, technical
13 queries. Others were looking at the RISC forms and the
14 quality control checklists. And ultimately all of that
15 was gathered together on this one form.

16 Q. Yes. Can you at least tell us whether you know that
17 there's any person in Leighton who would at least be
18 able to tell us who put the circle or the "yes" here?

19 A. I would have to check.

20 Q. Would you be kind enough to check this information and
21 inform the Commission later on?

22 A. Can do.

23 MR KHAW: Thank you. I have no further questions.

24 MR BOULDING: Sir, I have two matters I would like to
25 investigate with this witness. You might think it's

26

1 appropriate for me to do that after the coffee break but
2 I'm in your hands.

3 CHAIRMAN: Yes, I think so. Thank you very much.

4 15 minutes.

5 (11.46 am)

6 (A short adjournment)

7 (12.07 pm)

8 Cross-examination by MR BOULDING

9 MR BOULDING: Good afternoon, sir. Good afternoon,
10 Professor.

11 Good afternoon, Mr Lumb. There are just a couple of
12 matters I would appreciate your assistance on, please.

13 Do you remember that yesterday counsel for the
14 Commission took you to a document called, "Checklist for
15 on-site assembly of EWL slab to D-wall/slab couplers"?

16 A. Yes.

17 Q. If we can have that document up on the screen, please.
18 It's H14/35067. That's the one.

19 You can see the manuscript markings, "19 December
20 2015"; do you see that?

21 A. Yes.

22 Q. The Chairman, you will recall, I'm sure, made the
23 comment to you that this Leighton document looked like
24 a contemporary document; do you remember that being
25 suggested to you?

26

1 A. Correct, yes.

2 Q. And indeed you agreed?

3 A. At the time, yes.

4 Q. You need to say "yes" or "no" or whatever, for it to be
5 picked up, Mr Lumb.

6 A. Yes.

7 Q. You were then asked to look at the MTR equivalent
8 document. Can we keep that on the screen and have up
9 document B7/4588 by its side. Perhaps we can get them
10 next to each other. That's the one.

11 You can see that the MTR document is the record, in
12 this instance, for the area "C3-3 (East)"; do you see
13 that?

14 A. Yes.

15 Q. Then if we could focus in, please, at the bottom
16 left-hand corner of both documents -- up a little bit on
17 both, please, I mean move the bottom up so I can see the
18 bottom left-hand corner, please.

19 MR PENNICOTT: "Down".

20 MR BOULDING: Splendid. A little bit further so I can
21 see -- the document on the right, can you please move it
22 up so I can see what's down at the bottom, under the
23 signature of Kobe Wong. Thank you very much.

24 If one looks at the typescript in the bottom
25 left-hand corner of both documents, one can see, can one

26

1 not, that there is a difference, in that the MTR
2 document has, under the heading "Remark":

3 "This form serves a retrospective record of coupler
4 installation."

5 Do you see that?

6 A. Yes.

7 Q. We can see, can we not, that there's no such statement
8 on the Leighton document; correct?

9 A. Yes.

10 Q. Can I therefore suggest that it's clear, is it not, that
11 whatever the situation might have been so far as the
12 Leighton records were concerned, the MTR records were
13 never intended to give the impression that they were
14 contemporaneous documents, were they?

15 A. That's correct. It's also correct for the Leighton
16 documents as well.

17 Q. Well, there we are. That's the first matter that
18 I appreciate your assistance on, Mr Lumb.

19 You will recall today, I suspect, that my learned
20 friend Mr Khaw discussed with you today the QSP which
21 was annexed to your report; do you remember that?

22 A. Yes.

23 Q. We can pick that up at C27, document 20444, and you can
24 see the heading there, "Quality supervision plan", and
25 so on, and so forth. Then in paragraph (1) we've got

26

1 the introduction to the quality supervision plan; you
2 see that, do we not, Mr Lumb?

3 A. Yes.

4 Q. Then I would like you to go or be taken to page 20446,
5 and it's the heading, "Supervision of works", and you
6 will recall being questioned about the contents of
7 paragraph (5), and in particular paragraph (5)1, by
8 Mr Khaw; do you remember that?

9 A. Yes.

10 Q. The learned Chairman is recorded on the transcript as
11 saying as follows:

12 "Sorry, again I'm falling behind; please forgive me.
13 I'm looking at this and it says:

14 'Quality control supervisors (RC) will be
15 responsible to carry out full-time and continuous
16 supervision of the splicing assemblies on site.'"

17 Then he went on to say:

18 "Now, as a layperson, I've been educated as to
19 splicing assemblies, which is, as I understand it, the
20 actual act of putting rebars into couplers, and as
21 a layperson I've listened to Intrafor, and they don't
22 seem to have been involved in doing anything like that".

23 I assume you recall that particular statement?

24 A. Yes.

25 Q. Now, it's clear from that statement, is it not, that by
26

1 "splicing assemblies" the learned Chairman was referring
2 to the act of actually putting the rebars into the
3 couplers?

4 A. Yes. The assembly is the coupler plus the two bars
5 which are engaged into that.

6 Q. I can see that it might be thought, but it's a matter
7 for legal argument and submission, but having regard to
8 your elevated position, head of engineering in Leighton,
9 I wonder whether you can assist me on this particular
10 matter.

11 Do you see the phrase "splicing assemblies" in
12 paragraph (5)1(i)?

13 A. Yes.

14 Q. Would you agree, Mr Lumb, that the phrase "splicing
15 assemblies" could be read as a description of the
16 assembled rebar coupler and rebar?

17 A. Yes.

18 CHAIRMAN: Sorry, could we have a look -- sorry, which
19 paragraph is it?

20 MR BOULDING: It's the first one.

21 CHAIRMAN: Thank you.

22 MR BOULDING: It's used in several locations there, sir.

23 CHAIRMAN: Thank you, yes.

24 MR BOULDING: If that is right, it would not be correct,
25 would it, to read it as being the act or process of
26

1 actually putting the rebar into the coupler?

2 A. Agreed.

3 Q. In other words -- and I assume from what you've said
4 already that you would agree this as well -- it's
5 referring to the connection, the actual connection,
6 rather than the process of connecting the couplers up to
7 the rebars?

8 A. I would agree.

9 CHAIRMAN: I would hasten to add I didn't think of that as
10 witnessing the actual process, but rather splicing
11 assemblies was something that happened after Intrafor
12 was involved, that was done, and then there was
13 an obligation thereafter to check what had been done by
14 way of the assembly.

15 A. I would see the assembly as the finished product of
16 coupler plus the two bars which are engaged, not the
17 process.

18 MR BOULDING: That is very helpful. Thank you very much,
19 Mr Lumb. I have no further questions.

20 Thank you, sir. Thank you, Professor.

21 CHAIRMAN: Sorry, on that, how do you carry out full-time
22 and continuous supervision of something that's already
23 been done, as a matter of interest? Again, another
24 engineering issue.

25 A. Sorry, is that a question to myself?

26

1 CHAIRMAN: Yes.

2 MR BOULDING: I was rather hoping it was!

3 A. "Full-time supervision" for me means that someone is
4 fully engaged on the project, as opposed to part-time,
5 which is often used in the BD language, which means they
6 are visiting the site, the site being the whole project,
7 at a certain frequency.

8 "Continuous supervision", again I think, in the
9 context of Hong Kong supervision, just means the normal
10 daily supervision and inspection regime. It certainly,
11 in my opinion, doesn't mean that you are man-marking
12 someone who is actually physically screwing a bar in.

13 CHAIRMAN: No, no. The point I am making is perhaps
14 a different one. I accept entirely that "splicing
15 assemblies" doesn't have to mean necessarily purely the
16 act, and that it might have a broader term meaning once
17 the connection has been made. All I'm asking here is,
18 within this particular paragraph, it says that you will
19 be responsible to carry out full-time and continuous
20 supervision of the splicing assemblies. Now, if in fact
21 you're talking about assembling that's already been
22 done, it strikes me that you don't need then to have
23 full-time and continuous supervision of it. Do you see
24 the point? It would seem to me that in the context of
25 that sentence, what you are asked to do is to have

26

1 full-time supervision of the actual process of assembly,
2 because otherwise it's like saying -- otherwise you're
3 walking around looking at something that's been done,
4 just a lot of iron.

5 A. I don't think it's ever been read like that, in the
6 context of the Hong Kong construction industry. I'm
7 certainly never aware of circumstances where we've had
8 individuals just literally stood there, watching the
9 physical act of a bar being screwed, because again, in
10 my opinion, that is impractical. You would need to
11 probably multiply by a factor of ten the number of
12 supervisors on a site to actually carry out that
13 process.

14 CHAIRMAN: I appreciate that, but -- sorry, I really don't
15 want to keep us on this too long -- would you agree that
16 what this is talking about, in plain English, is that
17 there has to be some form of supervision of the process
18 of splicing assembly, some form of supervision?

19 A. Some form of supervision, yes.

20 CHAIRMAN: As opposed to -- and that would include, for
21 example, when the work is done, checking that it's been
22 done properly?

23 A. Yes.

24 CHAIRMAN: And your issue, as other people have raised --
25 and it seems to me to be an entirely legitimate issue to
26

1 raise -- is what does "full-time and continuous" mean in
2 this context?

3 A. Yes.

4 CHAIRMAN: Thank you.

5 MR CONNOR: Sir, no questions on behalf of Atkins for
6 Mr Lumb.

7 CHAIRMAN: Thank you.

8 Re-examination by MR WILKEN

9 MR WILKEN: Sir, just some very brief documentary
10 re-examination, as both the witness and the Commission
11 have asked to see some documents.

12 Good afternoon, Mr Lumb.

13 A. Good afternoon.

14 Q. Can we go first to H7/2643. This is in response to
15 a question from Prof Hansford; he asked to see the
16 notices of appointment, and here they are.

17 So if one goes to 2644 -- over the page, over the
18 page -- you see there that Intrafor is appointed as the
19 registered specialist contractor.

20 And if we go over the page, over the page, over the
21 page -- one more, please -- you see there that Leighton
22 is appointed as the registered general building
23 contractor.

24 Can we now, please, go to C13/8258. This is
25 an appendix to the Buildings Department consultation
26

1 letter.

2 A. Yes.

3 Q. And you will see here -- this is appendix IX, and you
4 will see it says, "Steel reinforcing bars for ductility
5 requirement"; do you see that?

6 A. Yes.

7 Q. Then if you go down to paragraph (c), you see there it
8 requires a T3, and below you see there are certain
9 requirements as to record-keeping.

10 If we then go to 8262, this is appendix X, "Mental
11 couplers for steel reinforcing bars without ductility
12 requirement", and if you go down to paragraph (c) on
13 this page, you will see it's a T1?

14 A. Yes.

15 Q. And there are different requirements.

16 A. Also, just to note, there is no quality supervision plan
17 required in this appendix.

18 Q. Finally, you wanted to see the Code of Practice for
19 Concrete.

20 A. Mm-hmm.

21 Q. I apologise if I've got this horribly wrong and I give
22 the wrong references because I'm doing this on the fly,
23 but C27/8503. No, I have got the wrong reference.
24 C13 -- I'm grateful to Mr Coleman -- 8503. There we go.
25 Scroll down, please. You see there, there's a reference
26

1 to detailing for ductility, and it refers to beams.

2 If we go to the next page, we have some references
3 to "Transverse reinforcement". The next page,
4 "Columns"; you see that.

5 Then if we go to 8547, please. You see there
6 "Ductility" and references to "Beam-column joints",
7 "Beams" and "Columns"; is that what you were referring
8 to?

9 A. Correct.

10 MR WILKEN: Sir, I have no further questions.

11 CHAIRMAN: Thank you. Thank you very much indeed, Mr Lumb.

12 You are finished.

13 WITNESS: Thank you.

14 CHAIRMAN: Thank you for the assistance you have given to
15 the Commission.

16 WITNESS: You are welcome.

17 (The witness was released)

18 MR BOULDING: Sir, that means it's the turn of MTR to call
19 its witnesses, and if it's convenient to you, I'm going
20 to call MTR's first witness, Mr Clement Ngai.

21 MR PENNICOTT: Sir, before Mr Boulding does that, could
22 I just mention one thing?

23 The Commission has invited Leighton to provide
24 a witness statement from Mr Harman, a gentleman whose
25 name has cropped up from time to time over the last few
26

1 days, if not few weeks. My understanding is that
2 Leighton are in the process of obtaining that witness
3 statement and I think they have been asked to do that by
4 next Friday. That's my understanding; I will be
5 corrected if I am wrong. So there will be, assuming
6 that all happens, one further witness from Leighton,
7 Mr Harman, who will be called in due course, but
8 obviously not next week. It will be in the week after.
9 Just to make it clear, so that everybody is aware that
10 that is happening.

11 MR WILKEN: Sir, the reason for the slight delay is he is no
12 longer an employee.

13 MR PENNICOTT: I understand that and that is entirely right.

14 CHAIRMAN: Good. Thank you.

15 MR BOULDING: Good morning, Mr Ngai.

16 WITNESS: Good morning.

17 MR NGAI YUM KEUNG, CLEMENT (sworn in Puntì)

18 Examination-in-chief by MR BOULDING

19 MR BOULDING: Please could you give your full name and
20 address to the Commission.

21 A. 魏欽強就係全名，地址係... [redacted]

22 Q. Thank you. We know that you've produced one witness
23 statement for the Commission's assistance in this
24 Inquiry, and please could you go to B232. Do we there
25 see the first page of your witness statement, Mr Ngai?

26 A. 係。

1 Q. If we can go on to page 238, we there see your
2 signature, under the date of 14 September 2018; correct?

3 A. 係。

4 Q. But we know that you'd like to make one or two
5 amendments to that, and if we can go to page 238.1, do
6 we see the amendments that you would like to make to
7 your statement?

8 A. 係。

9 Q. Subject to those amendments, are the contents of the
10 statement true to the best of your knowledge and belief?

11 A. 係。

12 Q. Is that your evidence in this Commission of Inquiry,
13 Mr Ngai?

14 A. 係。

15 MR BOULDING: Now, the process will be, Mr Ngai, that you
16 will be questioned by various of the lawyers in the
17 room, starting with my learned friend Mr Pennicott. At
18 the end of that questioning, I might ask you a few more
19 questions, and of course the Chairman and the Professor
20 are always at liberty to ask you a question when they
21 feel they need some assistance.

22 So thank you, Mr Ngai.

23 Examination by MR PENNICOTT

24 MR PENNICOTT: Mr Ngai, good afternoon. Thank you very much
25 for coming along to give evidence to the Commission.

1 Mr Boulding has explained the process. My name is
2 Pennicott, I'm one of the counsel to the Commission, and
3 I'll be asking you questions to start with.

4 Mr Ngai, as I understand it, at the moment you are
5 head of project engineering at MTR; is that correct?

6 A. 冇錯。

7 Q. And, as head of project engineering, you are not just
8 involved in project SCL1112, but you are involved in
9 a number of projects that the MTR has running at the
10 moment?

11 A. 係，冇錯。

12 Q. I think you started in June 2016 as acting head of
13 project engineering, and then a little later you became
14 head of project engineering?

15 A. 係。

16 Q. And your predecessor as head of project engineering was
17 Mr Stephen Chik?

18 A. 冇錯，冇錯。

19 Q. During the time that we are most concerned with in this
20 Inquiry, that is 2013 through to, let's say, June 2016,
21 when you became acting HPE, you were the chief design
22 manager, as I understand it, at MTR?

23 A. 冇錯。

24 Q. And, so far as this project is concerned, that is
25 SCL1112, you were responsible, in an overseeing role,

1 for the design management of the project; would that be
2 right?

3 A. 喎。

4 Q. You didn't have, as I understand it, day-to-day
5 involvement in the design, but it was, as I say,
6 an overseeing role?

7 A. 喎。

8 Q. Would this be right, that the principal personnel at MTR
9 who may report to you, if they needed to, were Andy
10 Leung, Ralph Tam and Vincent Chu?

11 A. 係, design manager係佢哋三個。

12 Q. Right. They were the three principal design managers
13 who, if they had any particular issue that they wished
14 to raise, you were there, effectively -- you were there
15 to assist him?

16 A. 係。

17 Q. Mr Ngai, I also understand from paragraph 9 of your
18 witness statement -- perhaps we could have a look at
19 that -- that the HPE, as I will now call you, was
20 responsible for the nomination of the competent person
21 or persons?

22 A. 係。

23 Q. We can see that -- I think, on the dates that you've
24 given us -- Mr Chik would have appointed Mr Saunders,
25 Mr Rooney and Mr Jason Wong to that position?

1 A. 係。

2 Q. And more recently you would have appointed Mr Neil Ng to
3 that position?

4 A. 係。

5 Q. Likewise or similarly, if we go to paragraph 11 of your
6 witness statement, the HPE was also responsible for
7 appointing the engineer's representative and the
8 engineer's delegate or delegates?

9 A. 係。

10 Q. We can see from the useful table that you've provided in
11 paragraph 11 that again Mr Chik would have been
12 responsible for appointing Dr Philco Wong and
13 Mr Saunders, Mr Reilly and Mr Rooney to the engineer's
14 delegate position?

15 A. 係。

16 Q. And again you would have appointed Mr Neil Ng to that
17 position more recently?

18 A. 係。

19 COMMISSIONER HANSFORD: Just on that, Mr Pennicott -- and
20 perhaps I can ask Mr Ngai -- on the engineer's
21 delegates, who appear to be multiple engineer's
22 delegates at any given time; is that correct?

23 A. 係。

24 COMMISSIONER HANSFORD: Okay. Thank you.

25 MR PENNICOTT: And so far as the engineer's representative

1 is concerned, again, Mr Chik would have appointed
2 Patrick Cheng and Kit Chan, and more recently you would
3 have appointed Mr Michael Fu? Or perhaps not, insofar
4 as Mr Michael Fu is concerned.

5 A. 我相信傅賢哲都係Mr Chik委任嘅。

6 Q. Right. So one can see from that brief discussion that,
7 at times, the competent person and the engineer's
8 delegate might be one and the same person?

9 A. 係。

10 Q. But the engineer's representative would always be
11 a separate and identifiable position and would not
12 double up with any other position; is that right?

13 A. Engineer's delegate同engineer's representative係唔同嘅人嘅。

14 Q. Yes, and likewise the engineer's representative would
15 never be the competent person?

16 A. 喺呢個case, 佢哋唔係。

17 Q. You have amended paragraph 13 of your witness statement
18 to tell us that you first heard of the defective steel
19 work allegation on 6 January 2017, when Mr TM Lee
20 forwarded you an email chain in respect of Jason Poon's
21 email to Mr Zervaas of Leighton, dated 6 January 2017?

22 A. 係。

23 Q. What you go on to say is that Mr Lee asked you to ask
24 Andy Leung to look into the matter, and you accordingly
25 forwarded the email chain to Andy Leung on the same day?

1 A. 係。

2 Q. Having done that, Mr Ngai, did you follow up with
3 Mr Andy Leung whether or not he had investigated into
4 the matter, and did he tell you what his conclusions
5 were?

6 A. 當時冇嘅。

7 Q. So would this be right, that at that time, which
8 I assume you mean January/February 2017, you had no
9 further discussions with Andy Leung about the bar
10 cutting email?

11 A. 冇嘅。

12 Q. Did you at any time follow up with Mr Andy Leung
13 Mr Poon's email and your request for Mr Leung to look
14 into it?

15 A. 冇嘅，當時。

16 Q. At any time?

17 A. 冇。

18 Q. All right. Could I then move to the subject matter of
19 the MTR report that was prepared and issued in June of
20 this year. You refer to that in paragraph 16 of your
21 witness statement, which you have also added to, and you
22 say:

23 "My involvement in the preparation of the June
24 report was limited to reviewing a few draft paragraphs
25 under the section entitled 'Carrying out site

1 supervision and inspection in accordance with statutory
2 requirements'."

3 And you've added the words "and commenting on
4 an earlier draft of the June report"?

5 A. 係。

6 Q. Would I be right in suggesting to you, Mr Ngai, that you
7 were also, in the context of the June report, asked to
8 carry out a check on the number of couplers that were
9 referred to in the report?

10 A. 當時係當時嘅project director Philco Wong要求我哋design
11 management team去估一估個number of couplers。

12 CHAIRMAN: Sorry, to guess?

13 MR PENNICOTT: Could I clarify --

14 A. I say "estimate".

15 INTERPRETER: "'Estimate', what I meant was."

16 MR PENNICOTT: "Estimate", okay. Right. That might be
17 a better answer.

18 When you say "he asked our design management team to
19 estimate the number of couplers", my understanding,
20 Mr Ngai, is that he asked you, no doubt as head of the
21 design management team, but he did ask you; is that
22 right?

23 A. 係。

24 Q. Perhaps we could just look at how Dr Philco Wong phrases
25 it in his witness statement. Could we go, please, to

1 B1/145. This is the statement of Dr Philco Wong, and at
2 145 you can see he's got a heading there -- and I assume
3 you've read this witness statement before, Mr Ngai;
4 would that be right?

5 A. 冇詳細睇過嘅。

6 Q. Okay. Well, he's got a heading there, "Request
7 no. 11(b)":

8 "Please identify the person or persons responsible
9 for preparing the MTR report."

10 Then there's paragraphs 31 and 32, and if you go
11 over the page, please, at paragraph 33 he says this:

12 "In addition, I also commented on a number of
13 specific issues/paragraphs of the draft ... report,
14 including the number of couplers. In this regard,
15 I specifically asked Mr Aidan Rooney and his team to
16 double-check the number of couplers. I also separately
17 requested Mr Clement Ngai [that's you] and his design
18 team to conduct a similar exercise."

19 Mr Ngai, can you explain to the Commission what
20 steps were taken to, as Dr Wong put it, double-check the
21 number of couplers? What was done?

22 A. 當時係Dr Philco Wong係打過電話畀我，佢就要求個design team去做
23 一個estimate of嗰個螺絲帽或者couplers嘅，我就委託咗design
24 manager就同埋個team就去做一個estimate。

25 Q. And which design manager was it? Mr Andy Leung, or one

1 of the others?

2 A. 係Andy Leung。

3 Q. Do you know what steps Mr Andy Leung took to carry out
4 your instructions to him?

5 A. 我記憶之中，Andy Leung同埋佢嘅團隊係做咗一個estimate，係根據當時
6 diaphragm wall嘅as-built drawings去估算。

7 Q. All right.

8 Could I ask you, please, to look at the June report,
9 at B1, page 24.

10 Just to put this in context, Mr Ngai, if we go back
11 to page B21, there's a heading there, "Contract
12 requirements"; do you see that?

13 A. 睇到。

14 Q. Then if we go over the page to B22, there's a section on
15 MTRC's on-site inspection personnel, and that's in
16 a series of subparagraphs which finish at the bottom of
17 B23.

18 Then, if we go over the page to B24, could I ask you
19 to look at the paragraph just above 5.3.2, towards the
20 bottom of the page, where it says this:

21 "In accordance with the design accepted by BD, the
22 total number of couplers connecting the EWL slab to the
23 east and west diaphragm walls was approximately 23,500.
24 In addition, to facilitate their method of slab
25 construction, Leighton installed approximately 19,800

1 couplers at the 31 construction joint locations between
2 adjacent bays of concrete and at temporary openings
3 within the whole EWL slab."

4 The first thing to note, Mr Ngai, is that all those
5 figures that we see in that paragraph relate, and relate
6 exclusively, to the EWL slab. Is that your
7 understanding?

8 A. 係。

9 Q. Mr Ngai, that means, in terms of the totality of the
10 couplers, both on the east and west diaphragm walls, and
11 the construction joints, there were 43,300 couplers,
12 according to this report?

13 A. 係。

14 Q. Did you personally take any steps to satisfy yourself
15 that those figures were correct?

16 A. 當時係Dr Philco Wong叫個design team去做一個estimate嘅時候，
17 係主要係EWL slab同埋diaphragm wall connection嘅地方個個
18 number of couplers嘅，就有包括個construction joint嗰度嘅
19 couplers嘅，而就住EWL slab同埋diaphragm wall嗰度嘅connection
20 嘅couplers，我係叫咗design manager Andy Leung佢去負責去做
21 一個estimate或者估算嘅。

22 Q. Right. So would this be fair, Mr Ngai, that you simply
23 relied upon the information that you were given by
24 Mr Andy Leung and his team, on the basis of the
25 investigation and the research that they had carried

1 out?

2 A. 係靠佢咁嘅結果嘅。

3 Q. Okay.

4 Could we then, please, look at, also in the report,
5 page B1/28. Mr Ngai, this is the section of the report,
6 at the top of the page, 5.3.3, "Carrying out site
7 supervision and inspection in accordance with statutory
8 requirements".

9 Do you see that?

10 A. 睇到。

11 Q. As I understand it, this is the section of the report
12 that you accept in your witness statement you looked at
13 and considered?

14 A. 係。

15 Q. You make reference -- sorry, the report makes reference,
16 below the box that we see, to the fact that:

17 "Leighton proposed to use BOSA type II ... standard
18 ductility couplers for the reinforcement coupler to the
19 threaded bar connection works. MTR accepted this
20 proposal."

21 Then there's reference to the QSP that I'm not going
22 to trouble you with. Then there's reference to the site
23 supervision plan, details of the technically competent
24 persons; again, I'm not going to trouble you with that.

25 Then it goes on to say:

26 "During the process of the EWL slab construction

1 works, MTR and Leighton have deployed TCPs to supervise
2 the works at specified frequencies. These TCPs are
3 required to record their observations in the SSP/QSP
4 records to confirm whether the works are carried out in
5 accordance with the approval requirement. The
6 fabrication, sampling, testing and supervision for
7 installation of the couplers and threaded reinforcement
8 bars were carried out in accordance with the submitted
9 QSP arrangement including ..."

10 And I'm not going to read the rest of that out, but
11 then the last sentence under the second bullet point,
12 that's under the heading "Supervision and inspection by
13 MTR on site", it says this:

14 "Full records are in place. All inspection records
15 indicated that the works were acceptable, with no
16 anomaly."

17 Again, Mr Ngai, did you personally, having read and
18 reviewed this paragraph, did you personally look at any
19 records in relation to these supervision and inspection
20 functions?

21 A. 冇嘅。

22 Q. So is it again a question of you simply relying upon
23 what you were told by Mr Andy Leung or whoever else
24 wrote this section of the report?

25 A. 我當時睇過，覺得佢哋嘅要求，包括20%嗰個splicing assembly都應該
26 係符合屋宇署嘅要求嘅。

1 Q. Could I ask you, please, to be shown bundle B7,
2 page 4537.

3 This is a document, as you can see, headed, "MTR
4 mechanical coupler checklist". Do you recall having
5 seen this document before, Mr Ngai?

6 A. 應該有。

7 Q. Could I ask you, please, to be shown the next page,
8 which will be 4538, I guess. This is an example,
9 Mr Ngai, of a series of documents, signed, as we can
10 see, bottom left, by Mr Kobe Wong, one of the MTR's
11 inspectors of works, and he puts at the bottom:

12 "This form serves a retrospective record of coupler
13 installation."

14 Do you know, Mr Ngai, whether this document was in
15 existence at the time that the June report was prepared?

16 A. 我唔知。

17 Q. Is it a document you have seen before, Mr Ngai?

18 A. 有。

19 Q. All right. Mr Ngai, do you have any idea how the figure
20 of 23,500 couplers for the EWL slab connected to the
21 diaphragm walls, both east and west, was calculated?

22 A. 我知道design manager Andy Leung佢哋係用diaphragm wall嘅
23 as-built drawings去做一個估算。

24 Q. We know, Mr Ngai, and I'm sure you know -- we can look
25 at some more documents in a moment, if necessary -- that

1 that figure, unfortunately, was wrong?

2 A. 係。

3 Q. Do you know why it was wrong, Mr Ngai?

4 A. 我理解係有啲--當時以為係有coupler嘅location, 後畀係用咗另一個
5 detail, 即係所謂而家講嘅through-bar嘅detail。

6 Q. Right. That, unfortunately, was a discovery that was
7 made after the report had been produced, been given to
8 the government and been made public?

9 A. 係。

10 MR PENNICOTT: Sir, I'm just about to go on to a sort of
11 separate section. It will be the last section, as it
12 happens. It will probably take maybe 10 or 15 minutes.
13 I'm in your hands.

14 CHAIRMAN: Well, it's 1 o'clock now. It's an opportune
15 moment.

16 MR PENNICOTT: Of course, sir.

17 MR BOULDING: Can you give him the usual warning, sir?

18 CHAIRMAN: Yes, I will do that.

19 Mr Ngai, you are in the middle of giving your
20 evidence at the moment. All witnesses, when they are in
21 the middle of giving their evidence, are not permitted
22 to speak to anybody about their evidence; okay? That
23 includes your lawyers or friends, anything like that.
24 So you must keep all matters relating to your evidence
25 to yourself, until it is completed.

1 WITNESS: 明白。

2 CHAIRMAN: Good. Thank you.

3 MR PENNICOTT: 2.15, sir?

4 CHAIRMAN: 2.15. Thank you.

5 (1.01 pm)

6 (The luncheon adjournment)

7 (2.18 pm)

8 MR PENNICOTT: Good afternoon, sir. Good afternoon,
9 Prof Hansford.

10 Good afternoon, Mr Ngai. Just a few more questions
11 from me.

12 Can I ask you, please, Mr Ngai, to be shown
13 bundle H8, page 3017. Mr Ngai, this is a letter from
14 the Highways Department to Dr Philco Wong, dated 31 May
15 this year. Is this a letter you've seen before,
16 Mr Ngai?

17 A. 有見過。

18 Q. It's the letter that was written shortly after all the
19 publicity in the media at the end of May about cut
20 threaded rebar, and what the Highways Department were
21 requesting from MTR was a load test to be conducted by
22 an independent expert, and you probably recall that
23 request being made, Mr Ngai; is that right?

24 A. 係嘅。

25 Q. And the independent expert that MTR engaged was a firm
26 called CM Wong & Associates; is that right?

1 A. 係。

2 Q. If you would be good enough to be shown the next page,
3 at 3019, two pages on, on 22 June, so some three weeks
4 later or so, Mr TM Lee, the general manager for the
5 project and head of E&M construction, sent to the
6 government a structural safety test outline proposal,
7 prepared by CM Wong & Associates. Do you see that?

8 A. 睇到。

9 Q. Mr Ngai, were you involved in any way in reviewing
10 CM Wong's report or proposal, outline proposal, before
11 it was sent out to government?

12 A. 我哋係有去做一個審查，因為呢個係CM Wong顧問公司佢一個independent
13 consultant嘅報告嚟嘅，或者一個proposal嚟嘅。

14 Q. Right. Did you see the report before it was forwarded
15 to government?

16 A. 我哋有見過嘅。

17 Q. Okay. If we go to the report, which is the -- the front
18 sheet is the next page, 3020, and then at 3022 we can
19 see a table of contents, and then at 3025 we see
20 a heading, "Extent of issue"; do you see that, Mr Ngai?

21 A. 睇到。

22 Q. What is said there is:

23 "According to [the MTR report]" -- that's the one we
24 were looking at before lunch -- "the total number of
25 couplers connecting the EWL track slab to the eastern

1 and western diaphragm walls is approximately 23,500", as
2 we have seen, "and the horizontal couplers under concern
3 are located at the junction between the eastern
4 diaphragm wall and the EWL track slab between
5 gridlines 15 and 50 (ie areas B and C)."

6 Do you see that?

7 A. 睇到。

8 Q. Then over the page, at 3026, CM Wong set out a list of
9 information provided by MTRC; do you see that?

10 A. 睇到。

11 Q. Again, Mr Ngai, were you involved in the provision of
12 this information to Mr Wong -- or to CM Wong, rather?

13 A. 由我哋嘅設計管理團隊係有提供過一啲嘅圖紙、文件畀CM Wong &
14 Associates。

15 Q. Who decided what information they were going to give to
16 CM Wong & Associates?

17 A. 當時我哋係有同CM Wong有meetings，佢需要嘅資料，我哋就向佢哋提供嘅。

18 Q. So it was really a process of him asking you for
19 information and then you complying with his requests?

20 A. 係，大致係咁。

21 Q. All right. Was Mr CM Wong himself dealing with this
22 matter?

23 A. 黃先生同埋佢另一個同事梁先生都有參與嘅。

24 Q. Mr Leung?

25 A. Yes.

1 Q. Okay. If you look at the list of information that is
2 set out on this page, and go about halfway down, under
3 the heading "As-built drawing", you will see the fourth
4 and fifth items there listed are firstly the "Coupler &
5 bend-out bar schedule for area B", and the "Coupler
6 schedule for area C (sheet 1 and 2)".

7 Do you know, Mr Ngai, what those documents are?

8 A. 我記憶之中，as-built drawing係有一啲schedule係講到每一個panel
9 有幾多粒coupler嘅。

10 Q. So just a schedule of couplers for each panel? Were
11 they stand-alone documents? Were they documents
12 prepared specifically for the purposes of giving
13 Mr Wong? Were they contemporary documents? Do you have
14 any recollection? Because I'm bound to say I haven't
15 been able to find them or identify them.

16 A. 我記憶之中，係當時嘅as-built drawing嚟嘅。

17 Q. All right. So I showed you a document, one of the
18 series of documents before lunch; remember the one
19 signed by Mr Kobe Wong? Do you remember that? We
20 looked at it before lunch. It wasn't those documents;
21 it was something different, was it?

22 A. 唔記得，唔係啲啲，唔係啲啲，我估呢個coupler schedule係應該我哋
23 係交界屋宇署嘅as-built嘅文件嚟嘅。

24 Q. I see. So as-built diaphragm wall drawings?

25 A. 係。

1 Q. Okay.

2 Then can I ask you, please, to go to page 3378 in
3 the same file. This is now a letter -- we're now at
4 18 July, so we've moved on another month.

5 Sorry, sir, did you want to ask a question?

6 COMMISSIONER HANSFORD: Yes. At the bottom of that letter,
7 there's a list of the partners in CM Wong, and I'm just
8 wondering whether that is the Mr Leung that we're
9 referring to, Mr Ben CH Leung?

10 MR PENNICOTT: Yes, sir, and he's also referred to in the
11 first line of this letter. I will get Mr Ngai to
12 confirm but I'm pretty sure that's right.

13 COMMISSIONER HANSFORD: Thank you.

14 MR PENNICOTT: Let's just deal with that first point. Just
15 looking at the list of partners at the bottom of the
16 letter, the two people dealing with it were, from
17 CM Wong's point of view, Mr Wong himself, and Mr Ben
18 Leung; is that correct?

19 A. 係。

20 Q. We can see, from the first line of this letter, that
21 what he says is this -- and this was signed by Mr Wong
22 himself:

23 "During the meeting at our office on 16 July 2018,
24 Mr Clement Ngai [that's you] handed to our Mr Ben Leung
25 two sketches, 'Attachment B' and 'Attachment C', which
26 show the as-built record of the connection details of

1 the eastern support of the EWL track slab with the
2 diaphragm wall. The sketches indicate that for bays
3 C1-1 and 1875, horizontal couplers were used for both
4 the top and bottom reinforcements of the track slab.
5 However, for the remaining portions, couplers were used
6 only for connecting the bottom reinforcement to the
7 diaphragm wall and no coupler was employed for the top
8 reinforcement. In other words, except for the width of
9 13 metres, encompassing bays C1-1 and 1875, no couplers
10 were used for all the top reinforcement. For ease of
11 reference, we enclose the two sketches with this
12 letter."

13 Mr Ngai, first of all, what that letter suggests is
14 that you personally, first of all, attended a meeting
15 with Mr Wong and perhaps Mr Ben Leung on 16 July this
16 year; is that right?

17 A. 係。

18 Q. That you handed to him the two sketches that we will
19 look at in a moment, Mr Leung that is?

20 A. 係。

21 Q. And would this be right, that by this time you, the
22 MTRC, had realised that, essentially, there were some
23 very material errors in the MTRC report of 15 June?

24 A. 係。

25 Q. And that the information that you had given to Mr Wong
26 for the purposes of his outline proposal was not the

1 full and accurate information that he needed?

2 A. 係我哋當時--我哋第一個6月黃志明工程師嘅報告，我哋就--畀到我哋當時
3 有嘅資料嘅，而呢度有兩個圖係我哋--應該係我哋7月13號畀RDO裏面嘅信
4 嘅attachment嚟嘅。

5 Q. Right. So you would have found out by 13 July what the
6 position was, and you were now informing Mr Wong?

7 A. 係。

8 Q. Mr Ngai, what role did you play, personally, in
9 discovering the errors that had occurred in the 15 June
10 2018 report?

11 A. 我哋嗰個attachment新嘅資料--可唔可以睇attachment B同C?

12 Q. Of course.

13 A. 嗰啲資料，我記憶之中，係我哋嘅construction team佢哋搵到嘅，而當
14 我哋7月嘅時候先至知道嘅。

15 Q. Let's look at attachment B first. It's at 3380.

16 A. Mmm.

17 Q. So that's the first detail, and, as I understand it,
18 Mr Ngai, this is showing, as it says on its face, the
19 position in relation to areas C1-1 and 1875.

20 A. Mm-hmm.

21 Q. That is, it is showing the original approved design
22 using rebar and couplers?

23 A. 根據7月13號嗰封信係咁樣。

24 Q. All right. The other detail is over the page at 3381.
25 At this point in time, your understanding was that the

1 remainder of areas B and C were constructed as per this
2 detail?

3 A. 係。

4 Q. Mr Ngai, following this letter, the letter to the RDO on
5 13 July, your meeting with Mr Wong on 16 July, Mr Wong's
6 letter that we've just been looking at on 18 July, did
7 you thereafter, you personally again, have a continuing
8 role in providing Mr Wong, CM Wong & Associates, with
9 further information?

10 A. 我記得後期我哋都搵到一啲更--即係construction team嘅同事係搵到一
11 啲最--仲一啲update嘅嘅資料嘅，我記憶之中，亦都有啲資料係畀過黃志明
12 顧問公司嘅。

13 Q. Did the construction team that you've just described,
14 your colleagues in the construction team, pass that
15 information to you in the design team before it was
16 passed on to CM Wong?

17 A. 我唔記得喇，呢個point。

18 Q. All right.

19 If we could go, please, to 3390. We are now at
20 30 August 2018, do you see that, some six weeks on from
21 where we were previously? What has happened during this
22 period, amongst other things, is that Mr Neil Ng has
23 become the project manager -- sorry, is the project
24 manager, but also I think had been, as we saw earlier --

25 A. 係。

1 Q. -- made the competent person?

2 A. 係。

3 Q. Because, unfortunately, a number of your colleagues at
4 the MTR, around about 7 and 8 August, had been -- their
5 contracts had been terminated?

6 A. 係。

7 Q. What Mr Ng is doing is sending to government an updated
8 or a different load test proposal; do you see that?

9 A. 睇到。

10 Q. Presumably, you would have had a look at this before it
11 was sent out?

12 A. 我哋有睇過，不過冇詳細review過嘅。

13 Q. All right. If we go to page 3397, there is a synopsis
14 provided, and under the first heading some background
15 provided, in this report.

16 CM Wong refer to, in the second paragraph, the
17 outline proposal that had been prepared on 22 June 2018,
18 which we looked at earlier; do you see that?

19 A. 睇到。

20 Q. Then in the next paragraph, skipping over the first
21 sentence, he then refers to the meeting on 16 July that
22 we've just touched upon, and the as-built updated
23 information provided.

24 Then in the next paragraph he says this:

25 "Subsequent to the response, MTRC further provided

1 in several occasions more as-built records of couplers
2 in late July 2018."

3 Is that a reference to what you mentioned just
4 a moment ago, Mr Ngai, that is the construction team
5 providing yet further information to Mr Wong for his
6 consideration?

7 A. 係，係。

8 Q. He goes on to say:

9 "CMA had requested on 10 August 2018 a set of the
10 amended drawings to be submitted to RDO but now without
11 such drawings, CMA have amalgamated the latest
12 information, which consist of 11 types of as-built
13 connection details, into a single drawing as attached.
14 It was noted that no top couplers are used in
15 area 1875."

16 Mr Ngai, why were you unable to provide Mr Wong with
17 as-built records of couplers?

18 A. 因為當時我哋嘅construction management team仲喺度同contractor
19 喺度搵啲construction record嘅。

20 Q. And why were you unable to provide amended drawings to
21 Mr Wong as he requested?

22 A. 當時我理解，係construction team同contractor喺度一齊去搵啲資料，
23 然後去做番一個update嘅圖紙嘅。

24 Q. Were you involved in that process, Mr Ngai, at all?

25 A. 我哋有知道有啲新嘅資料，但係我哋冇直接參與。

1 Q. Before information was passed to Mr Wong, would you get
2 to see it yourself first, or did the construction team
3 and your design managers just pass it straight to
4 Mr Wong?

5 A. 有時佢哋係--我相信大部分時間都係佢哋直接交畀CM Wong顧問公司嘅。

6 Q. So you didn't think it appropriate for you to oversee
7 this process of information flow to Mr Wong?

8 A. 我覺得佢哋可以係提供一啲資料畀黃先生佢哋嘅團隊嘅。

9 MR PENNICOTT: All right. Mr Ngai, thank you very much.
10 I have no further questions for you, but others may
11 have.

12 MR SO: No questions from China Technology.

13 CHAIRMAN: Thank you.

14 MR WILKEN: No questions from Leighton.

15 MR CONNOR: No questions from Atkins.

16 MR CHOW: Mr Chairman, I have some questions for Mr Ngai.

17 CHAIRMAN: Yes.

18 Cross-examination by MR CHOW

19 MR CHOW: Good afternoon, Mr Ngai. My name is Anthony Chow
20 and I represent the government, and I have a few
21 questions regarding the design of the project that
22 I would like to explore with you.

23 Mr Ngai, there is an entrustment agreement between
24 the government and MTRC in relation to the SCL project.
25 Are you aware of that agreement?

26 A. 我知道嘅。

1 Q. Under that entrustment agreement, there is a series of
2 entrustment activities that MTRC has to undertake in
3 relation to the project. Are you aware of that?

4 A. 知道。

5 Q. One of those activities actually concerns the detailed
6 design of the works. Are you also aware of that?

7 A. 知道。

8 Q. Am I correct to say that for that purpose, MTRC engaged
9 Atkins to carry out the detailed design for the works?

10 A. 係紅磡站呢一部分。

11 Q. Yes, Hung Hom Station; right?

12 A. 係。

13 Q. Notwithstanding that, MTRC would oversee the detailed
14 design performed by Atkins, in the sense that to make
15 sure that the detailed design form was proper?

16 A. 係。

17 Q. Is that the position?

18 A. 係。

19 Q. Can I then ask you to take a look at one of the
20 drawings: bundle H2, page 440, please.

21 What you see on the screen is one of the design
22 drawings submitted by MTRC to the Buildings Department,
23 and this drawing was accepted by the Buildings
24 Department. Can you confirm that?

25 A. 呢個係Atkins嘅圖嘅，但係我exactly邊一張圖有人，我呢一度睇唔清楚。

1 Q. That's fine. You can take it from me that this is one
2 of the drawings Buildings Department received from MTRC,
3 and this drawing was accepted by the Buildings
4 Department.

5 What I want to ask you is -- I would like you to
6 focus on the lower right-hand side of the drawing, which
7 shows -- you see there's a diagram, and the heading is
8 "Notes on diaphragm wall couplers"; do you see that
9 part?

10 A. 睇到。

11 Q. Under note 1, it provides that:

12 "Couplers positioned within the zone shown below
13 shall be classified as ductility couplers."

14 Do you see that?

15 A. 我睇到。

16 Q. And in the diagram under note 1, you can see two boxes
17 shaded, which indicate to be ductility zones; do you see
18 that?

19 A. 睇到。

20 Q. Can you confirm that these two boxes shaded represent
21 part of the diaphragm wall?

22 A. 係，應該係連續牆嚟嘅。

23 Q. Because to the right of the diaphragm wall we see "EWL
24 slab" and then below it is the "NSL slab"; you also see
25 that, right?

1 A. 我見到。

2 Q. Do you agree with me that the diaphragm wall would
3 involve the use of couplers, both vertically, for the
4 purpose of connecting different cages of -- the
5 reinforcement cages inside the diaphragm wall?

6 A. 係。

7 Q. And it also contained couplers placed horizontally for
8 the purpose of connecting to the horizontal
9 reinforcement coming in from the slabs?

10 A. 我知道係有--由slab係有啲橫鐵係要駁入去，但係呢張圖紙睇唔到。

11 Q. Yes. I'm going to take you to another drawing which
12 shows the horizontal couplers, but before that can I get
13 you to confirm that the requirement set out under note 1
14 for ductility couplers to be used in the zone, would it
15 include -- if there is any horizontal couplers to be put
16 inside the diaphragm wall for connecting -- for the
17 future connection with the slab, that would also be
18 included, under note 1?

19 A. 應該係，應該會。

20 Q. Can I then refer you to another drawing, at bundle H4,
21 page 725, please. You can also take it from me that
22 this is also one of the drawings submitted by MTRC to
23 the Buildings Department and was accepted by the
24 Buildings Department.

25 If we now focus on the diagram in the middle of the

1 drawing, and the top part of it, if we can have it blown
2 up a little bit -- right. Now, you see -- can you
3 confirm that the darkened rectangular boxes represent
4 the horizontal couplers, those to be used to connect to
5 the slab?

6 A. 係，係。

7 Q. If we can now move to the right side of the drawing, the
8 upper part, showing the legend -- right -- do you see,
9 under the word "Legend", there are a few symbols, and
10 one of those symbols is a darkened rectangular box put
11 in a vertical direction; do you see that?

12 A. 睇到。

13 Q. And next to it there is a description called "Ductility
14 coupler"; do you see that?

15 A. 睇到。

16 Q. Does it mean that the boxes, the darkened boxes,
17 represent ductility couplers?

18 A. 係。

19 Q. And does it mean that this is what is specified by MTRC
20 in the contract with Leighton?

21 A. 係。

22 Q. This morning, Mr Stephen Lumb's evidence is that, as
23 a structural engineer, he finds this is not necessary.
24 Do you agree with this?

25 A. 我覺得每一個設計我哋都係要根據嗰個顧問公司嘅設計去做嘅。

1 Q. Do you think there is a technical justification for
2 specifying ductility couplers in those locations?

3 A. 我覺得顧問可能考慮到嗰個joint嘅loading同個quote嘅時候，佢可能係
4 就specify咗啲呢一種嘅coupler。

5 MR CHOW: Thank you, Mr Ngai.

6 Mr Chairman, I have no more questions.

7 MR BOULDING: Sir, I have no questions. Unless the good
8 professor or yourself have any questions, perhaps the
9 perhaps could be released.

10 CHAIRMAN: Thank you very much indeed. Thank you. Your
11 evidence is completed now. Thank you for your
12 assistance.

13 (The witness was released)

14 MR BOULDING: Sir, my next witness is Mr Andy Leung.

15 Good afternoon, Mr Leung.

16 WITNESS: 午安。

17 MR LEUNG FOK VENG, ANDY (affirmed in Puntì)

18 Examination-in-chief by MR BOULDING

19 MR BOULDING: Splendid, Mr Leung.

20 Could you give your full name, please, to the
21 learned Commissioners.

22 A. 梁福榮。

23 Q. Could you turn to page B239, and do we there see the
24 first page of your first witness statement, Mr Leung?

25 A. (Nodded head).

1 Q. If you would be kind enough to be taken to page B258, do
2 we there see your signature under the date of
3 14 September 2018?

4 A. 正確。

5 Q. I understand that there are one or two corrections that
6 you would like to make, so could you be taken to
7 page B258.1. Do we there see, Mr Leung, the corrections
8 you'd like to make to your witness statement?

9 A. 正確。

10 Q. Subject to those corrections, are the contents of that
11 first witness statement true to the best of your
12 knowledge and belief?

13 A. 正確。

14 Q. We know you have also prepared a reply witness
15 statement, and I wonder if you could be taken to
16 page B24513. Do we there see the first page of your
17 reply statement, Mr Leung?

18 A. 睇到。

19 Q. If you can be taken on, please, to page B24517, and do
20 we there see your signature under the date of 7 November
21 2018?

22 A. 正確。

23 Q. Are the contents of that statement true to the best of
24 your knowledge and belief, Mr Leung?

25 A. 係。

1 Q. Do those two statements contain the evidence that you'd
2 like to put before the Commission?

3 A. 係。

4 Q. Now, Mr Leung, before I hand you over for questioning,
5 it's become something of a convention to see where
6 people like you are to be found in organisation charts,
7 so I wonder if we could assist the Commissioners by
8 going to page B627.

9 We can see, at the bottom left-hand corner, CAN we
10 not, that the positions set out there do not indicate
11 seniority but it's effective from July 2013; do you see
12 that? The bottom left-hand corner.

13 A. 係。

14 Q. If we go up the page, we can see, can we not, your name
15 and position, "Design manager", immediately below
16 Mr Clement Ngai; correct?

17 A. 係。

18 Q. Just to see how matters progressed, if we could then go,
19 please, to B694. Here, bottom left-hand corner,
20 "Effective July 2015", there we can see your name, can
21 we not, Mr Leung, "Design manager -- SCL (EWL south)"?

22 A. 正確。

23 MR BOULDING: Now, the situation is that various lawyers in
24 this room, Mr Leung, will ask you questions. The
25 Commissioners can ask you questions at any time they

1 consider it appropriate. Then I might take the
2 opportunity to ask some further questions at the end.

3 But for the time being, please stay there, and the
4 first person to have a go, I suspect, will be my learned
5 friend Mr Pennicott.

6 Examination by MR PENNICOTT

7 MR PENNICOTT: Good afternoon, Mr Leung.

8 A. 午安。

9 Q. Mr Boulding is entirely right; I get to go first. As
10 you know, I am one of the lawyers for the Commission.
11 Thank you very much for coming along this afternoon to
12 give your evidence.

13 Mr Leung, I want to discuss with you a few topics,
14 and they are as follows. First of all, I want to ask
15 you some questions about the respective roles of the
16 design management team and the construction management
17 team, and how they got along together, or didn't, as the
18 case may be.

19 The second thing I want to do is to talk to you,
20 briefly I hope, about the first design change that we
21 have been calling it, that is to the work that Intrafor
22 did on the diaphragm wall.

23 I then want to talk to you about the second change,
24 that is the further modifications that were made to the
25 top of the east diaphragm wall.

26 I then want to ask you some questions, fourthly,

1 about the QSP, that's the quality supervision plan, and
2 then perhaps at the end some general questions about
3 as-built records.

4 So that's the shape of it, Mr Leung.

5 Now, so turning to the first topic, that is the
6 design management and construction management teams --
7 Mr Leung, you, as I understand it, have been MTRC's
8 design manager for contract 1112 since July 2012. Is
9 that right?

10 A. 正確。

11 Q. In essence, you are the head of MTRC's design management
12 team for this project?

13 A. 如果喺沙中線嚟講，其實頭先魏生都提過，其實有三個設計經理，我係其中
14 一個，我就係負責由宋皇臺站至到去紅磡站呢個嘅，而contract 1112係我
15 其中一部分嘅責任嚟嘅。

16 Q. All right. Let me be a bit more specific. We are
17 obviously concerned in this Inquiry with the Hung Hom
18 Station; yes?

19 A. 係。

20 Q. And you were the design manager, the head of the design
21 management team, in respect of that station?

22 A. 正確。

23 Q. As we've just seen in the couple of questions that
24 Mr Boulding asked you, you reported to Mr Ngai?

25 A. 正確。

1 Q. As I understand it, Mr Leung, generally speaking, the
2 role of the design management team was to liaise with
3 MTR's detailed design consultant, namely Atkins, and
4 prepare design submissions to the Buildings Department.
5 Is that correct?

6 A. 正確。

7 Q. The design management team was very much office-based;
8 is that correct?

9 A. 正確。

10 Q. We know, and we've seen with Mr Ngai, that under the
11 instrument of exemption, MTR was required to appoint
12 a competent person to deal with submissions to the
13 Buildings Department, amongst other things.

14 A. 係。

15 Q. And we know, as we've seen with Mr Ngai, Mr Aidan Rooney
16 was the competent person from September 2013 to February
17 2015, and afterwards he was replaced by Mr Jason Wong?

18 A. 係。

19 Q. However, if one actually looks at some of the
20 documentation -- I'll start again. We had a bit of
21 a glitch there.

22 A. Sorry, so ...

23 Q. Let me start again, Mr Leung.

24 A. Okay, sorry.

25 Q. Mr Leung, I am noticing that you are watching the screen

1 that's in front of you. I think you're the first
2 witness that's had the LiveNote transcript in front of
3 you, as far as I'm aware -- I may be wrong about that --
4 but I don't want you to be distracted by it. If you are
5 going to be helped by it, that's fine, but I don't want
6 you to be distracted by it. Do you understand?

7 A. Okay. Sorry.

8 Q. Let me start that question again. If one looks at some
9 of the documents, which we're about to do, in fact you
10 were very often the person who was responsible for
11 making submissions to the Buildings Department; is that
12 right?

13 A. 正確。

14 Q. Could we therefore look in that context, by way of
15 example, at B10/7256.

16 You will see there, or you should see there,
17 a letter of 29 July 2015 from MTR to the Buildings
18 Department; do you see that?

19 A. 睇到。

20 Q. It's signed by you, as the design manager?

21 A. 係，正確。

22 Q. And it's submitting a "design report for the HUH station
23 excavation and lateral support area C1 and C2 --
24 excavation below minus 5mPD (amendment submission)"; do
25 you see that?

1 A. 睇到。

2 Q. In paragraph 1 it says -- you are submitting for comment
3 and agreement:

4 "1. 1 set of design report" -- and I'm not going to
5 read all that out" -- which are delivered to Pypun-KD as
6 per the agreed submission logistic."

7 Do you see that?

8 A. 睇到。

9 Q. Can you explain to me what "the agreed submission
10 logistic" is a reference to?

11 A. 可以嘅，因為通常我哋啲engineering submission都係好bulky，講緊
12 即係話一份submission隨時係有緊千幾頁紙嘅，我哋當時喺沙中線呢個工
13 程，我哋就同BD就有一個協定嘅，就因為佢哋就engage咗Pypun同佢哋就
14 review我哋啲submission嘅，所以我哋就啲圖同埋啲submission嗰個
15 main report嗰個submission，我哋係直接交一個copy去Pypun個
16 office度，就等佢哋可以快啲--儘快可以收到呢個report，可以做嗰個
17 審閱。

18 如果唔係嘅話，就我哋要交到去屋宇署個office，然後再由屋宇署
19 個office就再send畀佢哋，就呢個就係我講--喺呢啲信度，就係講嗰個
20 "agreed submission logistic" 就係咁解。

21 Q. Right. So there was essentially a protocol in place
22 that when a submission of this nature was being made to
23 the Buildings Department, you were also required to give
24 a physical hard copy to Pypun at the earliest

1 opportunity?

2 A. 係，冇錯，正確。

3 Q. Right. If you had feedback and comments on any of these
4 submissions, they would, however, as I understand it,
5 come from the Buildings Department itself, not from
6 Pypun?

7 A. 正確。

8 Q. Right. So you would have expected, although you
9 probably didn't know what was going on at the time,
10 Pypun to liaise with the Buildings Department if they
11 had any observations, and then the Buildings Department
12 would formally respond to yourself?

13 A. 係，正式回應，係，係咁。

14 Q. Okay.

15 COMMISSIONER HANSFORD: Sorry, you said "formal response".
16 Was there ever any informal response directly from
17 Pypun?

18 A. 有嘅。

19 COMMISSIONER HANSFORD: So you could get informal response
20 coming from Pypun, but formal response would always come
21 from BD; is that correct?

22 A. 正確。

23 COMMISSIONER HANSFORD: Thank you.

24 MR PENNICOTT: Sorry, sir, I'm slightly being distracted
25 because I'm getting a message regarding whether or not

1 the witness should be looking at the transcript in front
2 of him. I understand that perhaps that shouldn't be the
3 case. But anyway, let's see how we go from now and I'll
4 review the position perhaps when we break.

5 CHAIRMAN: Has this just started now?

6 MR PENNICOTT: It has, sir, and I don't quite know how or in
7 what circumstances it started. I'm not aware of any
8 previous witness having looked at the screen. Because
9 I'm standing where I'm standing, because I've been
10 asking the questions before, I've now picked up what's
11 happened. I was unaware of it before we started.

12 MR BOULDING: We understand it was provided by the
13 Commission. It's not something we've asked for.

14 MR PENNICOTT: No, it's not right. We haven't provided, as
15 we suspect -- it's not us, I'm afraid. That's what my
16 instructions are, anyway, and neither the Secretariat,
17 so we haven't, as far as I'm instructed, provided it.

18 Anyway, let's see how we go. We can either shut it
19 down now or look at it during the tea break.

20 CHAIRMAN: We'll do it at the break and I'll check into it
21 as well.

22 MR PENNICOTT: Yes, please, sir. Thank you very much.

23 WITNESS: (After shutting the computer lid) I think it's
24 better. Forget about it. Sorry for the trouble.

25 MR PENNICOTT: If I may say so, Mr Leung, good decision.

26 Mr Leung, just another example, just to emphasise

1 the point. If you go in the same file to B10/7322,
2 there's a similar letter from yourself, signed by
3 yourself, we can see from 7323, 30 July 2015, making
4 another submission -- it doesn't matter what it is; I'm
5 just doing this for an example -- and again copying the
6 design report and the assessment report this time to
7 Pypun, as per the agreed submission logistic that you've
8 explained to us?

9 A. 係，冇錯。

10 Q. All right. Fine.

11 Apart from the design team, you have the
12 construction management team as well?

13 A. 係。

14 Q. For the majority of the period with which we are
15 concerned, that was headed up, as I understand it, by
16 a Mr Kit Chan; is that correct?

17 A. 你講嘅大部分時間係邊段時間？可唔可以more specific？

18 Q. I can. From about November 2014 to May 2016,
19 Mr Kit Chan was the head of the construction management
20 team, so far as the Hung Hom Station is concerned?

21 A. 係。

22 Q. In contrast to the design management team, the
23 construction management team was to supervise the actual
24 construction works and was very much a site-based team;
25 is that correct?

1 A. 正確。

2 Q. However, the two teams presumably communicate with one
3 another; would that be right, Mr Leung?

4 A. 正確。

5 Q. So, by way of example, if Leighton wished to propose any
6 design changes, those changes would go to the
7 construction management team first for approval, and if
8 assented to by the construction management team, they
9 would send the proposed change to the design management
10 team for consideration?

11 A. 係。

12 Q. And, as I understand it, there were perhaps weekly
13 design management/construction management coordination
14 meetings; is that correct?

15 A. 正確。

16 Q. And, as I understand it, occasionally, but I'm not quite
17 sure yet how often, you attended those coordination
18 meetings?

19 A. 正確。

20 Q. How often did you attend those weekly meetings,
21 Mr Leung?

22 A. 如果喺個contract嘅早期，因為呢個會就我set up嘅，所以就喺早期係我
23 係每個會都有去嘅，當個contract一路run咗落去，即係smooth咗之後，
24 就由我嘅下屬嗰個高級設計管理工程師就去attend呢啲會。

25 Q. Right. And so far as, therefore, Hung Hom was

1 concerned, that would be who?

2 A. 就係我嘅高級管理--設計管理工程師Kevin Yip去嘅。

3 Q. Calvin ...?

4 A. Kevin Yip.

5 Q. Kevin Yip? Okay. I'm just coming to him as well.

6 We'll come to him in a moment. Okay.

7 Now, these weekly design management/construction
8 management coordination meetings, were they minuted?

9 A. 係有嘅。

10 Q. Why not?

11 A. 因為呢啲會就係好短嘅啫，我哋盡量都係--如果要take minutes，有可能
12 寫minutes嘅時間仲長過開會嘅時間嘅，所以我哋都係喺個會度盡量將大家
13 嘅--即係係一個coordination meeting，我哋盡量將佢哋有啲對我哋
14 design--I mean建造團隊對我哋有乜嘢設計上面有咩嘢疑問，佢哋喺個度
15 提出，而我哋或者有啲submission要佢哋--要儘早--叫個承建商儘早要
16 入嘅話，就喺個會度提出嘅。

17 Q. All right. So presumably, without any minutes of these
18 meetings -- and I understand your point about the
19 brevity of the meetings and no doubt the subject matter
20 didn't make it terribly easy to keep minutes, perhaps --
21 so one would be reliant upon the attendees at that
22 meeting or those meetings, what, keeping their own notes
23 of matters that they had to follow up on? Would that be
24 right?

25 A. 正確。

1 Q. Okay.

2 Could I then move on to what we've called the first
3 change, Mr Leung. That is, to put it simply, although
4 I know it was more complicated than this, the removal or
5 the missing U-bars at the top of the diaphragm wall.
6 I think you know what I'm talking about, Mr Leung; yes?

7 A. 知道，知道。

8 Q. Good. That's a relief.

9 Is it correct, Mr Leung, that the Buildings
10 Department only discovered this change that had happened
11 on 14 April 2015 at a meeting which you attended?

12 A. 應該係2015年初，係，差唔多呢個時間，當我哋入嗰個completion
13 certificate嗰時發現嘅，係。

14 Q. Yes. You submitted the completion certificate in
15 a series of batches.

16 A. 係，正確。

17 Q. And it was the Buildings Department analysis and
18 consideration of those submissions that threw up the
19 fact that they then appreciated that the change had been
20 made, of which they had not been previously advised?

21 A. 係，係，之前係冇話畀佢哋聽。

22 Q. Yes. As I understand it, Mr Leung, from your witness
23 statement, you do not dispute that the first change
24 should have been submitted to the Buildings Department;
25 do you agree with that?

1 A. 正確。

2 Q. And that it should have been submitted to the Buildings
3 Department for agreement, or consultation perhaps, prior
4 to the commencement of the work that changed the detail?

5 A. 正確。

6 Q. If we could look, please, at bundle H11, at 5527. This
7 is your letter of 7 July 2015, submitting what is
8 described as "Incident report on diaphragm wall
9 reinforcement details at HUH". Do you see that?

10 A. 睇到。

11 Q. If you go, please, to page 5531, you set out some
12 background, and then at 2, "Diaphragm wall design and
13 construction", and then the paragraph I would like to
14 focus on is 2.4 on page 5532, which says:

15 "Following the acceptance of the shop drawings, the
16 contractor's engineering team did not submit the amended
17 design formally for approval by MTRC in accordance with
18 the contract requirements. There was also some
19 miscommunication between the parties involved (1112
20 contractor's engineering and construction team, and
21 MTRC's construction management and design management
22 team) resulting in a misconception that the amended
23 design had already covered in the subsequent design
24 amendment submission for the permanent works made by
25 C1106 DDC in September 2013. Unfortunately, this was
26 not the case and this inadvertent non-conformity was not

1 discovered until the preparation of certification of
2 completion of works ... in January 2015 for the first
3 batch of diaphragm wall panels constructed."

4 So, in a nutshell, Mr Leung, you were putting
5 forward essentially two reasons for the situation, or
6 the incident as you call it. One was that Leighton, the
7 contractor, did not submit the amended design formally;
8 yes?

9 A. 正確。

10 Q. And, secondly, that there was a miscommunication or
11 a breakdown in communication between Leighton and MTRC's
12 construction management team and the design management
13 team?

14 A. 正確。

15 Q. In relation to that last point, are you saying that
16 there was a breakdown in communication or
17 miscommunication between MTRC's construction management
18 team, on the one hand, and MTRC's design management team
19 on the other?

20 A. 我覺得就唔只係MTRC嘅design management同埋construction
21 management，即係仲有就係禮頓，即係contractor嗰方面同我哋兩個
22 party嘅溝通失誤。

23 Q. But, Mr Leung, do you accept -- we can look at --
24 there's a quick way and a long way of doing this -- do
25 you accept that in relation to this first change, the

1 construction management team knew about it when it was
2 instigated and implemented?

3 A. 我諗佢哋應該係知，因為佢哋每日都係supervise嗰個--監管嗰個工程嘅
4 進行。

5 Q. Yes. You've no doubt heard, perhaps read, some of the
6 evidence from the Leighton witnesses, particularly
7 Mr Buckland, where he says it's quite clear from the
8 documents that the construction management team knew
9 about this right from the start. Have you reviewed that
10 material and do you agree with Mr Buckland?

11 A. 我唔可以代construction management team答呢個問題佢哋係咪一開
12 頭知，即係頭先我個答案都係話佢哋每日都負責管理個工程嘅進行，佢哋應
13 該係知嘅。

14 Q. All right. You would have expected them to know?

15 A. Yes。係，正確。

16 Q. So would this be fair: if that is right, and I'm pretty
17 sure it is, Mr Leung, the real breakdown might be said
18 to have occurred between the MTRC's construction
19 management team and your design team, because the
20 construction management team failed to inform you of the
21 change?

22 A. 我就唔係好同意。

23 Q. Why do you beg to differ, Mr Leung?

24 A. 我諗最基本就係話如果contractor佢係改嗰個permanent work嘅設計嘅
25 話，佢係有責任去通知番construction management team，然之後就

1 通知我哋design management team嘅，但係喺construction
2 management team我哋個建造團隊，佢哋或者冇--即係呢個係我自己嘅
3 估計，佢哋或者係有一個足夠嘅判斷呢個係唔係一個設計嘅改動，所以佢就
4 冇通知我哋。

5 所以就像話--即係如果有任何嘅改動，即係permanent work嘅改動，
6 佢哋就應該係根據個合約嘅精神，合約嘅要求就通知我哋，通知個建設團隊。

7 Q. When you say "They should inform us", are you talking
8 about the construction management team or Leighton?

9 A. Leighton.

10 Q. And so your position is this, is it, that it doesn't
11 matter that the construction management team of the MTRC
12 knew about this alteration and saw it being implemented,
13 saw it being constructed; there was still an obligation
14 on Leighton to do exactly what, Mr Leung?

15 A. 正確。

16 Q. Yes, but do what? What did Leighton fail to do that you
17 say they should have done?

18 A. 喺呢個case嚟講，就係佢哋就係用咗一個我哋叫做shop drawing嘅模式去
19 改動一個設計，而shop drawing個submission就係唔應該愛嚟做改
20 permanent work嘅設計，就喺呢度就係佢哋係有一個--我可以咁講，就係
21 做得唔係咁好嘅地方就係，而呢個就係個incident report亦都係反映咗出
22 嚟嘅，呢個係其中一個incident report嘅investigation發現到個問題
23 就係咁。

24 Q. First of all, let's start with Mr Buckland --

1 CHAIRMAN: Sorry, could I ask -- I do apologise -- what's
2 a soft drawing approach?

3 MR PENNICOTT: I think it was "shop", sir.

4 CHAIRMAN: It's come out as "soft".

5 MR PENNICOTT: That's what I heard as well, but then
6 I realised I think he meant "shop".

7 CHAIRMAN: I do want to emphasise here that the
8 transcription service, day after day, has been superb,
9 so it's not a criticism.

10 MR PENNICOTT: Not at all, no, no. It did come out as
11 "soft" and that's what I heard but I thought it couldn't
12 be right.

13 Can we just look at C29/21522.

14 I think this is perhaps the point you are making but
15 I'm not sure, Mr Leung.

16 We can see at C29/21522 that Leightons, under the
17 cover of a contractor's submission form, do you see
18 that, are submitting a number of shop drawings and bar
19 bending schedule for the diaphragm wall in area C; do
20 you see that?

21 A. 睇到。

22 Q. That's on 23 August 2013, so quite near the beginning of
23 the diaphragm wall construction period?

24 A. 冇錯。

25 Q. If we go, please, to 21528, and you look at the section
26 in the top right-hand corner, I think you'll agree with

1 me, Mr Leung, that that shows the first change, that is
2 the U-bars have disappeared and you've got the bars
3 going straight across the top of the diaphragm wall?

4 A. 正確。

5 Q. If we could just go back to the cover sheet, so 21522,
6 it's being sent by Mr Plummer of Leighton to Mr Patrick
7 Cheng, then construction manager on 1112; do you see
8 that?

9 A. 睇到。

10 Q. So it's quite clear, is it not, that as at 23 August
11 2013, MTRC had a drawing -- it might be a shop drawing
12 but they certainly had a drawing -- which showed the
13 change, proposed change, of detail?

14 A. 正確。

15 Q. Can you explain why it is that that is not sufficient so
16 far as Leighton is concerned in fulfilling their
17 obligation to advise MTRC of a proposed design change?

18 A. 正如頭先我咁講，呢個shop drawing就係愛嚟施工嘅，如果你喺呢度改咗
19 嗰個permanent work嘅設計，而未經過嗰個designer嘅review，就係
20 會發生而家咁嘅情形，就係話睇落去就好似個改動係可以接受嘅，但係其實
21 就係你畀一個--如果一個thorough，即係一個較為全面嘅review，你
22 就會發覺個design係有問題。

23 Q. Mr Leung, the problem with that answer, and if I may say
24 so your approach on this particular issue, is this.

25 I thought you had agreed with me earlier that if, for

1 example, as I put it to you earlier, Leighton wished to
2 propose a design change, that change would go to the
3 contract management team of MTR first, as it did by
4 reference to this contractor's submission form. Do you
5 agree with that so far?

6 A. 我係唔同意嘅，就係唔應該係用一個shop drawings嘅submission嘅形
7 式去改個permanent work design。

8 Q. Did you expect your construction management team, when
9 they received this contractor's submission form from
10 Leighton, with the amended design, to pass it to you,
11 the design management team?

12 A. 喺一個理想嘅情形，就係應--如果有咁嘅發生就好--即係就有問題，但係
13 就喺呢個case之下，就係冇發生到。

14 Q. No. And because -- even though the construction
15 management team clearly knew about the proposal, and
16 then we know that the proposal was actually implemented,
17 because this information was not passed to the design
18 management team, you weren't put in a position, as
19 I understand it, to take a call on whether or not this
20 should have been submitted to the Buildings Department
21 before implementation?

22 A. 你可唔可以再重複番個question?

23 Q. Yes. First of all, let me go back a stage. This
24 proposed revision in the shop drawing, had you had
25 notice of it back on 23 August 2013, would you have

1 concluded, Mr Leung, that this is something that should
2 have gone to Buildings Department at that time for
3 consultation?

4 A. 會嘅。

5 Q. And the reason it didn't go for consultation at that
6 time is because the construction management team didn't
7 inform the design management team of this proposed
8 change?

9 A. 我諗我喺嗰個我嘅statement都講過，就係話其實佢哋個修訂就係其中一張
10 email就係copy咗畀我哋DM team嘅，但係就當時就係冇pick up到嘅，所
11 以就即係你--係DM team係design management team係收過呢個改動，
12 但係就只不過係一張email度copy咗畀我哋嘅。

13 MR PENNICOTT: Right.

14 Sir, would that be a convenient moment for
15 15 minutes?

16 CHAIRMAN: Yes, it would. Thank you. 15 minutes. Thank
17 you.

18 MR PENNICOTT: Thank you, sir.

19 (3.43 pm)

20 (A short adjournment)

21 (4.03 pm)

22 CHAIRMAN: Sorry, as to the use of the computer --

23 MR PENNICOTT: Yes, sir.

24 CHAIRMAN: -- my understanding is that Mayer Brown asked
25 that a computer be put there. The request went direct

1 to the transcription service and bypassed us. It's
2 sounding a bit like an echo of the evidence. And we
3 were not aware of it.

4 MR PENNICOTT: Neither was I, sir.

5 CHAIRMAN: It has been done this way, apparently, in at
6 least one previous Commission of Inquiry. This is not
7 a trial, so we are not sort of giving a particular
8 advantage to one set of witnesses as against another.
9 However, we haven't followed that procedure so far, and
10 I think for purposes of consistency it's probably easier
11 if the computer be closed for the witness, but if
12 there's good reason why it needs to be opened then
13 obviously we are happy to consider any request.

14 MR PENNICOTT: Yes, sir. Thank you very much.

15 MR BOULDING: Sir, that's absolutely right. I carried out
16 a certain amount of extracurricular cross-examination
17 and established over the tea break that indeed we had
18 asked for it, Mayer Brown had asked for it, and they did
19 so on the basis that there was a precedent. You will
20 probably recall that Mr Poon had it in front of him
21 during the course of his evidence.

22 CHAIRMAN: Did he? I didn't notice that.

23 MR BOULDING: I do apologise.

24 CHAIRMAN: There's no need to apologise at all. In fact
25 Mayer Brown were obviously alert to the fact that there
26 was precedent and they thought that if it may be of

1 assistance then they would assist their client, so
2 there's nothing to criticise. But I just think for
3 consistency, although that seems to have been shot down
4 slightly, because it seems one of the principal
5 witnesses had that assistance right at the beginning.

6 COURT REPORTER: Excuse me, I don't think Jason Poon did
7 have the transcript.

8 CHAIRMAN: It would seem not. In any event, I don't want to
9 go into historical argument. We will leave it as it is.

10 Sometimes, for example, if a witness says, "Look,
11 I didn't get that question", you could then say, "It's
12 there on the transcript, would you like to read it?",
13 rather than having to repeat the whole thing.

14 MR BOULDING: I do have the right to cross-examine the
15 transcript writer on this occasion!

16 CHAIRMAN: Yes. Thank you.

17 MR PENNICOTT: I'll say no more about it.

18 CHAIRMAN: Yes, Mr Pennicott?

19 MR PENNICOTT: Mr Leung, hello again.

20 A. 午安。

21 Q. Could we, please, look at what I understand to be the
22 email that you referred to just before we broke for
23 a short break. Could you go, please, to paragraph 35 of
24 your witness statement, which is in B1, page 248.

25 You will see there, Mr Leung, you said this:

26 "By email to Mr Leo Wong (design liaison

1 representative of Atkins' team A) dated 2 July 2013,
2 Leighton sought comments on its shop drawings including
3 these changes to the rebar arrangement in of the
4 diaphragm wall. This email was copied to MTRC's CM and
5 DM teams."

6 Pausing there, could we look, please, at B11/8221.

7 If we could enlarge the centre bit a little bit
8 more, please. That's fine, thank you very much. But
9 now I can't see the date. Thank you very much.

10 You will see from the top, Mr Leung, it's 2 July
11 2013, and then, if we go further down, the email is from
12 Mr Buckland and goes to, as you say, Mr Leo Wong from
13 Atkins team A; do you see that?

14 A. 睇到。

15 Q. Then to CS Tang, who's from MTR -- is he from the design
16 team?

17 A. 冇錯，CS Tang當時係設計團隊嘅人。

18 Q. Right. Then also to Patrick Cheng, who we've seen
19 already is the construction manager in the construction
20 management team?

21 A. 正確。

22 Q. And this is the email that you're referring to in your
23 statement; have I got that right?

24 A. 我想睇番我證人供詞嗰個係咪同一個日子，而家我想睇。

25 Q. Yes.

1 A. 係，係，冇錯，就係Brett send畀Leo，正確。

2 Q. Okay. Is it this email that attached some shop drawings
3 that you say, well, it was sent to Mr Tang and
4 Mr Cheng -- Mr Tang was part of the design team, Mr Leo
5 Wong part of Atkins team A -- and you just didn't spot
6 the change in the shop drawings?

7 A. 正確，因為好似喺我個statement都講，當時我係冇自己親身去處理呢個
8 submission嘅。

9 Q. No, but you accept, quite rightly, that the material,
10 the shop drawings, and so forth, went to members of your
11 design -- a member of your design team?

12 A. 正確。

13 Q. All right. And of course this email is dated 2 July
14 2013, so it came before the contractor's submission form
15 dated 23 August that we were looking at before we had
16 a short break?

17 A. 我估計係因為in between嗰啲再有冇其他correspondence，再有冇email
18 我就唔清楚，當時我係搵到呢張email，係我可以confirm到就係禮頓嗰面係
19 send咗畀個DLR，同埋copy咗畀DM team。

20 Q. And so, as it happens, although we hear what you say
21 about the design management team not spotting or not
22 appreciating what they were being shown, on one view of
23 the position, Mr Leung, both from the MTRC construction
24 management team and the design team, knew about this
25 proposed change?

1 A. 正確。

2 Q. So your only complaint, as I understand it, can be that
3 somehow Leighton should have gone further and made some
4 formal submission to the MTR?

5 A. 正確，喺設計管理上，係應該一定要咁做。

6 Q. All right.

7 Just to finish this point off, I'm not going to read
8 it all out, but in the rest of paragraph 35 of your
9 witness statement, you make the point about Leighton not
10 having made any formal proposals; as a consequence, the
11 changes were not submitted to BD, it wasn't spotted
12 until after the first batch -- by BD, that is, until
13 after the first batch had been submitted in January
14 2015, and that you personally only became aware of it
15 after that date?

16 A. 正確。

17 Q. Just one last question on that then, Mr Leung. When you
18 say, or when you agreed with me that some formal
19 proposal should have been made, what form should that
20 have taken? What do you mean by a formal proposal?

21 A. 喺contract 1112其實就有一個我哋叫做work proposal咁嘅mechanism
22 嘅，有個work proposal嗰個meeting，就係話喺嗰度就承建商contractor
23 其實係有個forum畀佢哋係提出佢哋對permanent work嘅change嘅
24 proposal，即係可以proposal--即係change to個permanent work
25 嘅，而喺嗰度就--喺嗰個proposal group嗰度就係大家可以傾即係話係唔

1 係去proceed with呢個change, base on睇下有冇benefit to the
2 project咁樣。

3 Q. Right. So it should have been raised, you say, at one
4 or other of the forum for changes to the permanent works
5 or the project group meetings; is that really what it
6 comes to?

7 A. 正確。

8 Q. All right.

9 Can we move on to the second change, that is the
10 further change to the top of the east diaphragm wall.
11 Now, again, there's a long and a short way of doing
12 this, Mr Leung. The basic change from the coupler
13 arrangement to the through-bar arrangement -- with which
14 we are all familiar and I'm sure you're very familiar,
15 Mr Leung -- do you accept the general proposition that
16 when that change was implemented on site by Leighton,
17 the MTR construction management team knew about it?

18 A. 正如頭先我咁講, 我唔可以代表CM team答佢哋知唔知道, 不過一般嘅常識
19 就係話佢哋每日喺地盤度即係監察個施工, 咁即係好邏輯地嚟講, 係應該係
20 佢哋應該係知嘅, 喺邏輯上。

21 Q. Mr Leung, were you personally aware of it?

22 A. 唔知, 直至到今年嘅7月, 大約7月嘅我至知。

23 Q. Okay. So that would suggest, would it not, that if the
24 construction management team, as a matter of common
25 sense, ought to have known about it, they failed to tell

1 you personally?

2 A. 可以咁，係，正確。

3 Q. And presumably failed to tell anybody else in your
4 design management team?

5 A. 可以咁講，佢係冇話畀我哋設計管理團隊聽。

6 Q. I'm just going to try to limit what we need to look at,
7 Mr Leung. Could I ask you, however, to consider one
8 particular document, one particular email, that you
9 sent. It's an email that Mr Cheuk discussed with
10 Mr Taylor the other day.

11 Could I ask you, please, to look at B10/7249.

12 This is an email that you sent, Mr Leung, to
13 Mr Taylor, copying others, on 25 July 2015; do you see
14 that?

15 A. 見到。

16 Q. We've had some difficulty working out, Mr Leung,
17 precisely what you meant by some or perhaps all of this
18 email, so I'm going to see if we can break it down.

19 You start off by saying:

20 "Justin,

21 Portion of the wall should be cast together with the
22 OTE slab as a good practice."

23 Does that mean that you were in agreement with the
24 monolithic proposal of construction, Mr Leung?

25 A. 絕對唔同意。

1 Q. What did you mean by the first sentence?

2 A. 第一句嘅意思，如果可以嘅話，或者委員會可以將之前嗰張email嗰個
3 sketch如果可以show番出嚟，就可以容易解釋啲，如果唔係嘅話，...

4 Q. Yes.

5 A. ...就我嘗試盡量去解釋。

6 Q. We can see the sketch. It's at B5/2992.

7 A. 首先我想解釋就係呢張email，如果大家睇個heading，就係講緊係個OTE
8 wall，“Updated OTE wall and EWL 3 metre slab connection
9 requirement”，呢個就係嗰個subject嚟嘅，而我喺呢張email講嘅
10 wall就其實係個OTE wall，個OTE wall係邊部分呢，就其實就唔係個
11 diaphragm wall，就係如果大家睇番個螢光幕嘅右手面嗰張圖，右手嘅
12 sketch，係喇，就係...

13 Q. Detail 2?

14 A. Either detail 1 or detail --

15 即係2都可以嚟喇，就係喺--假設我哋大家去睇睇detail 1。

16 Q. Okay.

17 A. Okay，就detail 1嘅右手面嗰個wall，即係話你睇到OTE wall，大家
18 睇唔睇到上面有個三角形嘅符號“OTE wall CJ”？

19 Q. Yes.

20 A. Okay，我而家呢張email講緊嘅就係“a portion of the wall should
21 be cast together with the OTE slab as a good practice”，
22 係喇，就係講緊就係--即係話呢個OTE wall同塊slab就係應該係要cast埋
23 一齊，as一個good practice。而如果你哋大家睇番張--成個email，就
24 其實就係嗰個subject或者嗰個argument睇到就係喺Atkins有一team人

1 或者有一個design team嘅staff就話係可以個OTE wall，即係右手面嘅
2 部分係可以同個OTE slab就係唔需要cast一齊嘅，而有一個engineer，
3 就係WC Lee，佢就話要cast埋一齊嘅，你如果睇番張email，7月21號21點...

4 Q. It's the next page?

5 A. Yes，B7250嗰個reference，last paragraph，就係最樓層嗰段，如果
6 你睇番最樓層嗰段，佢嗰度寫得好清楚，“the OTE wall”...

7 I can't read. Because個B--個數目字遮住咗嗰個“the OTE
8 wall”。

9 Q. Sorry, are you reading the sentence --

10 A. 最樓層嗰段：

11 "Even though the horizontal slab have sufficient length
12 to form the tension anchorage for the slab rebar, the OTE
13 wall still" -- I can't read because the number here, right --
14 "the OTE wall [shall] be concrete concurrently with the EWL
15 slab ..."

16 Q. "[Shall] need to be"?

17 A. Yes。就有兩個唔同嘅design team member有唔同嘅view。所以就Justin
18 Taylor就喺7月24號喺佢嗰張19點10分嗰張email就send咗畀我同埋我嗰
19 team--即係MTRC，有Kevin Yip、Brendan Reilly同埋James Ho，就
20 即係想問下我哋嘅意見嘅，當時我就答咗佢，就係話就係個“portion of
21 the wall should be cast together with the OTE slab as a
22 practice, otherwise one more CJ is introduced between
23 them.”

24 即係話如果大家睇番張圖，如果你個OTE wall，即係右手面嗰堵牆係同個

1 OTE slab唔一齊cast，就係會多咗一個CJ喺度嘅，多咗個construction
2 joint。成句嘢嘅--成段嘅email就係咁嘅意思。

3 COMMISSIONER HANSFORD: Have we got the coloured sketch that
4 goes with this, the red --

5 MR CHEUK: The previous page.

6 COMMISSIONER HANSFORD: -- blue and -- the ones we saw
7 yesterday?

8 MR CHEUK: B10/7250.

9 COMMISSIONER HANSFORD: Will that help us?

10 MR PENNICOTT: It might do.

11 COMMISSIONER HANSFORD: It might help me.

12 MR PENNICOTT: B5/2991. The previous page.

13 COMMISSIONER HANSFORD: No. There was a sketch we were
14 shown yesterday with different --

15 MR PENNICOTT: In the design report, in the submission?
16 It's probably easier to do it in J.

17 COMMISSIONER HANSFORD: Tell me if that's not helpful.

18 MR PENNICOTT: Don't worry. We'll find it.

19 MR COLEMAN: C20824.

20 MR PENNICOTT: Hang on. Just before we go there. I thought
21 it was the design submission that we wanted to go to.

22 WITNESS: Yes, that's right.

23 MR PENNICOTT: Just give me the page number again?

24 MR LAM: C27.

25 COMMISSIONER HANSFORD: It's the next one, actually. That
26 one. I was trying to work out where this extra CJ is

1 before Mr Leung's email was discussing the second change
2 proposal. That is the diagram that, Professor, you just
3 referred us to.

4 COMMISSIONER HANSFORD: Yes.

5 MR CHEUK: I think everybody understood that.

6 What I understand Mr Leung's email here was talking
7 something totally different.

8 COMMISSIONER HANSFORD: Ah.

9 MR CHEUK: He's not answering the issues raised by everybody
10 else. What he actually talks about here -- Mr Leung can
11 correct me if I am wrong -- if we go back to the sketch,
12 B5/2992, we see everybody else was treating OTE wall and
13 OTE slab as one thing; you can just call it "OTE".

14 COMMISSIONER HANSFORD: Yes.

15 MR CHEUK: Then they were talking about casting the OTE with
16 the diaphragm wall monolithically, in one piece.
17 Everybody was understanding on that basis and trying to
18 discuss this issue. Then what I think -- and Mr Leung
19 can correct me -- he was talking about something totally
20 different. He was dividing the OTE into OTE slab and
21 OTE wall.

22 Of course you can divide it in two ways. One is you
23 cut it horizontally along somewhere below the OTE wall
24 CJ, you cut it slightly horizontally and treat
25 everything above is called OTE wall and everything below
26 is called OTE slab. Then his extra CJ would be along

1 that horizontal line.

2 COMMISSIONER HANSFORD: Of course.

3 MR CHEUK: Another way of looking at Mr Leung's evidence is

4 that if you cut it vertically along the line "FLL" --

5 I wonder, Professor and Chairman --

6 COMMISSIONER HANSFORD: I understand, Mr Cheuk, but no one

7 was proposing that, were they?

8 MR CHEUK: Exactly. That's the point. That's the line of

9 miscommunication. That's why, as I understand it, when

10 everybody else was talking about A, Mr Leung was talking

11 about B.

12 COMMISSIONER HANSFORD: Ah.

13 MR CHEUK: That's my understanding.

14 MR BOULDING: Sir, this is a useful explanation, but

15 obviously my learned friend will not want to be accused

16 of giving evidence, and it seems to me that this needs

17 to be put to this witness to see whether this

18 explanation accords with this witness's evidence.

19 COMMISSIONER HANSFORD: I agree entirely.

20 MR CHEUK: I agree entirely.

21 To save everybody else's time -- Mr Leung, you have

22 heard my dialogue and my understanding of your view,

23 your reply on the email. Can you confirm or say

24 anything else?

25 A. 我係唔同意你嗰個諗法嘅。

26 MR CHEUK: Please explain.

1 A. 因為正如喺我--其實我喺statement嗰度寫得好清楚，我個statement寫
2 得好清楚，喺呢張email個email chain度係大家係拗緊個OTE wall係唔
3 係同個OTE slab係一齊cast，if you--如果你哋--即係如果可以睇張
4 email，...

5 MR CHEUK: I think we can go back to the email chain, and
6 then let's clarify this a little bit. Let's go back to
7 your point. If we go down to the original email,
8 I think that's where the misunderstanding arises.

9 COMMISSIONER HANSFORD: I see.

10 MR CHEUK: If we go down to the original part that you just
11 referred to.

12 For example, I think you just refer us to 7250. If
13 we look at the bottom part, if we look at this subject,
14 Mr Leung, he's talking about updated OTE wall and EWL
15 slab, not OTE wall and OTE slab; is that correct?

16 A. Yes, so that's why it's different. 3 metre slab and the
17 OTE slab and wall should be cast concurrently or at the
18 same time. That is already defined in the remedial
19 proposal; okay? So this question is whether you need
20 to split it further. The subject here is whether you
21 need to split it further, to split the right-hand part,
22 the OTE slab and wall, cast separately.

23 COMMISSIONER HANSFORD: And where is that being proposed?

24 A. You can see that from the email on B7250, at the second
25 paragraph, or the last paragraph I just mentioned, from

1 the email from Lee Wan Cheung.

2 MR CHEUK: Yes, WC Lee, who is from Atkins.

3 Then if we read the second paragraph:

4 "Even though the horizontal slab have sufficient
5 length to form the tension anchorage for the slab rebar,
6 the OTE wall still need to be concrete concurrently
7 with", not the OTE slab, "the EWL slab ..."

8 A. Yes.

9 MR CHEUK: So, as I understand it, and I believe everybody
10 else understands it, we are talking about the OTE
11 portion together with the EWL slab portion. That's also
12 Mr Taylor's understanding, when I asked him questions
13 yesterday.

14 COMMISSIONER HANSFORD: We need to hear Mr Leung's
15 understanding.

16 MR CHEUK: What's your understanding?

17 A. But if you read it further:

18 "... the OTE wall still need to be concrete
19 concurrently with the EWL slab to a level minimum 300mm
20 above the tamper section of the OTE wall."

21 Right? And that's the requirement from Lee Wan
22 Cheung, the email; okay?

23 Then if you read Justin Taylor's email on Friday,
24 24 July, and the second paragraph:

25 "We have spoken to Torgeir about the need to cast
26 the OTE wall as our understanding their intention was

1 not to do so ..."

2 That's the subject of this email. Someone wants to
3 split the OTE wall casting from the OTE slab. That's
4 what I --

5 MR CHEUK: That's what you understood.

6 A. And that was the things happened on that -- you know,
7 at the material time.

8 MR CHEUK: Let's put it this way. I understand -- can you
9 agree with me what you understood is that the extra CJ
10 you mentioned will happen, as I tried to explain
11 previously, two ways? Either you say there's
12 a horizontal line, you cut it slightly below the
13 original CJ -- can we go back to the sketch -- yes. Can
14 you explain where your extra CJ will lie? I think that
15 would be easiest.

16 A. It will lie between this horizontal OTE portion and
17 the horizontal portion here (indicating).

18 If I can show it here, it will be somewhere between
19 here (indicating). That's the OTE slab horizontal
20 portion; right? So this is somewhere here.

21 MR CHEUK: I see. Yes. That's what I understood Mr Leung's
22 evidence all along.

23 The problem is that this is not Mr Taylor's
24 understanding, and that's why, when Mr Leung --
25 I believe now it's clear, the extra CJ is along the
26 vertical line --

1 COMMISSIONER HANSFORD: Well, sorry, Mr Leung is saying he
2 doesn't want an extra CJ in a vertical line.

3 MR CHEUK: Yes.

4 COMMISSIONER HANSFORD: But my difficulty is I'm not seeing
5 anybody proposing one.

6 A. That's -- if you read the email, they are talking about
7 to split the concreting of the right-hand portion, the
8 OTE slab and OTE wall, into two portions. That's the
9 email. If you read, you can see -- I don't know it's
10 engineering -- if you read WC -- Lee Wan Cheung's email
11 on 21 July, if you read it carefully, "Even though
12 the horizontal slab have sufficient length to form
13 the tension anchorage for the slab rebar" -- that means
14 if the horizontal part is long enough, but he still
15 insist that the wall still need to be cast together
16 with the horizontal part.

17 MR CHEUK: Okay. Let me take you again --

18 CHAIRMAN: Sorry, could I ask this. I'm sure it's
19 fascinating for those who are esoterically involved.
20 I'm just wondering, are we in a byway discussing
21 something of no great moment, or is it of moment? If
22 so, we must find a way to explain it.

23 MR PENNICOTT: Sir, in a sense, the moment, as it is, is
24 that there is a difference of view amongst the MTRC's
25 own witnesses.

26 And where we were going to end up before I asked

1 Mr Cheuk to take over for a few minutes, because of his
2 knowledge of this email chain, is a passage in the
3 witness statement of Mr Kit Chan, the construction
4 manager, as we have heard, of the MTRC, where one can
5 see very clearly and in sharp focus that the
6 construction team understood the design team, through
7 Mr Leung, through this email that we have been
8 struggling with, to have understood that the sensible
9 thing to do was to cast the EWL slab, the OTE wall and
10 the top of the east diaphragm wall monolithically so
11 that there would be no multiple construction joints, and
12 so forth.

13 So, essentially, the construction management team is
14 saying, "The design team had the same knowledge as we
15 had", and then this all goes to the question, of course,
16 ultimately of issues between the construction management
17 team on the one hand and the design management team on
18 the other, whether or not any change of detail should
19 have been submitted to the BD, and so forth, and so on.

20 I mean, there is little doubt -- and I think
21 Mr Leung accepts this quite openly -- that the
22 construction management team knew full well what was
23 going on, and the construction management team seemed to
24 me to be saying -- but obviously we haven't heard
25 Mr Kit Chan yet or indeed all of Mr Leung's evidence --
26 but it seems to me that Mr Kit Chan is saying, "The

1 design management team knew just as much as we did and
2 really it was for the design management team to take
3 this thing forward, if it thought appropriate, with the
4 Buildings Department."

5 So, to that extent, it's this email which is sort of
6 key to that point.

7 CHAIRMAN: Is it necessary to discover what the email
8 actually means, or can we work on the basis that there
9 was a misunderstanding as to its meaning?

10 MR PENNICOTT: I think you could certainly conclude the
11 second, that there was a clear misunderstanding.
12 There's no doubt about that.

13 CHAIRMAN: And see where that takes us.

14 MR PENNICOTT: On the basis of what Mr Leung has told us, it
15 seems to me to be blindingly obvious that there was
16 a misunderstanding, putting it at its lowest, yes.

17 CHAIRMAN: Then we look at what the consequences are, if
18 any.

19 MR PENNICOTT: Yes.

20 WITNESS: Can I supplement one point?

21 CHAIRMAN: Yes, of course.

22 MR PENNICOTT: Sir, I'm sort of very conscious of the fact
23 that because -- and I take entire responsibility for
24 this -- that we've sort of, in an endeavour by me to
25 save some time, jumped right into this email, without
26 looking at some of the steps that led up to it. I did

1 that because Mr Cheuk went through a lot of this with
2 Mr Taylor and to some extent Mr Buckland as well and
3 I didn't really want to repeat it all if I could avoid
4 it, and it may be that part of the problem is that we
5 haven't had that run-up, as it were, to the email, and
6 Mr Cheuk has tried to explain our understanding of what
7 we think it all means.

8 But obviously, ultimately, what we need to hear is
9 Mr Leung's evidence and of course I'm well aware of
10 that. So what I'm going to suggest, if I may -- and
11 it's 4.45 on Friday afternoon -- it might be an idea if
12 I go away, reflect upon this and see whether there's
13 a way of putting it a bit more clearly, neatly and
14 shortly so that we can all benefit from Mr Leung's
15 explanation, perhaps on Monday morning.

16 CHAIRMAN: All right. That sounds a very sensible
17 proposition. Thank you.

18 Mr Leung, as I said to you I think earlier, over the
19 luncheon, you are in the process of giving your evidence
20 and you are therefore not allowed to discuss your
21 evidence over the weekend with anybody.

22 We hope we can resolve this matter fairly early on
23 Monday, with a more structured approach, which will make
24 things clearer, but thank you very much for today, and
25 we will adjourn then until Monday morning at 10 am.
26 Thank you.

1 (4.48 pm)

2 (The hearing adjourned until 10.00 am

3 on Monday, 3 December 2018)

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